Attachment I




N
842500E
842900E
840000N
827000E
SHAM CHUN RIVER (SHENZHEN RIVER)
深圳河
PING HANG
坪坑
TA LAW HAU
大窿口
TSE KOO HANG
鶴咕坑
MA TSO LUNG
馬草壠
Ma Tso Lung Shun Yee San Tsuen
馬草壠信義新村
Ma Tso Lung San Tsuen
馬草壠新村
SEWAGE PUMPING STATION
污水抽水站
RESEARCH AND DEVELOPMENT
研究與發展
FIRING RANGE
練靶場
Lo Wu Firing Range Boundary
PAI TAU LO (VERNON PASS)
排頭路
Lo Wu Correctional Institution
羅湖懲教所
Ngam Pin
粟湧
SHEK MA
石馬
CREST HILL (TAI SHEK MO)
大石磨
NG TUNG RIVER (RIVER INDUS)
梧桐河
SHEUNG TAK RIVER (RIVER INDUS)
上水總污水處理廠
Sheung Shui Treatment Works and Fresh Water Pumping Station
上水總污水處及食水抽水站
FU TEI AU ROAD
Sheung Shui Slaughter House
上水屠宰場
Tsung Yuen
松園
FUNG KONG SHAN
鳳崗山
TIN HANG
鐵坑
ROAD C1 路
ROAD C2 路
ROAD C3 路
ROAD C4 路
ROAD C5 路
ROAD C6 路
ROAD C7 路
ROAD C8 路
ROAD C9 路
ROAD C10 路
ROAD C11 路
ROAD C12 路
ROAD C13 路
ROAD

Attachment III

~~APPROVED~~*DRAFT* KWU TUNG NORTH OUTLINE ZONING PLAN NO. S/KTN/2*A*

(Being ~~an Approved~~ **a *Draft*** Plan for the Purposes of the Town Planning Ordinance)

NOTES

(N.B. These form part of the Plan)

(1) These Notes show the uses or developments on land falling within the boundaries of the Plan which are always permitted and which may be permitted by the Town Planning Board, with or without conditions, on application. Where permission from the Town Planning Board for a use or development is required, the application for such permission should be made in a prescribed form. The application shall be addressed to the Secretary of the Town Planning Board, from whom the prescribed application form may be obtained.

(2) Any use or development which is always permitted or may be permitted in accordance with these Notes must also conform to any other relevant legislation, the conditions of the Government lease concerned, and any other Government requirements, as may be applicable.

(3) For any land or building falling within the boundaries of this Plan and also previously falling within the boundaries of the plan for the Kwu Tung North Interim Development Permission Area (IDPA) (hereafter referred to as "IDPA area"), and the Ma Tso Lung and Hoo Hok Wai Development Permission Area (DPA) (hereafter referred to as "DPA area"), whichever the case may be –

(a) no action is required to make the use of such land or building conform to this Plan, if the use of such land or building was in existence immediately before the first publication in the Gazette of the notice of the IDPA Plan for Kwu Tung North and/or the first DPA Plan for Ma Tso Lung and Hoo Hok Wai covering such land or building, provided such use has continued since it came into existence. Any material change of such use or any other development (except minor alteration and/or modification to the development of the land or building in respect of such use which is always permitted) must be always permitted in terms of the Plan or in accordance with a permission granted by the Town Planning Board;

(b) within the "IDPA area" and/or the "DPA area", a use or development of any land or building which has been permitted under an earlier draft or approved plan including the IDPA Plan for Kwu Tung North and/or the first DPA Plan for Ma Tso Lung and Hoo Hok Wai, whichever the case may be, and effected or undertaken during the effective period of that plan, is always permitted under this Plan. Alternatively, a use or a change of use approved under the Buildings Ordinance which relates to an existing building and permitted under a plan or plans prevailing at the time when the use or change of use was approved, is also always permitted under this Plan. Any material change of such use or any other development (except minor alteration and/or modification to the completed development of the land or building which is always permitted) must be always permitted in terms of the Plan or in accordance with a permission granted by the Town Planning Board;

(c) except to the extent that subparagraph (a) or (b) applies, any use or development falling within the "IDPA area" and/or "DPA area", unless always permitted in terms of the Plan, shall not be undertaken or continued on or after the date of first publication in the Gazette of the notice of the IDPA Plan for Kwu Tung North and/or the first DPA Plan for Ma Tso Lung and Hoo Hok Wai, whichever the case may be, without permission from the Town Planning Board.

(4) For any land or building falling within the boundaries of this Plan but not previously falling within the "IDPA area" or the "DPA area" –

(a) no action is required to make the existing use of such land or building conform to this Plan until there is a material change of use or the building is redeveloped;

(b) in relation to subparagraph (a) above, any material change of use or any other development (except minor alteration and/or modification to the development of the land or building in respect of the existing use which is always permitted) or redevelopment must be always permitted in terms of the Plan or, if permission is required, in accordance with the permission granted by the Town Planning Board;

(c) for the purposes of subparagraph (a) above, "existing use of such land or building" means -

(i) before the publication in the Gazette of the notice of the first plan covering the land or building (hereafter referred to as 'the first plan'),

- a use in existence before the publication of the first plan which has continued since it came into existence; or

- a use or a change of use approved under the Buildings Ordinance which relates to an existing building; and

(ii) after the publication of the first plan,

- a use permitted under a plan which was effected during the effective period of that plan and has continued since it was effected; or

- a use or a change of use approved under the Buildings Ordinance which relates to an existing building and permitted under a plan prevailing at the time when the use or change of use was approved; or

- a use or a change of use of an existing building in respect of which a certificate of exemption has been issued under the Buildings Ordinance (Application to the New Territories) Ordinance for the relevant building works and such use or change of use was permitted under a plan prevailing at the time when the use or change of use was approved;

(d) except to the extent that subparagraph (a) or (b) above applies, the use or development of such land or building, unless always permitted in terms of the Plan, shall not be undertaken or continued on or after the date when such land or building was first included within the boundaries of the Fanling/Sheung Shui Outline Zoning Plan published by notice in the Gazette, whichever the case may be, without permission from the Town Planning Board.

(5) Except as otherwise specified by the Town Planning Board, when a use or material change of use is effected or a development or redevelopment is undertaken, as always permitted in terms of the Plan or in accordance with a permission granted by the Town Planning Board, all permissions granted by the Town Planning Board in respect of the site of the use or material change of use or development or redevelopment shall lapse.

(6) Road junctions, alignment of roads and railway tracks, and boundaries between zones may be subject to minor adjustments as detailed planning proceeds.

(7) The following uses or developments are always permitted on land falling within the boundaries of the Plan except (a) where the uses or developments are specified in Column 2 of the Notes of individual zones or (b) as provided in paragraph (8) in relation to area zoned "Other Specified Uses" annotated "Nature Park":

(a) maintenance, repair or demolition of a building;

(b) provision, maintenance or repair of plant nursery, amenity planting, open space, rain shelter, refreshment kiosk, footpath, bus/public light bus stop or lay-by, cycle track, Mass Transit Railway station entrance, Mass Transit Railway structure below ground level, taxi rank, public utility pipeline, electricity mast, lamp pole, telephone booth, telecommunications radio base station, automatic teller machine and shrine;

(c) maintenance or repair of road, railway track, watercourse, nullah, sewer and drain;

(d) geotechnical works, local public works, road works, sewerage works, drainage works, environmental improvement works and waterworks (excluding works on service reservoir) and such other public works co-ordinated or implemented by Government;

(e) rebuilding of New Territories Exempted House;

(f) replacement of an existing domestic building i.e. a domestic building which was in existence on the date of the first publication in the Gazette of the notice of a draft plan including the IDPA Plan for Kwu Tung North and the first DPA Plan for Ma Tso Lung and Hoo Hok Wai covering such building, whichever the case may be, by a New Territories Exempted House; and

(g) provision, maintenance or repair of a grave of an indigenous New Territories villager or a locally based fisherman and his family members for which permission has been obtained from Government.

(8) In area zoned "Other Specified Uses" annotated "Nature Park",

(a) the following uses or developments are always permitted:

(i) maintenance or repair of plant nursery, amenity planting, sitting out area, rain shelter, refreshment kiosk, road, watercourse, nullah, public utility pipeline, electricity mast, lamp pole, telephone booth, shrine and grave;

(ii) geotechnical works, local public works, road works, sewerage works,

drainage works, environmental improvement works, waterworks (excluding works on service reservoir) and such other public works co-ordinated or implemented by Government; and

(iii) provision of amenity planting by Government; and

(b) the following uses or developments require permission from the Town Planning Board;

provision of plant nursery, amenity planting (other than by Government), sitting out area, rain shelter, refreshment kiosk, footpath, public utility pipeline, electricity mast, lamp pole, telephone booth and shrine.

(9) In any area shown as 'Road', all uses or developments except those specified in paragraphs (7)(a) to (7)(d) and (7)(g) above and those specified below require permission from the Town Planning Board:

road, toll plaza, on-street vehicle park, railway station and railway track.

(10) (a) Except in an area zoned "Other Specified Uses" annotated "Nature Park", temporary use or development of any land or temporary use of an existing building not exceeding a period of two months is always permitted provided that no site formation (filling or excavation) is carried out and that the use or development is a use or development specified below:

structures for carnivals, fairs, film shooting on locations, festival celebrations, religious functions or sports events.

(b) Except as otherwise provided in subparagraph (a), and subject to temporary uses for open storage and port back-up purposes which are prohibited in area zoned "Other Specified Uses" annotated "Nature Park", temporary use or development of any land or temporary use of an existing building not exceeding a period of three years requires permission from the Town Planning Board. Notwithstanding that the use or development is not provided for in terms of the Plan, the Town Planning Board may grant permission, with or without conditions, for a maximum period of three years, or refuse to grant permission.

(c) Temporary use or development of land or temporary use of an existing building exceeding three years requires permission from the Town Planning Board in accordance with the terms of the Plan.

(11) Unless otherwise specified, all building, engineering and other operations incidental to and all uses directly related and ancillary to the permitted uses and developments within the same zone are always permitted and no separate permission is required.

(12) In these Notes, unless the context otherwise requires or unless as expressly provided below, terms used in the Notes shall have the meanings as assigned under section 1A of the Town Planning Ordinance.

"Existing building" means a building, including a structure, which is physically existing and is in compliance with any relevant legislation and the conditions of the Government lease concerned.

"New Territories Exempted House" means a domestic building other than a guesthouse or a hotel; or a building primarily used for habitation, other than a guesthouse or a hotel, the ground floor of which may be used as 'Shop and Services' or 'Eating Place', the building works in respect of which are exempted by a certificate of exemption under Part III of the Buildings Ordinance (Application to the New Territories) Ordinance (Cap. 121).

~~APPROVED~~***DRAFT*** KWU TUNG NORTH OUTLINE ZONING PLAN NO. S/KTN/2***A***

Schedule of Uses

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COMPREHENSIVE DEVELOPMENT AREA

Column 1 Uses always permitted	Column 2 Uses that may be permitted with or without conditions on application to the Town Planning Board
	Eating Place Educational Institution Flat Government Refuse Collection Point Government Use (not elsewhere specified) Hotel House (other than rebuilding of New Territories Exempted House or replacement of existing domestic building by New Territories Exempted House permitted under the covering Notes) Library Market Office Petrol Filling Station Place of Entertainment Place of Recreation, Sports or Culture Private Club Public Clinic Public Convenience Public Transport Terminus or Station Public Utility Installation Public Vehicle Park (excluding container vehicle) Religious Institution Residential Institution Rural Committee/Village Office School Shop and Services Social Welfare Facility Utility Installation for Private Project

Planning Intention

This zone is primarily intended for comprehensive development/redevelopment of the area for residential use with the provision of open space and other supporting facilities. The zoning is to facilitate appropriate planning control over the development mix, scale, design and layout of development, taking account of various environmental, traffic, infrastructure and other constraints.

(Please see next page)

COMPREHENSIVE DEVELOPMENT AREA (Cont'd)

Remarks

(a) Pursuant to section 4A(2) of the Town Planning Ordinance, and except as otherwise expressly provided that it is not required by the Town Planning Board, an applicant for permission for development on land designated "Comprehensive Development Area" shall prepare a Master Layout Plan for the approval of the Town Planning Board and include therein the following information:

(i) the area of the proposed land uses, the nature, position, dimensions, and heights of all buildings to be erected in the area;

(ii) the proposed total site area and gross floor area for various uses, total number of flats/houses and flat/house size, where applicable;

(iii) the details and extent of Government, institution or community (GIC) and recreational facilities, public transport and parking facilities, and open space to be provided within the area;

(iv) the alignment, widths and levels of any roads proposed to be constructed within the area;

(v) the landscape and urban design proposals within the area;

(vi) programmes of development in detail;

(vii) an environmental assessment report to examine any possible environmental problems that may be caused to or by the proposed development during and after construction and the proposed mitigation measures to tackle them;

(viii) a drainage and sewerage impact assessment report to examine any possible drainage and sewerage problems that may be caused by the proposed development and the proposed mitigation measures to tackle them;

(ix) a traffic impact assessment report to examine any possible traffic problems that may be caused by the proposed development and the proposed mitigation measures to tackle them; and

(x) such other information as may be required by the Town Planning Board.

(b) The Master Layout Plan should be supported by an explanatory statement which contains an adequate explanation of the development proposal, including such information as land tenure, relevant lease conditions, existing conditions of the site, the character of the site in relation to the surrounding areas, principles of layout design, major development parameters, design population, types of GIC facilities, and recreational and open space facilities.

(Please see next page)

COMPREHENSIVE DEVELOPMENT AREA (Cont'd)

Remarks (Cont'd)

(c) No new development, or addition, alteration and/or modification to or redevelopment of an existing building shall result in a total development and/or redevelopment in excess of a maximum plot ratio of 0.4, a maximum site coverage of 20% and a maximum building height of three storeys (9m) including one storey of car park.

(d) In determining the maximum plot ratio/site coverage for the purposes of paragraph (c) above, any floor space that is constructed or intended for use solely as car park, loading/unloading bay, plant room and caretaker's office, or caretaker's quarters and recreational facilities for the use and benefit of all the owners or occupiers of the domestic building or domestic part of the building, provided such uses and facilities are ancillary and directly related to the development or redevelopment, may be disregarded.

(e) Based on the individual merits of a development or redevelopment proposal, minor relaxation of the plot ratio/site coverage/building height restrictions stated in paragraph (c) above may be considered by the Town Planning Board on application under section 16 of the Town Planning Ordinance.

RESIDENTIAL (GROUP A)

Column 1 Uses always permitted	Column 2 Uses that may be permitted with or without conditions on application to the Town Planning Board
Ambulance Depot Flat Government Use (not elsewhere specified) House Library Market Place of Recreation, Sports or Culture Public Clinic Public Transport Terminus or Station (excluding open air terminus or station) Residential Institution School (in free-standing purpose-designed building only) Social Welfare Facility Utility Installation for Private Project	Commercial Bathhouse/ Massage Establishment Eating Place Educational Institution Exhibition or Convention Hall Government Refuse Collection Point Hospital Hotel Institutional Use (not elsewhere specified) Mass Transit Railway Vent Shaft and/or Other Structure above Ground Level other than Entrances Office Petrol Filling Station Place of Entertainment Private Club Public Convenience Public Transport Terminus or Station (not elsewhere specified) Public Utility Installation Public Vehicle Park (excluding container vehicle) Religious Institution School (not elsewhere specified) Shop and Services ***(not elsewhere specified)*** Training Centre

In addition, the following uses are always permitted (a) on the lowest two floors of a building excluding basements, or (b) in a free-standing purpose-designed non-domestic building up to five storeys :

Eating Place
Educational Institution
Institutional Use (not elsewhere specified)
Off-course Betting Centre
Office
Place of Entertainment
Private Club
Public Convenience
Recyclable Collection Centre
School
Shop and Services
Training Centre

(Please see next page)

RESIDENTIAL (GROUP A) (Cont'd)

Planning Intention

This zone is intended primarily for high-density residential developments. Commercial uses are always permitted on the lowest two floors of a building excluding basements, or in a free-standing purpose-designed non-domestic building up to five storeys.

Remarks

(a) On land designated "R(A)1", no new development, or addition, alteration and/or modification to or redevelopment of an existing building shall result in a total development and/or redevelopment in excess of a total maximum plot ratio of 6 (of which the domestic plot ratio should not exceed 5), or the plot ratio of the existing building, whichever is the greater.

(b) On land designated "R(A)2", no new development, or addition, alteration and/or modification to or redevelopment of an existing building shall result in a total development and/or redevelopment in excess of a total maximum plot ratio of 5 (of which the domestic plot ratio should not exceed 4.5), or the plot ratio of the existing building, whichever is the greater.

(c) On land designated "R(A)3", no new development, or addition, alteration and/or modification to or redevelopment of an existing building shall result in a total development and/or redevelopment in excess of a total maximum plot ratio of 5 (of which the domestic plot ratio should not exceed 4), or the plot ratio of the existing building, whichever is the greater.

(d) On land designated "R(A)1", "R(A)2" and "R(A)3", no new development, or addition, alteration and/or modification to or redevelopment of an existing building shall result in a total development and/or redevelopment in excess of the maximum building height in terms of metres above Principal Datum as stipulated on the Plan, or the height of the existing building, whichever is the greater.

(e) On land designated 'Terraced Podium' in the "R(A)1", "R(A)2" and R(A)3" zones, the terraced podium is subject to a maximum building height of 5m.

(f) In determining the maximum plot ratio for the purposes of paragraphs (a) to (c) above, any floor space that is constructed or intended for use solely as car park, loading/unloading bay, plant room and caretaker's office, or caretaker's quarters and recreational facilities for the use and benefit of all the owners or occupiers of the domestic building or domestic part of the building, provided such uses and facilities are ancillary and directly related to the development or redevelopment, may be disregarded.

(g) Based on the individual merits of a development or redevelopment proposal, minor relaxation of the plot ratio and/or building height restrictions stated in paragraphs (a) to (e) above may be considered by the Town Planning Board on application under section 16 of the Town Planning Ordinance.

RESIDENTIAL (GROUP B)

Column 1 Uses always permitted	Column 2 Uses that may be permitted with or without conditions on application to the Town Planning Board
Flat Government Use (Police Reporting Centre, Post Office only) House Library Residential Institution School (in free-standing purpose-designed building only) Utility Installation for Private Project	Ambulance Depot Eating Place Educational Institution Government Refuse Collection Point Government Use (not elsewhere specified) Hospital Hotel Institutional Use (not elsewhere specified) ~~Market~~ Mass Transit Railway Vent Shaft and/or Other Structure above Ground Level other than Entrances Off-course Betting Centre Office Petrol Filling Station Place of Entertainment Place of Recreation, Sports or Culture Private Club Public Clinic Public Convenience Public Transport Terminus or Station Public Utility Installation Public Vehicle Park (excluding container vehicle) Recyclable Collection Centre Religious Institution Rural Committee/Village Office School (not elsewhere specified) Shop and Services Social Welfare Facility Training Centre

Planning Intention

This zone is intended primarily for medium-density residential developments where commercial uses serving the residential neighbourhood may be permitted on application to the Town Planning Board.

(Please see next page)

RESIDENTIAL (GROUP B) (Cont'd)

Remarks

(a) ***On land designated "R(B)",*** ~~N~~***n***o new development, or addition, alteration and/or modification to or redevelopment of an existing building shall result in a total development and/or redevelopment in excess of a maximum plot ratio of 3.5~~, and the maximum building height in terms of metres above Principal Datum as stipulated on the Plan,~~ or the plot ratio ~~and height~~ of the existing building, whichever is the greater.

(b) On land designated "R(B)1", no new development, or addition, alteration and/or modification to or redevelopment of an existing building shall result in a total development and/or redevelopment in excess of a maximum plot ratio of 4.2, or the plot ratio of the existing building, whichever is the greater.

(c) On land designated "R(B)2", the existing Grade 2 historic building, Enchi Lodge (including Main Building and Ancillary Block), shall be preserved. Any demolition of, addition, alteration and/or modification to (except those minor alteration and/or modification works which are ancillary and directly related to the always permitted uses) or redevelopment of the historic building requires permission from the Town Planning Board. No new development, or addition, alteration and/or modification to or redevelopment of an existing building shall result in a total development and/or redevelopment in excess of a maximum plot ratio of 3, or the plot ratio of the existing building, whichever is the greater.

(d) On land designated "R(B)", "R(B)1" and "R(B)2", no new development, or addition, alteration and/or modification to or redevelopment of an existing building shall result in a total development and/or redevelopment in excess of the maximum building height in terms of metres above Principal Datum as stipulated on the Plan, or the height of the existing building, whichever is the greater.

(***c***~~b~~) In determining the maximum plot ratio for the purposes of paragraph***s*** (a)***, (b) and (c)*** above, any floor space that is constructed or intended for use solely as car park, loading/unloading bay, plant room and caretaker's office, or caretaker's quarters and recreational facilities for the use and benefit of all the owners or occupiers of the domestic building or domestic part of the building, provided such uses and facilities are ancillary and directly related to the development or redevelopment, may be disregarded.

(***f***~~c~~) Based on the individual merits of a development or redevelopment proposal, minor relaxation of the plot ratio and/or building height restrictions stated in paragraph***s*** (a)***, (b) (c) and (d)*** above may be considered by the Town Planning Board on application under section 16 of the Town Planning Ordinance.

(***g***~~d~~) Under exceptional circumstances, for developments and/or redevelopments, minor relaxation of the non-building area restrictions as shown on the Plan may be considered by the Town Planning Board on application under section 16 of the Town Planning Ordinance.

RESIDENTIAL (GROUP C)

Column 1 Uses always permitted	Column 2 Uses that may be permitted with or without conditions on application to the Town Planning Board
Flat Government Use (Police Reporting Centre, Post Office only) House Utility Installation for Private Project	Eating Place Educational Institution Government Refuse Collection Point Government Use (not elsewhere specified) Institutional Use (not elsewhere specified) Library Petrol Filling Station Place of Recreation, Sports or Culture Private Club Public Clinic Public Convenience Public Utility Installation Public Vehicle Park (excluding container vehicle) Recyclable Collection Centre Religious Institution Residential Institution Rural Committee/Village Office School Shop and Services Social Welfare Facility

Planning Intention

This zone is intended primarily for low-rise, low-density residential developments where commercial uses serving the residential neighbourhood may be permitted on application to the Town Planning Board.

(Please see next page)

RESIDENTIAL (GROUP C) (Cont'd)

Remarks

(a) ***On land designated "R(C)",*** ~~N~~*n*o new development, or addition, alteration and/or modification to or redevelopment of an existing building shall result in a total development and/or redevelopment in excess of a maximum plot ratio of 0.4 and a maximum building height of two storeys, or the plot ratio and height of the existing building, whichever is the greater.

(b) On land designated "R(C)1", no new development, or addition, alteration and/or modification to or redevelopment of an existing building shall result in a total development and/or redevelopment in excess of a total maximum plot ratio of 1.1 and the maximum building height of 3 storeys (8.23m), or the plot ratio and height of the existing building, whichever is the greater.

(*c*~~b~~) In determining the maximum plot ratio for the purposes of paragraph*s* (a) ***and (b)*** above, any floor space that is constructed or intended for use solely as car park, loading/unloading bay, plant room and caretaker's office, or caretaker's quarters and recreational facilities for the use and benefit of all the owners or occupiers of the domestic building or domestic part of the building, provided such uses and facilities are ancillary and directly related to the development or redevelopment, may be disregarded.

(*d*~~c~~) Based on the individual merits of a development or redevelopment proposal, minor relaxation of the plot ratio and/or building height restrictions stated in paragraph*s* (a) ***and (b)*** above may be considered by the Town Planning Board on application under section 16 of the Town Planning Ordinance.

VILLAGE TYPE DEVELOPMENT

Column 1 Uses always permitted	Column 2 Uses that may be permitted with or without conditions on application to the Town Planning Board
Agricultural Use Government Use (Police Reporting Centre, Post Office only) House (New Territories Exempted House only) On-Farm Domestic Structure Religious Institution (Ancestral Hall only) Rural Committee/Village Office	Burial Ground Eating Place Flat Government Refuse Collection Point Government Use (not elsewhere specified) # House (not elsewhere specified) Institutional Use (not elsewhere specified) # ~~Market~~ Petrol Filling Station Place of Recreation, Sports or Culture Private Club Public Clinic Public Convenience Public Transport Terminus or Station Public Utility Installation # Public Vehicle Park (excluding container vehicle) Religious Institution (not elsewhere specified) # Residential Institution # School # Shop and Services Social Welfare Facility # Utility Installation for Private Project
In addition, the following uses are always permitted on the ground floor of a New Territories Exempted House: Eating Place Library School Shop and Services	

(Please see next page)

VILLAGE TYPE DEVELOPMENT (Cont'd)

Planning Intention

The planning intention of this zone is to designate both existing recognised villages and areas of land considered suitable for village expansion. Land within this zone is primarily intended for development of Small Houses by indigenous villagers. For land designated "Village Type Development (1)", the planning intention is to provide land considered suitable for reprovisioning of village houses affected by Government projects. It is also intended to concentrate village type development within this zone for a more orderly development pattern, efficient use of land and provision of infrastructures and services. Selected commercial and community uses serving the needs of the villagers and in support of the village development are always permitted on the ground floor of a New Territories Exempted House. Other commercial, community and recreational uses may be permitted on application to the Town Planning Board.

Remarks

(a) No new development, or addition, alteration and/or modification to or redevelopment of an existing building (except development or redevelopment to those annotated with #) shall result in a total development and/or redevelopment in excess of a maximum building height of three storeys (8.23m) or the height of the existing building, whichever is the greater.

(b) Based on the individual merits of a development or redevelopment proposal, minor relaxation of the building height restriction stated in paragraph (a) above may be considered by the Town Planning Board on application under section 16 of the Town Planning Ordinance.

(c) Any filling of pond, including that to effect a change of use to any of those specified in Columns 1 and 2 above or the uses or developments always permitted under the covering Notes (except public works co-ordinated or implemented by Government, and maintenance, repair or rebuilding works), shall not be undertaken or continued on or after the date of the first publication in the Gazette of the notice of the Kwu Tung North interim development permission area plan without the permission from the Town Planning Board under section 16 of the Town Planning Ordinance.

GOVERNMENT, INSTITUTION OR COMMUNITY

Column 1 Uses always permitted	Column 2 Uses that may be permitted with or without conditions on application to the Town Planning Board
Ambulance Depot Animal Quarantine Centre (in Government building only) Broadcasting, Television and/or Film Studio Correctional Institution (on land designated "G/IC (1)" only) Eating Place (Canteen, Cooked Food Centre only) Educational Institution Exhibition or Convention Hall Field Study/Education/Visitor Centre Flat (on land designated "G/IC (2)" only) Government Refuse Collection Point Government Use (not elsewhere specified) Hospital Institutional Use (not elsewhere specified) Library Market Place of Recreation, Sports or Culture Public Clinic Public Convenience Public Transport Terminus or Station Public Utility Installation Public Vehicle Park (excluding container vehicle) Recyclable Collection Centre Religious Institution Research, Design and Development Centre Rural Committee/Village Office School Service Reservoir Social Welfare Facility Training Centre Wholesale Trade	Animal Boarding Establishment Animal Quarantine Centre (not elsewhere specified) Columbarium Correctional Institution (not elsewhere specified) Crematorium Driving School Eating Place (not elsewhere specified) Firing Range Flat (not elsewhere specified) Funeral Facility Helicopter Landing Pad Helicopter Fuelling Station Holiday Camp Hotel House (other than rebuilding of New Territories Exempted House or replacement of existing domestic building by New Territories Exempted House permitted under the covering Notes) Mass Transit Railway Vent Shaft and/or Other Structure above Ground Level other than Entrances Off-course Betting Centre Office Petrol Filling Station Place of Entertainment Private Club Radar, Telecommunications Electronic Microwave Repeater, Television and/or Radio Transmitter Installation Refuse Disposal Installation (Refuse Transfer Station only) Residential Institution Sewage Treatment/Screening Plant Shop and Services ***(not elsewhere specified)*** Utility Installation for Private Project Zoo

(Please see next page)

GOVERNMENT, INSTITUTION OR COMMUNITY (Cont'd)

Planning Intention

This zone is intended primarily for the provision of Government, institution or community facilities serving the needs of the local residents and/or a wider district, region or the territory. It is also intended to provide land for uses directly related to or in support of the work of the Government, organisations providing social services to meet community needs, and other institutional establishments.

Remarks

(a) On land designated "G/IC", "G/IC(1) and "G/IC(2)", no new development, or addition, alteration and/or modification to or redevelopment of an existing building shall result in a total development and/or redevelopment in excess of the maximum building height in terms of number of storey(s) or metres above Principal Datum as stipulated on the Plan, or the height of the existing building, whichever is the greater.

(b) In determining the maximum number of storey(s) for the purposes of paragraph (a) above, any basement floor(s) may be disregarded.

(c) Based on the individual merits of a development or redevelopment proposal, minor relaxation of the building height restriction stated in paragraph (a) above may be considered by the Town Planning Board on application under section 16 of the Town Planning Ordinance.

OPEN SPACE

Column 1 Uses always permitted	Column 2 Uses that may be permitted with or without conditions on application to the Town Planning Board
Aviary Barbecue Spot Field Study/Education/Visitor Centre Park and Garden Pavilion Pedestrian Area Picnic Area Playground/Playing Field Promenade Public Convenience Sitting Out Area Zoo	Eating Place Government Refuse Collection Point Government Use (not elsewhere specified) Holiday Camp Mass Transit Railway Vent Shaft and/or Other Structure above Ground Level other than Entrances Place of Entertainment Place of Recreation, Sports or Culture Private Club Public Transport Terminus or Station Public Utility Installation Public Vehicle Park (excluding container vehicle) Religious Institution Service Reservoir Shop and Services Tent Camping Ground Utility Installation for Private Project

Planning Intention

This zone is intended primarily for the provision of outdoor open-air public space for active and/or passive recreational uses serving the needs of local residents as well as the general public. On land designated "Open Space (1)", the open space area is provided in the form of a Town Plaza stretching from west to east across the town centre. It serves as a green corridor linking up major activity nodes with the railway station and public transport interchange. To serve the community and enhance the vibrancy of the Town Plaza, it is intended that commercial uses such as shop and services and eating places would be provided in the area adjacent to the railway station subject to the approval of the Town Planning Board by way of a planning application under section 16 of the Ordinance.

OTHER SPECIFIED USES

Column 1 Uses always permitted	Column 2 Uses that may be permitted with or without conditions on application to the Town Planning Board

For "Commercial/Residential Development with Public Transport Interchange" Only

Ambulance Depot
Flat
Government Use (not elsewhere specified)
Library
Market
Place of Recreation, Sports or Culture
Public Clinic
Public Transport Terminus or Station
Residential Institution
School (in free-standing purpose-designed building only)
Social Welfare Facility
Utility Installation for Private Project

Commercial Bathhouse/ Massage Establishment
Eating Place
Educational Institution
Exhibition or Convention Hall
Government Refuse Collection Point
Hospital
Hotel
Institutional Use (not elsewhere specified)
Mass Transit Railway Vent Shaft and/or Other Structure above Ground Level other than Entrances
Office
Petrol Filling Station
Place of Entertainment
Private Club
Public Convenience
Public Utility Installation
Public Vehicle Park (excluding container vehicle)
Religious Institution
School (not elsewhere specified)
Shop and Services ***(not elsewhere specified)***
Training Centre

In addition, the following uses are always permitted (a) on the lowest two floors of a building excluding basements, or (b) in a free-standing purpose-designed non-domestic building up to five storeys :

Eating Place
Educational Institution
Institutional Use (not elsewhere specified)
Off-course Betting Centre
Office
Place of Entertainment
Private Club
Public Convenience
Recyclable Collection Centre
School
Shop and Services
Training Centre

(Please see next page)

OTHER SPECIFIED USES (Cont'd)

For "Commercial/Residential Development with Public Transport Interchange" Only (Cont'd)

Planning Intention

This zone is intended primarily for the provision of commercial and residential uses with public transport interchange. Commercial uses are always permitted on the lowest two floors of a building excluding basements, or in a free-standing purpose-designed non-domestic building up to five storeys.

Remarks

(a) No new development, or addition, alteration and/or modification to or redevelopment of an existing building shall result in a total development and/or redevelopment in excess of a total maximum plot ratio of 6 (of which the domestic plot ratio should not exceed 5) and the maximum building height in terms of metres above Principal Datum as stipulated on the Plan, or the plot ratio and height of the existing building, whichever is the greater.

(b) On land designated 'Terraced Podium', the terraced podium is subject to a maximum building height of 5m.

(c) In determining the maximum plot ratio for the purposes of paragraph (a) above, any floor space that is constructed or intended for use solely as car park, loading/unloading bay, plant room and caretaker's office, or caretaker's quarters and recreational facilities for the use and benefit of all the owners or occupiers of the domestic building or domestic part of the building, provided such uses and facilities are ancillary and directly related to the development or redevelopment, may be disregarded.

(d) Based on the individual merits of a development or redevelopment proposal, minor relaxation of the plot ratio and/or building height restrictions stated in paragraph (a) and (b) above may be considered by the Town Planning Board on application under section 16 of the Town Planning Ordinance.

(Please see next page)

OTHER SPECIFIED USES (Cont'd)

Column 1 Uses always permitted	Column 2 Uses that may be permitted with or without conditions on application to the Town Planning Board

For "Mixed Use" Only

Schedule I: for non-residential building or non-residential portion of a building upon development/redevelopment/conversion

Ambulance Depot
Commercial Bathhouse/
Massage Establishment
(in non-residential building only)
Eating Place
Educational Institution
Exhibition or Convention Hall
Government Use (not elsewhere specified)
Hotel
Information Technology and
Telecommunications Industries
Institutional Use (not elsewhere specified)
Library
~~Market~~
Off-course Betting Centre
Office
Place of Entertainment
Place of Recreation, Sports or Culture
Private Club
Public Clinic
Public Convenience
Public Transport Terminus or Station
Public Utility Installation
Public Vehicle Park
(excluding container vehicle)
Recyclable Collection Centre
Religious Institution
Research, Design and Development Centre
School
Shop and Services
Social Welfare Facility (excluding those
involving residential care)
Training Centre
Utility Installation for Private Project
Wholesale Trade

Broadcasting, Television and/or Film Studio
Commercial Bathhouse/
Massage Establishment
(not elsewhere specified)
Flat
Government Refuse Collection Point
Hospital
Mass Transit Railway Vent Shaft and/or
Other Structure above Ground Level
other than Entrances
Petrol Filling Station
Residential Institution
Social Welfare Facility (not elsewhere specified)

(Please see next page)

OTHER SPECIFIED USES (Cont'd)

Column 1 Uses always permitted	Column 2 Uses that may be permitted with or without conditions on application to the Town Planning Board

For "Mixed Use" Only (cont'd)

Schedule II: for residential building or residential portion of a building upon development/redevelopment/conversion

Flat
Government Use (Police Reporting Centre, Post Office only)
House
Residential Institution
Social Welfare Facility (residential care facility only)
Utility Installation for Private Project

Eating Place
Educational Institution
Government Refuse Collection Point
Government Use (not elsewhere specified)
Hotel
Institutional Use (not elsewhere specified)
Library
Mass Transit Railway Vent Shaft and/or Other Structure above Ground Level other than Entrances
Office
Place of Entertainment
Place of Recreation, Sports or Culture
Private Club
Public Clinic
Public Transport Terminus or Station
Public Utility Installation
Public Vehicle Park (excluding container vehicle)
Religious Institution
School
Shop and Services
Social Welfare Facility (not elsewhere specified)
Training Centre

Planning Intention

This zone is intended for medium-density development for a mix of commercial/office, hotel, residential uses and social welfare facilities, either vertically within a building or horizontally over a spatial area. Physical segregation has to be provided between the non-residential and residential portions within a new/converted building to prevent non-residential uses from causing nuisance to the residents.

(Please see next page)

OTHER SPECIFIED USES (Cont'd)

For "Mixed Use" Only (Cont'd)

Remarks

(a) No new development, or addition, alteration and/or modification to or redevelopment of an existing building shall result in a total development and/or redevelopment in excess of a total maximum plot ratio of 3 (of which the domestic plot ratio should not exceed 1), or the plot ratio of the existing building, whichever is the greater.

(b) No new development, or addition, alteration and/or modification to or redevelopment of an existing building shall result in a total development and/or redevelopment in excess of the maximum building height in terms of metres above Principal Datum as stipulated on the Plan, or the height of the existing building, whichever is the greater.

(c) On land designated 'Terraced Podium', the terraced podium is subject to a maximum building height of 5m.

(d) In determining the maximum plot ratio for the purposes of paragraph (a) above, any floor space that is constructed or intended for use solely as car park, loading/unloading bay, plant room and caretaker's office, or caretaker's quarters and recreational facilities for the use and benefits of all the owners or occupiers of the domestic building or domestic part of the building, provided such uses and facilities are ancillary and directly related to the development or redevelopment, may be disregarded.

(e) Based on the individual merits of a development or redevelopment proposal, minor relaxation of the plot ratio and/or building height restriction(s) stated in paragraphs (a) to (c) above may be considered by the Town Planning Board on application under section 16 of the Town Planning Ordinance.

(f) Upon development/redevelopment/conversion of a building to a mixed use development, the residential and non-residential portions within a building shall be physically segregated through appropriate building design. The provision of residential and non-residential uses on the same floor will not be permitted. Under exceptional circumstances, relaxation of the requirement for physical segregation and no inter-mixing on the same floor may be considered by the Town Planning Board on application under section 16 of the Town Planning Ordinance.

(g) Under exceptional circumstances, for developments and/or redevelopments, minor relaxation of the non-building area restrictions as shown on the Plan may be considered by the Town Planning Board on application under section 16 of the Town Planning Ordinance.

(Please see next page)

OTHER SPECIFIED USES (Cont'd)

Column 1 Uses always permitted	Column 2 Uses that may be permitted with or without conditions on application to the Town Planning Board

For "Business and Technology Park" Only

Ambulance Depot
Broadcasting, Television and/or Film Studio
Creative Industries
Eating Place
Educational Institution
Exhibition or Convention Hall
Government Use (not elsewhere specified)
Government Refuse Collection Point
~~Hotel (on land designated "OU(Business and Technology Park)1" only)~~
Information Technology and Telecommunications Industries
Institutional Use (not elsewhere specified)
Library
Office
Place of Entertainment
Place of Recreation, Sports or Culture
Private Club
Public Clinic
Public Convenience
Public Transport Terminus or Station
Public Utility Installation
Public Vehicle Park (excluding container vehicle)
Radar, Telecommunications Electronic Microwave Repeater, Television and/or Radio Transmitter Installation
Recyclable Collection Centre
Religious Institution
Research, Design and Development Centre
School
Shop and Services
Social Welfare Facility
Training Centre
Utility Installation for Private Project

Commercial Bathhouse/Massage Establishment
Hotel (not elsewhere specified)
Off-course Betting Centre
Industrial Use
Petrol Filling Station
Residential Institution
Wholesale Trade

Planning Intention

This zone is intended primarily for medium-density development to provide a mix of commercial, office, design, research and development uses for promoting high technology business development.

(Please see next page)

OTHER SPECIFIED USES (Cont'd)

For "Business and Technology Park" Only (Cont'd)

Remarks

(a) On land designated "Other Specified Uses" annotated "Business and Technology Park" ("OU(Business and Technology Park)") ~~and "Other Specified Uses" annotated "Business and Technology Park (1)" ("OU(Business and Technology Park)1")~~, no new development, or addition, alteration and/or modification to or redevelopment of an existing building shall result in a total development and/or redevelopment in excess of a maximum plot ratio of 3, or the plot ratio of the existing building, whichever is the greater.

(b) On land designated "OU(Business and Technology Park)" ~~and "OU(Business and Technology Park)1"~~, no new development, or addition, alteration and/or modification to or redevelopment of an existing building shall result in a total development and/or redevelopment in excess of the maximum building height in terms of metres above Principal Datum as stipulated on the Plan, or the height of the existing building, whichever is the greater.

(c) Based on the individual merits of a development or redevelopment proposal, minor relaxation of the plot ratio and/or building height restrictions stated in paragraphs (a) and (b) above may be considered by the Town Planning Board on application under section 16 of the Town Planning Ordinance.

(d) Under exceptional circumstances, for developments and/or redevelopments, minor relaxation of the non-building area restrictions as shown on the Plan may be considered by the Town Planning Board on application under section 16 of the Town Planning Ordinance.

(Please see next page)

OTHER SPECIFIED USES (Cont'd)

Column 1 Uses always permitted	Column 2 Uses that may be permitted with or without conditions on application to the Town Planning Board

For "Research and Development" Only

Ambulance Depot
Broadcasting, Television and/or Film Studio
Creative Industries
Eating Place
Educational Institution
Exhibition or Convention Hall
Government Use (not elsewhere specified)
Information Technology and Telecommunications Industries
Institutional Use (not elsewhere specified)
Library
Office
Place of Entertainment
Place of Recreation, Sports or Culture
Private Club
Public Clinic
Public Convenience
Public Transport Terminus or Station
Public Utility Installation
Public Vehicle Park (excluding container vehicle)
Radar, Telecommunications Electronic Microwave Repeater, Television and/or Radio Transmitter Installation
Recyclable Collection Centre
Religious Institution
Research, Design and Development Centre
School
Shop and Services
Social Welfare Facility (excluding those involving residential care)
Training Centre
Utility Installation for Private Project
Government Refuse Collection Point
Hotel
Industrial Use
Petrol Filling Station
Residential Institution

Planning Intention

This zone is intended primarily for design, research and development uses for promoting innovative and high technology industries.

(Please see next page)

OTHER SPECIFIED USES (Cont'd)

For "Research and Development" Only (Cont'd)

Remarks

(a) No new development, or addition, alteration and/or modification to or redevelopment of an existing building shall result in a total development and/or redevelopment in excess of a maximum plot ratio of 1.76 and a maximum building height in terms of metres above Principal Datum as stipulated on the Plan, or the plot ratio and height of the existing building, whichever is the greater.

(b) Based on the individual merits of a development or redevelopment proposal, minor relaxation of the plot ratio and/or building height restrictions stated in paragraph (a) above may be considered by the Town Planning Board on application under section 16 of the Town Planning Ordinance.

(Please see next page)

OTHER SPECIFIED USES (Cont'd)

Column 1 Uses always permitted	Column 2 Uses that may be permitted with or without conditions on application to the Town Planning Board

For "Nature Park" Only

Agricultural Use (other than Plant Nursery)	Government Refuse Collection Point
Field Study /Education/Visitor Centre	Government Use (not elsewhere specified)
Nature Reserve	On Farm Domestic Structure
Nature Trail	Public Convenience
Wetland Habitat	Public Utility Installation

Planning Intention

This zone is intended primarily for the development of a nature park to protect and enhance existing wetland habitats for the benefit of the local ecology and promotion of nature conservation and education. The primary intention is to discourage new development unless it is required to support the conservation of the ecological integrity of the wetland habitats or the development of an essential infrastructure project with overriding public interest.

Remarks

Any filling of land/pond or excavation of land, including that to effect a change of use to any of those specified in Columns 1 and 2 above or the uses or developments always permitted under the covering Notes (except public works co-ordinated or implemented by Government, and maintenance or repair works) shall not be undertaken or continued on or after the date of the first publication in the Gazette of the notice of the draft Kwu Tung North Outline Zoning Plan No. S/KTN/1 without the permission from the Town Planning Board under section 16 of the Town Planning Ordinance.

(Please see next page)

OTHER SPECIFIED USES (Cont'd)

Column 1 Uses always permitted	Column 2 Uses that may be permitted with or without conditions on application to the Town Planning Board

For "Amenity Area" Only

Amenity Planting	Government Use Utility Installation not Ancillary to the Specified Use

Planning Intention

This zone is intended primarily for the provision of landscaping and planting to enhance the environment.

For All Other Sites (Not Listed Above)

As Specified on the Plan	Government Use (not elsewhere specified) Public Utility Installation Utility Installation for Private Project

Planning Intention

This zone is intended primarily to provide/reserve land for specific purposes and uses.

Remarks

(a) No new development, or addition, alteration and/or modification to or redevelopment of an existing building shall result in a total development and/or redevelopment in excess of the maximum building height in terms of number of storeys or metres above Principal Datum as stipulated on the Plan, or the height of the existing building, whichever is the greater.

(b) In determining the maximum number of storeys for the purposes of paragraph (a) above, any basement floor(s) may be disregarded.

(c) Based on the individual merits of a development or redevelopment proposal, minor relaxation of the building height restriction stated in paragraph (a) above may be considered by the Town Planning Board on application under section 16 of the Town Planning Ordinance.

AGRICULTURE

Column 1 Uses always permitted	Column 2 Uses that may be permitted with or without conditions on application to the Town Planning Board
Agricultural Use Government Use (Police Reporting Centre only) On-Farm Domestic Structure Public Convenience Religious Institution (Ancestral Hall only) Rural Committee/Village Office	Animal Boarding Establishment Barbecue Spot Burial Ground Field Study/Education/Visitor Centre Government Refuse Collection Point Government Use (not elsewhere specified) House (New Territories Exempted House only, other than rebuilding of New Territories Exempted House or replacement of existing domestic building by New Territories Exempted House permitted under the covering Notes) Picnic Area Place of Recreation, Sports or Culture (Horse Riding School, Hobby Farm, Fishing Ground only) Public Utility Installation Religious Institution (not elsewhere specified) School Utility Installation for Private Project

Planning Intention

This zone is intended primarily to retain and safeguard good quality agricultural land/farm/fish ponds for agricultural purposes. It is also intended to retain fallow arable land with good potential for rehabilitation for cultivation and other agricultural purposes.

(Please see next page)

AGRICULTURE (Cont'd)

Remarks

(a) On land previously falling within the "Agriculture" zone on the Kwu Tung North OZP No. S/NE-KTN/8, any filling of pond, including that to effect a change of use to any of those specified in Columns 1 and 2 above or the uses or developments always permitted under the covering Notes (except public works co-ordinated or implemented by Government, and maintenance, repair or rebuilding works), shall not be undertaken or continued on or after the date of the first publication in the Gazette of the notice of the Kwu Tung North interim development permission area plan without the permission from the Town Planning Board under section 16 of the Town Planning Ordinance.

(b) On land previously falling within the "Agriculture" zone on the Kwu Tung North OZP No. S/NE-KTN/8, any filling of land, including that to effect a change of use to any of those specified in Columns 1 and 2 above or the uses or developments always permitted under the covering Notes (except public works co-ordinated or implemented by Government, and maintenance, repair or rebuilding works), shall not be undertaken or continued on or after the date of the first publication in the Gazette of the notice of the draft Kwu Tung North Outline Zoning Plan No. S/NE-KTN/6 without the permission from the Town Planning Board under section 16 of the Town Planning Ordinance. This restriction does not apply to filling of land specifically required under prior written instructions of Government department(s) or for the purposes specified below:

(i) laying of soil not exceeding 1.2m in thickness for cultivation; or

(ii) construction of any agricultural structure with prior written approval issued by the Lands Department.

(c) On land not previously falling within the "Agriculture" zone on the Kwu Tung North OZP No. S/NE-KTN/8, as set out in paragraphs (a) and (b) above, any filling of pond/land, including that to effect a change of use to any of those specified in Columns 1 and 2 above or the uses or developments always permitted under the covering Notes (except public works co-ordinated or implemented by Government, and maintenance, repair or rebuilding works), shall not be undertaken or continued on or after the date of the first publication in the Gazette of the notice of the draft Kwu Tung North Outline Zoning Plan No. S/KTN/1 without the permission from the Town Planning Board under section 16 of the Town Planning Ordinance. This restriction does not apply to filling of land specifically required under prior written instructions of Government department(s) or for the purposes specified below:

(i) laying of soil not exceeding 1.2m in thickness for cultivation; or

(ii) construction of any agricultural structure with prior written approval issued by the Lands Department.

AGRICULTURE (1)

Column 1 Uses always permitted	Column 2 Uses that may be permitted with or without conditions on application to the Town Planning Board
Agricultural Use On-Farm Domestic Structure Public Convenience Religious Institution (Ancestral Hall only) Rural Committee/Village Office	Field Study/Education/Visitor Centre Government Refuse Collection Point Government Use (not elsewhere specified) House (New Territories Exempted House only, other than rebuilding of New Territories Exempted House or replacement of existing domestic building by New Territories Exempted House permitted under the covering Notes) Picnic Area Public Utility Installation Religious Institution (not elsewhere specified) Utility Installation for Private Project

Planning Intention

The zone is intended primarily to retain and safeguard the agricultural land/farm/fish ponds for agricultural purposes and to serve as a buffer to give added protection to the Long Valley Nature Park.

Remarks

(a) On land previously falling within the "Agriculture" and "Village Type Development" zones on the Kwu Tung North OZP No. S/NE-KTN/8, any filling of pond, including that to effect a change of use to any of those specified in Columns 1 and 2 above or the uses or developments always permitted under the covering Notes (except public works co-ordinated or implemented by Government, and maintenance, repair or rebuilding works), shall not be undertaken or continued on or after the date of the first publication in the Gazette of the notice of the Kwu Tung North interim development permission area plan without the permission from the Town Planning Board under section 16 of the Town Planning Ordinance.

(b) On land previously falling within the "Agriculture" and "Village Type Development" zones on the Kwu Tung North OZP No. S/NE-KTN/8, any filling of land, including that to effect a change of use to any of those specified in Columns 1 and 2 above or the uses or developments always permitted under the covering Notes (except public works co-ordinated or implemented by Government, and maintenance, repair or rebuilding works), shall not be undertaken or continued on or after the date of the first publication in the Gazette of the notice of the draft Kwu Tung North Outline Zoning Plan No. S/KTN/1 without the permission from the Town Planning Board under section 16 of the Town Planning Ordinance.

(Please see next page)

AGRICULTURE (1) (Cont'd)

(c) On land not previously falling within the "Agriculture" and "Village Type Development" zones on the Kwu Tung North OZP No. S/NE-KTN/8, as set out in paragraphs (a) and (b) above, any filling of pond/land, including that to effect a change of use to any of those specified in Columns 1 and 2 above or the uses or developments always permitted under the covering Notes (except public works co-ordinated or implemented by Government, and maintenance, repair or rebuilding works), shall not be undertaken or continued on or after the date of the first publication in the Gazette of the notice of the draft Kwu Tung North Outline Zoning Plan No. S/KTN/1 without the permission from the Town Planning Board under section 16 of the Town Planning Ordinance.

GREEN BELT

Column 1 Uses always permitted	Column 2 Uses that may be permitted with or without conditions on application to the Town Planning Board
Agricultural Use Barbecue Spot Government Use (Police Reporting Centre only) Nature Reserve Nature Trail On-Farm Domestic Structure Picnic Area Public Convenience Tent Camping Ground Wild Animals Protection Area	Animal Boarding Establishment Broadcasting, Television and/or Film Studio Burial Ground Columbarium (within a Religious Institution or extension of existing Columbarium only) Crematorium (within a Religious Institution or extension of existing Crematorium only) Field Study/Education/Visitor Centre Government Refuse Collection Point Government Use (not elsewhere specified) Helicopter Landing Pad Holiday Camp House (other than rebuilding of New Territories Exempted House or replacement of existing domestic building by New Territories Exempted House permitted under the covering Notes) Mass Transit Railway Vent Shaft and/or Other Structure above Ground Level other than Entrances Petrol Filling Station Place of Recreation, Sports or Culture Public Transport Terminus or Station Public Utility Installation Public Vehicle Park (excluding container vehicle) Radar, Telecommunications Electronic Microwave Repeater, Television and/or Radio Transmitter Installation Religious Institution Residential Institution Rural Committee/Village Office School Service Reservoir Social Welfare Facility Utility Installation for Private Project

Planning Intention

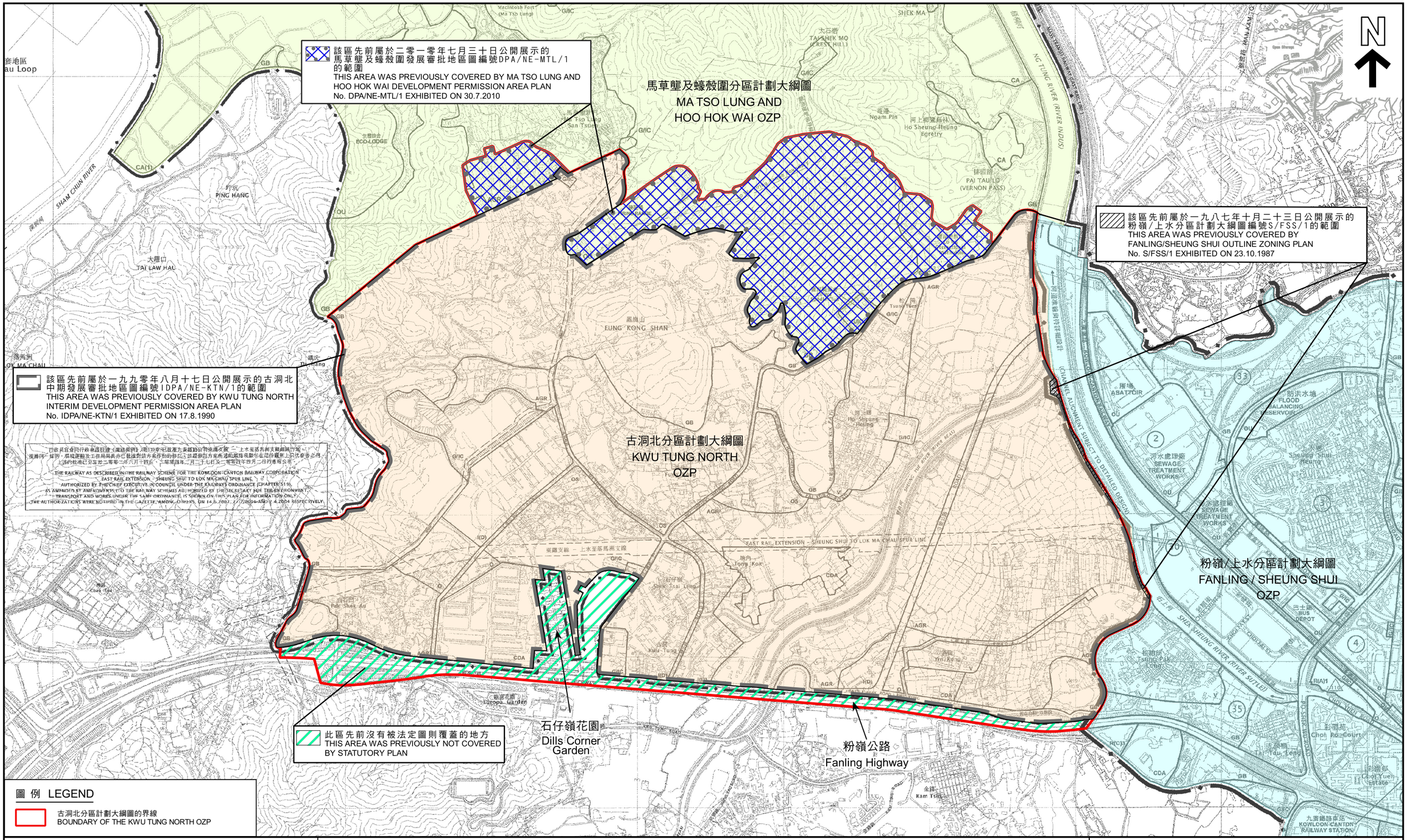
The planning intention of this zone is primarily for defining the limits of development areas, to preserve existing natural features, as well as to provide passive recreational outlets for the local population and visitors. There is a general presumption against development within this zone.

(Please see next page)

GREEN BELT (Cont'd)

Remarks

Any diversion of stream, filling of pond/land or excavation of land, including that to effect a change of use to any of those specified in Columns 1 and 2 above or the uses or developments always permitted under the covering Notes (except public works co-ordinated or implemented by Government, and maintenance, repair or rebuilding works), shall not be undertaken or continued on or after the date of the first publication in the Gazette of the notice of the draft Kwu Tung North Outline Zoning Plan No. S/KTN/1 without the permission from the Town Planning Board under section 16 of the Town Planning Ordinance.



本摘要圖於2022年8月26日擬備，所根據的資料為於2006年10月31日核准的分區計劃大綱圖編號S/NE-KTN/8，於2013年9月10日核准的分區計劃大綱圖編號S/FSS/18及於2013年7月19日展示的分區計劃大綱圖編號S/NE-MTL/1
EXTRACT PLAN PREPARED ON 26.8.2022 BASED ON OUTLINE ZONING PLANS No. S/NE- KTN/8 APPROVED ON 31.10.2006, S/FSS/18 APPROVED ON 10.9.2013 AND S/NE-MTL/1 EXHIBITED ON 19.7.2013

古洞北分區計劃大綱圖先前的法定圖則範圍
PREVIOUS STATUTORY PLANS COVERING KWU TUNG NORTH OUTLINE ZONING PLAN AREA

SCALE 1 : 12 000 比例尺
米 METRES 200 0 200 400 600 800 1000 米 METRES

規劃署
PLANNING DEPARTMENT

參考編號
REFERENCE No.
M/FS/22/31

圖解 FIGURE
1



圖 例 LEGEND

- 地帶 ZONES
- 規劃範圍界線 PLANNING SCHEME BOUNDARY
- 規劃區界線 PLANNING AREA BOUNDARY
- (18) 規劃區編號 PLANNING AREA NUMBER

本摘要圖於2022年9月21日擬備
EXTRACT PLAN PREPARED ON 21.9.2022

古洞北分區計劃大綱圖 KWU TUNG NORTH OUTLINE ZONING PLAN

規劃區
PLANNING AREAS

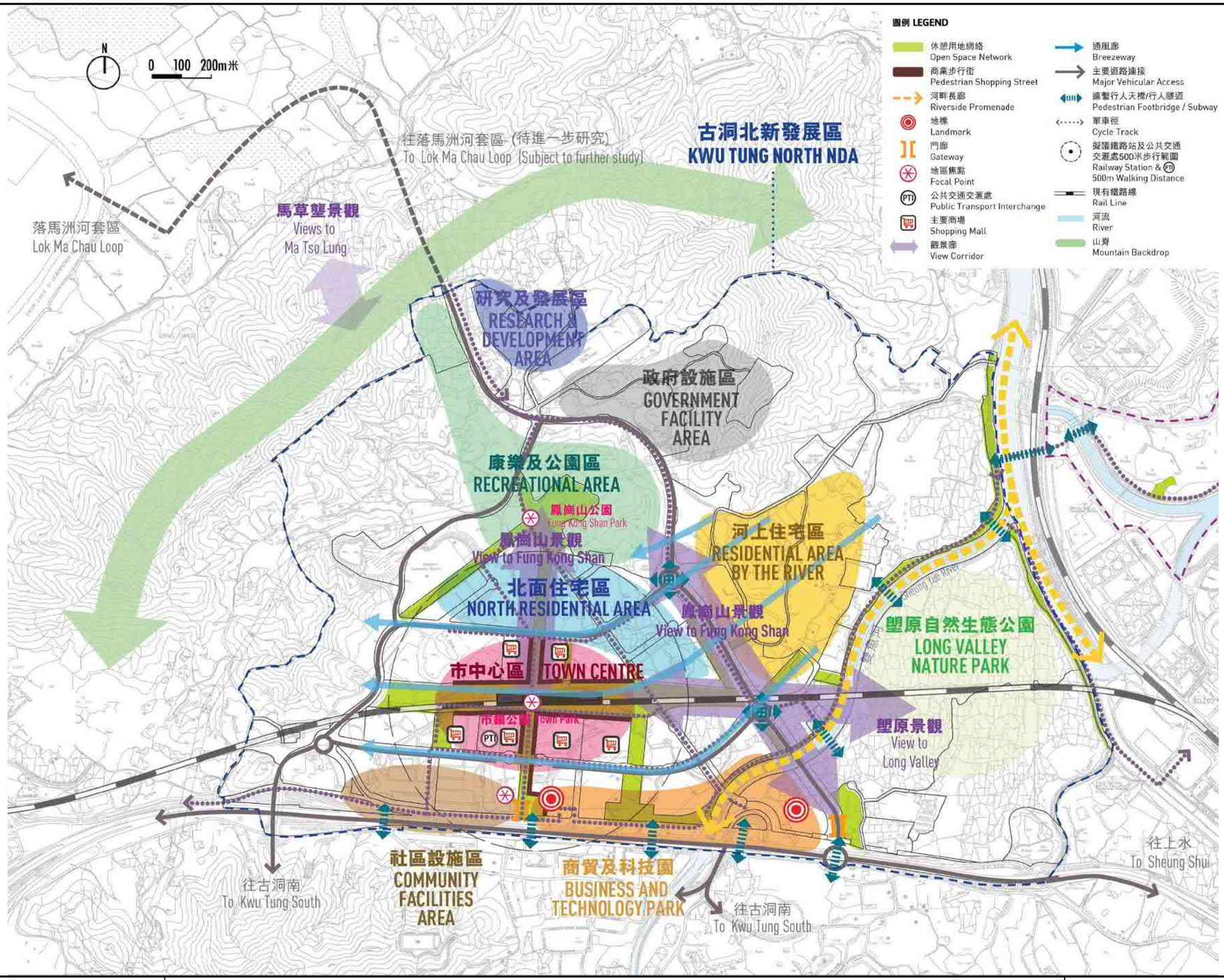
SCALE 1 : 10 000 比例尺

米 METRES 100 0 100 200 300 400 500 600 700 800 900 1000 米 METRES

規劃署
PLANNING DEPARTMENT

參考編號
REFERENCE No.
M/FS/22/31

圖解 FIGURE
2



只作顯示用途
FOR INDICATIVE PURPOSE ONLY

本摘要圖於2022年9月19日擬備
EXTRACT PLAN PREPARED ON 19.9.2022

古洞北新發展區 KWU TUNG NORTH NEW DEVELOPMENT AREA

城市設計及景觀大綱
URBAN DESIGN AND LANDSCAPE FRAMEWORK
摘自2013年完成的新界東北新發展區規劃及工程研究
Extracted from North East New Territories New Development Areas Planning and Engineering Study completed in 2013

規劃署
PLANNING DEPARTMENT

參考編號
REFERENCE No.
M/FS/22/31

圖解 FIGURE
3

圖 例 LEGEND

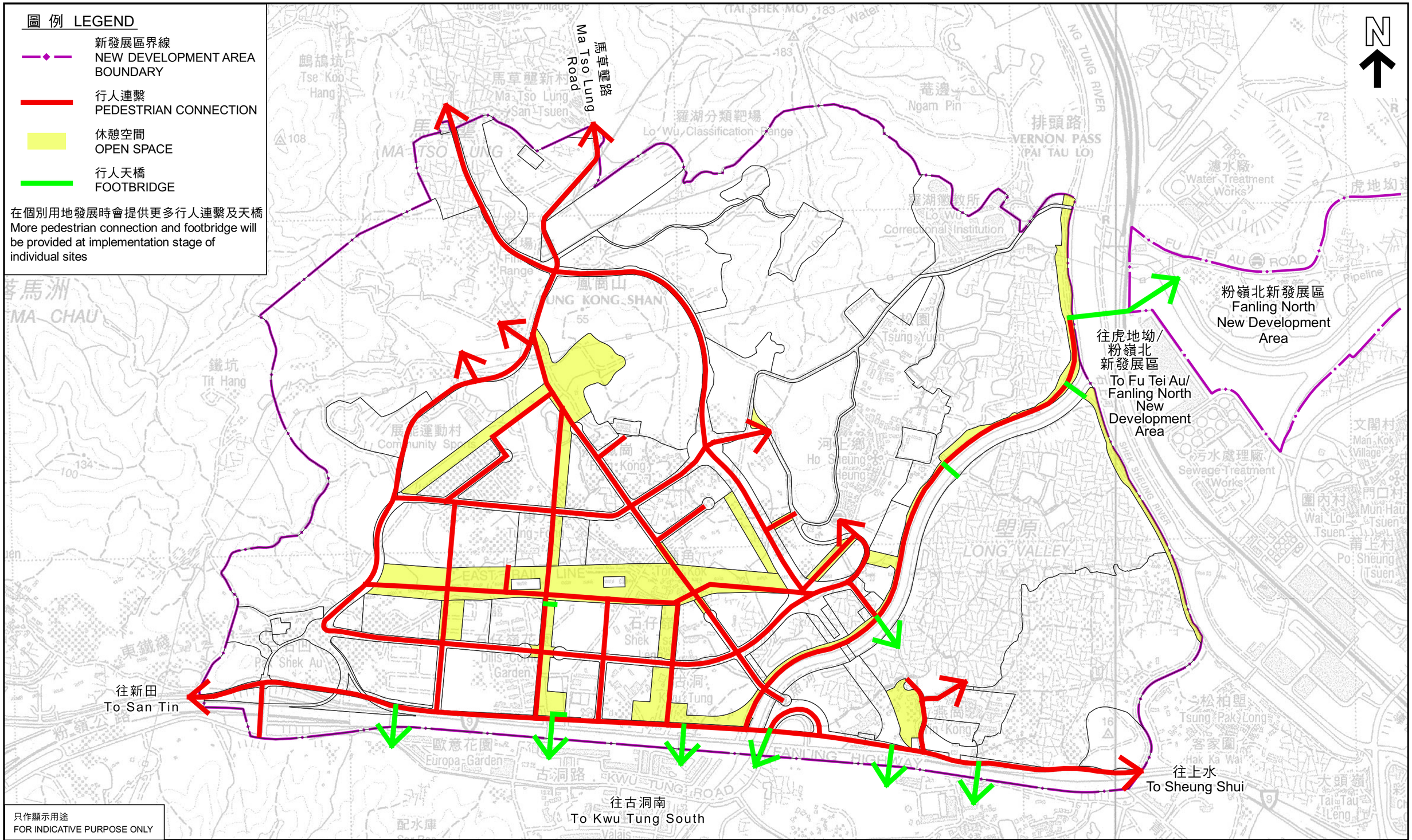
新發展區界線
NEW DEVELOPMENT AREA BOUNDARY

行人連繫
PEDESTRIAN CONNECTION

休憩空間
OPEN SPACE

行人天橋
FOOTBRIDGE

在個別用地發展時會提供更多行人連繫及天橋
More pedestrian connection and footbridge will be provided at implementation stage of individual sites



只作顯示用途
FOR INDICATIVE PURPOSE ONLY

本摘要圖於2022年9月21日擬備
EXTRACT PLAN PREPARED ON 21.9.2022

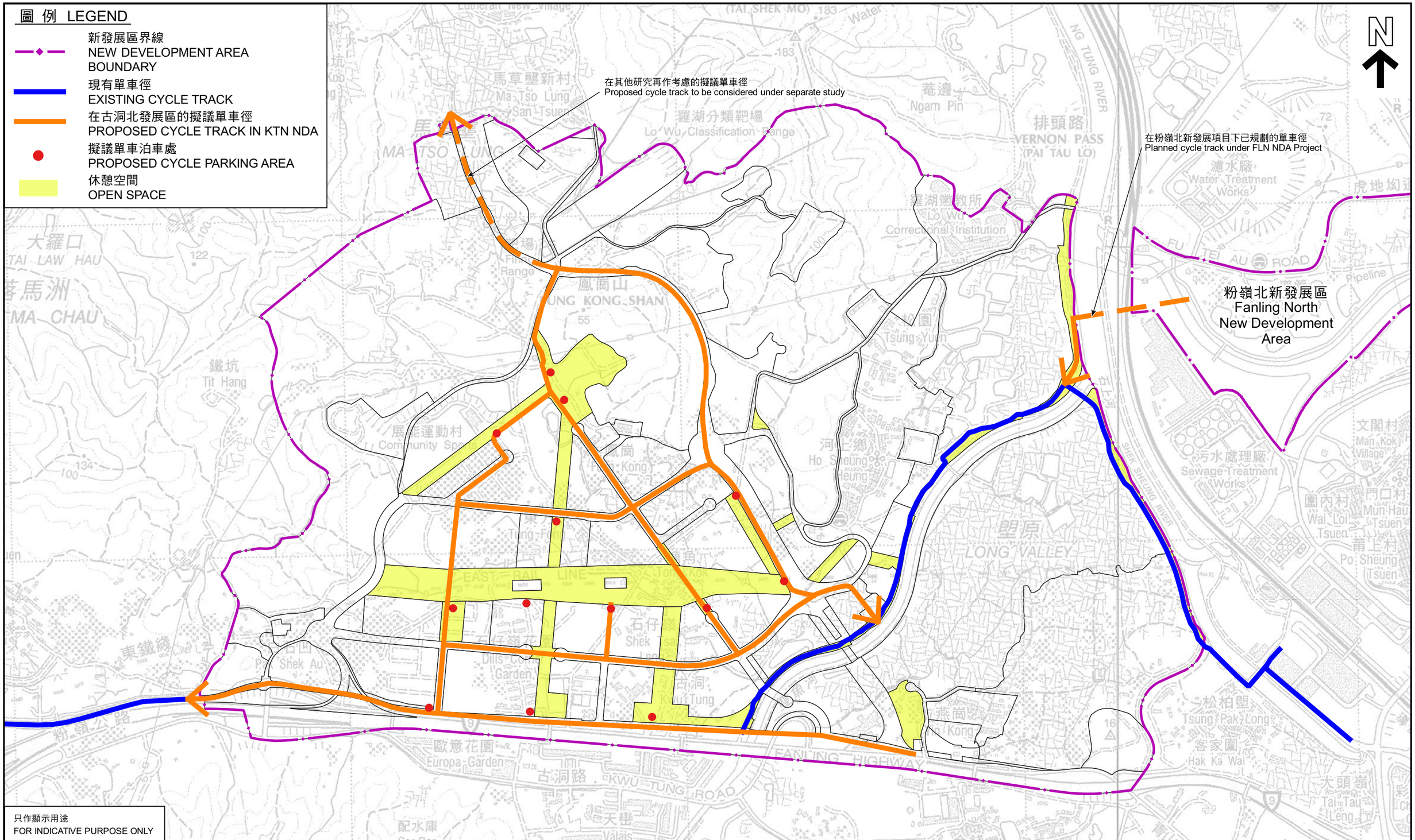
古洞北新發展區 KWU TUNG NORTH NEW DEVELOPMENT AREA

行人連繫
PEDESTRIAN CONNECTIONS
（有待詳細設計）
(Subject to Detailed Design)

規劃署
PLANNING DEPARTMENT

參考編號
REFERENCE No.
M/FS/22/31

圖解 FIGURE
4



古洞北新發展區 KWU TUNG NORTH NEW DEVELOPMENT AREA

單車徑網絡
CYCLE TRACK NETWORK
（有待詳細設計）
(Subject to Detailed Design)

本摘要圖於2022年9月21日擬備
EXTRACT PLAN PREPARED ON 21.9.2022

規劃署
PLANNING DEPARTMENT

參考編號
REFERENCE No.
M/FS/22/31

圖解 FIGURE
5

N

擬議東面連接路
Proposed Eastern Connection Road

馬草壟路
Ma Tso Lung Road

Road R1 道路

Road D5 道路

Road L8 道路

Road D4 道路

Road L7 道路

Road L5 道路

往河上鄉
To Ho Sheung Heung

PTI

Road L6 道路

Road P2 道路

往河上鄉
To Ho Sheung Heung

Road D3 道路

Road L6 道路

Road P1 道路

白石凹交匯處
Pak Shek Au Interchange

Road L3 道路

Road L4 道路

Road L1 道路

PTI

Road P2 道路

Road D1 道路

Road D2 道路

Road L2 道路

青山公路–洲頭段
Castle Peak Road-Chau Tau Section

粉嶺公路
Fanling Highway

古洞南 Kwu Tung South

古洞交匯處
Kwu Tung Interchange

粉嶺公路
Fanling Highway

青山公路–古洞段
Castle Peak Road-Kwu Tung Section

圖 例 LEGEND

- 新發展區界線 NEW DEVELOPMENT AREA BOUNDARY
- 快速公路 EXPRESSWAY
- 主要幹道 PRIMARY DISTRIBUTOR ROAD
- 區域幹道 DISTRICT DISTRIBUTOR ROAD
- 區內幹道 LOCAL DISTRIBUTOR ROAD
- 郊區道路 RURAL ROAD
- 進入古洞北新發展區 ENTRY TO KWU TUNG NORTH NEW DEVELOPMENT AREA
- 擬議鐵路車站 PROPOSED RAILWAY STATION
- PTI 公共交通交匯處 PUBLIC TRANSPORT INTERCHANGE

只作顯示用途
FOR INDICATIVE PURPOSE ONLY

本摘要圖於2022年9月21日擬備
EXTRACT PLAN PREPARED ON 21.9.2022

古洞北新發展區 KWU TUNG NORTH NEW DEVELOPMENT AREA

交通網絡
TRANSPORT NETWORK
（有待詳細設計）
(Subject to Detailed Design)

規劃署
PLANNING DEPARTMENT

參考編號
REFERENCE No.
M/FS/22/31

圖解 FIGURE
6

~~APPROVED~~*DRAFT* KWU TUNG NORTH OUTLINE ZONING PLAN NO. S/KTN/2A

(Being ~~an Approved~~ **a** ***Draft*** Plan for the Purposes of the Town Planning Ordinance)

EXPLANATORY STATEMENT

Note : For the purposes of the Town Planning Ordinance, this statement shall not be deemed to constitute a part of the Plan.

1. INTRODUCTION

This Explanatory Statement is intended to assist an understanding of the ~~approved~~ ***draft*** Kwu Tung North Outline Zoning Plan (OZP) No. S/KTN/2**A**. It reflects the planning intentions and objectives of the Town Planning Board (the Board) for various land use zonings of the Plan.

2. AUTHORITY FOR THE PLAN AND PROCEDURE

2.1 The OZP for the Kwu Tung North New Development Area (NDA) included the areas previously covered by the Kwu Tung North Interim Development Permission Area (IDPA) Plan No. IDPA/NE-KTN/1, the Ma Tso Lung and Hoo Hok Wai Development Permission Area (DPA) Plan No. DPA/NE-MTL/1, the Fanling/Sheung Shui OZP No. S/FSS/1, and a piece of land not covered by any statutory plan (**Figure 1**).

2.2 On 17 August 1990, the Kwu Tung North IDPA Plan No. IDPA/NE-KTN/1 was notified in the Gazette. The land within the IDPA Plan was subsequently included in the draft Kwu Tung North DPA Plan No. DPA/NE-KTN/1. On 8 March 1994, the then Governor in Council approved, under section 9(1)(a) of the Town Planning Ordinance (the Ordinance), the draft Kwu Tung North DPA Plan.

2.3 On 17 May 1993, under the power delegated by the then Governor, the then Secretary for Planning, Environment and Lands directed the Board, under section 3(1)(a) of the Ordinance, to prepare an OZP for the area of Kwu Tung North.

2.4 On 27 May 1994, the draft Kwu Tung North OZP No. S/NE-KTN/1 was exhibited for public inspection under section 5 of the Ordinance. The OZP was subsequently amended twice and exhibited for public inspection under the Ordinance.

2.5 On 22 February 2000, the Chief Executive in Council (CE in C), under section 9(1)(a) of the Ordinance, approved the draft Kwu Tung North OZP, which was renumbered as S/NE-KTN/4. On 8 June 2004, the Chief Executive in Council referred the approved OZP to the Board for amendment ***under section 12(1)(b)(ii) of the Ordinance***.

2.6 On 1 April 2005, the draft Kwu Tung North OZP No. S/NE-KTN/6, ~~incorporating mainly amendments to the Notes for the "Agriculture" ("AGR") zone to include control on filling of land~~ was exhibited for public inspection ***under section 5 of the Ordinance***. ~~During the exhibition period, one objection was received. On 21 April 2006, the Board gave further consideration to the objection and decided to propose an amendment to partially meet the objection by amending the Remarks in the Notes for the "Agriculture" zone to exempt filling of land specifically required under the written instructions of Government departments from the planning control. On 19 May 2006, the proposed amendment to the OZP was notified in the Gazette under section 6(7) of the Ordinance. No valid further objection was received. On 14 July 2006, the Board agreed that the proposed amendment was a decision under section 6(9) of the Ordinance and the amendment should form part of the OZP.~~

2.7 On 31 October 2006, the CE in C, under section 9(1)(a) of the Ordinance, approved the draft Kwu Tung North OZP, which was subsequently renumbered as S/NE-KTN/8.

2.8 On 22 August 2012 and 4 December 2013, under the power delegated by the Chief Executive, the Secretary for Development directed the Board, under section 3(1)(a) of the Ordinance, to prepare a draft plan for the Kwu Tung North NDA. The approved Kwu Tung North OZP No. S/NE-KTN/8 was replaced by the draft Kwu Tung North OZP No. S/KTN/1. Two pieces of land in the southern part of the draft Ma Tso Lung and Hoo Hok Wai OZP No. S/NE-MTL/1 and small strips of land in the north-western part of the approved Fanling/Sheung Shui OZP No. S/FSS/18 were excised for incorporation into the new Kwu Tung North OZP. The new OZP also included a piece of land at the southern fringe previously not covered by any statutory plan (**Figure *1*~~2~~**).

2.9 On 20 December 2013, the draft Kwu Tung North OZP No. S/KTN/1 was exhibited for public inspection under section 5 of the Ordinance. ~~During the exhibition period, a~~ ***A*** total of 20,668 valid representations ~~were received. On 15 April 2014, the Board published the representations for three weeks for public comments~~ and a total of 5,596 valid comments were received. ~~On 25 September 2014, the Chief Executive, under section 8(2) of the Ordinance, agreed to extend the statutory time limit for the Board to submit the draft OZP to the CE in C for approval for a period of six months from 20 November 2014 to 20 May 2015 as more time was required to complete the hearing of the large amount of representations and comments.~~ After giving consideration to the representations and comments on 28 and 29 April 2015, the Board decided not to propose any amendment to the draft OZP to meet the representations.

2.10 On 16 June 2015, the CE in C, under section 9(1)(a) of the Ordinance, approved the draft Kwu Tung North OZP, which was subsequently renumbered as S/KTN/2. ~~On 19 June 2015, the approved Kwu Tung North OZP No. S/KTN/2 (the Plan) was exhibited for public inspection under~~

~~section 9(5) of the Ordinance.~~

2.11 On 31 May 2022, the CE in C referred the approved OZP to the Board for amendment under section 12(1)(b)(ii) of the Ordinance. The reference back of the OZP was notified in the Gazette on 10 June 2022 under section 12(2) of the Ordinance.

2.12 On _____, the draft Kwu Tung North OZP No. _____ (the Plan) was exhibited for public inspection under section 5 of the Ordinance. The major amendments incorporated on the Plan include the rezoning of a site each at Areas 32 and 34 from "Other Specified Uses" annotated "Business and Technology Park" ("OU(BTP)") and "OU(BTP)1" respectively to "Residential (Group B)1" ("R(B)1"); rezoning of a site at Yin Kong from "Comprehensive Development Area" ("CDA") partly to "R(B)2" and partly to "Residential (Group C)1" ("R(C)1"); and revision of the building height restriction of three "Government, Institution or Community" ("G/IC") sites at Areas 9, 28 and 29.

3. OBJECT OF THE PLAN

3.1 The object of the Plan is to indicate the broad land use zonings and major road network for the Kwu Tung North NDA ***(KTN NDA)*** so that development and redevelopment of land within the area can be put under statutory planning control. It also provides the planning framework for preparing more detailed non-statutory plans which form the basis for public works planning and site reservation for various uses.

3.2 The Plan is to illustrate the broad principles of development and planning control only. It is a small-scale plan and the road alignments and boundaries between the land use zones may be subject to minor alterations as detailed planning and development proceed.

3.3 Since the Plan is to show broad land use zonings, there would be situations in which small strips of land not intended for building development purposes and carry no development right under the lease, such as areas restricted for garden, slope maintenance and access road purposes, are included in the residential zones. The general principle is that such areas should not be taken into account in plot ratio and site coverage calculation. Development within residential zones should be restricted to building lots carrying development right in order to maintain the character and amenity of the ~~Kwu Tung North~~***KTN*** NDA and not to overload the road network in this area.

4. NOTES OF THE PLAN

4.1 Attached to the Plan is a set of Notes which shows the types of uses or developments which are always permitted within the Planning Scheme Area and in particular zones and which may be permitted by the Board, with or without conditions, on application. The provision for

application for planning permission under section 16 of the Ordinance allows greater flexibility in land use planning and control of development to meet changing needs.

4.2 For the guidance of the general public, a set of definitions that explains some of the terms used in the Notes may be obtained from the Technical Services Division of the Planning Department and can be downloaded from the Board's website at http://www.info.gov.hk/tpb.

5. THE PLANNING SCHEME AREA

The Planning Scheme Area (the Area) covered by the Kwu Tung North OZP is about 447 ha. The Area is bounded by Shek Sheung River in the east, Castle Peak Road and Fanling Highway in the south, Tit Hang in the west and Tai Shek Mo (Crest Hill) in the north. The boundary of the Area is shown by a heavy broken line on the Plan. For planning and reference purposes, the Area is sub-divided into a number of smaller planning areas as shown on the Plan (**Figure** *2* ~~3~~).

6. STRATEGIC PLANNING CONTEXT

6.1 In view of continued population growth, increase in number of households and public aspirations for more housing supply, the ~~Kwu Tung North~~ ***KTN*** NDA would be an important component in the overall strategy to provide housing land for Hong Kong in the medium-to long-term. As extensions of the Fanling/Sheung Shui New Town, the ~~Kwu Tung North~~ ***KTN*** and Fanling North ***(FLN)*** NDA~~s~~ will be integrated to form the Fanling/Sheung Shui/Kwu Tung (FL/SS/KT) New Town, which will have a total population of about ~~460,000~~ ***603,800*** upon full development. The existing and new ***government, institution and community*** (G/IC) facilities and open spaces in the NDA~~s~~ would be shared by the existing and new residents of the FL/SS/KT New Town.

6.2 Taking advantage of its proximity to the Lo Wu, Lok Ma Chau and Lok Ma Chau Spur Line Boundary Control Points (BCPs), ~~Kwu Tung North~~ ***KTN*** NDA will serve to meet different strategic land use requirements and capitalise on the increasing economic interaction with the mainland. Various economic uses would be provided in the Area to help meet Hong Kong's economic needs and generate employment opportunities for the local residents.

7. HOUSING MIX

7.1 To provide a balanced population profile for the Area, a mix of housing land has been allocated for public and subsidised housing and various types of private housing to provide a wide range of housing choices for different social sectors. The overall public to private housing ratio in terms of number of flats for the ~~Kwu Tung North~~ ***KTN*** and ~~Fanling North~~ ***FLN*** NDA~~s~~ is about ~~60:40~~ ***67:33*** to ensure a balanced and socially

integrated community.

7.2 For the ~~Kwu Tung North~~***KTN*** NDA, the planned population is around ~~60:40~~ ***62:38*** in public and private housing developments. ~~It is noted that s~~Some sites have been reserved for public rental housing (PRH)~~/Home Ownership Scheme (HOS)~~/ ***other subsidized sale flat (SSF)*** use or a mix of them to cater for the future demand for subsidised housing. This allows flexibility for provision of PRH and ***SSF*** ~~HOS~~ units within individual sites. The mix of PRH and ***SSF*** ~~HOS~~ units within individual sites would be further considered upon implementation of the developments, subject to further technical assessments if necessary.

8. POPULATION

~~According to the 2011 Census~~ ***Based on the 2016 Population By-census***, the population of the Area ***estimated by the Planning Department*** was about ***7,100*** ~~5,400~~ persons. It is estimated that the total planned population ~~of the Area~~ would be about ~~105,500~~ ***139,700***.

9. OPPORTUNITIES AND CONSTRAINTS

9.1 Opportunities

Highly Accessible

9.1.1 The proposed ***railway station at*** Kwu Tung ~~railway station~~ on the Lok Ma Chau Spur Line provides a key opportunity to connect the ~~Kwu Tung North~~***KTN*** NDA with the Fanling/Sheung Shui New Town and the other parts of Hong Kong. The use of public transport especially rail transport would minimise road traffic and reduce carbon emission. Fanling Highway to the south of the Area connects the ~~Kwu Tung North~~***KTN*** NDA to the other areas in the North District and the New Territories, and to the urban areas through strategic road network. The ***proposed*** Northern Link (NOL) ~~as proposed in the Railway Development Strategy 2014 (RDS-2014)~~ will connect the Kam Sheung Road Station on the existing ***Tuen Ma Line*** ~~West Rail Line~~ and the proposed ***railway station at*** Kwu Tung ~~Station~~ on the Lok Ma Chau Spur Line ***(NOL Phase 1)***, enhancing east-west connectivity, serving the KTN NDA, facilitating cross-boundary movements and relieving the overloading problem of East Rail Line. Flexibility shall also be provided for extending the NOL to serve the potential developments in the New Territories in future, subject to further study.

Locational Advantage

9.1.2 Strategically located near the Lo Wu, Lok Ma Chau and Lok Ma Chau Spur Line BCPs, the ~~Kwu Tung North~~***KTN*** NDA could

capitalise on the economic interaction between Hong Kong and the mainland. There is also potential for integrated planning of the ~~Kwu Tung North~~***KTN*** NDA with the Lok Ma Chau Loop which is planned for higher education~~, as the leading land use, complemented by~~ high-tech research and development (R&D), ***and*** cultural and creative industries.

Natural and Landscape Setting

9.1.3 There are a number of natural and landscape features within and in the surroundings of the ~~Kwu Tung North~~***KTN*** NDA that could be utilised to create a quality living environment. Long Valley in the eastern portion of the Area is recognised by its high ecological value. Sheung Yue River and Shek Sheung River provide good opportunities for passive recreation in the riverside promenades. Mountain areas to the north, including Fung Kong Shan and Tai Shek Mo, create a ***green*** visual backdrop to the Area and act as a focus for major view corridors across the Area.

Rich Cultural Heritage

9.1.4 ~~Kwu Tung North~~***KTN*** NDA is rich in cultural and historical resources. These resources include the fung shui woodland adjacent to Ho Sheung Heung, a declared monument and a number of graded historic buildings within the Area. Appropriate planning and proper land use zoning designation could help incorporate these valuable resources into the NDA development for the benefit of existing and future residents.

9.2 Constraints

Environmental Constraints

9.2.1 The Sheung Shui Water Treatment Works (SS WTW), which is a potentially hazardous installation (PHI), is located to the north-east just outside the Area, but its 1km Consultation Zone covers the north-eastern portion of the Area. Sheung Shui Slaughter House and Shek Wu Hui Sewage Treatment Works (SWH STW) located to the north-east of the Area also impose environmental constraints to the NDA development.

9.2.2 Fanling Highway to the south is the major air polluting and noise source to the Area. To the north, the existing Lo Wu Firing Range and Ma Tso Lung Firing Range impose shooting noise and the former also imposes helicopter noise on the nearby developments. Developments adjacent to the helicopter pad of Lo Wu Firing Range are subject to the building height restrictions as stipulated in the Helicopter Landing Site Specification Guidelines of Government Flying Service.

Infrastructural Constraints

9.2.3 The northern part of the Area is traversed by the 400kV overhead power lines and the existing Dongjiang water mains running in the western part of the Area pose constraints to land use planning as these will limit the types of structure to be built thereon.

9.2.4 The Area falls within the Deep Bay catchment and is subject to the requirement that no additional pollution load should be discharged into the Deep Bay as a result of any new development. Apart from provision of sewage treatment facilities, measures to improve the quality of existing sewage discharge is required to ensure no net increase of pollution load to the Deep Bay Area.

Ecologically Sensitive Area

9.2.5 Due consideration should be paid to ecological resources within and in the vicinity of the Area, including Long Valley and Ho Sheung Heung, Ng Tung River, Sheung Yue River, Shek Sheung River, Ma Tso Lung Stream, Ho Sheung Heung egretry together with their associated flight paths, fung shui woods and secondary woodlands, to avoid/minimise adverse effects on their ecological value and natural habitats.

Recognised Village and Permitted Burial Grounds

9.2.6 There are two recognised villages, namely Ho Sheung Heung and Yin Kong, within the Area. Permitted burial grounds are located at the hillslopes lying immediately north-west of Ho Sheung Heung, near Tit Hang at the north-western fringes and near Tsung Pak Long in the south-eastern part of the Area and they will generally be retained.

10. PLANNING THEMES AND URBAN DESIGN AND LANDSCAPE FRAMEWORK

10.1 Planning Themes

The ~~Kwu Tung North~~*KTN* NDA would be developed as a 'Mixed Development Node' with a mix of residential, commercial, R & D and agricultural uses as well as retail and services, community and government facilities and land for natural and ecological conservation. The major planning themes adopted in planning and designing the ~~Kwu Tung North~~*KTN* NDA are as follows :

Respecting Nature and Integrating Urban and Rural Uses

10.1.1 The existing natural landscape features such as Long Valley, Sheung Yue River, Shek Sheung River, the hillslope of Fung Kong Shan, the fung shui woodland to the west of Ho Sheung Heung and the natural ridgelines to the west and north have been

retained in the urban design of the ~~Kwu Tung North~~***KTN*** NDA. As part and parcel of the NDA~~s~~ development, some 37 ha of land in the core area of Long Valley generally of high ecological value ~~will be~~ ***is*** designated as a Nature Park. An extensive area of about 83 ha (including 37 ha of land in Long Valley Nature Park, 20.79 ha in the "Agricultur***e***~~al~~ (1)" ("AGR(1)") zone to the north and ***25.11*** ~~25.07~~ ha in the "Agriculture" ("AGR") zone to the south of the Long Valley Nature Park) have been retained for agricultural use. These would preserve the existing rural character, contribute to a diversified townscape and quality living environment, and facilitate the integration of urban and rural uses.

Integration of New and Old Communities

10.1.2 A comprehensive pedestrian walkway system and cycle track network is planned to ensure good connectivity between the major activity nodes ***and***~~,~~ existing recognised villages of Ho Sheung Heung and Yin Kong***,*** and to connect ~~Kwu Tung North~~***KTN*** NDA with the ~~Fanling North~~***FLN*** NDA, Kwu Tung South and Fanling/Sheung Shui New Town. This would promote the shared use of community, recreational and commercial facilities, and enhance employment opportunities within the district.

Transit Oriented Development

10.1.3 The proposed railway station ***at Kwu Tung*** at the centre of ~~Kwu Tung North~~***KTN*** NDA facilitates rail-based transit oriented development. Major developments and population would be planned within walking distance from the proposed railway station to maximise the use of rail transport.

Robust Economic and Employment Clusters

10.1.4 To take advantage of its strategic location near the Lo Wu BCP, Lok Ma Chau BCP, Lok Ma Chau Loop, the proposed railway station ***at Kwu Tung*** and Fanling Highway, the ~~Kwu Tung North~~***KTN*** NDA will serve to meet different strategic land use requirements and capitalise on the increasing economic interaction with the mainland to enhance Hong Kong's competitiveness. Apart from reserving land for various types of office and R & D uses as well as to support the development of industries which Hong Kong enjoys clear advantage, commercial uses are allowed in some of the residential sites to serve the local community, to enhance vibrancy of the area and to generate different employment opportunities.

Balanced and Socially Integrated Communities

10.1.5 To provide a balanced population profile for the Area, a mix of housing land has been allocated for public/subsidised housing and various types of private housing to provide a wide range of

housing choices for different social sectors. Sufficient land has been designated for commercial, shopping and various G/IC uses, which in turn create new jobs for the communities. The various G/IC facilities, such as the hospital, polyclinic, swimming pool complex, and open spaces could also serve the wider communities.

Environmentally friendly Design

10.1.6 To pursue a green living environment, a compact city form is adopted in the ~~Kwu Tung North~~ ***KTN*** NDA with a majority of the new population concentrated near the proposed ~~Kwu Tung~~ railway station ***at Kwu Tung*** and public transport interchange***s*** (PTI***s***). Comprehensive pedestrian and cycle track networks will be provided to encourage walking and promote cycling so as to minimise road traffic. The primary distributors and main district distributors are planned at the periphery of the Town Centre to minimise noise and air pollution to the future residents.

Sustainable and Quality Living Environment

10.1.7 The planning and design for the ~~Kwu Tung North~~ ***KTN*** NDA adopts a sustainable development approach, balancing the housing, employment, community and conservation needs, and encompassing the economic, social and environmental considerations. Various urban design and greening features have been incorporated in the layout to achieve a quality living environment. High priority has been accorded to 'sustainable design' and 'social consideration'.

10.2 Urban Design and Landscape Framework

A comprehensive planning and urban design framework optimising opportunities afforded by the Area, the adjoining Fanling/Sheung Shui New Town and the surrounding natural and landscape features has been formulated to create a quality living environment and socially integrated communities. Nine character areas connected by a comprehensive open space network are planned within the ~~Kwu Tung North~~ ***KTN*** NDA, including the Town Centre, North Residential Area, Residential Area by the River, Business and Technology Park, Long Valley Nature Park, Community Facilities Area, Recreational Area, Research and Development Area and Government Facility Area (**Figure *3*~~4~~**). The following urban design and landscape principles are adopted in the Plan :

Creating Nodes

10.2.1 A Town Centre accommodating a mix of residential use, retail and social and community facilities is planned around the proposed railway station ***at Kwu Tung*** and PTI in the central part of the Area to serve as a major activity node. The Town Centre is further emphasised by the development of a Town Plaza integrated with the proposed railway station, the shopping street

on both sides of the Town Plaza and the residential/commercial developments around the proposed railway station ***at Kwu Tung***. This integrated core area will form a regional landmark and major focal point and activity node of the Area. A north-south green spine connecting Kwu Tung South and the Town Centre will be marked by landmark buildings in the development ~~site~~s in Planning Area~~s~~ 30 adjacent to the southern entrance.

10.2.2 The Business and Technology Park at the south-eastern part of the Area is an important economic and employment node for the ~~Kwu Tung North~~***KTN*** NDA. Adjoining the south-eastern entrance of the Area, the Business and Technology Park in Planning Area 33 provides an opportunity for creating a gateway to the Area with the development of a landmark building at the entrance.

10.2.3 The Recreational Area comprising Fung Kong Shan Park, a swimming pool, a sports centre and a sports ground/sports complex in the north-eastern portion of the Area is another focal point of the Area to create a recreational hub for the future residents.

Forming a Compact City

10.2.4 High-density residential developments, workplace, leisure/ entertainment and public service facilities are planned within the 500m catchments of the proposed railway station ***at Kwu Tung*** and ***the*** PTI in the Town Centre to offer the majority of resident**'**s convenient and comfortable access to public transport and supporting retail and recreational facilities. A comprehensive pedestrian, cycle track and open space networks (**Figures *4*~~5~~ and *5*~~6~~**) linking the residential areas and major activity nodes with the public transport hub will be provided.

Connecting the Neighbourhoods

10.2.5 The north-south and east-west ***running*** open space across the Town Centre serves as major connecting spines to the existing communities in Kwu Tung South to the south of the Area and Ho Sheung Heung and Yin Kong in the eastern portion of the Area. Pedestrian linkages (**Figure *4*~~5~~**) in the form of footbridges ~~and subway~~ to Kwu Tung South across the Fanling Highway, and ~~subway and~~ footbridge to Ho Sheung Heung and Yin Kong would provide easy access for pedestrians between these areas and the Town Centre. A comprehensive cycle track network (**Figure *5*~~6~~**) is also planned with linkages to the existing cycle track network in the Fanling/Sheung Shui area and the proposed cycle track network in the ~~Fanling North~~ ***FLN*** NDA.

Creating a Pedestrian Friendly Environment

10.2.6 Pedestrian movement linking the Town Centre and the proposed

railway station ***at Kwu Tung***/PTI***s*** to the outer fringe areas will be provided via the east-west and north-south ***landscaped*** open space corridors. The Town Centre will be pedestrianised to provide a motor vehicle-free walking environment by placing the vehicular roads away from the Town Centre. A cruciform pedestrian shopping street supplemented with green corridors is planned. There will be two-storey terraces lined with retail shops, cafés and restaurants on both sides of the pedestrian street abutting the Town Plaza to liven up the pedestrian environment. The major north-south ***landscaped*** open space spine across the Town Plaza is designed as a major boulevard with tree-lined pedestrian path.

Creating a Comprehensive Cycle Track Network

10.2.7 Cycle tracks are planned along the open space spines, riverside promenades along Sheung Yu River, Shek Sheung River and Castle Peak Road (**Figure *5*~~6~~**). Cycle parking areas are proposed close to the railway station/PTI***s*** and major activity centres to facilitate the use of public transport.

Providing Leisure Spaces

10.2.8 Riverside promenade will be provided along Sheung Yue River and Shek Sheung River for the enjoyment of the residents and visitors. A comprehensive network of recreation and green spaces comprises regional, district and local open spaces. The Town Plaza and Fung Kong Shan Park will be conveniently located for the enjoyment of residents. Some heritage features within the open spaces will also be incorporated in the layout and design of open space to enhance local identity and character.

Green Corridors

10.2.9 Major green corridors and secondary green corridors are designed in the form of tree avenues, boulevards, pedestrian streets and green walkways which make the ~~Kwu Tung North~~ ***KTN*** NDA visually cohesive in terms of the continuity of tree and shrub planting and allow continuous and safe pedestrian access throughout the NDA.

Roadside Landscape

10.2.10 The streetscape contributes to the landscape framework of the NDA. The roadside landscape would incorporate a tree lined avenue on both sides of the primary, district and local distributor roads ~~including Road P1 (part), Road P2 (part), Road D1, Road D2, Road D3, Road D4, Road D5, Road L1, Road L2, Road L3, Road L4, Road L5, Road L6, Road L7 and Road L8~~ wherever possible with modern and contemporary hard landscape treatments (**Figure *6*~~7~~**).

11. BUILDING HEIGHT RESTRICTIONS IN THE AREA

11.1 In order to provide better control on the building height of developments in the Area and to preserve some key urban design attributes (e.g. stepped building height from the Town Centre towards the periphery and riverside and preservation of visual corridors to the ridgelines), building height restrictions are imposed for the development zones on the Plan.

11.2 Based on the urban design framework mentioned above, a stepped building height concept is recommended with the overall development intensity and building height profile stepping down from the Town Centre towards the periphery and riverside so as to enhance variety in height and massing of new developments and to ensure a better integration with the adjacent rural setting. Exemplifying the concept of rail-based planning, a gradation approach is adopted with developments of higher intensity and building height planned around the proposed railway station ***at Kwu Tung*** in the core area of ***the*** NDA to minimise the need for road transport. The development intensity and building height descends toward the southern periphery by designating some low to medium rise G/IC facilities and "Business and Technology Park" along Fanling Highway to allow visual relief between the Area and the existing low-rise developments in the Kwu Tung South area, except for a landmark development at the southern entrance of the Area. Lower intensity and building height is also proposed in the Residential Area by the River near the Long Valley and the existing recognised villages for better integration with the ecologically/visually important areas. Stepped building height control zones are introduced within ~~the~~ ***some*** development sites along the Sheung Yue River to further enhance the stepped building height concept towards the riverside.

11.3 Specific building height restrictions for the ~~"Government, Institution or Community" (~~"G/IC"~~)~~ and "Other Specified Uses" ("OU") zones in terms of number of storey(s) or mPD, where appropriate, which mainly reflect the existing and planned building heights of developments, have been incorporated into the Plan to provide visual and spatial relief to the Area.

11.4 For any site which covers a relatively large area, the development should be designed with a view to providing a variation in the height profile within the site, whilst not exceeding the maximum building height specified on the Plan.

11.5 An Expert Evaluation on Air Ventilation Assessment (AVA ***EE***) ha**d** been undertaken to assess the existing wind environment and the likely impact of the proposed building heights of the development sites within the Area on the pedestrian wind environment. The building height restrictions shown on the ~~Plan~~ ***first KTN OZP No. S/KTN/1*** have taken the findings of the AVA ***EE*** into consideration. ***In 2022, an Initial Study on AVA (AVA IS) was conducted to assess the air ventilation***

impact of the proposed rezoning at Areas 32 and 34, and revision of the building height restrictions of the two sites and the other three "G/IC" sites mentioned in paragraph 2.12. The AVA IS shows that a district wide decline in wind environment within the KTN NDA is not anticipated.

11.6 In general, a minor relaxation clause in respect of the building height restrictions is incorporated into the Notes of the Plan in order to provide incentive for development/redevelopments with planning and design merits. Each planning application under section 16 of the Ordinance will be considered on its own merits.

Non-building Areas (NBAs)

11.7 According to the findings of the AVA ***EE***, the prevailing annual wind direction is from the eastern direction, and the prevailing summer wind mainly comes from south-west direction. A number of major breezeway/air paths have been incorporated in the layout to facilitate wind penetration. ~~These~~***They*** include the east-west running Town Plaza, the north-east/south-west running and east/west running district/local roads across the Area and the north-east/south-west running district and local open spaces (**Figure *3*4**).

11.8 The AVA ***EE*** recommends a few strips of non-building areas (NBAs) for better penetration of the prevailing winds. Besides, a NBA is proposed along the eastern side of the site in Planning Area 33 while four NBAs are proposed in the northern side of four sites in Planning Areas 30, 31 and 32 to provide a green buffer and spatial corridor. NBAs proposed on the Plan are as follows :

(a) two strips of land (11m-wide and 6m-wide respectively) running in north-east to south-west direction along the two sides of the local open space within the "R(B)" sites in Planning Area 23 to the south of Ho Sheung Heung. These two NBAs together with the local open space between them provides a 50m-wide breezeway/air path which facilitate the penetration of wind from the east to the Area;

(b) two 30m-wide NBAs running in north-east to south-west direction within the "R(B)" sites are designated in the middle of Planning Areas 22 and 23 to divert wind to penetrate through the Town Plaza to the inner parts of the Area;

(c) two NBAs running in north-east to south-west direction are designated at the south-eastern corner of Planning Area 15 and at the north-western corner of Planning Area 23 to facilitate the penetration of wind from the east to the Area;

(d) a 20m-wide strip of land running in north-east to south-west direction in the "R(B)" zone in Planning Area 15 facilitates better penetration of wind from the east to the NDA;

(e) a 18m-wide NBA is designated along the eastern side of the site of

"OU" annotated "Business and Technology Park" in Planning Area 33 to form a 30m green buffer with the adjacent amenity strip in order to further set back the building from the Long Valley Nature Park; and

(f) four 10m-wide NBAs are designed along the northern boundary of the "OU" annotated "Mixed Use" site in Planning Area 30***,*** and ~~three~~ ***two*** "OU" annotated "Business and Technology Park" sites in Planning Area~~s~~ 31 and ***the "R(B)" site at Area*** 32 in order to maintain a spatial corridor along the northern boundary of ***these sites*** ~~the business and technology park cluster~~. This would enhance the pedestrian environment and further enhance wind penetration at pedestrian level.

11.9 To improve wind penetration at pedestrian level, large and bulky podium development is discouraged in the Area. In general, permeable podium design up to two storeys is to be adopted. For development sites along the ***Town Plaza and at the southern entrance of the Area*** ~~pedestrianised shopping street in the core of the Town Centre~~, a two-storey terraced podium will be provided in these sites to enhance vibrancy at street level as well as to direct downward airflow to the pedestrian level. To further enhance prevailing wind penetration through the Area, future developments at sites on both sides abutting the Town Plaza are encouraged to adopt suitable design measures to allow wind entries through the development sites. Podium-free design is adopted in sites for pure residential development to improve wind penetration at street level. The urban design guidelines for improving air ventilation stipulated in Chapter 11 of Hong Kong Planning Standards and Guidelines (HKPSG) and the Technical Circular and Technical Guide on Air Ventilation Assessment should be referred to in the detailed design for the developments.

11.10 Minor relaxation of the NBA restriction may be considered by the Board on application under section 16 of the Ordinance. Within the NBAs stipulated on the OZP, landscaping and street furniture and underground structures will be permitted. For residential sites, fence or boundary walls that are designed to allow for high visual/air porosity will be allowed in the NBAs.

11.11 The major view corridors are created by the east-west and north-south open space spines across the Town Centre which provide long-range views toward Long Valley Nature Park in the east and Fung Kong Shan in the north respectively (**Figure** ***3***~~4~~**)**. Another view corridor is also provided in a northwest-southeast direction in the form of the eastern periphery road (Road P2), providing a distant view to Fung Kong Shan when one is driving from the south-eastern entrance.

12. LAND USE ZONINGS

~~12.1 Comprehensive Development Area ("CDA") : Total Area 1.61 ha~~

~~12.1.1 This zone is intended for comprehensive development/ redevelopment of the area for residential use with the provision of open space and other supporting facilities. The zoning is to facilitate appropriate planning control over the development mix, scale, design and layout of development, taking account of environmental, traffic, infrastructure and other constraints.~~

~~12.1.2 The only "CDA" zone in Kwu Tung North is located in Planning Area 38 to the south of Yin Kong Village. Development or redevelopment is subject to a maximum plot ratio of 0.4, maximum site coverage of 20% and a maximum building height of three storeys (9m) including one storey of car park. The Enchi Lodge located in the southern portion of the zone is a Grade 2 historic building, which should be incorporated in the design of the development on this site.~~

~~12.1.3 To provide flexibility for innovative design adapted to the characteristics of the site, minor relaxation of the plot ratio, site coverage and/or building height stated above may be considered by the Board through the planning permission system. Each proposal will be considered on its individual planning merits.~~

~~12.1.4 Pursuant to section 4A(1) of the Ordinance, any development within the "CDA" zone will require approval of the Board by way of a planning application under section 16 of the Ordinance. A MLP should be submitted in accordance with the requirements as specified in the Notes of the Plan for the approval of the Board pursuant to section 4A(2) of the Ordinance. A copy of the approved MLP will be made available for public inspection in the Land Registry pursuant to section 4(A)3 of the Ordinance.~~

12.*1*~~2~~ "Residential (Group A)" ("R(A)") : Total Area 28.51 ha

12.*1*~~2~~.1 Land zoned "R(A)" is intended primarily for high-density residential developments. All of them are located within the 500m walking distance of the proposed railway station. The "R(A)" zone includes sites for PRH, ***SSF***~~HOS~~ and private residential developments in the Town Centre and the North Residential Area (**Figure *3*~~–~~4**). Commercial uses are always permitted on the lowest two floors of a building excluding basements, or in a free-standing purpose-designed non-domestic building up to five storeys. Terraced commercial podium up to two storeys in the core area of town centre is recommended. Also, purpose-designed non-domestic building up to five storeys may allow flexibility for provision of greater floorspace for commercial and G/IC facilities to cater for special needs while at the same time avoid bulky podium structures to minimise any possible adverse air ventilation and visual impacts. ~~To allow design flexibility and better layout, some provisions of public open space and amenity strips have been incorporated in some PRH/HOS sites to be developed by Housing Department. The~~

~~public open spaces and amenity strips will be handed over to the Government for management and they should not be taken into account in plot ratio calculation of the PRH/HOS development.~~

12.*1*~~2~~.2 This zoning includes three sub-zones which are subject to the following development restrictions:

"Residential (Group A)1" ("R(A)1") : Total Area: 6.~~02~~ ha

(a) Concentrated around the proposed ~~Kwu Tung~~ railway station ***at Kwu Tung***, four sites in Planning Areas 20, 24 and 25 are designated as "R(A)1" zone. Developments within this sub-zone are subject to a total maximum plot ratio of 6 (of which the domestic plot ratio should not exceed 5) and a maximum building height of 115mPD and 120mPD. These high-density residential developments aim to maximise the utilisation of the high capacity public transport system and to create a vibrant activity node around the railway station. Commercial uses in close proximity to the proposed ~~Kwu Tung~~ railway station ***at Kwu Tung*** will capitalize on the convenience offered by mass transit as well as the concentration of population. Whilst the "R(A)1" site at the western portion of Planning Area 20 is planned for high-density ***SSF*** ~~HOS~~ development, the other three sites in Planning Area 20 (eastern portion), Planning Areas 24 and 25 are planned for high-density private residential developments.

"Residential (Group A)2" ("R(A)2") : Total Area: 17.4~~5~~ ha

(b) Four sites are zoned "R(A)2" which is subject to a total maximum plot ratio of 5 (of which the domestic plot ratio should not exceed 4.5) and a maximum building height of 130mPD and 135mPD. These sites are located in Planning Areas 12, 13, 19 and 24 and are all within the 500m walking distance of the proposed ~~Kwu Tung~~ railway station ***at Kwu Tung*** to make good use of the public transport. These sites are reserved for PRH/***SSF***~~HOS~~ use or a mix of them to cater for the future demand for subsidised housing. The "R(A)2" site in Planning Area 24 has been reserved for local rehousing for eligible clearees affected by the NDA development, whilst the remaining units after rehousing clearees will be used for general public housing purpose.

"Residential (Group A)3" ("R(A)3") : Total Area: 5.04 ha

(c) Two sites in Planning Areas 21 and 26 located close to the proposed ~~Kwu Tung~~ railway station ***at Kwu Tung*** are reserved for PRH/***SSF*** ~~HOS and HOS~~ development ~~respectively~~. Developments on these two sites are subject to a total maximum plot ratio of 5 (of which the domestic plot ratio should not exceed 4) and a maximum building height of 110mPD and 125mPD.

Terraced Podium in "R(A)1", "R(A)2" and "R(A)3" Sites

(d) Terraced podiums are to be provided along site boundaries abutting the Town Plaza and the major north-south open space spine as shown on the Plan. These include four "R(A)1" sites in Planning Areas 20, 24 and 25, two "R(A)2" sites in Planning Areas 19 and 24, and two "R(A)3" sites in Planning Areas 21 and 26. Land designated as 'Terraced Podium' is subject to a maximum building height of 5m and 10m-wide set back at first floor level. This terraced design could promote pedestrian experience and enhance air ventilation at street level. Except the two "R(A)2" at the western end of the Town Plaza (i.e. the western "R(A)2" site of Planning Area 19 and the "R(A)2" site in Planning Area 24), 'Shop and Services' and 'Eating Place' uses should be provided along the site boundaries abutting the Town Plaza and the major north-south open space spine to ensure continuous shop frontages and the provision of commercial and leisure facilities such as café, restaurants and retail shops on the side lining the pedestrian shopping street, thus contributing to the vibrancy and character of the area.

12.*1*~~2~~.3 Minor relaxation of the plot ratio and/or building height restrictions for the "R(A)" sites may be considered by the Board on application under section 16 of the Ordinance. Each application for minor relaxation of plot ratio and/or building height restrictions will be considered on its own merits.

12.*1*~~2~~.4 Planning briefs setting out the planning parameters and the special design requirements of individual PRH/*SSF*~~HOS~~ sites will be provided to guide the future development of the sites.

12.*2*~~3~~ "Residential (Group B)" ("R(B)") : Total Area *23.1*~~08~~ ~~19.91~~ ha

12.*2*~~3~~.1 This zone is intended primarily for medium-density residential developments where commercial uses serving the residential neighbourhood may be permitted on application to the Board.

12.*2*~~3~~.2 Eight sites to the east of the Town Plaza are designated as "R(B)", these include one site in Planning Area 14, one site in Planning Area 22 and two sites in Planning Area 26 adjoining Road L3, one site in Planning Area 15 to the east of Fung Kong Shan*,* and three sites in Planning Area 23 to the southwest of the fung shui woodland of Ho Sheung Heung. ~~These sites are reserved for private residential development.~~ Developments in these sites are subject to a maximum plot ratio of 3.5. ***Two sites at Areas 32 and 34 abutting Sheung Yue River are designated as "R(B)1" subject to a maximum plot ratio of 4.2, and another site to the south of Yin Kong is designated as "R(B)2" subject to a maximum plot ratio of 3. These sites are reserved for private residential development***. ~~and~~ ***The sites are subject to*** a maximum building height ranging from ~~75~~ **55**mPD to 95mPD respecting the topography and site constraints in individual sites such as locating ***near*** the ***Sheung Yu River, Long Valley Nature Park, or*** in the major breezeway and railway protection area.

12.2.3 The two "R(B)1" sites and the "R(B)2" site are close to the Long Valley Nature Park and Sheung Yu River. As required by the Agriculture, Fisheries and Conservation Department (AFCD), mitigation measures should be provided in the developments on these sites to minimise disturbance and light/glare impacts to the Nature Park.

12.2.4 Within the "R(B)2" zone, there is a Grade 2 historic building, Enchi Lodge (the Lodge). The preservation of the Lodge, including Main Building and Ancillary Block, should be incorporated in the design of the development on this site. The boundary of the "R(B)2" zone along the northern side and north-eastern corner of the Ancillary Block is 3m away from the Ancillary Block. Any demolition of, addition, alteration and/or modification to (except those minor alteration and/or modification works which are ancillary and directly related to the always permitted uses) or redevelopment of the Lodge requires planning permission from the Board under section 16 of the Ordinance. As required by the Antiquities and Monuments Office, a Conservation Management Plan should be submitted by the developer for future adaptive reuse of the Lodge to address how the changes to the Lodge will be properly managed so as to minimize the impact to the heritage value of the Lodge.

12.2.5 The plot ratio control under "R(B)1" and "R(B)2" zones is regarded as being stipulated in a "new or amended statutory plan" according to the Joint Practice Note No. 4 "Development Control Parameters Plot Ratio/Gross Floor Area", and shall be subject to the streamlining arrangements stated therein.

12.*2.6*~~3.3~~ To provide flexibility for innovative design adapted to the characteristics of particular sites, minor relaxation of the plot ratio and/or building height restrictions stated above may be considered by the Board through the planning permission system. Each proposal will be considered on its individual planning merits.

12.*2.7*~~3.4~~ Under exceptional circumstances, for developments and/or redevelopments, minor relaxation of the NBA restrictions as shown on the Plan may be considered by the ~~Town Planning~~ Board on application under section 16 of the Ordinance.

12.*3*4 "Residential (Group C)" ("R(C)") : Total Area **1.2** ~~0.34~~ ha

12.*3*~~4~~.1 This zone is intended primarily for low-rise, low-density residential developments where commercial uses serving the residential neighbourhood may be permitted on application to the Board.

12.*3*~~4~~.2 The existing Phoenix Garden on the southern side of Fung Kong

Shan in Planning Area 14 falls within this zone. Developments or redevelopments in this site are subject to a maximum plot ratio of 0.4 and building height of two storeys.

12.3.3 A site located to the immediate south of Yin Kong Village is zoned "R(C)1" subject to a maximum plot ratio of 1.1 and building height of three storeys (8.23m) (excluding basement floor(s)). The plot ratio control under "R(C)1" zone is regarded as being stipulated in a "new or amended statutory plan" according to the Joint Practice Note No. 4 "Development Control Parameters Plot Ratio/Gross Floor Area", and shall be subject to the streamlining arrangements stated therein.

12.*3*~~4~~.*4*~~3~~ Minor relaxation of the stated restrictions may be considered by the Board through the planning permission system. Each application will be considered on its individual merits.

12.*4*~~5~~ "Village Type Development" ("V") : Total Area 17.*84*~~66~~ ha

12.*4*~~5~~.1 The planning intention of this zone is to designate both existing recognised villages and areas of land considered suitable for village expansion. Land within this zone is primarily intended for development of Small Houses by indigenous villagers. For land designated "V(1)", the planning intention is to provide land considered suitable for reprovisioning of village houses affected by Government projects. It is also intended to concentrate village type development within this zone for a more orderly development pattern, efficient use of land and provision of infrastructures and services. Selected commercial and community uses serving the needs of the villagers and in support of the village development are always permitted on the ground floor of a New Territories Exempted House. Other commercial, community and recreational uses may be permitted on application to the Town Planning Board. In order to ensure that any future development or redevelopment within the "V" zone will retain a village character, a maximum building height of three storeys (8.23m) or the height of the existing building, whichever is the greater, is imposed under this zoning.

12.*4*~~5~~.2 The existing recognised villages, i.e. Ho Sheung Heung in Planning Area 17 and Yin Kong in Planning Area 37*,* fall within this zone. The existing Hau Ku Shek Ancestral Hall (Declared Monument), Hung Shing Temple and Pai Fung Temple (Grade 3 historic building) and Sin Wai Nunnery (Grade 3 historic building) will remain unaffected in this "V" zone. In the delineation of the boundaries of the proposed "V" zones, consideration has been given to the Small House demand forecast, the village 'environ' and planning considerations.

12.*4*~~5~~.3 A site of about 1.1 ha in Planning Area 36 in close proximity to Ho Sheung Heung Village is designated "V(1)". The site would provide land for reprovisioning the affected village houses under

the Village Removal Terms due to the NDA development.

12.*4*~~5~~.4 To provide flexibility for innovative design adapted to the characteristics of particular sites, minor relaxation of the building height restriction stated above may be considered by the Board through the planning permission system. Each proposal will be considered on its individual planning merits.

12.*5*~~6~~ "Government, Institution or Community" ("G/IC") : Total Area 46.*93*~~66~~ ha

12.*5*~~6~~.1 This zone is intended primarily for the provision of ~~Government, institution or community~~ ***G/IC*** facilities serving the needs of the local residents and/or a wider district, region or the territory. It is also intended to provide land for uses directly related to or in support of the work of the Government, organisations providing social services to meet community needs, and other institutional establishments. Local community facilities are also provided within the other land use zones.

12.*5*~~6~~.2 Major regional and district G/IC facilities include ***a government office and community complex at the eastern portion of Planning Area 29,*** the two service reservoirs (one for fresh water and the other for flushing water) proposed at the hilly terrain in Planning Area 5, a fire station cum ambulance depot in Planning Area 4 and a site ~~reserved~~ in Planning Area 28 for the proposed ***public*** hospital~~, polyclinic and general clinic/health centre~~ to provide medical services for the Area and wider population of the district. ~~Lo Wu Correctional Institute in Planning Area 6 is designated as "G/IC(1)" to reflect the existing use.~~ A site in Planning Area 9 is designated as "G/IC(2)" for the provision of a district police headquarter~~, police~~ ***and its associated*** married quarters and a divisional police station.

12.5.3 Planning Area 29 is located near the Town Centre and well connected to the residential areas. It is well-served by public transport including the proposed railway station at Kwu Tung and the nearby PTI. It will serve as a hub of civic activities and social services. There will be a Multi-welfare Services Complex at the western portion of the area and two schools next to it. The eastern portion of the area is planned for a government office and community complex comprising mainly a government office building, a library, a sports centre, a community hall, a post office, a kindergarten and some social welfare facilities.

12.*5.4*~~6.3~~ One site to the north of Fung Kong Shan in Planning Area 4 is reserved for Potential Activity Centre to accommodate youth camp, adventure training and other related facilities. The site in Planning Area 10 is reserved for a cluster of recreational and sports/leisure related facilities including a standard swimming pool and a sports centre. The site in Planning Area 1 in the north-western part of the ~~Kwu Tung North~~***KTN*** NDA is reserved

for a sports ground/sports complex accommodating up to 10,000 persons.

~~12.6.4 A district library, a sports centre, a community hall and some social welfare facilities (an integrated children and youth services centre, an integrated family service centre, a child care centre and a social security field unit) would be provided in the "G/IC" site in Planning Area 29 which is located near the Town Centre and well connected to the residential areas.~~

12.*5*~~6~~.5 ~~Seven~~ *Six* primary schools and four secondary schools are ~~provided~~ *planned* within the NDA to meet the needs of the population. These school sites are in close proximity to residential developments to facilitate convenient access to students. ~~Two~~ *One* primary school~~s~~ and one secondary school are proposed ~~in the sites next to the proposed district library~~ in Planning Area 29 in the southern part of the ~~Kwu Tung North~~*KTN* NDA. ~~The same combination of t~~*T*wo primary schools and one secondary school ~~is also~~*are* planned at the sites in Planning Area 22 in the north-east of the Town Centre. Two primary and two secondary schools are ~~proposed~~ *planned* in sites adjacent to the swimming pool and sports centre in Planning Areas 8, 9 and 11 in the North Residential Area. A primary school is ~~proposed~~*planned* in the site near the Fung Kong Shan in Planning Area 13.

12.*5*~~6~~.6 A site to the south-western of Yin Kong abutting Castle Peak Road in Planning Area 37 is reserved for ~~relocation of Kwu Tung V~~*v*egetable ~~M~~*m*arket*ing* ~~and Credit C~~*c*o-operative *societies.*~~Society.~~ ***A site at Area 34 is reserved for a visitor centre of the Long Valley Nature Park.*** ~~Five~~ *Six* sites are also designated *as* "G/IC" to reflect the existing uses. These include ~~the disused Lung Kai Public School in Planning Area 2,~~ ***Lo Wu Correctional Institute in Planning Area 6 designated as "G/IC(1)",*** two sites for the Lo Wu Saddle Club in Planning Area 17 and *two* ~~the~~ disused ~~Ho Kai S~~s~~chool~~s in Planning Area*s 2 and* 18.

12.*5*~~6~~.7 There are ~~seven~~ *three* sites in Planning Areas 4, 8, ~~22, 24,~~ 27~~, 29~~ and 35 designated as "G/IC" for government reserve purpose. ***The "G/IC" site at Area 22 is earmarked for G/IC facilities, including a community hall.***

12.*5*~~6~~.8 When detailed planning and development for the Area proceeds, local community facilities such as ***social welfare facilities and*** kindergartens ~~and neighbourhood centres~~ will be provided within the public housing estates and the private residential developments ***as proposed by concerned bureau/department.*** ~~in accordance to HKPSG.~~

12.*5*~~6~~.9 Development and redevelopment in the "G/IC" zones are subject to building height restrictions in terms of number of storey(s)

(excluding basement floor(s)) or mPD as stipulated on the Plan, or the height of the existing building, whichever is the greater. Minor relaxation of the building height restriction may be considered by the Board on application under section 16 of the Ordinance. Each application for minor relaxation of building height restriction will be considered on its individual merits.

12.*6*~~7~~ "Open Space" ("O") : Total Area 33.*2* ~~31~~ha

12.*6*~~7~~.1 This zone is intended primarily for the provision of outdoor open-air public space for active and/or passive recreational uses serving the needs of local residents as well as the general public. A network of interconnected public open spaces of different sizes and functions would be provided including regional, district and local open spaces.

12.*6*~~7~~.2 Regional open space is provided along the western banks of Sheung Yue River and Shek Sheung River which will be developed into a continuous riverside promenade for the enjoyment of the territorial population including residents and visitors. It mainly provides an area for passive recreational uses and maximises access and enjoyment of the riverside. The design of this regional open space should integrate with the proposed footpath and cycle track network of the Area. The riverside promenades should incorporate continuous tree lines along the river banks with modern and contemporary hard landscape treatments to create an attractive and favourable riverside environment. A Grade 3 historic building, i.e. Yeung Yuen*,* is located in the southern end of the riverside promenade in Planning Area 31 along the Castle Peak Road, it should be incorporated in the design of the regional open space.

12.*6*~~7~~.3 District open space is intended primarily for the provision of outdoor open-air public space for active and/or passive recreational uses serving the needs of residents as well as the general public in the district. It also serves as major pedestrian passageway and breezeway corridors. The major north-south ***landscaped*** open space corridor linking Kwu Tung South to Fung Kong Shan Park is planned as a major tree-lined boulevard in order to enhance walking experience through the NDA. Other major district open space includes Fung Kong Shan Park in Planning Area 7, ~~a site in Planning Area 31 incorporating a Grade 3 historic building, i.e. Yan Wah Lo,~~ and a tract of land in Planning Area 37 to serve as a gateway to the ~~Kwu Tung North~~***KTN*** NDA as well as a green buffer for providing a subtle transition from the busy Fanling Highway to the tranquil Long Valley Nature Park.

12.*6*~~7~~.4 The Town Plaza stretching from west to east across the Town Centre is a focus area of activities and an important public space of the NDA linking up major activity nodes with the proposed ~~Kwu Tung~~ railway station **at *Kwu Tung*** and PTI. It is specially

designated as "O(1)" to signify its major function as a green corridor. To serve the community and enhance the vibrancy of the Town Plaza, it is intended that commercial uses such as shop and services and eating places would be provided in the area adjacent to the railway station subject to the approval of the ~~Town Planning~~ Board by way of a planning application under section 16 of the Ordinance. Development control on its detailed planning and design would be exercised through the planning application system. An urban design study ~~would be undertaken to formulate~~ ***is conducted, and design requirements for the terraced podium development along the open space and*** the ***general*** design guidelines for the Town Plaza ***are formulated***.

12.***6***~~7~~.5 Local open space is provided in close proximity to residential areas to serve local residents. This includes some ***landscaped*** open space corridors linking up the residential areas with the Town Plaza and the riverside promenade along Sheung Yue River***, and a site in Planning Area 31 incorporating a Grade 3 historic building, i.e. Yan Wah Lo***. ~~Some of the public local open spaces would be incorporated into the HOS/PRH developments to allow greater design flexibility and better layout planning.~~ Local open space will also be provided to the residents within individual public and private residential developments in the ~~Kwu Tung North~~***KTN*** NDA to meet the requirements in the HKPSG.

12.***7***~~8~~ "Other Specified Uses" ("OU") : Total Area **71.94 ~~73~~** ~~75.36~~ ha

12.***7***~~8~~.1 This zone is intended for specific development(s) and/or uses, which is/are specified in the annotation of the zone.

Commercial/Residential Development with Public Transport Interchange

12.***7***~~8~~.2 A site with an area of about 2.1 ha to the south of the proposed ~~Kwu Tung~~ railway station ***at Kwu Tung*** in Planning Area 25 is zoned "OU" annotated "Commercial/Residential Development with Public Transport Interchange". This zone is intended primarily for commercial and residential uses with public transport interchange serving the community. This site is reserved for high-density private residential development. Developments within this zone are subject to a total maximum plot ratio of 6 (of which the domestic plot ratio should not exceed 5) and a maximum building height of 120mPD. A public transport interchange ~~of not less than 6,000m^2~~ should be provided in the site to serve the community. Commercial uses are always permitted on the lowest two floors of a building excluding basements, or in a free-standing purpose-designed non-domestic building up to five storeys.

12.***7***~~8~~.3 As the site is located to the immediate south of the proposed ~~Kwu Tung~~ railway station ***at Kwu Tung***, due consideration shall

be given to better integrate the ***pedestrian connection to the*** future railway station in the design of the PTI. A master layout plan should be submitted, as an administrative measure, by the project proponent to the satisfaction of the Director of Lands to ensure proper design of the development before development proceeds.

12.~~7~~8.4 In order to enhance vibrancy and vitality of the core area of Town Centre, terraced podium lined with retail frontage along site boundaries abutting the Town Plaza and major north-south open space spine should be provided. For land designated as 'Terraced Podium', it is subject to a maximum building height of 5m and 10m-wide set back at the first floor level. This terraced design could promote pedestrian experience and enhance air ventilation at street level. 'Shop and Services' and 'Eating Place' uses should be provided along the site boundary abutting the Town Plaza and the major north-south open space spine to ensure continuous shop frontage and the provision of commercial and leisure facilities such as café, restaurants and retail shops on the side lining the pedestrian shopping street.

Mixed Use

12.~~7~~8.5 A site with an area of about 2.1 ha in Planning Area 30 at the southern entrance of the ~~Kwu Tung North~~***KTN*** NDA abutting the Fanling Highway is designated as "OU" annotated "Mixed Use". This zone is intended for medium-density development for a mix of commercial/office, hotel, residential uses and social welfare facilities, either vertically within a building or horizontally over a spatial area. Physical segregation has to be provided between the non-residential and residential portions within a building to prevent non-residential uses from causing nuisance to the residents. Developments within this zone are subject to a total maximum plot ratio of 3 (of which the domestic plot ratio should not exceed 1) and a maximum building height of 110mPD.

12.~~7~~8.6 Terraced podium lined with retail frontage along site boundaries abutting the north-south running open space spine should be provided. For land designated as 'Terraced Podium', it is subject to a maximum building height of 5m and 10m-wide set back at the first floor level. This terraced design could promote pedestrian experience and enhance air ventilation at street level. 'Shop and Services' and 'Eating Place' uses should be provided along the site boundary abutting the north-south open space spine to ensure continuous shop frontage and the provision of commercial and leisure facilities such as café, restaurants and retail shops on the side lining the pedestrian shopping street. ***A 10m wide NBA is designed along the northern boundary of this site in order to maintain a spacious corridor along the northern boundary. This would facilitate wind penetration and greening at the pedestrian***

street level and enhance the pedestrian environment.

12.*7*~~8~~.7 As the site is adjacent to Fanling Highway, due consideration should be given to the disposition and design of the building(s) at the site as well as the provision of mitigation measures to address the possible traffic noise impact. Besides, the mix of commercial/office, hotel and residential uses provides the site flexibility to mitigate the potential noise from the adjacent road by adopting suitable layout of the non noise-sensitive uses.

12.*7*~~8~~.8 The 'White House' located on the site is currently used by the Home of Loving Faithfulness and is of cultural and historical value. The building should be retained and integrated with the proposed development on-site. To enhance pedestrian connectivity between the Area and Kwu Tung South, a footbridge should be provided at the site to link with the ***footbridge across Castle Peak Road.*** ~~nearby "G/IC" site in Planning Area 29.~~

12.*7*~~8~~.9 In view of its strategic location at the southern entrance of the ~~Kwu Tung North~~***KTN*** NDA and the various planned uses, a master layout plan shall be submitted, as an administrative measure, by the project proponent to the satisfaction of the Director of Lands to ensure an integrated layout before development proceeds.

Business and Technology Park

12.*7*~~8~~.10 ~~Five~~***Three*** sites with a total area of ***8.6*** ~~11.7~~ ha are designated as "OU" annotated "Business and Technology Park". This zone is intended primarily for medium-density development to provide a mix of commercial, offices, design, research and development uses. This cluster will provide development spaces for the industries where Hong Kong enjoys clear advantage, such as innovative and high-technological industries, cultural and creative industries. An urban design and landscape framework aiming to create a pleasant park-like environment for this business and technology cluster should be formulated to guide the future development. To achieve a coherent urban and landscape design, development on individual site should submit a master layout plan, following the urban design and landscape framework by the project proponent to the satisfaction of Director of Lands to ensure an integrated and compatible layout before development proceeds.

12.*7*~~8~~.11 Developments in this zone are subject to a maximum plot ratio of 3~~.0~~ and maximum building heights range from 40mPD to 60mPD. Different height bands are designated within the sites along Sheung Yue River to establish a stepped building height profile increasing from the riverside towards Fanling Highway and the Town Centre. For the sites in Planning Areas 31 ***and***~~,~~ ~~32,~~ 33 ~~and 34~~, developments fronting the riverside are subject

to a maximum building height of 40mPD while those at the rear are subject to a maximum building height of 55mPD.

12.*7*~~8~~.12 Adoption of innovative building design and special landscape treatment will help define the site in Planning Area 33 as a gateway of the NDA. However, as the site is located near the ~~proposed~~ Long Valley Nature Park, careful consideration should be given to the building disposition and façade treatment of the development to minimise disturbance and impacts of light and glare to fauna, especially ensure that there will not be any possible adverse impact to the nearby Nature Park. An urban design plan shall be submitted, as an administrative measure, by the project proponent to the satisfaction of the Director of Planning before development proceeds. In this connection, a 30m green buffer should be provided along the eastern side of the site in order to further set back the building from the Nature Park. Measures to ensure no hydrological disruption to Long Valley Watercourse and water supply to Long Valley shall be designed at the detailed design stage for the re-channelization of the Long Valley Watercourse and the development of areas through which it passes.

~~12.8.13 The site in Planning Area 34 to the west of Sheung Yue River designated "OU" annotated "Business and Technology Park(1)" is proposed to accommodate hotel, exhibition and conference facilities. It will offer accommodation/hospitality for business visitors and tourists of the Business and Technology Park and the nearby Long Valley Nature Park.~~

Research and Development

12.*7*~~8~~.1*3*4 The site of about 5.8 ha in Planning Area 2 is designated as "OU" annotated "Research and Development". The planning intention of this zone is primarily for design, research and development uses which could create synergy with the development of Lok Ma Chau Loop in close proximity to the site. This site will provide development spaces for the industries where Hong Kong enjoys clear advantage, such as innovative and high-technological industries and cultural/creative industries.

12.*7*~~8~~.1*4*~~5~~ Developments on the site are subject to a maximum plot ratio of 1.76 and maximum building heights range from 30mPD to 65mPD to be in harmony with the rural setting and village development in the vicinity. As the site is located in proximity to the Lo Wu Firing Range and Ma Tso Lung Firing Range, developments on the site are subject to the building height restrictions as stipulated in the Helicopter Landing Site Specification Guidelines of Government Flying Service.

Nature Park

12.*7*~~8~~.1*5*~~6~~About 37 ha of land in the Long Valley area generally of high ecological value is designated as "OU" annotated "Nature Park" for its long-term conservation as part and parcel of the NDA~~s~~ project, and as on-site ecological mitigation to compensate for the wetland loss due to the NDA~~s~~ development. This zone is intended primarily for the development of a Nature Park to protect and enhance existing wetland habitats for the benefit of the local ecology and promotion of nature conservation and education. The primary intention is to discourage new development unless it is required to support the conservation of the ecological integrity of the wetland habitats or the development of an essential infrastructure project with overriding public interest.

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12.*7*~~8~~.1*6*~~7All private land within t~~*T*he Long Valley Nature Park~~ will be resumed by the Government for future management under~~ ***is under construction and will be managed by*** the ~~Agriculture, Fisheries and Conservation Department (~~AFCD~~)~~. As the ecological value of this area is closely related to the existing farming practice, the Nature Park ~~may~~ **will** allow such practice based on guidelines and requirements to be prescribed by the Government. ~~The Civil Engineering and Development Department (CEDD) in consultation with AFCD will formulate a management plan~~ ***A Habitat Creation and Management Plan was formulated*** for this area to holistically protect and enhance the ***ecological value of*** ~~habitats in~~ the Nature Park. As filling of land/pond and excavation of land may affect the wetland habitat and the ecological value of the area, permission from the Board is required for such activities.

<u>District Cooling System</u>

12.*7*~~8~~.1*7*~~8~~A site of about 2.3 ha in the south-western end of the ~~Kwu Tung North~~***KTN*** NDA in Planning Area 27 is designated as "OU" annotated "District Cooling System" for ~~a plant for~~ ***Phase 2 of the*** district cooling system ***plant (Phase 1 of the plant is at a "G/IC" site in Area 24)*** to provide chilled water to buildings planned for non-residential purpose. Developments in this zone are subject to further study and a maximum building height of 35mPD.

<u>Railway Associated Facilities</u>

12.*7*~~8~~.1*8*~~9~~A few sites near the proposed ~~Kwu Tung~~ railway station ***at Kwu Tung*** and along the existing Lok Ma Chau Spur Line in Planning Areas 25, 27 and 35 are designated as "OU" annotated "Railway Associated Facilities" for the existing and planned railway associated facilities. Two sites in Planning Area 25 are for ***entrances and related facilities*** ~~the planned ventilation and plant room~~ for the proposed ~~Kwu Tung~~ railway station ***at Kwu Tung***. ***Their boundary is subject to change, pending the design of the station.*** The other two sites in Planning Areas 27

and 35 accommodate the existing emergency access point of the Lok Ma Chau Spur Line.

Petrol Filling Station

12.*7*~~8~~.*19*~~20~~A site of about ~~0.1~~ *0.07* ha along the Castle Peak Road Kwu Tung Section in the south-eastern part of the NDA is designated as "OU" annotated "Petrol Filling Station" for a petrol filling station with liquefied petroleum gas filling facilities serving the needs of the local residents as well as the general public. Development in this zone is subject to a maximum building height of 20mPD.

Sewage Pumping Station

12.*7*~~8~~.2*0*~~1~~Two sites with a total area of 0.3*5*~~4~~ ha, one on the western bank of the Sheung Yue River in Planning Area 35 and the other at the northern end of the Area near Ma Tso Lung in Planning Area 1, are designated as "OU" annotated "Sewage Pumping Station" for collecting sewage flows from the NDA and pumping the sewage to the SWH STW. Developments in the sites in Planning Areas 1 and 35 are subject to a maximum building height of 20mPD and 15mPD respectively.

Firing Range

12.*7*~~8~~.2*1*~~2~~Two sites of about 5.2 ha currently occupied by the Lo Wu Firing Range and Ma Tso Lung Firing Range in Planning Area 3 are designated as "OU" annotated "Firing Range". Developments in this zone are subject to a maximum building height of two storeys. ***The facilities are going to be relocated to Kong Nga Po upon completion of the facilities therein.***

Amenity Area

12.*7*~~8~~.2*2*~~3~~"OU" annotated "Amenity Area" are indicated on the Plan. Amenity areas with a total area of about ***6.39*** ~~***2*** 6.86~~ ha are provided along the major road links to enhance the environment and to serve as visual buffers. The amenity areas in Planning Area 27 along Fanling Highway and along Road P2 in Planning Area 37 will provide an essential landscaped link. The Earth God Shrine of Kam Tsin (Grade 2 historic building) will be integrated into the amenity area in 38. ~~Some of the amenity areas would be incorporated into the HOS/PRH developments to allow greater design flexibility and better layout planning.~~

12.*7*~~8~~.2*3*~~4~~To provide flexibility for innovative design adapted to the characteristics of particular sites, minor relaxation of the plot ratio and/or building height restrictions stated above may be considered by the Board on application under section 16 of the Ordinance. Each application will be considered on its individual merits.

12.*7*~~8~~.2*4*~~5~~ Under exceptional circumstances, for developments and/or redevelopments on the "Mixed Use" in Planning Area 30 and the "Business and Technology Park" in Planning Areas 31~~, 32~~ and 33, minor relaxation of the NBA restrictions as shown on the Plan may be considered by the Board on application under section 16 of the Ordinance.

12.*8*~~9~~ "Agriculture" ("AGR") : Total Area 45.86 ~~9~~ ha

12.*8*~~9~~.1 This zone is intended primarily to retain and safeguard good quality agricultural land/farm/fish ponds for agricultural purposes. It is also intended to retain fallow arable land with good potential for rehabilitation for cultivation and other agricultural purposes.

12.*8*~~9~~.2 The southern portion of the Long Valley in Planning Area 40 are predominately dry active agricultural land intermixed with abandoned farmland/grassland, fruit trees and squatter huts. The areas are designated as "AGR" to allow the continuation of the existing farming practices. With basic agricultural infrastructure, including irrigation facilities, fallow arable land can be rehabilitated for agricultural purpose. The "AGR" zoning would also provide a buffer for the Long Valley to its north.

12.*8*~~9~~.3 Except as otherwise provided in the Notes of this Plan, filling of land/pond may cause adverse drainage and environmental impacts on the areas, permission from the Board is required for such activities. However, filling of land specifically required under prior written instructions of Government department(s) or for the purposes of genuine agricultural practice including laying of soil not exceeding 1.2m in thickness for cultivation, and construction of agricultural structure with prior written approval from the Lands Department is exempted from the control.

12.*8*~~9~~.4 For land designated "Agriculture (1)" ("AGR(1)"), the planning intention is primarily to retain and safeguard the agricultural land/farm/fish ponds for agricultural purposes and to serve as a buffer to give added protection to the Long Valley Nature Park. This zone includes areas located to the north of the Long Valley Nature Park which is at present predominantly under active agricultural use. The area is under the direct flight path of birds from Ho Sheung Heung egretry to Long Valley. Its ecological value is closely related to the current farming practice in the area.

12.*8*~~9~~.5 In order to minimise adverse impacts on fauna in the Long Valley and fragmentation impacts on the flight-lines between Ho Sheung Heung Egretry and Long Valley, appropriate planning control would be exercised in the "AGR(1)" zone.

Uses related to agricultural uses and rural facilities serving the local community such as agricultural use, on farm domestic structure, public convenience, rural committee/village office, etc. are always permitted. Only a selective range of uses serving the local village and village development such as government refuse collection point, house (NTEH only) may be permitted on application to the Board. In considering the planning application, due consideration should be paid to the ecological resources within the area. Land use proposals that would have adverse drainage, environmental and ecological impacts to the area should not be permitted. Any filling of land/pond may cause adverse drainage and environmental impacts on the areas. Permission from the Board is required for such activities.

12.*9*~~10~~ "Green Belt" ("GB") : Total Area *12*5.3*7*4 ha

12.*9*~~10~~.1 The planning intention of this zone is primarily for defining the limits of development areas, to preserve existing natural features, as well as to provide passive recreational outlets for the local population and visitors. There is a general presumption against development within this zone. However, limited developments may be permitted with or without conditions on application to the Board, and each application will be considered on its individual merits taking into account the relevant Town Planning Board Guidelines.

12.*9*~~10~~.2 The land area where Ma Tso Lung Stream is located in Planning Areas 2 and 8 is designated as "GB" to protect the habitats for wildlife associated with the Ma Tso Lung Stream. Areas with mature vegetation and/or hilly terrain have also been designated as "GB" to protect existing green areas and preserve the hilly terrain as a green backdrop to the ~~Kwu Tung North~~*KTN* NDA. Moreover, Fung Shui woodlands at Planning Area 16 are also designated as "GB" which are of landscape and ecological value. Compensatory planting areas are proposed in the "GB" zone in Planning Areas 5 and 7. Areas of recognised burial grounds are also incorporated into this land use zone.

12.*9*~~10~~.3 As diversion of stream, filling of land/pond or excavation of land may cause adverse drainage impacts on the areas and adverse impacts on the natural environment, permission from the Board is required for such activities.

13. COMMUNICATIONS

To support the development of ~~Kwu Tung North~~*KTN* NDA, a number of improvements to the existing road network are necessary. The traffic impacts of the NDA developments have been assessed. With the implementation of the proposed improvement works, no adverse traffic impact is envisaged.

13.1 Road Network (**Figure *6*~~7~~**)

13.1.1 ~~Kwu Tung North~~***KTN*** NDA will be connected with different parts of Hong Kong and surrounding areas by a comprehensive road network. The major road networks within the Area including trunk roads, ***primary distributors,*** district distributors and local distributors.

13.1.2 Regarding the trunk road, Fanling Highway serves to provide a convenient route linking ~~Kwu Tung North~~***KTN*** NDA to other parts of the New Territories. It is also the major trunk route for the cross-boundary traffic through Lok Ma Chau, Man Kam To and Sha Tau Kok. To improve weaving difficulty emerging from the new road scheme for ~~Kwu Tung North~~***KTN*** NDA, Fanling Highway will be widened between San Tin Interchange and Po Shek Wu Interchange from dual 3-lane to dual 4-lane or 5-lane depending on the section of Fanling Highway. The existing Castle Peak Road – Kwu Tung Section will also be shifted northward to make way for the road widening.

13.1.3 Regarding the primary distributor, there are two primary distributors, namely P1 and P2. Both of the primary distributors are in dual 2-lane configuration. The eastern primary distributor road P2 is connected to Fanling Highway via a grade-separated interchange near Yin Kong while the western primary distributor road P1 will be connected to the Fanling Highway via a pair of slip roads near Pak Shek Au.

13.1.4 Regarding the district distributor, there are five district distributors, namely Road D1, Road D2, Road D3, Road D4 and Road D5. Road D1 and D2 will provide direct connectivity between the diverted Castle Peak Road and ~~Kwu Tung North~~ ***KTN*** NDA. Road D3 will provide the east-west connectivity between the two primary distributor roads (P1 and P2) whereas Road D4 and D5 will connect the Kwu Tung North town centre to the future developments in Lok Ma Chau Loop via the proposed ~~r~~**R**oad R1.

13.1.5 Local distributor roads are designed for single 2-lane configuration, and will branch off from the distributor roads for access to the proposed new developments and existing indigenous villages. ~~Cul-de-sacs will be introduced in the local distributor roads south of the proposed Kwu Tung railway station to allow east-west through traffic to be effectively diverted away from the town centre.~~

13.1.6 Amenity strips are provided alongside roads to enhance the amenity and to serve as visual buffers. They also offer good opportunities for landscaping and tree planting***, as well as utility facilities***. Some amenity strips are incorporated into the area shown as ‘Road’ on the Plan.

13.2 Railway

13.2.1 The proposed ~~Kwu Tung~~ railway station ***at Kwu Tung*** on the Lok Ma Chau Spur Line, extending from Sheung Shui Station westwards to the Lok Ma Chau Terminal, provides convenient mass transit link between the ~~Kwu Tung North~~***KTN*** NDA and other parts of the territory. The NOL ~~as proposed in the RDS-2014~~ will connect the Kam Sheung Road Station on the existing ~~West Rail~~ ***Tuen Ma*** Line and the proposed ~~Kwu Tung~~ ~~S~~**railway** ***s***tation ***at Kwu Tung*** on the Lok Ma Chau Spur Line, enhancing east-west connectivity, serving the KTN NDA, facilitating cross-boundary movements and relieving the overloading problem of East Rail Line. Flexibility shall also be provided for extending the NOL to serve the potential developments in the New Territories in future, subject to further study.

13.2.2 The proposed ~~Kwu Tung~~ railway station ***at Kwu Tung*** will be located at the Town Centre of ~~Kwu Tung North~~***KTN*** NDA. This will encourage residents to use mass transport and reduce the demand for road traffic.

13.3 Public Transport

~~A~~***Three*** PTI**s** ~~of not less than 6,000m^2~~ will be provided in Planning Area**s** ***12, 23 and*** 25 to provide bus/Green Minibus services. Taxi pick-up and drop-off bays would also be provided in the PTI**s**.

13.4 Pedestrian and Cycling Track Connections (**Figures *4*~~5~~ & *5*~~6~~**)

13.4.1 The proposed footpaths and cycle tracks will link up major activity nodes, including the proposed railway station, PTI***s***, residential areas, open spaces and recreational facilities in the ~~Kwu Tung North~~***KTN*** NDA. To the east and west, it will link with the ***existing*** cycle track networks ~~proposed under the 'Cycle Track Networks in the Northwest and Northeast New Territories'~~ and the planned cycle track network in the Fanling North NDA.

13.4.2 Convenient cycle parking facilities will be provided near major destinations including proposed railway station, PTI***s***, major residential areas and open spaces.

13.4.3 The north-south and east-west ***landscaped*** open space corridor across ~~Kwu Tung North~~***KTN*** NDA will provide a comfortable walking environment for the pedestrian and connect to the ~~future~~ ***proposed*** ~~Kwu Tung~~ railway station ***at Kwu Tung***. At the south, five footbridges ~~and a subway~~ are provided to enhance the connectivity between the ~~Kwu Tung North~~***KTN*** NDA with the Kwu Tung South area. At the east, footpath to villages such as Yin Kong and Ho Sheung Heung will also be provided/maintained. Three footbridges are also proposed across the Sheung Yue River, linking Long Valley and the ~~rest~~

eastern part of ~~Kwu Tung North~~***KTN*** NDA.

14. UTILITY SERVICES

14.1 Drainage

14.1.1 The Area is mainly located within the catchment area of Sheung Yue River except a small area in the west which falls within the San Tin Basin. The majority of the catchment area drains to Sheung Yue River and Shek Sheung River, with a small area to the Chau Tau Channel. The existing drainage pattern will generally be retained under the NDA development.

14.1.2 New storm water drainage system in the form of a gravity piped drainage system will be provided within the development sites to convey storm water runoff to the downstream watercourses following the existing catchment delineation. The drainage system will be laid along the main roads within the Area.

14.2 Sewage and Sewage Treatment

Sewage flows from the Area will be collected through gravity sewer at the proposed Sewage Pumping Station in Planning Area 35 on the west of Sheung Yue River, from where it will be pumped to the extension/upgrade of SWH STW through a rising main. The rising main will be routed along the cycle track parallel to the western bank of Sheung Yue River before crossing underneath the Shek Sheung River and the MTR east rail track and connected to the SWH STW. The existing SWH STW is proposed to be expanded and upgraded. In addition, a sewage pumping station in Planning Area 1 at the north-western end of the Area is proposed for the collection and pumping of sewage.

14.3 Water Supply

14.3.1 ~~The Area will be either served by Au Tau WTW or Ngau Tam Mei WTW by integrating the supply networks.~~ ***A new fresh water service reservoir and a*** ~~A~~ new flushing water service reservoir in Planning Area 5 will be provided ***to serve KTN NDA.*** ~~if either treated sewage effluent or fresh water is used for flushing.~~

14.3.2 Water mains will run transversely through the Area in a north-eastern direction and a number of water mains within the Area will be diverted. The diversion works will be incorporated into the road works.

14.4 Electricity

A new 132kV bulk infeed substation (BIS) ~~is proposed~~ ***will be provided*** in the ~~Kwu Tung North~~***KTN*** NDA in Planning Area 29. ***Another***

substation is planned at the northern part of the NDA at Area 4. ~~For power infeed of this station, 132kV power lines from the existing Fanling BIS are proposed. Existing 132kV underground cables from Fanling BIS, running along the Castle Peak Road, shall be diverted upon road reconstruction. New 132kV underground cables are proposed to be connected from the diverted 132kV underground cables in Castle Peak Road to the new Kwu Tung North BIS. In addition, 132kV power lines are proposed between the proposed Kwu Tung North 132kV BIS and Fanling North 132kV primary substation as the backup supply to each other.~~

14.5 Gas

The existing gas supply for Kwu Tung, Fanling and Sheung Shui is provided by the Hong Kong and China Gas Company Limited from the two existing offtake stations, namely Fanling West Offtake Station and Fanling East Offtake Station. Gas is supplied from the Tai Po Gas Production Plant to the two offtake stations through high pressure gas pipes and then medium pressure gas pipes outfeed from the offtake stations.

14.6 Telecommunications

Telecommunications cables will be laid along the proposed roads and distributed to the development sites. Optic fibres cables can be branched off from the existing network along Castle Peak Road and Ho Sheung Heung Road.

15. CULTURAL HERITAGE

15.1 Several areas with high or medium archaeological potential are located in Fung Kong, Ho Sheung Heung, Pak Shek Au, Tsung Pak Long, the sloping areas at the north-west of the Lo Wu Correctional Institution and at the east of Lo Wu Firing Range, Ma Tso Lung and Tit Hang. A declared monument and a number of graded historic buildings are identified in the Area, including the Hau Ku Shek Ancestral Hall (Declared Monument), Enchi Lodge (Grade 2), The Earth God Shrine of Kam Tsin (Grade 2), Hung Shing Temple and Pai Fung Temple (Grade 3), Sin Wai Nunnery (Grade 3), Yan Wah Lo (Grade 3) and Yeung Yuen (Grade 3). All the above archaeological potential areas, declared monument and graded historic buildings/structures are worthy of preservation. The Antiquities and Monuments Office (AMO) of the ***Development Bureau (DEVB)*** ~~Leisure and Cultural Services Department (LCSD)~~ should be consulted on any development or redevelopment proposals which might affect these buildings/structures and archaeological potential areas or jeopardise the integrity of these buildings/structures and archaeological potential areas and their immediate environs.

15.2 The Antiquities Advisory Board (AAB) also released a list of new items in addition to the list of 1,444 historic buildings. These items are

subject to grading assessment by the AAB. Details of the list of 1,444 historic buildings and the new items have been uploaded onto the official website of the AAB at http://www.aab.gov.hk.

15.3 Prior consultation with the AMO of the ***DEVB***~~LCSD~~ should be made if any development, redevelopment or rezoning proposals might affect the above graded historic building/structure, new items pending grading assessment***, any other historic buildings/structures identified and their immediate environs, both at grade and underground,*** or areas with high or medium archaeological potential and their/its immediate environs.

16. PLANNING CONTROL

16.1 The types of permitted developments and uses within the Area are listed in the Notes to the Plan. Unless otherwise specified, all building, engineering and other operations incidental to and all uses directly related and ancillary to the permitted developments and uses within the same zone are always permitted and no separate permission is required.

16.2 For any land or building falling within the boundaries of this Plan and also previously falling within the boundaries of the 'IDPA area' or the 'DPA area', whichever the case may be –

(a) uses of land or building as defined under paragraphs (3)(a) and (3)(b) of the covering Notes and which are not in compliance with the terms of the Plan may have adverse impact on the environment, drainage and traffic of the area. Although no action is required to make such use conform to this Plan, any material change of such use or any other development (except minor alteration and/or modification to the development of the land or building in respect of such use which is always permitted) must be always permitted in terms of the Plan or, if permission is required, in accordance with a permission granted by the Board. The Board will consider these applications on their individual merits. Those alteration and/or modification works which may lead to an environmental improvement or upgrading to the Area may be considered favourably by the Board;

(b) any development, other than those referred to the above paragraph or in conformity with this Plan or with the permission of the Board, undertaken or continued on or after 17 August 1990 on land included in a plan of the Kwu Tung North IDPA, or on or after 30 July 2010 on land included in a plan of the Ma Tso Lung and Hoo Hok Wai DPA, may be subject to enforcement proceedings under the Ordinance. Any diversion of streams, filling of land/pond and excavation of land in the relevant zones on or after the exhibition of the specific plan referred to in the Notes of the relevant zones without the permission from the Board may also be subject to enforcement proceedings.

16.3 For any land or building falling within the boundaries of this Plan but

not previously falling within the 'IDPA area' or the 'DPA area', no action is required to make the existing use of such land or building conform to this Plan, until there is a material change of use or the building is redeveloped. Any material change of such use or any other development (except minor alteration and/or modification to the development of the land or building in respect of such use which is always permitted) must be always permitted in terms of the Plan or, if permission is required, in accordance with a permission granted by the Board. The Board has published a set of guidelines for the interpretation of existing use in the urban and new town areas. Any person who intends to claim an 'existing use right' should refer to the guidelines and will need to provide sufficient evidence to support his claim. The enforcement of the zoning control mainly rests with the Buildings Department, the Lands Department and the various licensing authorities.

16.4 Planning applications to the Board will be assessed on individual merits. In general, the Board, in considering the planning applications, will take into account all relevant planning considerations which may include the departmental outline development plans and layout plans, and guidelines published by the Board. The outline development plans and layout plans are available for public inspection at the Planning Department. Guidelines published by the Board are available from the Board's website, the Secretariat of the Board and the Technical Services Division of the Planning Department. Application forms and Guidance Notes for planning application can be downloaded from the Board's website and are available from the Secretariat of the Board, and the Technical Services Division and relevant District Planning Offices of the Planning Department. Applications should be supported by such materials as the Board thinks appropriate to enable it to consider the applications.

17. IMPLEMENTATION

17.1 To achieve early delivery of land to meet the housing needs and ensure timely provision of a comprehensive range of commercial, retail, open space and G/IC facilities in tandem with the population build-up, an implementation programme with proper phasing and packaging of works for the NDA development has been formulated. ~~Detailed design for site formation and engineering infrastructural works for part of the housing development and supporting facilities included in the Advance Works Package has commenced in 2014, to enable~~ ***Site formation and engineering infrastructure works of the First Phase commenced in 2019***. ***The site formation and engineering infrastructure works of the Remaining Phase is scheduled for commencement in 2024 and for completion in 2031.*** ~~construction to start in 2018 and~~ ***The*** first population intake in ***the KTN NDA is anticipated in 2025***~~2023~~. ~~Allowing modification of lease (including in-situ land exchange) may help advance the first population intake to 2022. Other major works will start after the commencement of the advance works and the development of the Kwu Tung North NDA is expected to be fully~~

~~completed by 2031.~~

17.2 The Government will resume and clear the private land planned for public works projects, public and private developments, carry out site formation works, and provide infrastructure before allocating land for various purposes, including disposal of land planned for private developments in the market. Land formation and the provision of infrastructure will be implemented in accordance with the development programme prepared by the CEDD. Open space, schools, social welfare and other community facilities will be constructed by the appropriate Government departments on the basis of the Capital Works Programme, School Building Programme and other Public Works Programme. PRH and ***SSF*** ~~HOS~~ housing together with the supporting facilities will be built by the HD in accordance with the Public Housing Development Programme and other relevant agents. Flexibility will be provided for modification of lease including in-situ land exchange applications meeting a set of criteria by specified deadlines having regard to the phased development of the NDA~~s~~.

17.3 The OZP provides a broad land use framework within which a more detailed departmental Outline Development Plan (ODP) has been prepared in consultation with Government departments concerned. The ODP is a non-statutory plan which will be used as the basis for public works planning and site reservation purpose. It includes information on detailed land uses, development parameters and boundaries of individual sites, green coverage, waterworks and drainage reserves, site formation levels, road alignment and dimensions, location of pedestrian facilities, public utility facilities as well as other building and engineering requirements. These should generally be followed in land transactions and allocations. In particular, the OZP together with the ODP, where appropriate, will serve as the basis for processing the lease modification applications (including in-situ land exchange) subject to specified criteria promulgated by the Government.

Index of Figures (All figures are for indicative purpose only)

Figure 1 – ***Previous ~~OZPs~~ statutory plans covering*** Kwu Tung North Outline Zoning Plan ***Area*** ~~No. S/KTN/1~~
~~Figure 2 Planning Scheme Area of the Kwu Tung North Outline Zoning Plan~~
Figure ***2***~~3~~ – Planning Areas
Figure ***3***~~4~~ – Urban Design and Landscape Framework
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TOWN PLANNING BOARD
~~**JUNE 2015**~~
XXXX 2022

Provision of Major Community Facilities and Open Space in Kwu Tung North OZP
(Based on planned population in KTN OZP of 139,700)

Type of Facilities	Hong Kong Planning Standards and Guidelines (HKPSG)	Require-ment based on OZP planned population	Provision		Surplus/ Shortfall against planned provision
			Existing Provision	Planned Provision (including Existing Provision)	
District Open Space	10 ha per 100,000 persons	13.97 ha	0 ha	18.75 ha	+4.78 ha
Local Open Space	10 ha per 100,000 persons	14.49 ha (include demand of specified workers)	1.08 ha	14.9 ha	+0.41 ha
Sports Centre	1 per 50,000 to 65,000 persons (assessed on a district basis)	2	0	2	0
Sports Ground/ Sport Complex	1 per 200,000 to 250,000 persons (assessed on a district basis)	0	0	1	+1
Swimming Pool Complex – standard	1 complex per 287,000 persons (assessed on a district basis)	0	0	1	+1
District Police Station	1 per 200,000 to 500,000 persons (assessed on a regional basis)	0	0	1	+1
Divisional Police Station	1 per 100,000 to 200,000 persons (assessed on a regional basis)	0.7	0	1	+0.3
Magistracy (with 8 courtrooms)	1 per 660,000 persons (assessed on a regional basis)	0	0	0	0

Type of Facilities	Hong Kong Planning Standards and Guidelines (HKPSG)	Require-ment based on OZP planned population	Provision		Surplus/ Shortfall against planned provision
			Existing Provision	Planned Provision (including Existing Provision)	
Community Hall	No set standard	N.A.	0	2	N.A.
Library	1 district library for every 200,000 persons (assessed on a district basis)	0.7	0	1	+0.3
Kindergarten/ Nursery	34 classrooms for 1,000 children aged 3 to 6	100 classrooms	7 classrooms	96 classrooms	-4 classrooms
Primary School	1 whole-day classroom for 25.5 persons aged 6-11 (assessed by EDB on a district/school network basis)	209 classrooms	0 classroom	180 classrooms (advised by EDB)	-29 classrooms
Secondary School	1 whole-day classroom for 40 persons aged 12-17 (assessed by EDB on a territory-wide basis)	157 classrooms	0 classroom	120 classrooms (advised by EDB)	-37 classrooms
Hospital	5.5 beds per 1,000 persons (assessed by Hospital Authority on a regional/cluster basis)	768 beds	0 bed	1,600 beds	+832 beds
Clinic/Health Centre	1 per 100,000 persons (assessed on a district basis)	1	0	1	0

Type of Facilities	Hong Kong Planning Standards and Guidelines (HKPSG)	Require-ment based on OZP planned population	Provision		Surplus/ Shortfall against planned provision
			Existing Provision	Planned Provision (including Existing Provision)	
Child Care Centre	100 aided places per 25,000 persons (assessed by SWD on a local basis)	559	0	400	-159#
Integrated Children and Youth Services Centre	1 for 12,000 persons aged 6-24 (assessed by SWD on a local basis)	2	0	2	0
Integrated Family Services Centre	1 for 100,000 to 150,000 persons (assessed by SWD on a service boundary basis)	1	0	1	0
District Elderly Community Centres	One in each new development area with a population of around 170,000 or above (assessed by SWD)	1	0	1	0
Neighbourhood Elderly Centres	One in a cluster of new and redeveloped housing areas with a population of 15,000 to 20,000 persons, including both public and private housing (assessed by SWD)	7	0	0	-7#
Community Care Services (CCS) Facilities	17.2 subsidised places per 1,000 elderly persons aged 65 or above (assessed by SWD on a district basis)	593 places	11 places	224 places	-369# places

Type of Facilities	Hong Kong Planning Standards and Guidelines (HKPSG)	Require-ment based on OZP planned population	Provision		Surplus/ Shortfall against planned provision
			Existing Provision	Planned Provision (including Existing Provision)	
Residential Care Homes for the Elderly	21.3 subsidised beds per 1,000 elderly persons aged 65 or above (assessed by SWD on a cluster basis)	804 beds	0 bed	1,514 beds	+710 beds
Pre-school Rehabilitation Services	23 subvented service places for every 1,000 children aged 0-6 (assessed by SWD on a district basis)	299 places	0 place	60 places	-239# places
Day Rehabilitation Services	23 subvented service places for every 10,000 persons aged 15 or above (assessed by SWD on a district basis)	261 places	0 place	250 places	-11 places
Residential Care Services	36 subvented service places for every 10,000 persons aged 15 or above (assessed by SWD on a cluster basis)	408 places	160 places	850 places	+442 places
Community Rehabilitation Day Centre	1 centre for every 420,000 persons (assessed by SWD on a district basis)	0	0	1	+1
District Support Centre for Persons with Disabilities	1 centre for every 280,000 persons (assessed by SWD on a district basis)	0	0	1	+1

Type of Facilities	Hong Kong Planning Standards and Guidelines (HKPSG)	Require-ment based on OZP planned population	Provision		Surplus/ Shortfall against planned provision
			Existing Provision	Planned Provision (including Existing Provision)	
Integrated Community Centre for Mental Wellness	1 standard scale centre for every 310,000 persons (assessed by SWD on a district basis)	0	0	0	0

Remark:

The planned social welfare facilities in KTN NDA are based the demand of Social Welfare Department (SWD). All demand for social welfare facilities from SWD are reserved in public housing sites or "G/IC" sites. The deficit in provision is based on OZP planned population while SWD adopts a wider spatial context/cluster in the assessment of provision of such facility. In applying the population-based planning standards, the distribution of welfare facilities, supply in different districts, service demand as a result of the population growth and demographic changes as well as the provision of different welfare facilities have to be considered. As the HKPSG requirements for these facilities are a long-term goal, the actual provision will be subject to consideration of the SWD in the planning and development process as appropriate. The Government has been adopting a multi-pronged approach with long-, medium- and short-term strategies to identify suitable sites or premises for the provision of more welfare services which are in acute demand.

Proposed Amendments Shown on the draft KTN OZP No. S/KTN/2A

Item A1 Rezoning of a site (about 2 ha) at Area 32 from "OU(BTP)" to "R(B)1" with a maximum plot ratio of 4.2 and a maximum building height of 75mPD.

Item A2 Rezoning of a strip of land (about 1,680m^2) at Area 32 from "OU(BTP)" or "OU(A)" to area shown as 'Road' to reflect the revised Road D2.

Item B1 Rezoning of a site (about 0.94 ha) at Area 34 from "OU(BTP)1" to "R(B)1" with a maximum plot ratio of 4.2 and a maximum building height of 70mPD.

Item B2 Rezoning of a strip of land (about 365m^2) at Areas 34 and 35 from mainly "OU(BTP)1" and "G/IC" to "O" to reflect the existing condition.

Item C Revision of the building height restriction of a "G/IC" site (about 2.1 ha) at Area 29 from 8/10 storeys to 130mPD for a proposed government office/community complex.

Item D1 Revision of the building height restriction of a "G/IC" site (about 4 ha) at Area 28 from 10 storeys to 130mPD for a proposed hospital development.

Item D2 Rezoning of a strip of land (about 0.34 ha) at Area 28 from "OU(A)" to "G/IC" with a maximum building height of 130mPD to form a part of the planned hospital site.

Item E1 Revision of the building height restriction of a "G/IC" site (about 2.27 ha) at Area 9 from 20 storeys to 130mPD for the proposed police station and staff quarters.

Item E2 Rezoning of a strip of land (about 980m^2) at Area 9 from area shown as 'Road' to "G/IC(2)" with a maximum building height of 130mPD to form a part of the planned police facility site.

Item F1 Rezoning of a small piece of land (about 870m^2) at Area 35 from "G/IC" to "OU(Sewage Pumping Station)" for expansion of the adjoining sewage pumping station.

Item F2 Rezoning of two small pieces of land (about 705m^2) at Area 35 from "G/IC", "OU(SPS)" or "O" to "OU(Railway Associated Facilities)" to reflect the above ground existing railway facility.

Item G1 Rezoning of a piece of land (about ~~0.86~~ ***0.7*** ha) near Yin Kong village from "CDA" to "R(B)2" with a maximum plot ratio of 3 and a maximum building height of 55mPD.

Item G2 Rezoning a piece of land (about 0.86 ha) near Yin Kong village from "CDA" to "R(C)1" with a maximum plot ratio of 1.1 and a maximum building height of 3 storeys (8.23m).

~~Item H1 to H3~~

~~Rezoning of five pieces of land from "CDA" (**H1**) (about 660m^2), "V" (**H2**) (about 180m^2), "O" (about 360m^2) or "OU(Nature Park)" (**H3**) (about 100m^2) to area shown as 'Road' to reflect the revised alignment of Yin Kong Road.~~

Item H4***1*** Rezoning of a piece of land from area shown as 'Road' to "OU(Nature Park)" (about ~~220~~***320***m^2) to reflect the revised alignment of Yin Kong Road.

Item H5***2*** Rezoning of three pieces of land from "OU(A)" or 'Road' to "O" (about 890m^2) to reflect the revised alignment of Yin Kong Road.

Item J1 Rezoning of ~~six~~ ***two*** pieces of land ~~(about 1,090m^2)~~ from "OU(PFS)", "OU(BTP)", "G/IC" or "O" to 'Road' or "OU(A)" ***(about 1,060m^2)***, and ~~a piece of land (60m^2)~~ from "G/IC"***/ "OU(PFS)"*** to "O"***/ "OU(BTP)"*** **respectively** ***(total 90m^2)*** to reflect the revised Kwu Tung Interchange.

Item J2 Rezoning of a piece of land (about 460m^2) from "OU(BTP)" or "OU(A)" to "OU(PFS)".

Item J3 Rezoning of a piece of land (about 850m^2) from "O" to "G/IC".

Item K1 Rezoning of a piece of land from "R(B)" (about 2,640m^2) or "O"

(about 730m^2) to area shown as 'Road' to reflect the proposed extension of Road L4.

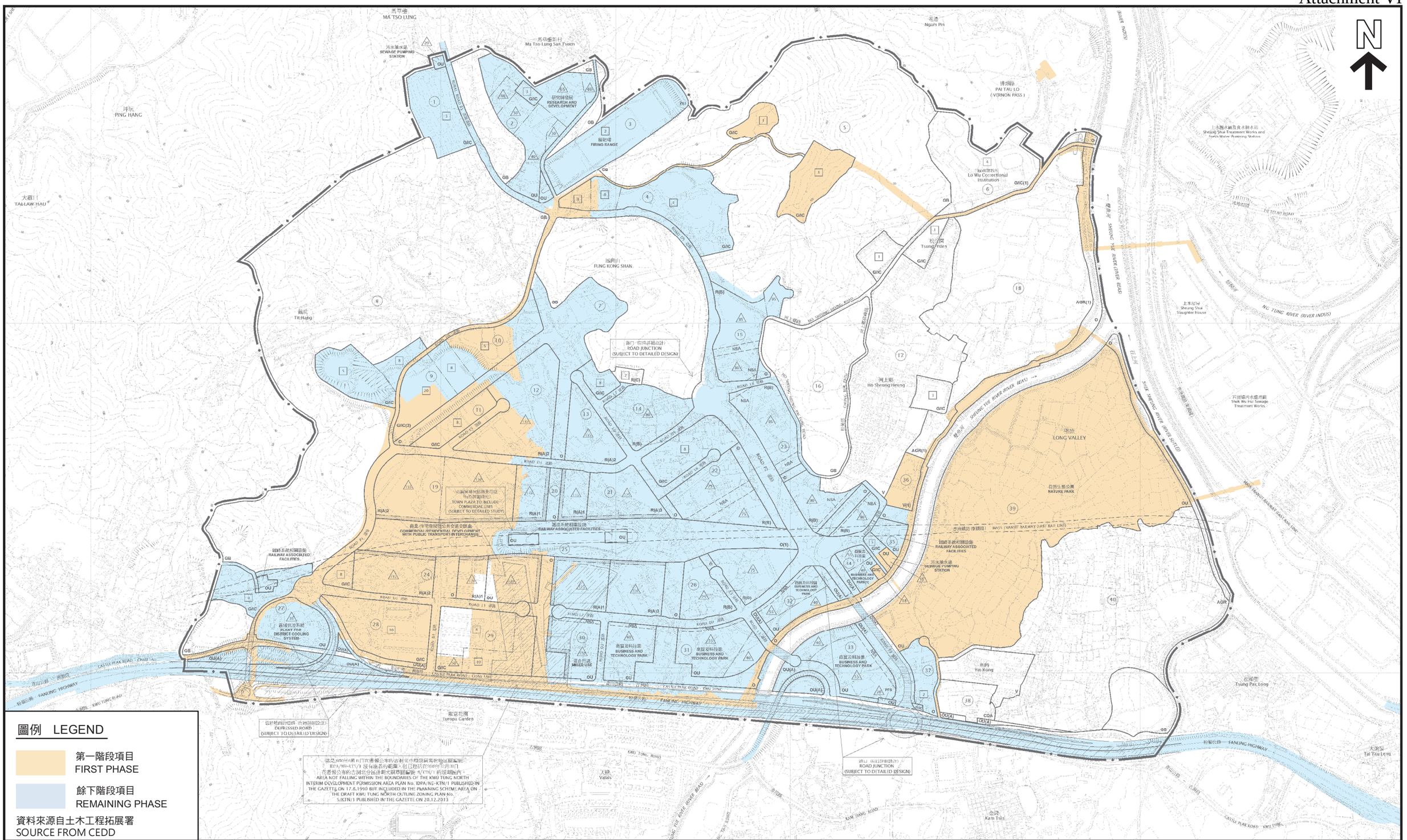
Item K2 Rezoning of a piece of land from "R(B)", "O" or 'Road' to "V" (about 1,820m^2) or "V(1)" (about 170m^2) and a piece of land from 'Road' to "O" (about 120m^2) to reflect the proposed extension of Road L4.

Item L1 Rezoning of a small piece of land from area shown as 'Road' to "O" (about 620m^2).

Item L2 Rezoning of a piece of land along Ho Sheung Heung Road from "R(B)" (about 660m^2) and "O" (about 370m^2) to area shown as 'Road'.

Items M1 and M2
Rezoning of a strip of land from area shown as 'Road' to "GB" (**M1**) (about 330m^2) and "G/IC" (**M2**) (about 1,080m^2).

Item M3 Rezoning of a piece of land (about 1,840m^2) from "G/IC" to 'Road'.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MA TSO LUNG
污水抽水站
SEWAGE PUMPING STATION
馬草壟新村
Ma Tso Lung San Tsuen
研究與發展
RESEARCH AND DEVELOPMENT
GB
G/IC
OU
坪坑
PING HANG
大欖口
TAI LAM HAU
靶場
FIRING RANGE
CDA
R(B)
鳳崗山
FUNG KONG SHAN
道路交匯處(須作詳細設計)
ROAD JUNCTION (SUBJECT TO DETAILED DESIGN)
R(C)
NBA
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ROAD 15 路15
ROAD 17 路17
ROAD 18 路18
ROAD 19 路19
ROAD 20 路20
ROAD 21 路21
ROAD 22 路22
ROAD P2 路P2
R(A)2
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(資料來源:申請人於 15. 10. 2021 呈交的資料)
(Source : Applicant's Submission of 15.10.2021)

參考編號 REFERENCE No.	繪圖 DRAWING
Y/KTN/2	Z-1

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C	Water Supply Impact Assessment
D	Drainage Impact Assessment
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H	Air Ventilation Assessment Initial Study Report

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Appendix A

Traffic and Transport Impact Assessment

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1 INTRODUCTION

1.1 Background

1.1.1 This purpose of this assessment is to review the traffic and transport impacts arising from the proposed minor relaxation of plot ratio and building height restriction for 5 public housing sites and 14 private housing sites and the proposed OZP amendment in Kwu Tung North New Development Area (KTN NDA) Remaining Phase on the transport infrastructure/networks (including both roads and railways). The adequacy of the existing and planned transport system, and the requirements for capacity improvements or enhancement which will contribute to the feasibility of the development will also be reviewed and reported.

1.1.2 The planned population after relaxation of development restrictions are summarized in **Table 1.**

Table 1 Planned Population and Employment (After relaxation of development restrictions)

	Residential (Population)	Commercial (Employment)
KTN NDA	131,600	38,700 (Including GIC Facilities)
Non-NDA Residential Population	6,900	-
Total	**138,500**	**38,700**

2 PROPOSED KTN ROAD NETWORK

2.1 KTN NDA will be connected to different parts of Hong Kong and surrounding areas by a comprehensive road network. The major road networks within the NDA include primary distributors P1 and P2, district distributors D1, D2, D3, D4 and D5 and local and rural distributor roads branch off from the district distributor roads for access to development sites. Road P1 and Road P2 will be connected to Fanling Highway at Pak Shek Au Interchange and new Kwu Tung Interchange.

2.2 **Figures 2.1** to **2.5** shows the proposed road networks to support the latest development of KTN NDA. Road networks under Advanced and Remaining Phases will be tentatively completed by 2026 and 2031 respectively to suit the population programme accordingly.

2.3 The proposed roads for KTN NDA are summarized in **Table 2** and location plan is shown in **Figure 2.6.**

Table 2 Proposed Road for KTN NDA

Road	NDA Work Package
KTN Road P1	Advance Work
KTN Road P2	Remaining Work
KTN Road D1	Advance Work
KTN Road D2	Remaining Work
KTN Road D3	Remaining Work
KTN Road D4	Advance Work
KTN Road D5	Remaining Work
KTN Road L1	Advance Work
KTN Road L2	Remaining Work
KTN Road L3	Remaining Work
KTN Road L4	Remaining Work
KTN Road L5	Remaining Work
KTN Road L6	Remaining Work
KTN Road L7	Remaining Work
KTN Road L8	Remaining Work

2.4 Junction types for the junctions are list in **Table 3** and location plan is shown in **Figure 2.7.**

Table 3 Proposed Junction Type

No.	Junction	NDA Work Package	Type
KJ1A	Castle Peak Rd / KTN Road P1 / Pak Shek Au Interchange	Advance Work / Remaining Work	Roundabout
KJ1B	Kwu Tung Road / Pak Shek Au Interchange	Advance Work / Remaining Work	Roundabout
KJ13	KTN Road D2 / KTN Road P2 / KTN Road L4	Remaining Work	Roundabout
KJ14	KTN Road D5 / KTN Road L8 / KTN Road P2 / KTN Road D3	Remaining Work	Roundabout
KJ15	KTN Road P1 / KTN Road D1/ Fanling Hwy Slip Roads	Advance Work / Remaining Work	Roundabout
KJ16	KTN Road D1 / KTN Road L1	Advance Work	Signalised Junction
KJ17	KTN Road L2 / KTN Road D2	Remaining Work	Signalised Junction
KJ18	KTN Road D1 / Castle Peak Rd	Advance Work / Remaining Work	Priority Junction
KJ19	KTN Road D2 / Castle Peak Rd	Remaining Work	Priority Junction
KJ31	KTN Road P1 / KTN Road D4 / KTN Road D3	Advance Work	Signalised Junction
KJ32	KTN Road D3 / KTN Road L5	Remaining Work	Signalised Junction
KJ33	KTN Road D3 / KTN Road L6	Remaining Work	Signalised Junction
KJ34	KTN Road D2 / KTN Road L3	Remaining Work	Signalised Junction
KJ35	KTN Road D4 / KTN Road D5 / KTN Road R1	Advance Work / Remaining Work	Signalised Junction
KJ43	Castle Peak Road (Kwu Tung) / Yin Kong Road	Advance Work / Remaining Work	Priority Junction
KJ44	Castle Peak Road (Kwu Tung) / Kwu Tung Road	Remaining Work	Signalised Junction
KJ45	Kwu Tung Road / Kam Hang Road	Remaining Work	Priority Junction
KJ48	Road L3 / Kwu Tung Road	Remaining Work	Signalised Junction

3 REVIEW OF TRAFFIC IMPACT ASSESSMENTS

3.1 Two-tier traffic modelling approach has been adopted in this Study.

3.2 The design years 2026, 2031, 2036 and 2041 are adopted to examine the traffic impact by the revised development parameters as stated in the scope of this Study.

3.3 The performance of the key road links and key junctions are summarised in **Tables 4** and **5.**

3.4 As shown in **Table 4**, all assessed road links would have the V/C ratio below 0.85, except KL46 - San Tin Highway (west of LMC BCP).

3.5 From **Table 4**, V/C for the eastbound of KL46 - San Tin Highway (west of LMC BCP) will reach up to 0.90 in year 2036 and 0.96 in year 2041, V/C for the westbound of KL46 - San Tin Highway (west of LMC BCP) will reach up to 0.96 in year 2036 and 1.01 in year 2041.

3.6 For road link KL46 which have slightly exceeded V/C ratio 1.0 in year 2041, it is part of the strategic road network and there are no small-scale improvement schemes available that could increase the capacity of the road network. Yet, it is anticipated that the potential issues could be possibly relieved under holistic review by “Strategic Study on Railways beyond 2030” and latest relevant traffic studies related to the Northern Metropolis, and such additional sensitive analysis is currently beyond the scope of this study.

Table 4 Performance of Key Road Links in Design Years

Link	Road	Dir	Con-fig	Capacity (pcu/hr)	2026				2031				2036				2041			
					AM		PM		AM		PM		AM		PM		AM		PM	
					Flow (pcu)	V/C	Flow (pcu)	V/C	Flow (pcu)	V/C	Flow (pcu)	V/C	Flow (pcu)	V/C	Flow (pcu)	V/C	Flow (pcu)	V/C	Flow (pcu)	V/C
KL4	Fanling Highway (between Po Shek Wu and Kwu Tung North I/C)	EB	D3/ D5	6,100/10,300*	4,440	0.73	5,070	0.83	5,710	0.55	6,440	0.63	6,480	0.63	6,975	0.68	6,875	0.67	7,450	0.72
		WB	D3/ D5	6,100/10,300*	5,125	0.84	5,035	0.83	6,645	0.65	6,715	0.65	7,445	0.72	7,590	0.74	7,910	0.77	7,930	0.77
KL5	Fanling Highway (Kwu Tung North section)	EB	D3/ D4	6,100/8,200**	4,440	0.73	5,070	0.83	4,460	0.54	5,490	0.67	4,695	0.57	5,680	0.69	4,960	0.60	5,955	0.73
		WB	D3/ D4	6,100/8,200**	5,125	0.84	5,035	0.83	5,390	0.66	5,425	0.66	5,675	0.69	5,570	0.68	5,930	0.72	5,790	0.71
KL6	Fanling Highway (between San Tin and Kwu Tung North)	EB	D3/ D4	6,100/8,200**	3,750	0.61	4,630	0.76	4,830	0.59	5,795	0.71	5,270	0.64	6,210	0.76	5,640	0.69	6,435	0.78
		WB	D3/ D4	6,100/8,200**	4,330	0.71	4,255	0.70	5,680	0.69	5,460	0.67	6,025	0.73	5,790	0.71	6,340	0.77	6,015	0.73
KL16	Kwu Tung North NDA – KTN Road P1	NB	D2	2,800	600	0.21	480	0.17	765	0.27	560	0.20	940	0.34	650	0.23	1,110	0.40	780	0.28
		SB	D2	2,800	520	0.19	430	0.15	785	0.28	595	0.21	1,020	0.36	735	0.26	1,215	0.43	835	0.30
KL17	Kwu Tung North NDA – KTN Road D1	EB	S1	1,250	115	0.09	155	0.12	325	0.26	465	0.37	300	0.24	430	0.34	695	0.56	725	0.58
		WB	S1	1,250	140	0.11	135	0.11	450	0.36	380	0.30	425	0.34	350	0.28	740	0.59	720	0.58
KL18	Kwu Tung North NDA – KTN Road P2 (between Fanling Highway and KTN Road D2)	NB	D2	3,050	10	0.00	10	0.00	1,470	0.48	1,480	0.49	2,190	0.72	2,330	0.76	2,400	0.79	2,445	0.80
		SB	D2	3,050	10	0.00	10	0.00	1,465	0.48	1,140	0.37	2,200	0.72	1,595	0.52	2,330	0.76	1,795	0.59
KL19	Kwu Tung North NDA – KTN Road D2	EB	S1	2,500	125	0.05	95	0.04	730	0.29	505	0.20	830	0.33	650	0.26	855	0.34	675	0.27
		WB	S1	2,500	150	0.06	165	0.07	630	0.25	770	0.31	955	0.38	1,185	0.47	965	0.39	1,210	0.48
KL20	Kwu Tung North NDA – KTN Road P2 (between KTN Road D2 and KTN Road D3)	NB	D2	3,050	15	0.00	15	0.00	1,230	0.40	1,110	0.36	1,430	0.47	1,335	0.44	1,685	0.55	1,480	0.49
		SB	D2	3,050	15	0.00	15	0.00	1,070	0.35	995	0.33	1,410	0.46	1,125	0.37	1,565	0.51	1,355	0.44
KL21	Kwu Tung North NDA – KTN Road D3 (eastern section)	EB	S1	1,250	15	0.01	35	0.03	610	0.49	460	0.37	655	0.52	465	0.37	665	0.53	475	0.38
		WB	S1	1,250	5	0.00	5	0.00	515	0.41	550	0.44	535	0.43	555	0.44	545	0.44	565	0.45
KL22	Kwu Tung North NDA – KTN Road D5	NB	S1	1,600	15	0.01	15	0.01	500	0.31	275	0.17	645	0.40	415	0.26	900	0.56	550	0.34
		SB	S1	1,600	15	0.01	15	0.01	175	0.11	330	0.21	315	0.20	405	0.25	465	0.29	630	0.39
KL41	Hang Tau Road (south of Kwu Tung Road)	NB	S1	1,250	400	0.32	190	0.15	400	0.32	190	0.15	400	0.32	190	0.15	400	0.32	190	0.15
		SB	S1	1,250	245	0.20	300	0.24	240	0.19	300	0.24	240	0.19	300	0.24	240	0.19	300	0.24
KL42	Kwu Tung Road (between Kam Hang Road and Pak Shek Au Interchange)	EB	S1	1,250	160	0.13	170	0.14	270	0.22	230	0.18	355	0.28	350	0.28	355	0.28	350	0.28
		WB	S1	1,250	300	0.24	145	0.12	400	0.32	165	0.13	480	0.38	240	0.19	480	0.38	240	0.19
KL43	Castle Peak Road – Chau Tau (west of Pak Shek Au Interchange)	EB	S1	1,250	350	0.28	465	0.37	170	0.14	175	0.14	165	0.13	185	0.15	170	0.14	200	0.16
		WB	S1	1,250	225	0.18	315	0.25	80	0.06	105	0.08	90	0.07	115	0.09	90	0.07	120	0.10
KL46	San Tin Highway (west of LMC BCP)	EB	D3	6,100	4,125	0.68	3,775	0.62	5,065	0.83	4,805	0.79	5,465	**0.90**	5,180	0.85	5,830	**0.96**	5,370	**0.88**
		WB	D3	6,100	4,075	0.67	4,455	0.73	5,380	**0.88**	5,435	**0.89**	5,870	**0.96**	5,805	**0.95**	6,160	**1.01**	6,025	**0.99**

* This section of Fanling Highway (KL4) currently has a capacity of 6,100 pcu/hr, but would have a capacity of 10,300 pcu/hr following the completion of the proposed Fanling Highway Widening work as part of the Remaining Works under the Remaining Phase. The difference in road capacity between KL4 and KL5/KL6 is due to the additional lane at the near side connecting to the slip roads of Kwu Tung Interchange.

** These sections of Fanling Highway (KL5 and KL6) currently have a capacity of 6,100 pcu/hr, but would have a capacity of 8,200 pcu/hr following the completion of the proposed Fanling Highway Widening work as part of the Remaining Works under the Remaining Phase.

Table 5 Performance of Key Junctions in Design Years

Junction	Location	Layout	Type*	2026		2031		2036		2041	
				DFC / RC		DFC / RC		DFC / RC		DFC / RC	
				AM	PM	AM	PM	AM	PM	AM	PM
KJ1A	Castle Peak Rd / KTN Road P1 / Pak Shek Au Interchange	Advance Work	RA	0.40	0.29	-	-	-	-	-	-
		CE20/2019 (HY) Study	RA	-	-	0.19	0.19	0.26	0.24	0.33	0.29
KJ1B	Pak Shek Au Interchange / Kwu Tung Road	Advance Work	RA	0.58	0.56	-	-	-	-	-	-
		CE20/2019 (HY) Study	RA	-	-	0.39	0.39	0.49	0.41	0.65	0.53
KJ13	KTN Road D2 / KTN Road P2 / KTN Road L4	Proposed	RA	-	-	0.43	0.41	0.63	0.53	0.70	0.59
KJ14	KTN Road D5 / KTN Road L8 / KTN Road P2 / KTN Road D3	Proposed	RA	-	-	0.54	0.49	0.63	0.59	0.74	0.65
KJ15	KTN Road P1 / KTN Road D1/ Fanling Hwy Slip Roads	Advance Work	RA	0.27	0.24	-	-	-	-	-	-
		CE20/2019 (HY) Study	RA	-	-	0.41	0.38	0.55	0.52	0.70	0.62
KJ16	KTN Road D1 / KTN Road L1	Advance Work	S	>100%	>100%	71%	59%	70%	71%	54%	63%
KJ17	KTN Road L2 / KTN Road D2	Proposed	S	-	-	35%	41%	31%	32%	26%	25%
KJ18	KTN Road D1 / Castle Peak Rd	Advance Work	P	0.02	0.02	-	-	-	-	-	-
		Proposed**	P	-	-	0.20	0.05	0.25	0.07	0.30	0.09
KJ19	KTN Road D2 / Castle Peak Rd	Proposed	P	-	-	0.35	0.25	0.70	0.68	0.71	0.69
KJ31	KTN Road P1 / KTN Road D4 / KTN Road D3	Advance Work	S	>100%	>100%	>100%	>100%	93%	>100%	64%	>100%
KJ32	KTN Road D3 / KTN Road L5	Advance Work	-	Free-flow		-	-	-	-		-
		Proposed**	S	-	-	32%	53%	28%	58%	27%	56%
KJ33	KTN Road D3 / KTN Road L6	Proposed	S	-	-	42%	51%	27%	48%	26%	46%
KJ34	KTN Road D2 / KTN Road L3	Proposed	S	-	-	59%	103%	28%	41%	25%	36%
KJ35	KTN Road D4 / KTN Road D5 / KTN Road R1	Proposed**	S	-	-	>100%	>100%	>100%	>100%	27%	63%
KJ43	Castle Peak Road (Kwu Tung) / Yin Kong Road	Existing	P	0.07	0.12	0.11	0.13	0.14	0.17	0.14	0.17
KJ44	Castle Peak Road (Kwu Tung) / Kwu Tung Road	Existing	P	0.49	0.46	-	-	-	-	-	-
		CE20/2019 (HY) Study	S	-	-	96%	>100%	31%	27%	29%	25%
KJ45	Kwu Tung Road / Kam Hang Road	Proposed	P	0.50	0.26	0.53	0.28	0.59	0.30	0.59	0.30
KJ46	San Tin Interchange	Existing	RA	0.50	0.45	0.52	0.40	0.57	0.42	0.57	0.42
KJ48	Road L3 / Kwu Tung Road	Proposed	S	-	-	51%	70%	32%	37%	28%	35%

* Junction Type: P = Priority junction, S = Signalised junction, RA = Roundabout, FF = Free-flow
** KJ18, KJ32 and KJ35 will be modified to connect to the road network for Remaining Phase after the construction in Advance Work.

4 PUBLIC TRANSPORT FOR KTN NDA

4.1 According to the latest Northern Link (“NOL”) implementation programme, target commissioning of NOL Phase 1 - Kwu Tung (KTU) Station on the existing Lok Ma Chau Spur Line is year 2027 while Phase 2 completion of NOL comprising a rail between the Kam Sheung Road Station and KTU Station is targeted to year 2034. The public transport facilities have been reviewed taking into account the latest population and employment assumptions for KTN NDA and the implementation programme of NOL Phase 1 and 2. The review indicates that the services level of both East Rail Line ("EAL") and West Rail Line ("WRL"), which connected by NOL phase 2, may also need to be enhanced and 5 to 10 bus routes would be required to serve the KTN NDA development from 2026 to 2036.

4.2 The proposed PT plan in 2026, 2031 and 2036 are shown in **Table 6** to **Table 8** respectively.

Table 6 Proposed PT Plan for the Advance Stage of Kwu Tung North NDA in 2026

No.	Cover area	Mode	Daily patronage in 2026 (a)	Peak hour patronage in 2026 (b)*	Peak hour peak direction patronage in 2026 (c)**	Head way in min (d)	Pax carrying capacity per vehicle (e)	Hourly pax capacity (60 / d x e) (f)	Occupancy (c / f)
1	Kwu Tung North, NTE	Bus	5,100	610	370	12	120	600	62%
2	Kwu Tung North, NWNT	Bus	4,500	540	320	15	120	480	67%
3	Kwu Tung North, Hong Kong Island	Bus	6,200	740	440	12	120	600	73%
4	Kwu Tung North, Kowloon E	Bus	6,800	820	490	10	120	720	68%
5	Kwu Tung North, NENT MTR Station	Bus	4,500	540	320	15	120	480	67%

Note:

*Assume 12% peak hour factor with reference from 2011 TCS

**Assume 60% peak direction split with reference from existing bus routes in North District

Table 7 Proposed PT Plan in 2031 with Completion of NOL Phase 1 but without NOL Phase 2

No.	Route No.	Cover area	Daily patronage in 2031 (a)	Peak hour patronage in 2031 (b)*	Peak hour peak direction patronage in 2031 (c)**	Head way in min (d)	No. of peak departure (60 / d) (e)	Pax carrying capacity per vehicle (f)	Hourly pax capacity (f x e) (g)	Occupancy (c / g)
1a	KTN6a	Kwu Tung North, NENT	11,200	1,300	800	6.7	9	120	1,080	74%
1b	KTN6b	Kwu Tung North, NTE	10,600	1,300	800	6.7	9	120	1,080	74%
2	KTN10	Kwu Tung North, NWNT	12,000	1,400	800	6.7	9	120	1,080	74%
3a1	KTN4a	Kwu Tung North, Kowloon East	7,000	800	500	10	6	120	720	69%
3a2i	KTN4bi	Kwu Tung North, Kowloon West	17,600	2,100	1,300	4	15	120	1,800	72%
3a2ii	KTN4bii	Kwu Tung North, NT West	7,000	800	500	10	6	120	720	69%
3b1	KTN11a	Kwu Tung North, Hong Kong Island	15,600	1,900	1,100	4.6	13	120	1,560	71%
3b2	KTN11b	Kwu Tung North, Hong Kong Island East	10,800	1,300	800	6.7	9	120	1,080	74%
6	KTN8	Kwu Tung North, Kwu Tung MTR Station	13,500	1,600	1,000	5	12	120	1,440	69%
9	KTN9	NWNT MTR Station	12,700	1,500	900	6	10	120	1,200	75%

Note:

*Assume 12% peak hour factor with reference from 2011 TCS

**Assume 60% peak direction split with reference from existing bus routes in North District

(1) As KTN9 is a temporary route proposed to serve the westbound rail-based PT demand in 2031 where NOL Phase 2 is not available, it will no longer be necessary in 2036 after commissioning of NOL Phase 2. If KTN9 would be maintained in 2036 PT plan with adjusted routing to serve different areas subject to the development of the site, it is anticipated that the proposed PTIs could still cater the proposed PT services. Final decision on cancelling or adjusting the routing of this bus route will be subject to the detailed discussion between the relevant authorities and bus operators.

Table 8 Proposed PT Plan in 2036 upon Full Intake with Completion of NOL Phase 1 and Phase 2

No.	Route No.	Cover area	Daily patronage in 2036 (a)	Peak hour patronage in 2036 (b)*	Peak hour peak direction patronage in 2036 (c)**	Head way in min (d)	No. of peak departure (60 / d) (e)	Pax carrying capacity per vehicle (f)	Hourly pax capacity (f x e) (g)	Occupancy (c / g)
1a	KTN6a	Kwu Tung North, NENT	14,900	1,800	1,100	4.6	13	120	1,560	71%
1b	KTN6b	Kwu Tung North, NTE	14,000	1,700	1,000	5.0	12	120	1,440	69%
2	KTN10	Kwu Tung North, NWNT	8,300	1,000	600	8.6	7	120	840	71%
3a1	KTN4a	Kwu Tung North, Kowloon East	9,200	1,100	700	7.5	8	120	960	73%
3a2i	KTN4bi	Kwu Tung North, Kowloon West	9,700	1,200	700	7.5	8	120	960	73%
3a2ii	KTN4bii	Kwu Tung North, NT West	3,800	500	300	15	4	120	480	63%
3b1	KTN11a	Kwu Tung North, Hong Kong Island	8,600	1,000	600	8.6	7	120	840	71%
3b2	KTN11b	Kwu Tung North, Hong Kong Island East	5,900	700	400	12	5	120	600	67%
4	KTN7	Kwu Tung North, NDA	4,200	500	300	15	4	120	480	63%
6	KTN8	Kwu Tung North, Kwu Tung MTR Station	19,900	2,400	1,400	3.8	16	120	1,920	73%

Note:

*Assume 12% peak hour factor with reference from 2011 TCS

**Assume 60% peak direction split with reference from existing bus routes in North District

(1) The PT plan in 2041 will follow the PT plan in 2036
(2) As KTN9 is a temporary route proposed to serve the westbound rail-based PT demand in 2031 where NOL Phase 2 is not available, it will no longer be necessary in 2036 after commissioning of NOL Phase 2. If KTN9 would be maintained in 2036 PT plan with adjusted routing to serve different areas subject to the development of the site, it is anticipated that the proposed PTIs could still cater the proposed PT services. Final decision on cancelling or adjusting the routing of this bus route will be subject to the detailed discussion between the relevant authorities and bus operators.

4.3 To cope with the road-based public transport demands, 3 public transport interchanges (PTI) at Kwu Tung North Area 25 (to be completed to the satisfaction of the Government in accordance with land lease condition by end Sep 2025), Area 12 (public housing site) and Area 23 (private housing site), and 11 pairs of on-street bus laybys along roads of the KTN NDA are proposed. PTIs at KTN NDA Area 12 & 23 will be provided upon population intake of KTN NDA Remaining Phase in 2030/2031. **T**he PTI at Kwu Tung North Area 25 will be provided under the first phase of KTN NDA while the other 2 PTIs at Kwu Tung Area 12 (public housing site) and Area 23 (private housing site) will be provided under the remaining phase of KTN NDA.

4.4 The proposed locations of PTIs and bus lay-bys are shown in **Diagram 1**.

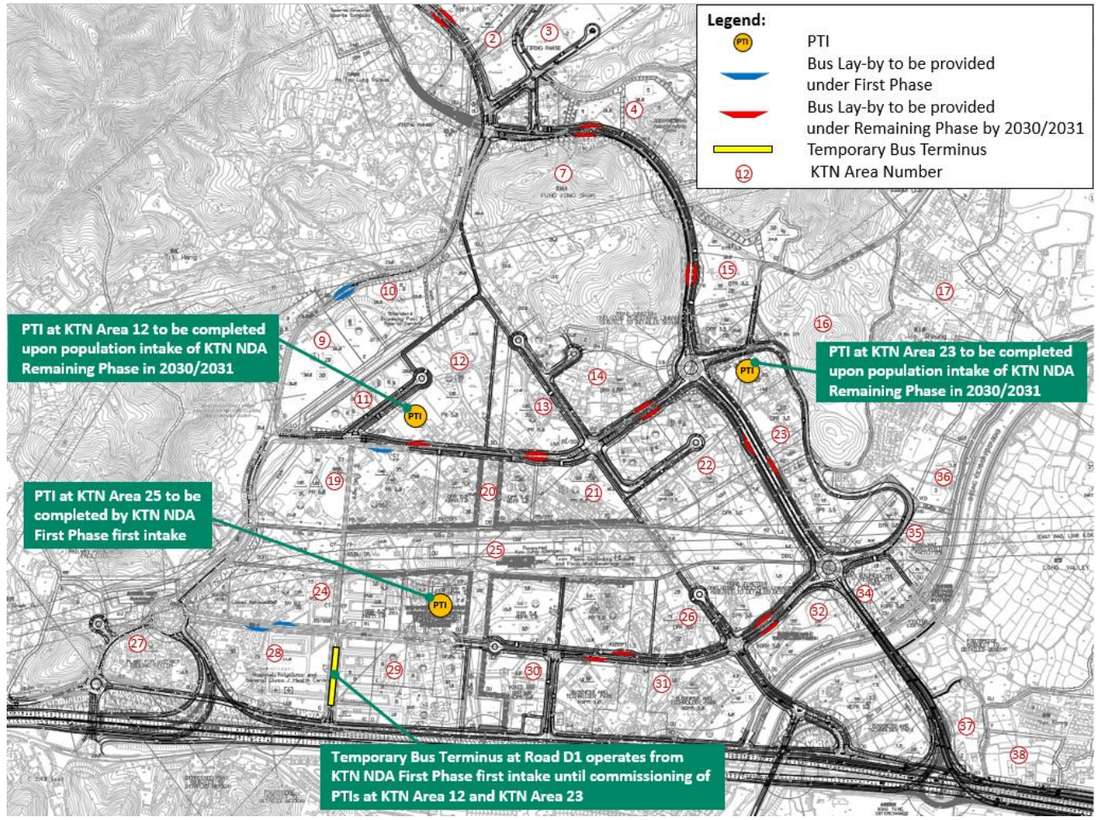


Diagram 1 Proposed Locations of PTI and Bus Lay-by at KTN NDA

5 PEDESTRIAN AND CYCLING NETWORK FOR KTN NDA

Pedestrian Network for KTN NDA

5.1 The recommended pedestrian network of KTN NDA will be comprehensive where footpaths are provided at most of the local and distributor roads. The north-south and east-west open space corridor across the KTN NDA will enhance the accessibility of the entire NDA, allowing seamless connections to different major activity nodes and transportation nodes, including the residential area, KTN NDA town centre, community facilities area, business area, government facilities area, and the recreational area. Remarkably, the central part of KTN NDA, where the proposed Kwu Tung Station and the PTI located, is proposed to be pedestrianised by placing the vehicular roads away from the town centre in order to provide a pleasant motor vehicle-free walking environment.

5.2 To provide pedestrian connectivity for handling the road level difference between the pedestrian footpath at Road L1 and Kwu Tung Station as well as open space nearby, a 24-hour public passage will be provided within the government cluster in KTN NDA Area 29 for pedestrian connection between Road L1 and open space. Also, pedestrians could access the proposed Kwu Tung Station in the central part of KTN NDA via the development of FSSTL 279.

5.3 Other than the connectivity inside the KTN NDA community, the pedestrian network is further extended externally for increasing the linkage to the adjoining developments. Elevated pedestrian linkage in the form of footbridges to Kwu Tung South across the Fanling Highway is proposed for providing a safe walking environment by considering the high vehicular flow in Fanling Highway. On the other side, at the north, at-grade crossing will be provided for connection towards the Lok Ma Chau Loop direction. Besides, at-grade crossings will be provided along Road R1 and Castle Peak Road Diversion for providing linkages to San Tin and Sheung Shui. Pedestrian link is also planned at the periphery of Long Valley along Sheung Yue River and Shek Sheung River, it is further linked to Sheung Shui, or alternatively, to the existing hiking route.

Cycling Network for KTN NDA

5.4 In order to develop KTN NDA into a “bicycle-friendly” new town, a connected and safe cycling network with sufficient cycling parking will be provided.

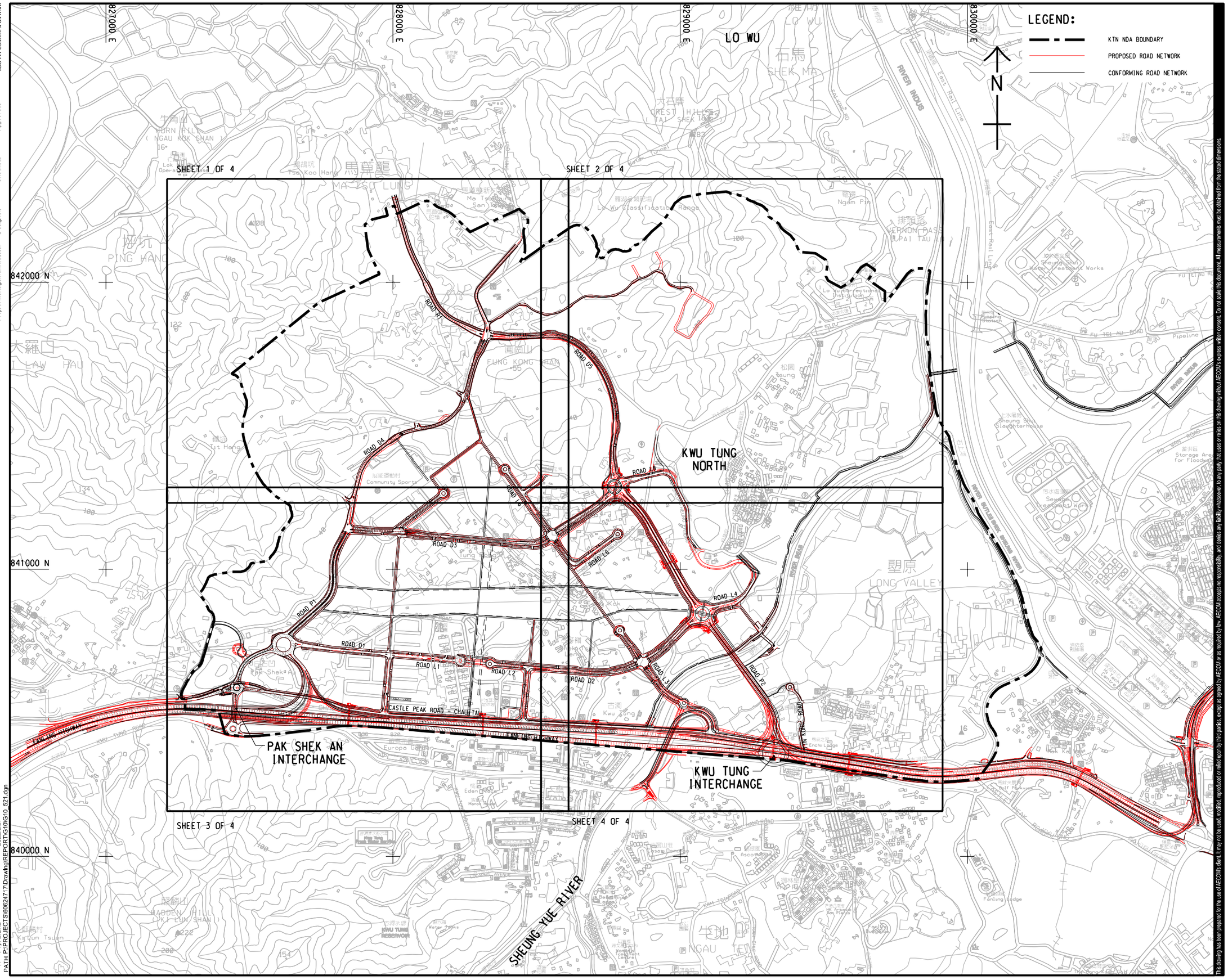
5.5 The proposed cycling network in the KTN NDA is extensive that cycle tracks will be provided at various road segments. Having the function of linking up the major activity nodes and transport nodes as the same as the pedestrian network, the recommended cycling network will also connect to the green areas, for examples, the KTN NDA town centre and Long Valley Nature Park.

5.6 In addition to the city centre and its vicinity areas, the cycling network will be connected to another planned CEDD projects that to link up the cycle tracks in NWNT and NENT, while completion, cyclists will be able to move freely to the San Tin and Sheung Shui from KTN NDA, and further connect to the FLN NDA. On the other hand, cycle track is planned to connect with Lok Ma Chau Loop via Road R1.

6 CONCLUSIONS

6.1 In conclusion, the transport and traffic assessment review has confirmed that with the proposed traffic improvement schemes, the highway and transport systems could address the traffic demand from KTN NDA. The proposed **changes** in Kwu Tung North New Development Area (KTN NDA) is technically feasible from the traffic and transport of point of view.

FIGURES



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PROJECT

DEVELOPMENT OF KWU TUNG NORTH NEW DEVELOPMENT AREA, REMAINING PHASE - DESIGN & CONSTRUCTION

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CEDD 土木工程拓展署 Civil Engineering and Development Department

CONSULTANT

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KEY PLAN

PROJECT NO. 60624717

CONTRACT NO. CE 19/2019 (CE)

SHEET TITLE

KEY PLAN FOR PROPOSED ROAD NETWORK FOR KTN NDA

SHEET NUMBER

60624717/G10/FIGURE 2.1

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1. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING NOS. 60624717/G10/FIGURE 2.2 TO 2.5.

LEGEND:

KTN NDA BOUNDARY

CONFORMING ROAD NETWORK

PROPOSED ROAD NETWORK

827600 E

828000 E

828400 E

842000 N

841600 N

ROAD R1

ROAD R1

ROAD L5

CUT LINE A-A
SEE DRAWING NO. 60624717/G10/FIGURE 2,3

CUT LINE B-B
SEE DRAWING NO. 60624717/G10/FIGURE 2.4

N

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PROJECT NO. 工程編號
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CE 19/2019 (CE)

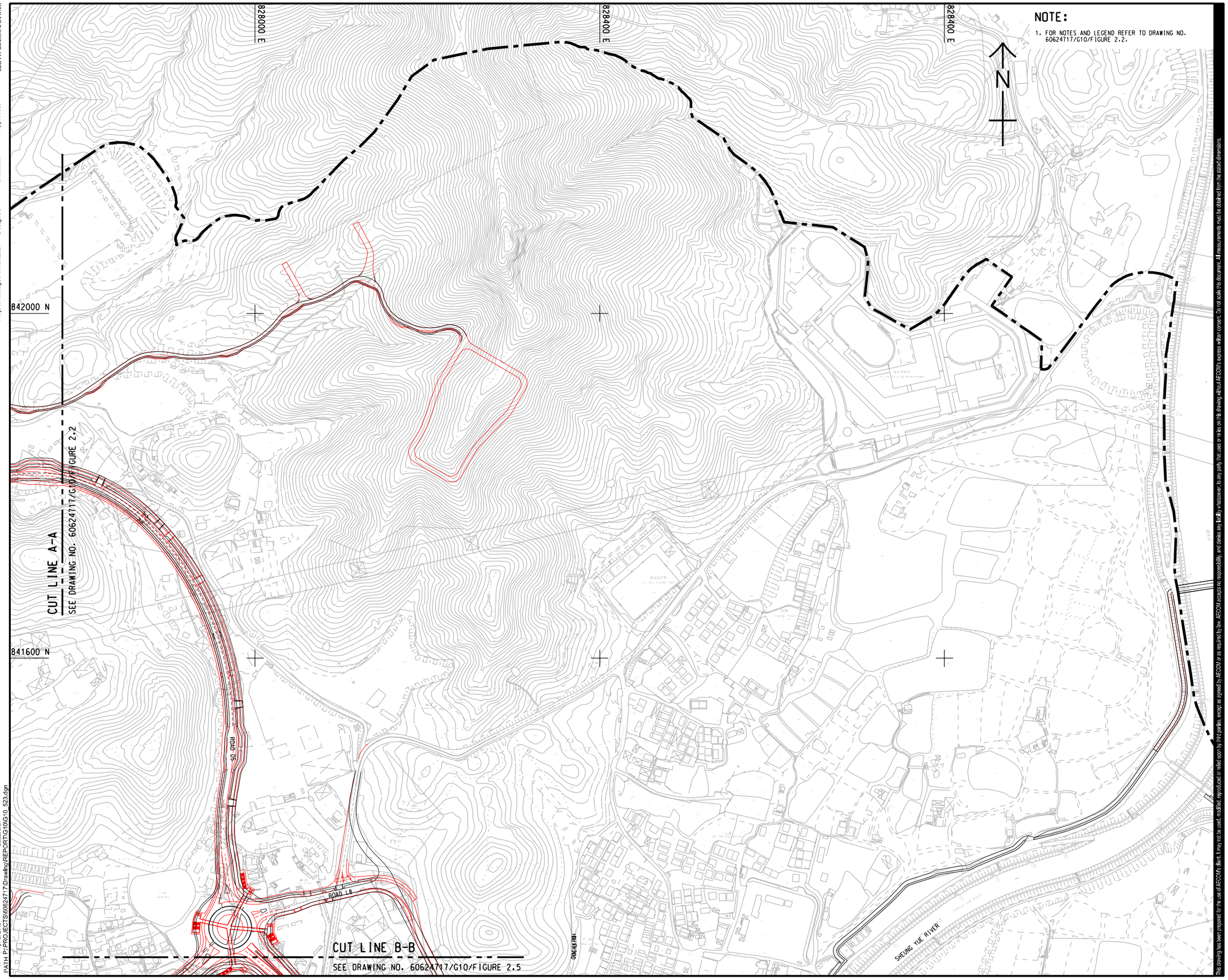
SHEET TITLE
圖紙名稱

PROPOSED ROAD
NETWORK FOR KTN NDA

SHEET 1 OF 4

SHEET NUMBER
圖紙編號

60624717/G10/FIGURE 2.2



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PROPOSED ROAD NETWORK FOR KTN NDA

SHEET 2 OF 4

SHEET NUMBER
圖紙編號

60624717/G10/FIGURE 2.3

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CUT LINE A-A

SEE DRAWING NO. 60624717/G10/FIGURE 2.2

841200 N

840800 N

840400 N

ROAD D1

ROAD D2

ROAD D3

ROAD D4

ROAD D5

ROAD D6

ROAD D7

ROAD L1

ROAD L2

HO SHEUNG HEUNG ROAD

REALIGNED CASTLE PEAK ROAD – CHAU TAU (REMAINING STAGE OF WORK)

FANLING HIGHWAY

KWU TUNG ROAD

CUT LINE C-C

SEE DRAWING NO. 60624717/G10/FIGURE 2.5

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KEY PLAN
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PROJECT NO.
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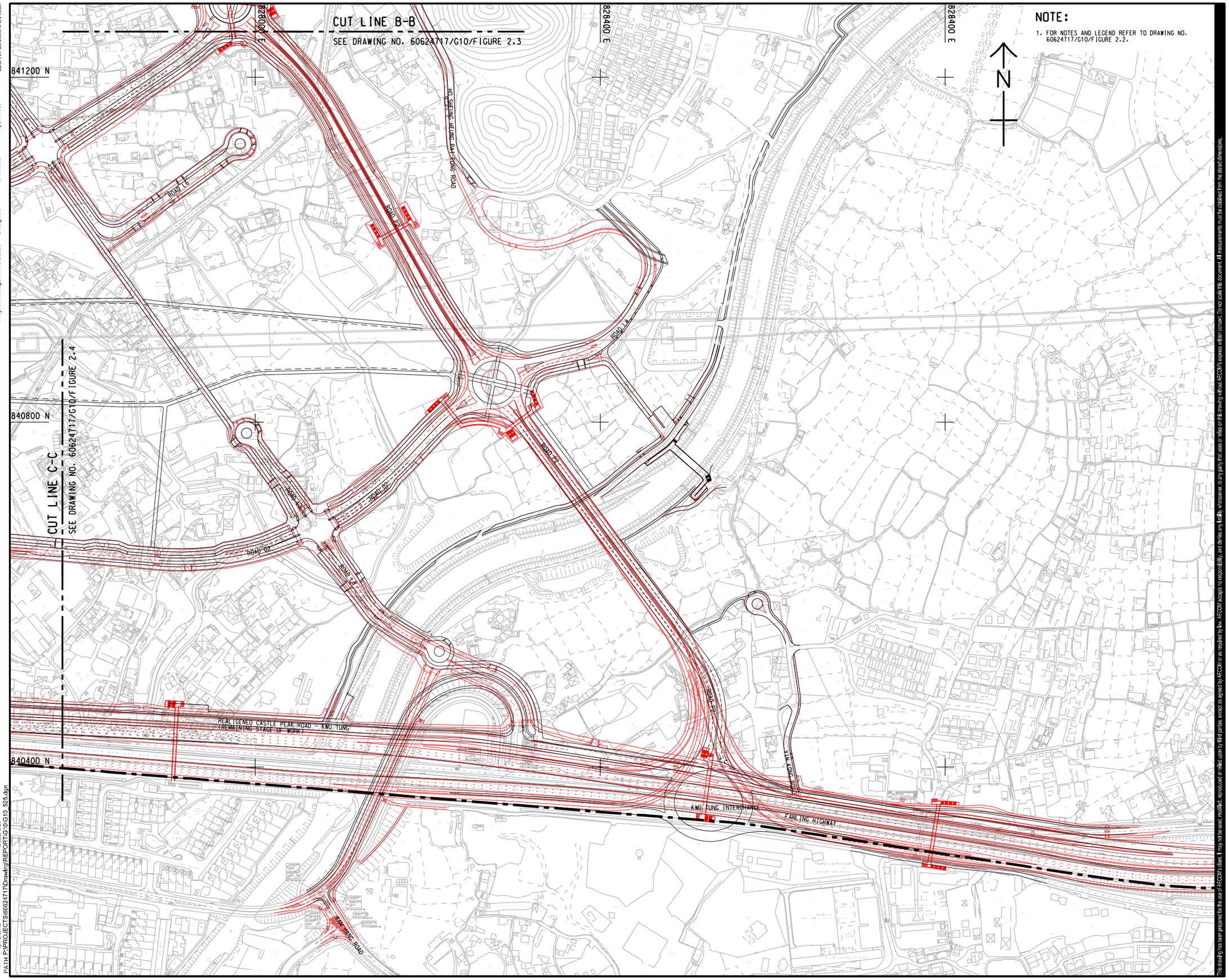
PROPOSED ROAD
NETWORK FOR KTN NDA

SHEET 3 OF 4

SHEET NUMBER
圖紙編號

60624717/G10/FIGURE 2.4



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KEY PLAN
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圖紙名稱

PROPOSED ROAD NETWORK FOR KTN NDA

SHEET 4 OF 4

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60624717/G10/FIGURE 2.5

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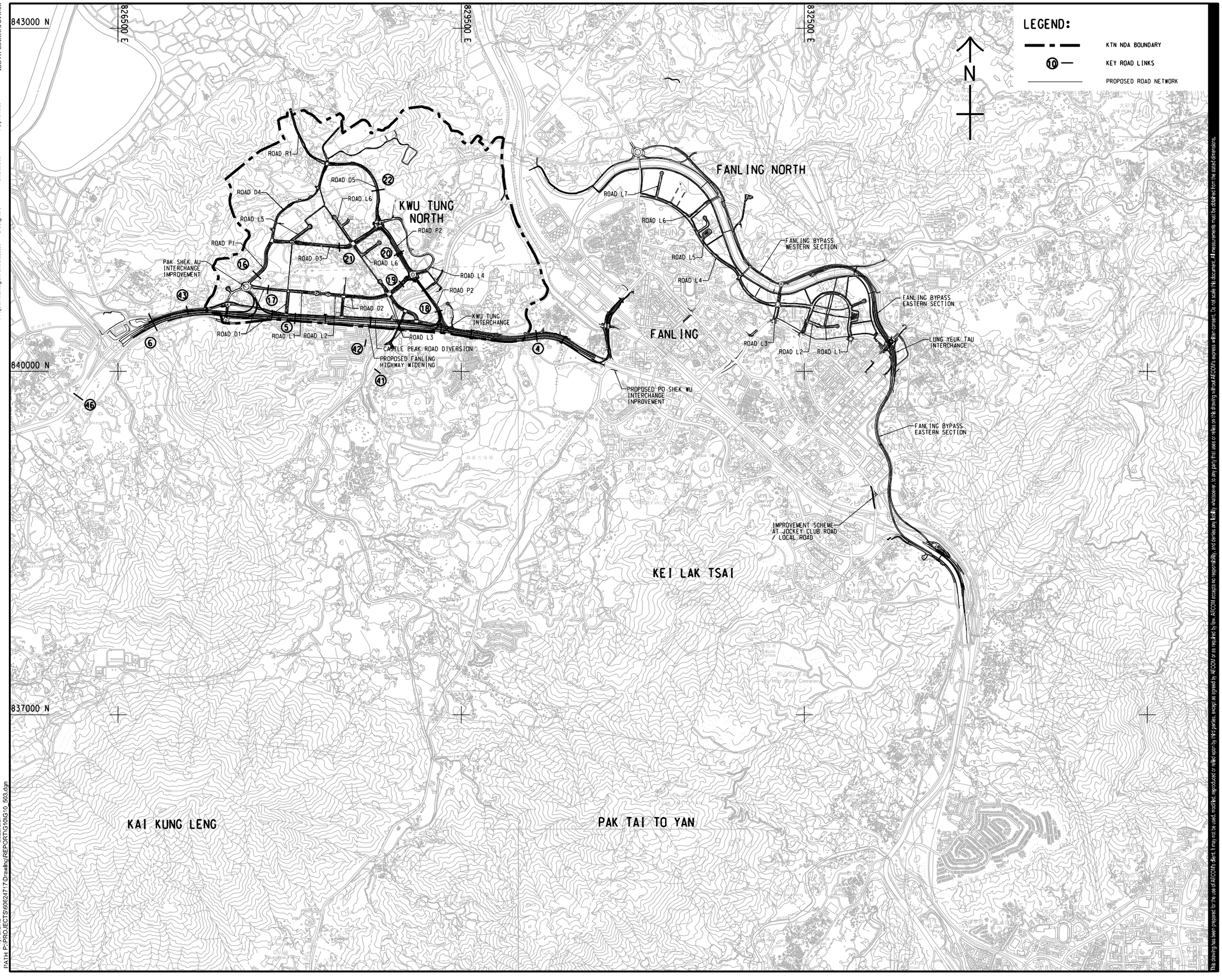

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DEVELOPMENT OF KWU TUNG NORTH NEW DEVELOPMENT AREA, REMAINING PHASE - DESIGN & CONSTRUCTION

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DIMENSION UNIT METRES

KEY PLAN

PROJECT NO. 60624717

CONTRACT NO. CE 19/2019 (CE)

SHEET TITLE

LOCATION PLAN FOR KEY ROAD LINKS

SHEET NUMBER

60624717/G10/FIGURE 2.6

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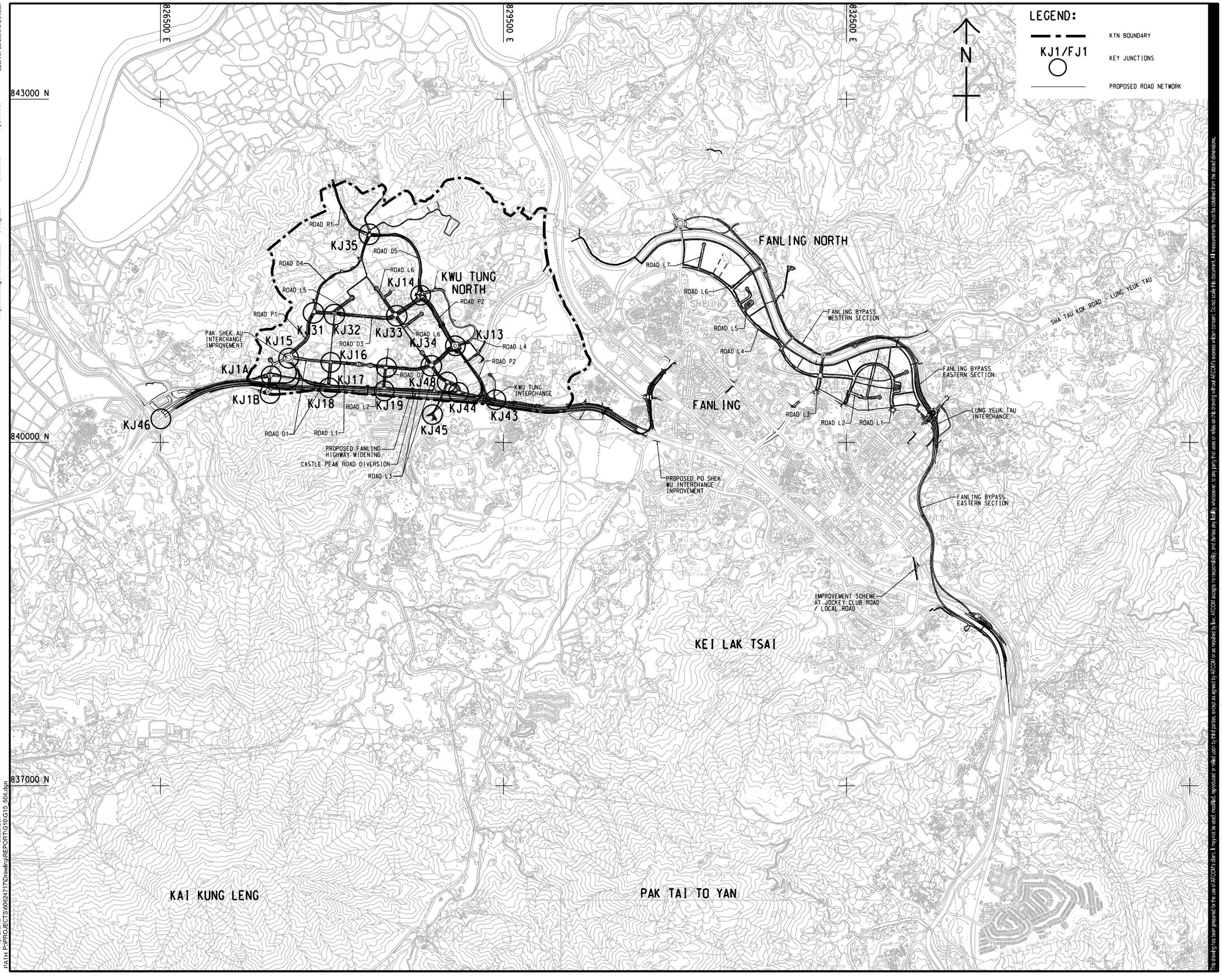

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Appendix B
Sewerage Impact Assessment

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1 INTRODUCTION 1

2 POPULATION AND EMPLOYMENT DATA 1

3 ESTIMATION OF SEWAGE FLOW 2

4 REVIEW OF EXISTING SEWERAGE INFRASTRUCTURES 2

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LIST OF DRAWINGS

60624717/G3Db/401 Sewerage Sub-catchment Layout Plan

60624717/G3Db/402 Sewerage Layout Plan

1 INTRODUCTION

1.1 Background

1.1.1 The purpose of this assessment is to review the impact on the sewerage infrastructure in the NDA including sewerage and treatment facilities induced by the proposed minor relaxation of housing sites intensification and the proposed OZP amendment:

- Estimating the sewage flow and designing the sewerage network for the proposed development;
- Assessing impact to the existing sewerage conveyance system and sewage treatment works of the flow generated from the proposed development; and
- Proposing sewerage improvement works, if required.

2 POPULATION AND EMPLOYMENT DATA

2.1.1 According to the SIA report of Development of Kwu Tung North and Fanling North New Development Areas, Phase 1 – Design and Construction (Phase 1 Assignment), sewage from KTN and FLN NDAs would be conveyed to Shek Wu Hui Sewage Treatment Works (SWHSTW). The sewerage catchment in KTN NDA is shown in **Drawing No. 60624717/G3Db/401.**

2.1.2 The proposed relaxation of development restrictions and OZP amendment would not change the proposed sewerage catchment in KTN NDA. Review and discussion are provided in the later section of this report.

2.1.3 The estimated increase in population at KTN NDA under the proposed relaxation of development restrictions and the proposed OZP amendment is about 18,800 persons, resulting the total population in KTN NDA upon full development to be about 138,500 persons.

2.1.4 The planned population after relaxation of development restrictions are summarized below:

Table 1 Planned Population and Employment (After relaxation of development restrictions)

	Residential (Population)	Commercial (Employment)
KTN NDA	131,600	38,700 (Including GIC Facilities)
Non-NDA Residential Population	6,900	-
Total	**138,500**	**38,700**

3 ESTIMATION OF SEWAGE FLOW

3.1.1 The total ADWF generated from Phase 1 development and full development of KTN NDA is estimated to be 21,300m^3/day and 59,156m^3/day respectively, according to latest available data obtained from relevant parties.

3.1.2 Sewerage contributed by developments within KTN NDA boundary comprises of population and employment flow. Apart from that, discharge from some specific locations is included, e.g. Kwu Tung Station, Public Market and District Cooling System, etc.

3.1.3 Sewage generated from existing population within non-development area are considered in this sewerage impact assessment.

3.1.4 The ADWF to be conveyed by the proposed Ma Tso Lung SPS, KTNSPS and existing sewerage system are 3,027 m^3/day, 55,316m^3/day and 813 m^3/day approximately. The total ADWF is subject to the latest design of the sewerage network of KTN NDA.

4 REVIEW OF EXISTING SEWERAGE INFRASTRUCTURES

Existing Sewerage Network in Castle Peak Road near Yin Kong

4.1.1 The sewage flow of non-NDA development areas in Yin Kong is conveyed by existing sewerage network in Castle Peak Road.

Shek Wu Hui Sewage Treatment Works (SWHSTW)

4.1.2 Sewage generated from Fanling and Sheung Shui, and some from Tai Po (Kau Lung Hang area) are currently collected and conveyed to SWHSTW for treatment and then disposal to Deep Bay area.

4.1.3 Sewage generated under Full Development (2031) is 59,156m3/day. EPD advised that the sewage generated from KTN NDA is within the catchment of SWH STW, which is being upgraded, and that sufficient capacity will be timely provided in phase with the Territorial Population and Employment Data Matrix (TPEDM) forecasted population to accommodate by all existing and planned developments within its catchment including the latest forecasted population of KTN NDA. The total ADWF is subject to the latest design of the sewerage network of KTN NDA.

4.1.4 In view of the above, KTN NDA would not overload the existing sewerage network as well as the treatment capacity of SWHSTW reserved after population intake in both 2026 (Phase 1) and 2031 (full development).

5 PROPOSED SEWERAGE WORKS

5.1.1 Sewerage scheme has been reviewed with some updated information incorporated (i.e. latest population and flow data).

5.1.2 The proposed sewage system of KTN NDA is shown in Drawing No. 60624717/G3Db/402.

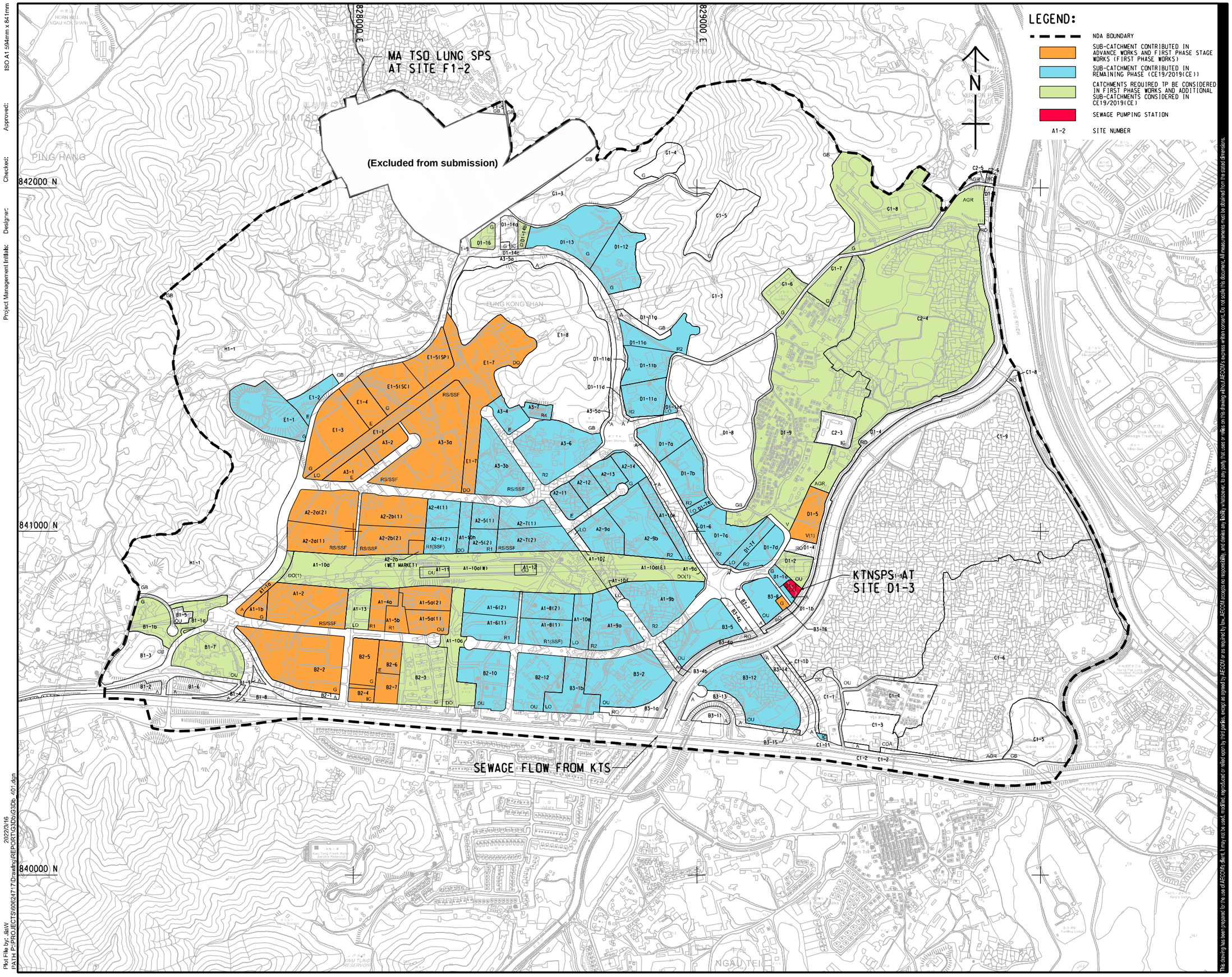
5.1.3 Similar to Phase 1 Assignment, sewage generated from full developments in KTN NDA would be conveyed to SWHSTW directly via gravity sewers in KTN NDA, Kwu Tung North Sewage Pumping Station (KTNSPS) to be constructed under Contract No. ND/2019/02 of Phase 1 works, as well as Ma Tso Lung Sewage Pumping Station (MTLSPS) at north-west of the NDA to be constructed at alter stage, and their associated twin rising mains due to topographic constraints.

5.1.4 The estimated projected peak flows fall within design capacity of the pumping stations and SWHSTW and therefore no adverse sewerage impact will be induced due to increase in population of upstream catchment.

6 SUMMARY

6.1.1 Based on the assessment under this Report, no adverse impacts will be induced to SWHSTW for the increased population at the planned public and private housing sites.

Drawings



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SEWERAGE SUB-CATCHMENT LAYOUT PLAN

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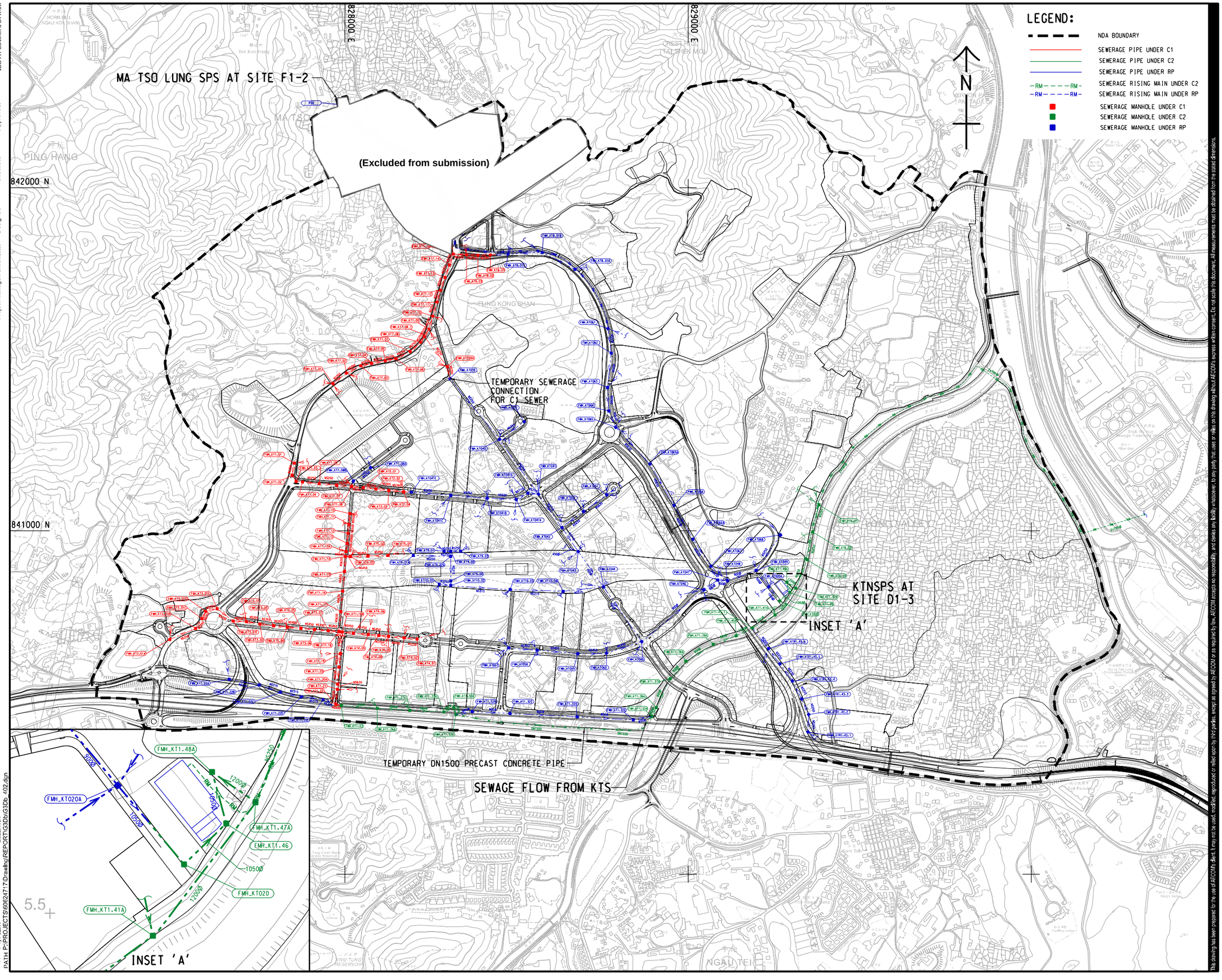

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SEWERAGE LAYOUT PLAN

SHEET NUMBER
圖紙編號

60624717/G3Db/402

Appendix C

Water Supply Impact Assessment

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3 TOTAL WATER DEMAND ESTIMATION 2

4 WATER SUPPLY IMPACT ASSESSMENT 2

5 CONCLUSION 3

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Table No.	Title
Table 2-1	Planned Population and Employment (After relaxation of planning parameters)
Table 3-1	Water Demand – KTN NDA Full Development (After relaxation of development restrictions)

LIST OF DRAWINGS

DRAWING No.	Title
60624717/CE1/WIA/001	Locations of KTN FWSR and FLWSR
60624717/CE1/WIA/002 - 005	Updated Fresh Water Distribution Network in KTN NDA (Sheet 1 to 4)
60624717/CE1/WIA/006 - 009	Updated Flushing Water Distribution Network in KTN NDA (Sheet 1 to 4)

1 INTRODUCTION

1.1 Background

1.1.1 This section describes the assessment of the impact on the freshwater and flushing water supply system including service reservoirs and water mains arising from the proposed minor relaxation of development restrictions (plot ratio and building height restrictions for proposed/permitted public and private housing developments and the proposed OZP amendment for KTN NDA.

1.2 Approach and Methodology

1.2.1 In general, the design parameters and approach in this WSIA follows that of the Development of and Kwu Tung North New Development Areas, Remaining Phase–Design and Construction Water Supply Impact Assessments Report.

1.2.2 The proposed demand rates and peaking factors are based on the values defined in the WSD's Departmental Instruction (DI) No. 1309. Where relevant rates are not available, assumption based on past records for similar user types will be adopted.

2 ESTIMATED POPULATION AFTER RELAXATION OF DEVELOPMENT RESTRICTIONS

2.1.1 The estimated increase in population at KTN NDA under the proposed relaxation of development restrictions and OZP amendment is about 18,800 persons, resulting the total population in KTN NDA upon full development to be about 138,500 persons.

2.1.2 The planned population after relaxation of development restrictions are summarized below:

Table 2-1 Planned Population and Employment (After relaxation of planning parameters)

	Residential (Population)	Commercial (Employment)
KTN NDA	131,600	38,700 (Including GIC Facilities)
Non-NDA Residential Development Area	6,900	-
Total	**138,500**	**38,700**

3 TOTAL WATER DEMAND ESTIMATION

3.1.1 The freshwater and flushing water average daily water demand of each development lot was estimated by multiplying the projected residential and commercial populations of the development lot by a unit demand factor. This unit demand factor is specific to the land use type of the development lot, which is extracted from WSD's DI No. 1309.

3.1.2 The KTN NDA's irrigation demand is based on the previous North East New Territories (NENT) NDAs Study.

3.1.3 The KTN NDA's DCS demand was advised by EMSD.

3.1.4 The total fresh water and flushing water demand for KTN NDA under full development is estimated to be 47,120 m^3/day and 13,906 m^3/day respectively, according to latest available data obtained from relevant parties. The total freshwater and flushing water demand for KTN NDA is shown in the table below.

Table 3-1 Water Demand – KTN NDA Full Development (After relaxation of development restrictions)

Potable (m^3/day)	DCS (m^3/day)	Irrigation (m^3/day)	Flushing (m^3/day)	Total Fresh Water (Potable + DCS + Irrigation) (m^3/day)	Total Flushing Water (m^3/day)
39,121	5,689	2,310	13,906	47,120	13,906

4 WATER SUPPLY IMPACT ASSESSMENT

4.1 Proposed Freshwater Service Reservoir (FWSR) and Flushing Water Service Reservoir (FLWSR) for KTN NDA

4.1.1 Freshwater demand (including potable water, DCS and irrigation demand) generated from KTN NDA full development could be supported by the proposed KTN FWSR and supplemented by the proposed Fanling North (FLN) FWSR.

4.1.2 The locations of the proposed KTN FWSR and KTN FLWSR are presented in the **Drawing no. 60624717/CE1/WIA/001**.

4.1.3 Flushing water demand generated from KTN NDA full development is supported by the proposed KTN FLWSR.

4.1.4 The capacities and sizes of the proposed KTN FWSR and KTN FLWSR are re-assessed in order to cater for the revised water demands (after proposed relaxation of development restrictions and OZP amendment) under KTN NDA full development.

<u>KTN FWSR</u>

4.1.5 The proposed KTN FWSR is being constructed under Phase 1 works. The capacity of the proposed KTN FWSR is 34,000 m^3 with dimensions 77 m (L) x 60 m (W) and water depth of 7.78 m. About 2,500m^3 of water demand will be supplied by the proposed FLN FWSR.

<u>KTN FLWSR</u>

4.1.6 The proposed KTN FLWSR is being constructed under Phase 1 works. The capacity of the proposed KTN FLWSR is 9,900 m^3 with dimensions 70m (L) x 31m (W) and water depth of 4.74m.

4.2 Proposed Fresh Water and Flushing Water Supply Distribution Networks

4.2.1 Based on hydraulic model checking result, the pipe size of the proposed freshwater and flushing supply distribution mains has been reviewed to cater for the proposed relaxation of development restrictions and OZP amendment of KTN NDA.

4.2.2 The sizes and alignments of the proposed freshwater and flushing supply distribution network serving the KTN NDA at Full Development are presented in **Drawing no. 60624717/CE1/WIA/002 to 009**.

4.3 Hydraulic Performance of Proposed Water Supply Network

4.3.1 Hydraulic performance of the proposed water supply distribution networks after changes are assessed by using the hydraulic modelling.

4.3.2 Hydraulic performance of the proposed freshwater supply network is checked under (1) normal demand scenario with peak flow condition and (2) firefighting scenario. Under firefighting scenario, an additional freshwater demand of 6,000 m^3/d is added.

4.3.3 Hydraulic modelling results indicate that all the supply nodes of the proposed fresh and flushing water supply network at development sites can meet WSD's required minimum residual head.

5 CONCLUSION

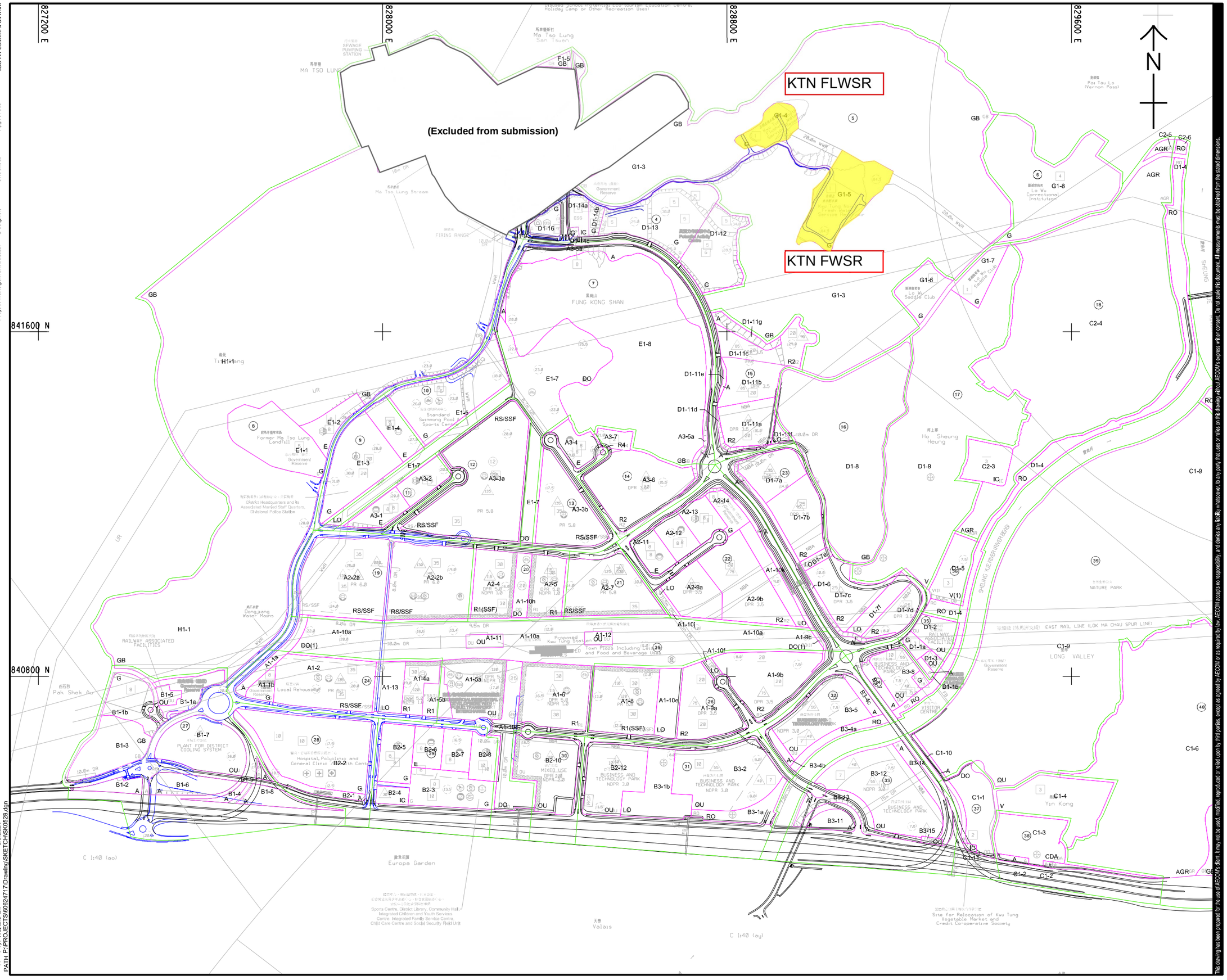
5.1.1 The impact to water supply under the proposed changes has been studied. The updated fresh water and flushing demand are 47,120 m^3/day and 13,906 m^3/day respectively.

5.1.2 The capacity of the proposed KTN FWSR is 34,000 m^3 with dimensions 77 m (L) x 60 m (W) and water depth of 7.78 m. About 2,500 m^3 of water demand will be supplied by the proposed FLN FWSR.

5.1.3 The required flushing water demand would be within the capacity of KTN FLWSR (9,900 m^3) with dimensions 70m (L) x 31m (W) with water depth of 4.74m.

5.1.4 The sizes and alignments of the proposed freshwater and flushing supply distribution mains have been reviewed to cater for the proposed relaxation of development restrictions and OZP amendment of KTN NDA.

Drawings



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SHEET TITLE

Locations of KTN FWSR and FLWSR

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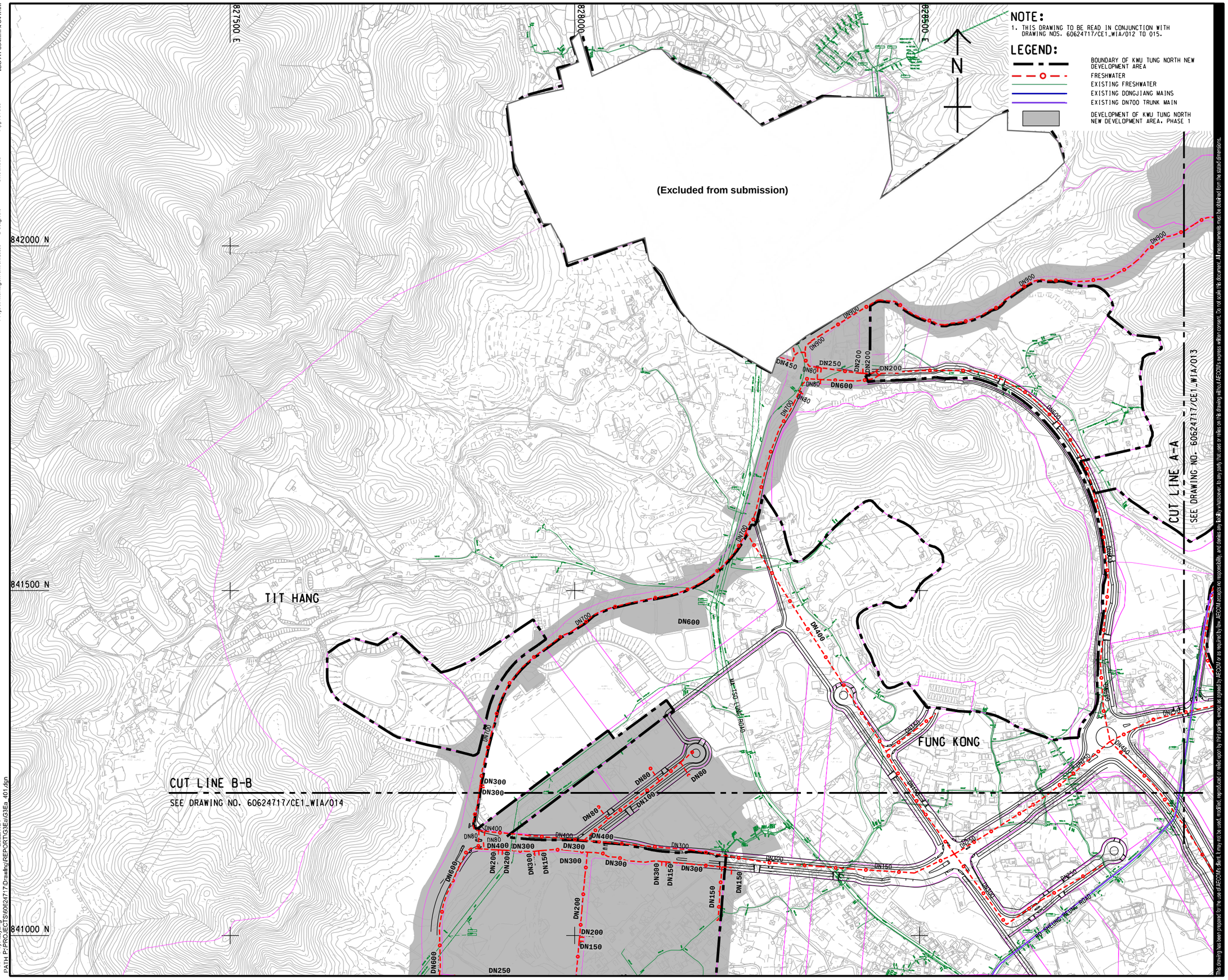

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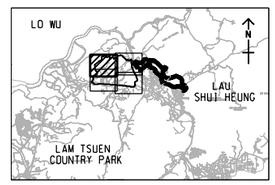

PROJECT NO. 60624717

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SHEET TITLE

UPDATED FRESH WATER DISTRIBUTION NETWORK IN KTN NDA

SHEET 1 OF 4

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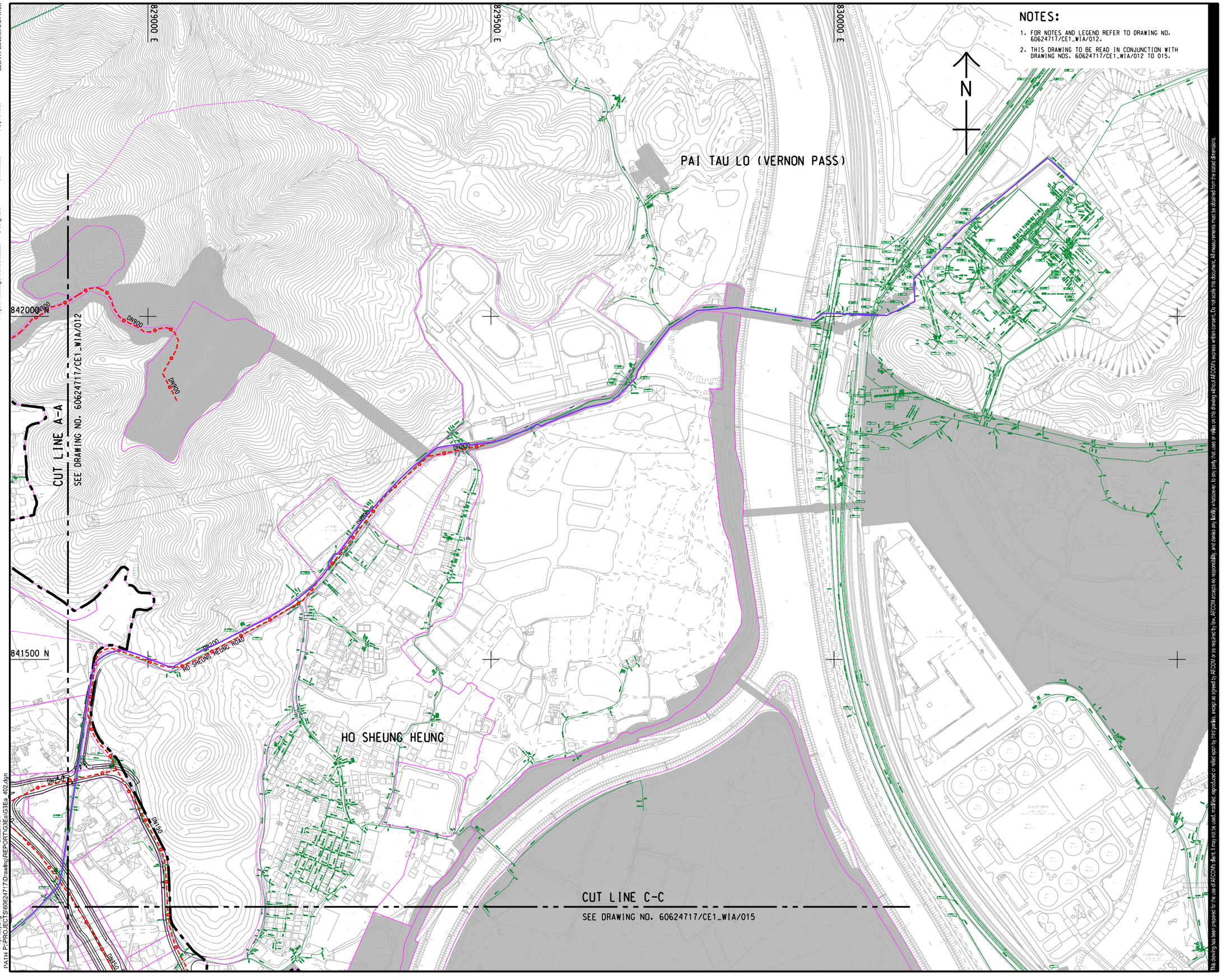

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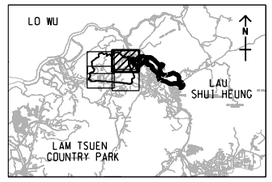

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UPDATED FRESH WATER DISTRIBUTION NETWORK IN KTN NDA

SHEET 2 OF 4

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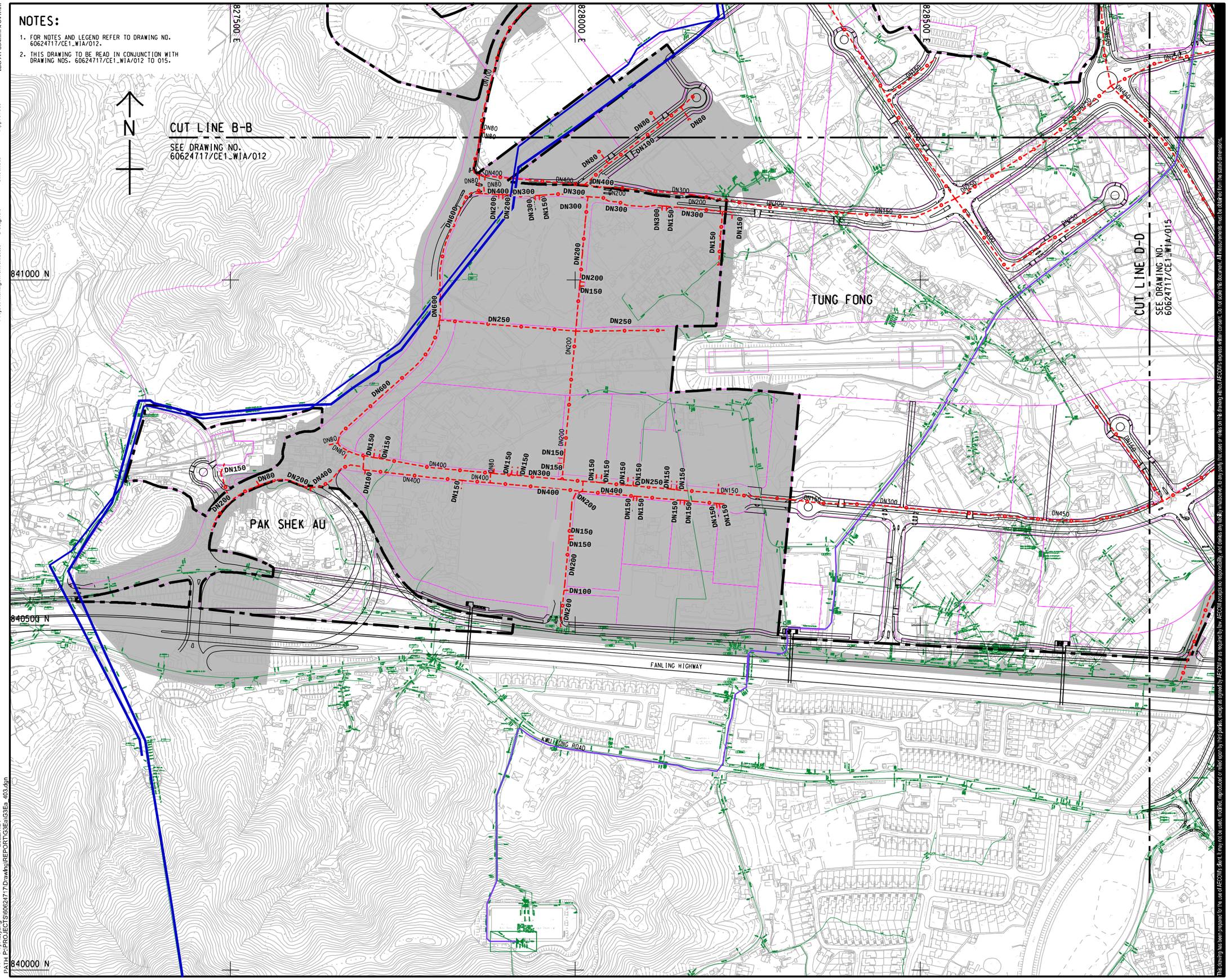

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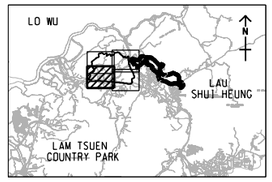

PROJECT NO.
項目編號

60624717

CONTRACT NO.
合約編號

CE 19/2019 (CE)

SHEET TITLE
圖紙名稱

UPDATED FRESH WATER DISTRIBUTION NETWORK IN KTN NDA

SHEET 3 OF 4

SHEET NUMBER
圖紙編號

60624717/CE1/WIA/004

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829000 E

829500 E

830000 E

CUT LINE C-C

SEE DRAWING NO. 60624717/CE1_WIA/013

841000 N

840500 N

840000 N

CUT LINE D-D

SEE DRAWING NO. 60624717/CE1_WIA/014

N

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DN450
DN150
DN200
DN250
DN300
DN600

FANLING HIGHWAY

TSUNG PAK LONG

KAM TSIN

CASTLE PEAK ROAD - KAM TSIN

LO WU

LAU SHUI HEUNG

LAM TSUEN COUNTRY PARK

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PROJECT
DEVELOPMENT OF KWU TUNG NORTH NEW DEVELOPMENT AREA, REMAINING PHASE - DESIGN & CONSTRUCTION

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CONTRACT NO. CE 19/2019 (CE)

SHEET TITLE

UPDATED FRESH WATER DISTRIBUTION NETWORK IN KTN NDA

SHEET 4 OF 4

SHEET NUMBER

60624717/CE1/WIA/005

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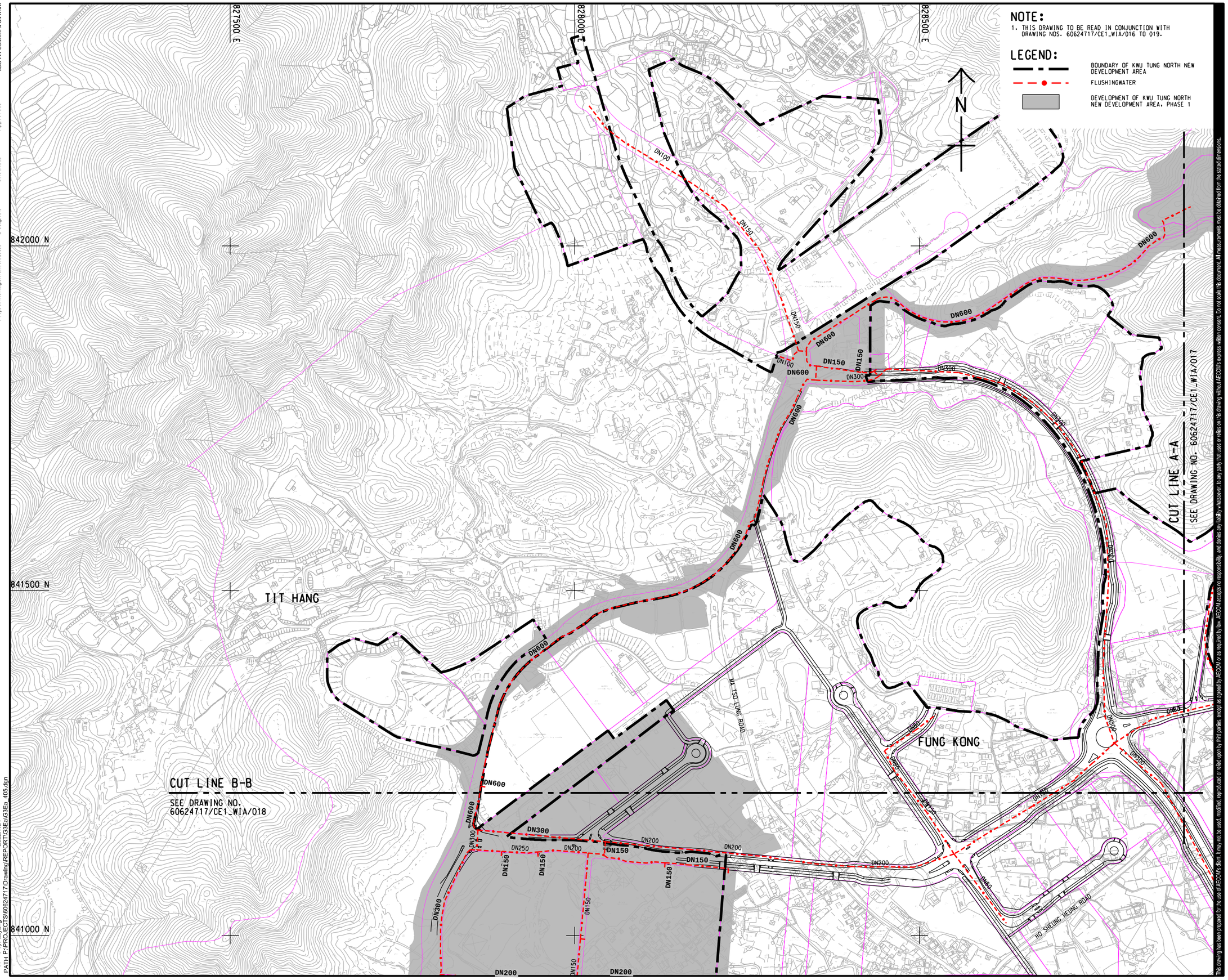

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LEGEND:
- BOUNDARY OF KWU TUNG NORTH NEW DEVELOPMENT AREA
- FLUSHINGWATER
- DEVELOPMENT OF KWU TUNG NORTH NEW DEVELOPMENT AREA, PHASE 1

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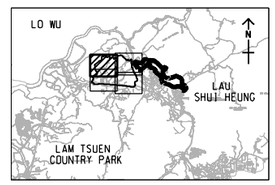

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CONTRACT NO. 合約編號: CE 19/2019 (CE)

SHEET TITLE
圖紙名稱

UPDATED FLUSHING WATER DISTRIBUTION NETWORK IN KTN NDA

SHEET 1 OF 4

SHEET NUMBER
圖紙編號

60624717/CE1/WIA/006

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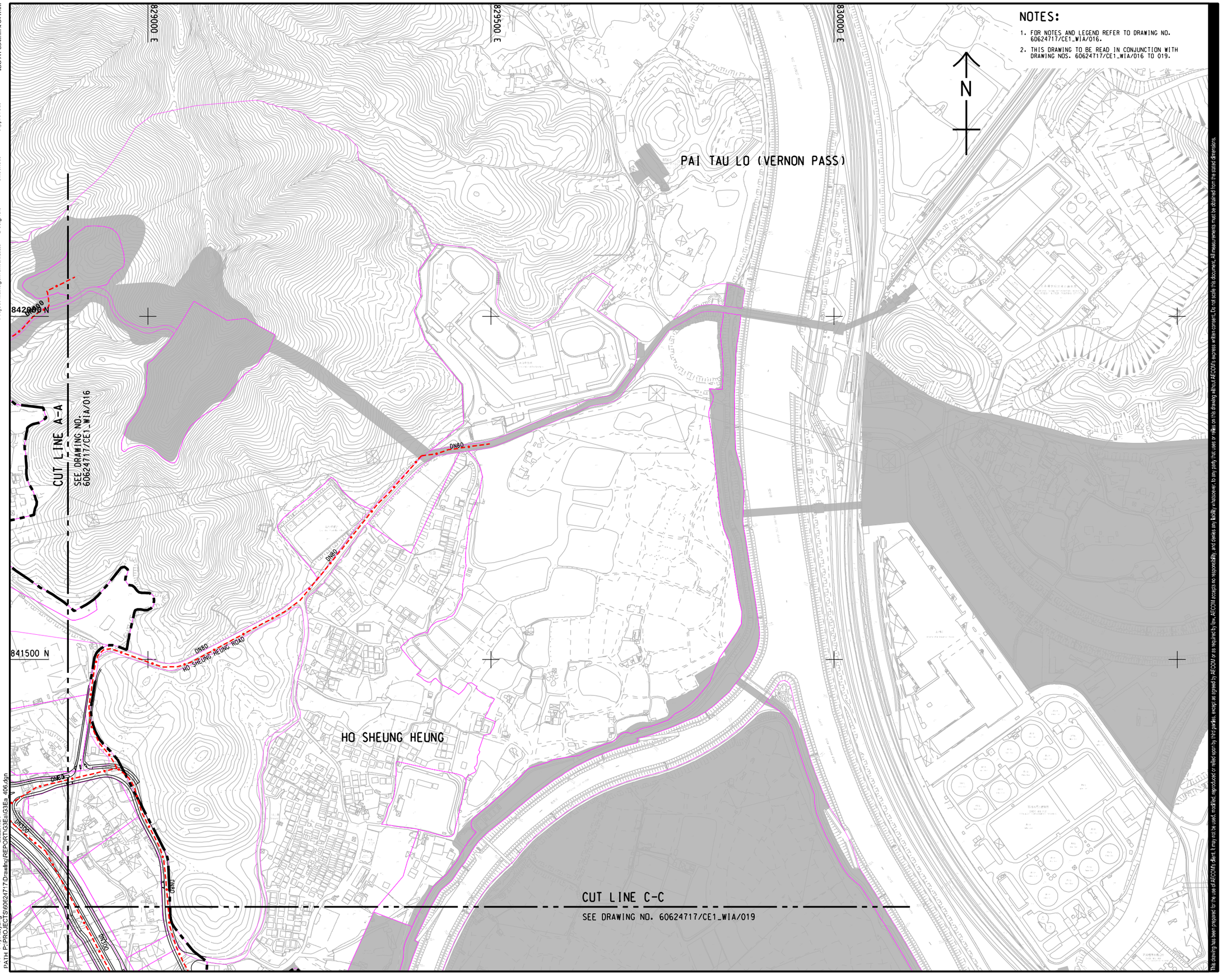

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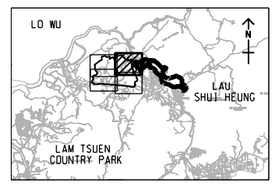

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CONTRACT NO. 合約編號 CE 19/2019 (CE)

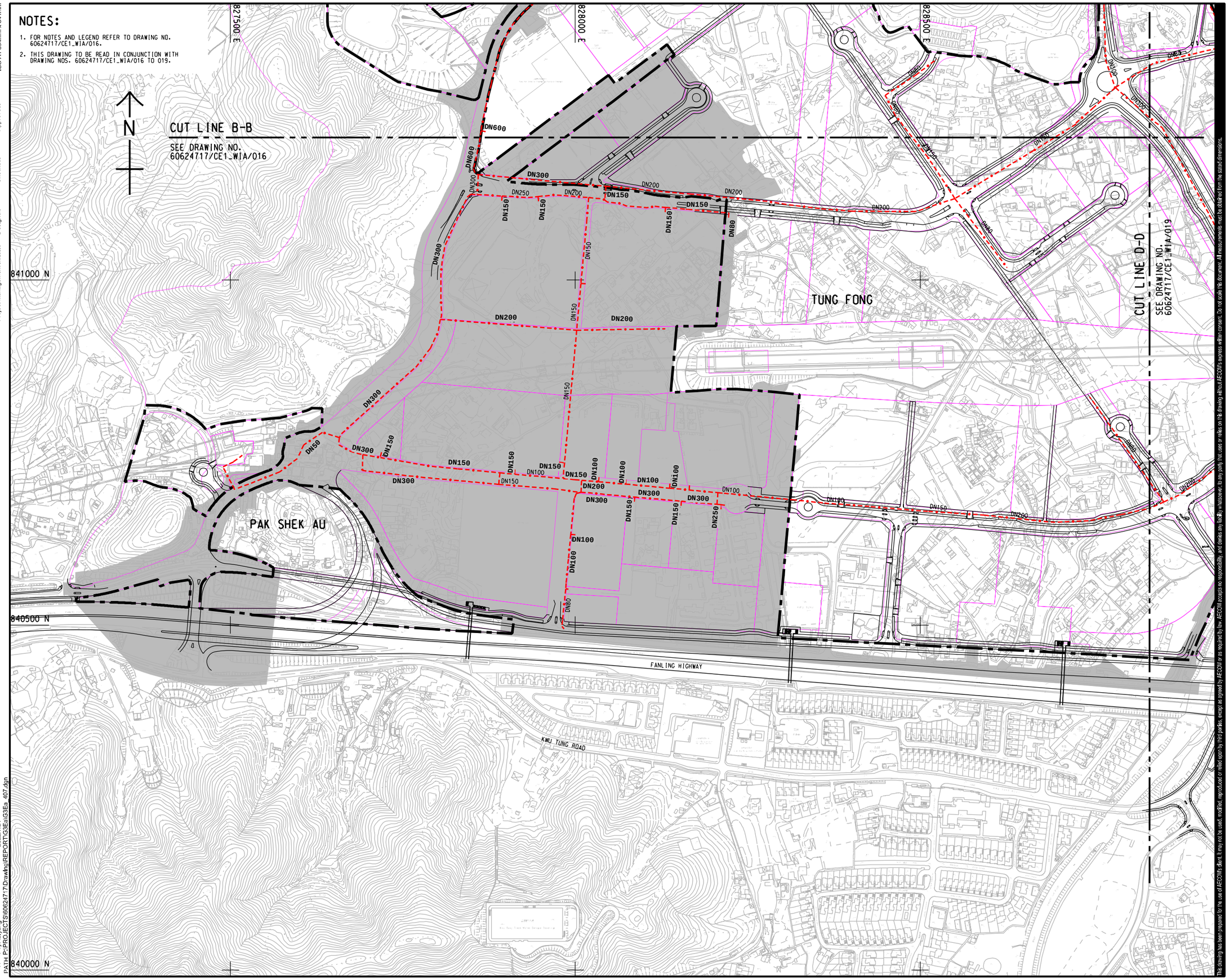
SHEET TITLE
圖紙名稱

UPDATED FLUSHING WATER
DISTRIBUTION NETWORK
IN KTN NDA

SHEET 2 OF 4

SHEET NUMBER
圖紙編號

60624717/CE1/WIA/007



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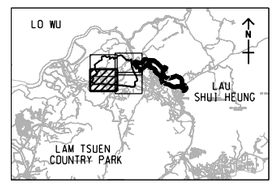

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UPDATED FLUSHING WATER DISTRIBUTION NETWORK IN KTN NDA

SHEET 3 OF 4

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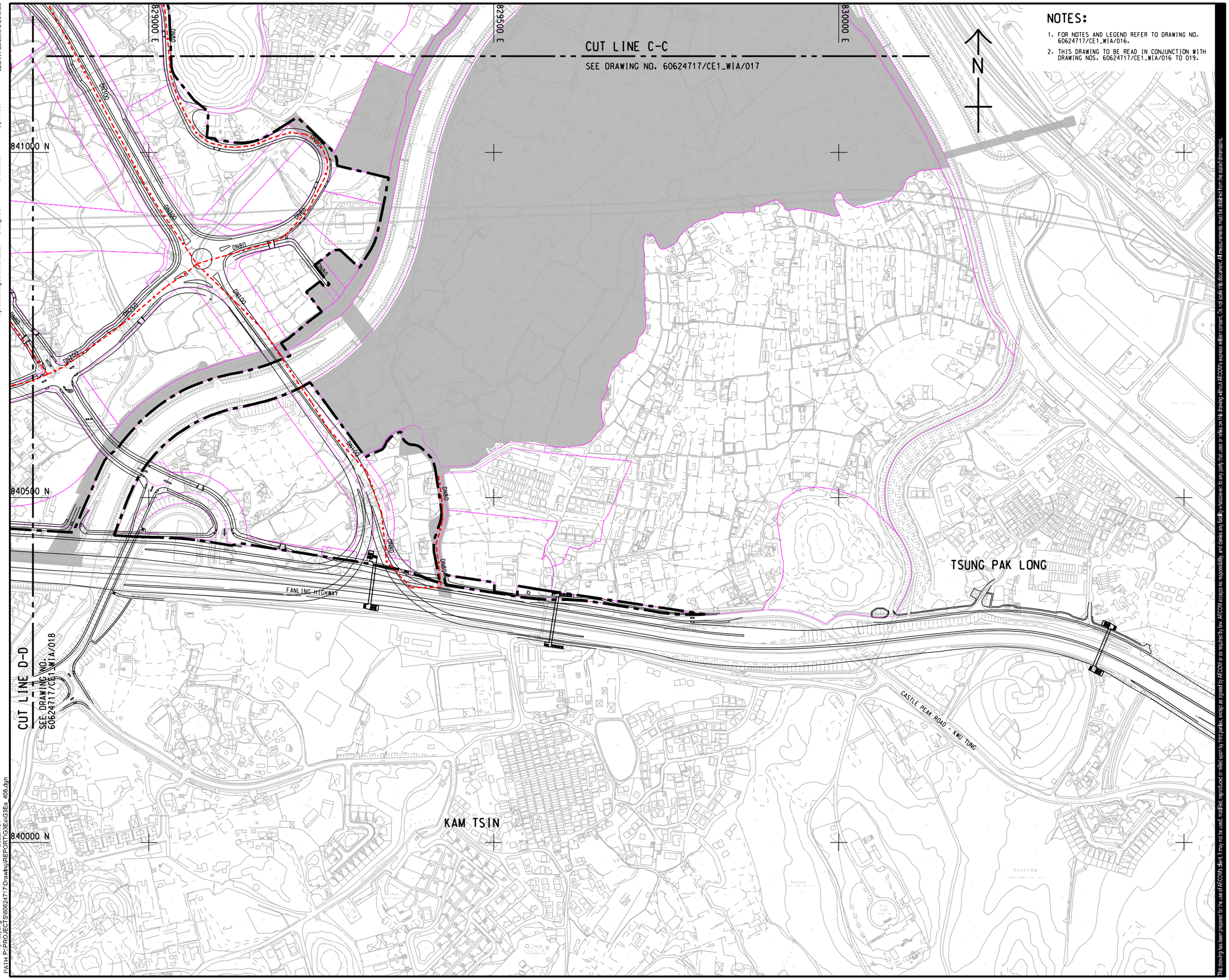

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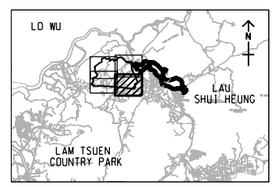

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CONTRACT NO. 合約編號 CE 19/2019 (CE)

SHEET TITLE
圖紙名稱

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SHEET NUMBER
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Appendix D

Drainage Impact Assessment

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2 EXISTING DRAINAGE SYSTEM AND DRAINAGE CHARACTERISTICS.....1

3 ASSESSMENT OF DRAINAGE IMPACT 1

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60624717/G3Da/001	Proposed Drainage Layout Plan for KTN NDA

1 INTRODUCTION

1.1 The purpose of this assessment is to review the impact on the drainage system induced by the proposed minor relaxation of housing sites intensification and the proposed OZP amendment in KTN NDA**.**

2 EXISTING DRAINAGE SYSTEM AND DRAINAGE CHARACTERISTICS

2.1 The existing catchment includes mixed land uses comprising mainly scattered villages, agricultural land, small-scaled open storage uses and rural industrial uses. The KTN NDA is currently served by 3 nos. of existing secondary channels, including:-

- Fung Kong
- Shek Tsai Leng
- Kwu Tung

Storm water collected by these channels is conveyed eastwards into Sheung Yue River.

2.2 **Storm water from t**he catchment of Pak Shek Au at south west of the KTN NDA is drained to the existing 3000m x 1700m box culvert in Castle Peak Road (Chau Tau section) in the west side of the KTN NDA.

2.3 The catchment layout of KTN NDA full development and the proposed drainage layout for KTN NDA is shown in **Drawing No. 60624717/G3Da/001.**

3 ASSESSMENT OF DRAINAGE IMPACT

3.1 Under the proposed minor relaxation of development restrictions and the proposed OZP amendment for KTN NDA, the proposed additional population is tackled by increase additional floors on the same paved areas. The drainage catchment of paved area and unpaved area are remain unchanged before and after the proposed minor relaxation of development restrictions and the proposed OZP amendment for KTN NDA. As no increased paved area due to additional population, no additional surface runoff and drainage impact are anticipated.

3.2 The proposed minor relaxation of development restrictions and the proposed OZP amendment for KTN NDA will not change the catchment characteristic, thus the runoff arising from the development will remain the same as that of the existing condition. The hydraulic loading to the drainage system will not be increased. Therefore, no adverse drainage impact is anticipated due to the proposed development.

Drawings

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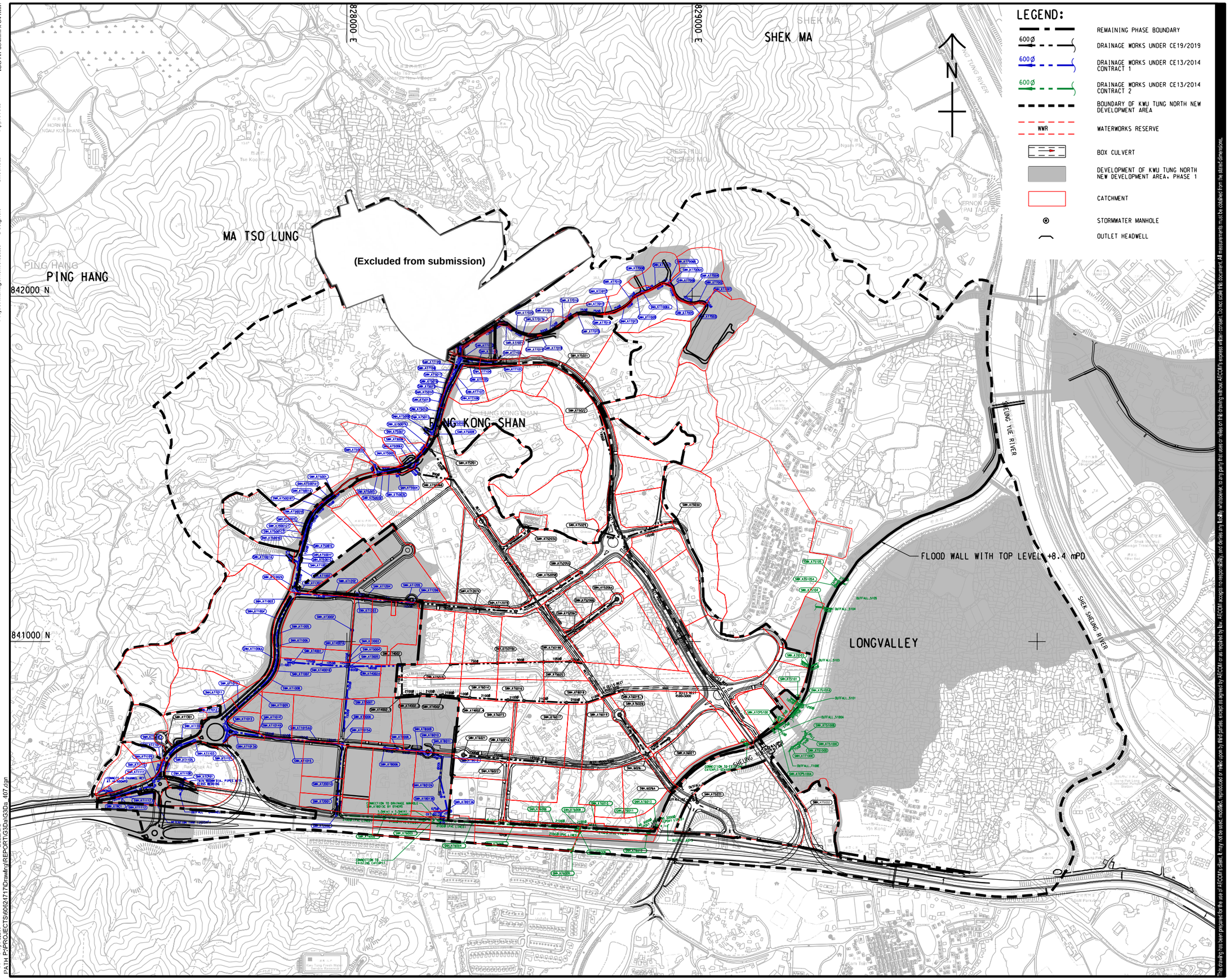

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DEVELOPMENT OF KWU TUNG NORTH NEW DEVELOPMENT AREA, REMAINING PHASE - DESIGN & CONSTRUCTION

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PROJECT NO. 60624717
CONTRACT NO. CE 19/2019 (CE)

SHEET TITLE
GENERAL DRAINAGE LAYOUT PLAN

SHEET NUMBER
60624717/G3Da/007

Appendix E

Environmental Assessment

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1 INTRODUCTION

1.1 Background

1.1.1 AECOM has been commissioned to provide an Environmental Assessment (EA) to support Section 16 Planning Application (hereafter refer to as s.16 Application) for a total of 17 housing sites (i.e. Area nos. 12, 13, 14, 15, 20, 21, 22, 23, 25 and 26) (hereinafter referred to as "the proposed developments") on top of the previous planning application No. A/KTN/54 and the approved Outline Zoning Plan (OZP) No. S/KTN/2). The plot ratio and building height restrictions of the proposed developments are proposed to be relaxed for additional housing supply and community facilities. In addition, there is a total of 5 sites (i.e. Area nos. 9 (partial), 28, 29 (partial), 32 and 34) to be included in the OZP amendments for relaxation of building height restrictions and land use rezoning.

1.1.2 As the proposed changes under S.16 Application and OZP amendments are related to plot ratio, building height and the updated building layout of some areas only, this EA presents a study of the potential air quality and noise impact, as well as ecological impact where necessary arising from the proposed changes in order to confirm the environmental suitability of the proposed developments.

1.2 Site Location and Existing Land Use

1.2.1 All application sites are located within the Kwu Tung North (KTN) New Development Area (NDA) and fall within the Approved Kwu Tung North Outline Zoning Plan (OZP) No. S/KTN/2 (the OZP). Locations of 17 Application Sites under the s.16 Application and 5 application sites under the proposed OZP amendments are shown in **Figure no. 60624717/G10/FIGURE 1.1**.

1.2.2 Among the 17 Application Sites under the s.16 planning application, 3 are zoned as "Residential (Group A) 1" ("R(A)1"), 2 of which are zoned as "Residential (Group A) 2" ("R(A)2"), 2 are zoned as "Residential (Group A) 3" ("R(A)3"), 3 are zoned as "Residential (Group B)" ("R(B)") and 7 zoned as "Residential (Group B)" ("R(B)") with portions of the area shown as 'Road'.

1.2.3 For the 5 Application Sites under the OZP amendments, 3 of them in Area 9, 28 and 29 are zoned as "Government, Institution or Community" ("G/IC"). The remaining 2 sites in Area 32 and 34 are originally zoned as "Other Specified Uses" annotated "Business and Technology Park" ("OU (Business and Technology Park)") which are proposed to be rezoned as "Residential (Group B)" ("R(B)1").

1.3 Proposed Developments

1.3.1 **Table 1.1** below shows the proposed changes in plot ratio and building height of the application sites, with the layout shown in **Figure no. 60624717/G10/FIGURE 1.1**.

Table 1.1 Proposed Changes in Maximum Plot Ratio and Building Height Restriction of the Proposed Developments

Site no.	OZP Planning Area	Approved Planning Restriction		Proposed Planning Restriction	
		Total Maximum Plot Ratio*	Building Height Restriction (mPD) / No. of Storey	Total Maximum Plot Ratio*	Building Height Restriction (mPD)
S.16 Application					
A1	12	5.8	135 mPD	6.73	180
A2	13	5.8	135 mPD	6.5	160
A3	20	6	115 mPD	7.8	145
A4	21	5.8	130 mPD	6.5	140
A5	26	5.8	120 mPD	6.5	135
B1	20	6	115 mPD	7.2	130
B2	25	6	115 mPD	7.2	130
B3	14	3.5	80 mPD	4.2	95

Site no.	OZP Planning Area	Approved Planning Restriction		Proposed Planning Restriction	
		Total Maximum Plot Ratio*	Building Height Restriction (mPD) / No. of Storey	Total Maximum Plot Ratio*	Building Height Restriction (mPD)
B4	22	3.5	75 mPD	4.2	85
B5	26	3.5	75 mPD	4.2	80
B6	26	3.5	75 mPD	4.2	80
B7	15	3.5	85/95 mPD	4.2	100
B8	15	3.5	85 mPD	4.2	90
B9	15	3.5	80 mPD	4.2	85
B10	23	3.5	95 mPD	4.43	110
B11	23	3.5	90 mPD	4.2	90
B12	23	3.5	90 mPD	4.2	90
OZP Amendments					
-	9	N/A	20 storeys	N/A	130
-	28	N/A	10 storeys	N/A	130
-	29	N/A	8/10 storeys	N/A	130
-	32	3	40/55 mPD	4.2	75
-	34	3	40/55 mPD	4.2	70

1.4 Environmental Assessment

1.4.1 Considering that the proposed changes, nature and scope of the proposed developments, it is anticipated that there would be no additional environmental impacts arising from the proposed changes during the construction of the proposed developments.

1.4.2 During the operational phase, the identified potential sources of impacts on the proposed developments would be vehicular emissions and traffic noise from nearby roads, while the potential ecological impact arising from the proposed changes at Area 32 and 34 due to their proximity of Long Valley Nature Park has been reviewed. In this EA, the identified key issues associated with operation of proposed developments have been addressed in the following sections:

- Section 2 – Air Quality;
- Section 3 – Noise;
- Section 4 – Ecology; and
- Section 5 – Conclusions.

2 AIR QUALITY IMPACT ASSESSMENT

2.1 Introduction

2.1.1 The dominant air emission sources in the vicinity of the application sites are vehicular emissions from existing and future roads, including Fanling Highway, Castle Peak Road (Chau Tau and Kwu Tung section), primary distributor road (i.e. Road P1 and P2), district distributor roads (i.e. Road D1, D2, D3, D4 and D5) and local distributor roads (i.e. Road L1, L2, L3, L4, L5, L6, L7 and L8). No observable industrial emission was found within 500 m from the application areas. Therefore, air quality impact from industrial emission is not considered to be of concern to the proposed developments. This section therefore addresses the potential air quality impact associated with vehicular emissions on the proposed developments.

2.2 Environmental Legislation and Guidelines

2.2.1 The Hong Kong Air Quality Objectives (AQOs), which must be satisfied, stipulate the maximum allowable concentrations over specific periods for typical pollutants. The AQOs are listed in **Table 2.1**.

Table 2.1 Hong Kong Air Quality Objectives

Pollutant	Averaging Time	Maximum Concentration (μg m^{-3}) (1)	No. of Exceedances Allowed
Fine Suspended Particulates (FSP/$PM_{2.5}$) (3)	24-hour	50	35
	Annual (2)	25	NA
Respirable Suspended Particulates (RSP/PM_{10}) (4)	24-hour	100	9
	Annual	50	NA
Sulphur Dioxide (SO_2)	10-min	500	3
	24-hour	50	3
Nitrogen Dioxide (NO_2)	1-hour	200	18
	Annual	40	NA
Carbon Monoxide (CO)	1-hour	30,000	0
	8-hour	10,000	0
Ozone	8-hour	160	9

Notes:
(1) Measured at 293 K and 101.325 kPa.
(2) Arithmetic mean.
(3) Suspended particles in air with a nominal aerodynamic diameter of 2.5 μm or less.
(4) Suspended particles in air with a nominal aerodynamic diameter of 10 μm or less.

2.3 Description of the Environment

2.3.1 The proposed developments adjoin primary distributor road (Road P1 and P2), district distributor roads (Road D1, D2, D3, D4 and D5) and local distributor roads (Castle Peak Road (Chau Tau and Kwu Tung section), Road L1, L2, L3, L4, L5, L6, L7 and L8), where the dominant air emission sources are vehicular emissions.

2.4 Vehicular Emission Impact Assessment

2.4.1 According to Table 3.1 in *Chapter 9* of the *Hong Kong Planning Standards and Guidelines* (HKPSG), a minimum buffer distance of 20 m is recommended between major trunk road / primary distributors and sensitive uses (e.g. residential units, sport grounds), 10 m for district distributor and 5 m for local distributors. The separation distance between the neighbouring roads and the nearest Air Sensitive Receivers (ASRs) (i.e. residential building block) of each application site is summarised in **Table 2.2**. With sufficient separation distance between the ASRs and the nearby roads as recommended in HKPSG, no adverse impact on ASRs from vehicular emissions is anticipated.

Table 2.2 Separation Distance Between the Neighbouring Proposed Roads and the Application Sites

Road	Category (1)	Distance from Nearest ASRs (m)	Minimum Setback Distance as stated in HKPSG (m)	Meet Requirement (Y/N)
Area 9				
Road D3	DD	15	10	Y
Road D4	DD	51	10	Y
Area 12 (A1)				
Road D3	DD	11	10	Y
Road L5	LD	12	5	Y
Area 13 (A2)				
Road D3	DD	11	10	Y
Road L6	LD	18	5	Y
Area 14 (B3)				
Road D3	DD	17	10	Y
Road L6	LD	17	5	Y
Road L7	LD	23	5	Y
Area 15 (B7, B8, B9)				
Road D5	DD	31	10	Y
Road L8	LD	30	5	Y
Area 20 (A3, B1)				
Road D3	DD	12	10	Y
Area 21 (A4)				
Road D3	DD	11	10	Y
Road L6	LD	10	5	Y
Area 22 (B4)				
Road P2	PD	55	20	Y
Road L6	LD	16	5	Y
Area 23 (B10, B11, B12)				
Road P2	PD	28	20	Y
Road D5	DD	48	10	Y
Road L4	LD	10	5	Y
Road L8	LD	16	5	Y
Area 25 (B2)				
Road D2	DD	24	10	Y
Road L2	LD	14	5	Y
Area 26 (A5, B5, B6)				
Road P2	PD	70	20	Y
Road D2	DD	14	10	Y
Road L3	LD	12	5	Y
Area 28				
Road P1	PD	80	20	Y
Road D1	DD	16	10	Y
Area 29				
Castle Peak Road (Chau Tau and Kwu Tung section)	LD	26	5	Y
Road L1	LD	12	5	Y
Area 32				
Road P2	PD	38	20	Y
Road D2	DD	19	10	Y
Road L3	LD	36	5	Y
Area 34				
Road P2	PD	34	20	Y
Road L4	LD	19	5	Y

Note:
(1) PD – Primary Distributor Road; DD – District Distributor Road; LD – Local Distributor Road.

3 NOISE IMPACT ASSESSMENT

3.1 Introduction

3.1.1 With respect to the proposed changes in plot ratio and building height restrictions, major concern would be the potential road traffic noise impact on the proposed residential developments from the nearby roads. There would be other concerns related to fixed plant noise to the proposed developments. According to the Environmental Review Report (ERR) submitted under the Variation of Environmental Permit (VEP) of Sheung Shui to Lok Ma Chau Spur Line (Application No.: VEP-604/2021), the fixed noise impact to the proposed developments is anticipated to be insignificant.

3.1.2 Hence, this section only addresses road traffic noise impact on the proposed residential developments. The building blocks layouts of the application sites have been agreed with respective authorities and confirmed to be practicable in fulfilling the proposed planning / development requirements.

3.2 Environmental Legislation and Guidelines

Road Traffic Noise

3.2.1 The Hong Kong Planning Standards and Guidelines (HKPSG) recommends that the maximum permissible road traffic noise level of L_{10} (1 hour) assessed at 1 m from the external façade should not exceed 70 dB(A) for the residential development.

3.3 Assessment Methodology

Road Traffic Noise

3.3.1 Calculations were carried out using the UK Department of Transport "Calculation of Road Traffic Noise" 1988 (CRTN), which is the method accepted by Environmental Protection Department (EPD) for use in Hong Kong. Predicted noise levels are given in terms of L_{10} (1-hr) dB(A).

3.3.2 In accordance with the requirements of the EPD, road traffic noise should be predicted based on the maximum traffic forecast within 15 years upon the occupation of the proposed developments.

3.3.3 The first population intake of proposed developments is 2031. As a worst-case scenario, the traffic noise assessment has been conducted using the peak hour traffic flow of 2046, which is the 15th year after the operation of proposed roads under *Development of Kwu Tung North New Development Area Project* adjacent to the proposed developments. Existing and future roads within 300 m assessment boundary of the proposed developments have been considered in this noise assessment. Traffic forecast adopted in the traffic noise model is given in **Appendix 3.1**.

3.3.4 In order to demonstrate that the proposed developments would not be adversely affected by traffic noise from the nearby existing and future road network, calculations have been performed at the representative noise sensitive facades of the NSRs. The locations of the noise assessment points for residential uses, kindergartens and social welfare facilities are shown in **Figure nos. 60624717/G10/FIGURE 3.1.1** to **3.1.13**, **60624717/G10/FIGURE 3.2.1** to **3.2.7** and **60624717/G10/FIGURE 3.3.1** to **3.3.4** respectively.

3.4 Traffic Noise Impact Assessment Results

3.4.1 Road traffic noise levels at the representative noise sensitive facades have been predicted based on the traffic forecast in 2046. The results of representative assessment points for residential are summarised in **Table 3.1** and the detailed breakdown is presented in **Appendix 3.2-1.**

Table 3.1 Predicted Road Traffic Noise Levels at Representative Noise Sensitive Receivers (Residential)

NSR ID	Floor	First Assessment Level, mPD	Range of Predicted Road Traffic Noise Level, L10 (1-hr) dB(A)			Compliance with the Standard of L_{10} (1-hr) 70 dB(A) (Y/N)	At Receiver-end Mitigation Measures Required (Y/N)
A1 (KTN NDA Area 12)							
A3-3a-1	41	56.2	65.6	-	68.5	Y	N
A3-3a-2a	41	56.2	53.5	-	69.3	Y	N
A3-3a-2b	41	56.2	51.9	-	68.9	Y	N
A3-3a-3a	41	56.2	51.5	-	68.8	Y	N
A3-3a-3b	41	56.2	53.2	-	69.3	Y	N
A3-3a-4a	41	56.2	52.5	-	68.7	Y	N
A3-3a-4b	41	56.2	52.2	-	68.4	Y	N
A3-3a-5	41	45.7	57.6	-	61.6	Y	N
A3-3a-6	41	45.7	61.1	-	62	Y	N
A2 (KTN NDA Area 13)							
A3-3b-1a	41	43.2	54.6	-	69.5	Y	N
A3-3b-1b	41	43.2	54.1	-	69.4	Y	N
A3-3b-2a	41	43.2	61.9	-	69.9	Y	N
A3-3b-2b	41	43.2	61.7	-	70.3	Y	N
A3-3b-3	41	43.2	61.6	-	66.8	Y	N
A3-3b-4	41	43.2	60	-	66.1	Y	N
A3-3b-5	41	43.2	57.9	-	64.8	Y	N
A3-3b-6	41	43.2	58.9	-	64.4	Y	N
B3 (KTN NDA Area 14)							
A3-6-1	22	22.7	67.5	-	**71.4**	**N**	**Y**
A3-6-2	22	22.7	69	-	**73**	**N**	**Y**
A3-6-3	22	22.7	69.3	-	**72.4**	**N**	**Y**
A3-6-4	22	22.7	70	-	**71.4**	**N**	**Y**
A3-6-5	22	22.7	69.9	-	**70.6**	**N**	**Y**
A3-6-6	22	22.7	65.1	-	65.8	Y	N
A3-6-7	22	22.7	63.4	-	65	Y	N
A3-6-8	22	22.7	63	-	64.5	Y	N
B7 (KTN NDA Area 15)							
D1-11c-1	20	25.2	64.4	-	67.6	Y	N
D1-11c-2	20	25.2	67.8	-	70.3	Y	N
D1-11c-3	20	25.2	56.8	-	60.5	Y	N
D1-11c-4	20	36.2	63.1	-	67.6	Y	N
D1-11c-5	20	36.2	62.6	-	65.2	Y	N
B8 (KTN NDA Area 15)							
D1-11b-1	20	25.2	65.8	-	67.9	Y	N
D1-11b-2	20	25.2	67.5	-	69.8	Y	N
D1-11b-3	20	25.2	67.4	-	69.5	Y	N
D1-11b-4	20	25.2	65.5	-	67.1	Y	N
D1-11b-5	20	25.2	63.7	-	67.8	Y	N
D1-11b-6	20	25.2	62.7	-	66.4	Y	N

NSR ID	Floor	First Assessment Level, mPD	Range of Predicted Road Traffic Noise Level, L10 (1-hr) dB(A)			Compliance with the Standard of L_{10} (1-hr) 70 dB(A) (Y/N)	At Receiver-end Mitigation Measures Required (Y/N)
B9 (KTN NDA Area 15)							
D1-11a-1	18	23.2	69.7	-	**71.8**	**N**	**Y**
D1-11a-2	18	23.2	**70.6**	-	**72.6**	**N**	**Y**
D1-11a-3	18	23.2	**70.5**	-	**72.2**	**N**	**Y**
D1-11a-4	18	23.2	68.1	-	70.2	Y	N
D1-11a-5	18	23.2	65.2	-	69.7	Y	N
D1-11a-6	18	23.2	63.4	-	66.4	Y	N
A3 (KTN NDA Area 20)							
A2-4-1	32	41.7	67.4	-	**71.9**	**N**	**Y**
A2-4-2	32	41.7	67.5	-	**72.1**	**N**	**Y**
B1 (KTN NDA Area 20)							
A2-5-1	26	33.7	59	-	70.2	Y	N
A2-5-2	26	33.7	55.7	-	69.6	Y	N
A4 (KTN NDA Area 21)							
A2-7-1	37	35.7	66	-	**70.8**	**N**	**Y**
A2-7-2	37	35.7	48.1	-	63.1	Y	N
A2-7-3	37	35.7	57.9	-	62.6	Y	N
A2-7-4	37	35.7	54.1	-	61.1	Y	N
B4 (KTN NDA Area 22)							
A2-9a-1	20	18.2	58.7	-	59.7	Y	N
A2-9a-2	20	18.2	60.8	-	62.8	Y	N
A2-9a-3	20	18.2	59.1	-	62.8	Y	N
A2-9b-1	20	18.2	61	-	63.6	Y	N
A2-9b-2	20	18.2	65.5	-	66.5	Y	N
A2-9b-3	20	18.2	69.2	-	69.6	Y	N
A2-9b-4	20	18.7	69.4	-	70.4	Y	N
A2-9b-5	20	18.2	69.8	-	**70.8**	**N**	**Y**
A2-9b-6	20	18.2	70	-	**70.6**	**N**	**Y**
A2-9b-7	20	18.2	68.6	-	68.9	Y	N
B10 (KTN NDA Area 23)							
D1-7a-1	24	38.2	69.7	-	**71.6**	**N**	**Y**
D1-7a-2	24	38.2	70.1	-	**71.9**	**N**	**Y**
D1-7a-3	24	38.2	69.1	-	**71.5**	**N**	**Y**
D1-7a-4	24	38.2	63.2	-	68.7	Y	N
D1-7a-5	24	38.2	52.5	-	62.8	Y	N
D1-7b-1	26	21.2	69.9	-	**72.6**	**N**	**Y**
D1-7b-2	26	21.2	69.9	-	**73.4**	**N**	**Y**
D1-7b-3	26	21.2	60.7	-	62.6	Y	N
D1-7b-4	26	21.2	61.8	-	64.4	Y	N
B11 (KTN NDA Area 23)							
D1-7c-1	20	17.7	65.9	-	**70.7**	**N**	**Y**
D1-7c-2	20	17.7	64.8	-	**70.8**	**N**	**Y**
D1-7c-3	20	17.7	65.5	-	**70.7**	**N**	**Y**
D1-7c-4	20	17.7	**72.3**	-	**73.2**	**N**	**Y**
D1-7c-5	20	17.7	70.4	-	**71.2**	**N**	**Y**
D1-7c-6	20	17.7	70.4	-	**72**	**N**	**Y**
D1-7c-7	20	17.7	69.7	-	**70.6**	**N**	**Y**
B12 (KTN NDA Area 23)							

NSR ID	Floor	First Assessment Level, mPD	Range of Predicted Road Traffic Noise Level, L10 (1-hr) dB(A)			Compliance with the Standard of L_{10} (1-hr) 70 dB(A) (Y/N)	At Receiver-end Mitigation Measures Required (Y/N)
D1-7d-1	24	15.2	65.3	-	70.2	Y	N
D1-7d-2	24	15.2	65.7	-	**70.7**	**N**	**Y**
D1-7d-3	24	15.2	67.9	-	**71**	**N**	**Y**
D1-7d-4	24	15.2	68.6	-	**70.6**	**N**	**Y**
B2 (KTN NDA Area 25)							
A1-6-1	26	36.2	67.5	-	70	Y	N
A1-6-2	26	36.2	69.2	-	**71.5**	**N**	**Y**
A5 (KTN NDA Area 26)							
A1-8-1	34	36.7	57.4	-	70.4	Y	N
A1-8-2	34	36.7	58.7	-	**70.5**	**N**	**Y**
A1-8-3	34	36.7	57.8	-	69	Y	N
B5 (KTN NDA Area 26)							
A1-9a-1	18	14.7	67.8	-	69.7	Y	N
A1-9a-2	18	14.7	70.1	-	**73.4**	**N**	**Y**
A1-9a-3	18	14.7	68.8	-	**71**	**N**	**Y**
A1-9a-4	18	14.7	69.4	-	**71.4**	**N**	**Y**
A1-9a-5	18	14.7	68.4	-	**70.7**	**N**	**Y**
A1-9a-6	18	14.7	65.7	-	69	Y	N
A1-9a-7	18	14.7	61.6	-	64.6	Y	N
B6 (KTN NDA Area 26)							
A1-9b-1	18	15.2	68.4	-	**71.1**	**N**	**Y**
A1-9b-2	18	15.2	70.3	-	**73**	**N**	**Y**
A1-9b-3	18	15.2	70.1	-	**73.3**	**N**	**Y**
A1-9b-4	18	15.2	69.2	-	**71.9**	**N**	**Y**
A1-9b-5	18	15.2	68.7	-	70.1	Y	N
A1-9b-6	18	15.2	**71**	-	**72.6**	**N**	**Y**
A1-9b-7	18	15.2	**71.7**	-	**72.8**	**N**	**Y**
A1-9b-8	18	15.2	66.2	-	70.4	Y	N
A1-9b-9	18	15.2	63.1	-	67.3	Y	N
KTN NDA Area 9							
E1-3-1	28	46.7	62.4	-	63.7	Y	N
E1-3-2	28	46.7	63.5	-	66.6	Y	N
E1-3-3	28	46.7	64	-	67.6	Y	N
E1-3-4	28	46.7	64	-	68.4	Y	N
E1-3-5	28	46.7	66.2	-	68.8	Y	N
E1-3-6	28	46.7	63.6	-	65.2	Y	N
E1-3-7	28	46.7	60.8	-	63.3	Y	N
KTN NDA Area 32							
B3-5a-1	19	14.7	70.4	-	**70.9**	**N**	**Y**
B3-5a-2	19	14.7	69	-	**71.2**	**N**	**Y**
B3-5a-3	19	14.7	68.4	-	**70.5**	**N**	**Y**
B3-5a-4	19	14.7	67.1	-	69.6	Y	N
B3-5a-5	19	14.7	**71.1**	-	**73.5**	**N**	**Y**
B3-5a-6	19	14.7	**71.4**	-	**73.3**	**N**	**Y**
B3-5a-7	19	14.7	68.9	-	**72.1**	**N**	**Y**
B3-5a-8	19	14.7	69.5	-	**73**	**N**	**Y**
B3-5a-9	19	14.7	**71.8**	-	**73.8**	**N**	**Y**
B3-5a-10	19	14.7	**72.2**	-	**72.9**	**N**	**Y**

NSR ID	Floor	First Assessment Level, mPD	Range of Predicted Road Traffic Noise Level, L10 (1-hr) dB(A)			Compliance with the Standard of L_{10} (1-hr) 70 dB(A) (Y/N)	At Receiver-end Mitigation Measures Required (Y/N)
B3-5a-11	19	14.7	**70.5**	-	**71.1**	**N**	**Y**
B3-5a-12	19	14.7	70.2	-	**70.8**	**N**	**Y**
B3-5a-13	19	14.7	68.1	-	69.3	Y	N
B3-5a-14	19	14.7	68	-	69.3	Y	N
B3-5a-15	19	14.7	69.3	-	70.3	Y	N
KTN NDA Area 34							
B3-8-1	16	14.7	60.9	-	68.4	Y	N
B3-8-2	16	14.7	68.1	-	**71.8**	**N**	**Y**
B3-8-3	16	14.7	**72.5**	-	**73**	**N**	**Y**
B3-8-4	16	14.7	**72**	-	**73.8**	**N**	**Y**
B3-8-5	16	14.7	70.1	-	**72**	**N**	**Y**
B3-8-6	16	14.7	62.9	-	65.5	Y	N

3.4.2 With the proposed at-source noise mitigation measures as illustrated in **Figure no. 60624717/G10/FIGURE 3.4**, the predicted noise levels at a few NSRs still exceed the noise limit of 70 dB(A). In order to reduce substantial structures of at-source noise mitigation measures (NMMs), a balanced approach would be adopted to provide NMMs with both at source and at receiver end.

3.4.3 Adoption of at-receiver end NMMs is a common mitigation approach and had been widely adopted as effective practices to reduce traffic noise impact on the existing residential developments. According to information provided by EPD[1], Innovative Noise Mitigation Measures (INMMs), i.e. acoustic windows and enhanced acoustic balconies, have been adopted in over 150 developments. These INMMs could provide a high degree of noise reduction and allow natural ventilation at the same time. It is anticipated that INMMs will not affect the development parameters. Different types of INMMs and their noise reduction performances are listed in **Table 3.2**.

Table 3.2 Noise Reduction Performance of Innovative Noise Mitigation Measures

Innovative Noise Mitigation Measures		Noise Reduction performance in dB(A) (1)
Acoustic Windows	Baffle Type	About 4 – 8
	Top-Hung Type	About 4 – 5.5
Enhanced Acoustic Balcony		About 3 – 7

Note:
(1) Reference was made to the website of Innovative Noise Mitigation Designs and Measures by EPD (2022) (https://www.epd.gov.hk/epd/Innovative/greeny/eng/innovation.html).

3.4.4 The predicted degree of noise exceedance of respective public and private housing sites as indicated in **Table 3.1** has been made known to Housing Department and Lands Department, respectively. It was agreed that the above-mentioned INMMs will be adopted subject to the detailed designs of respective housing sites. For public housing sites, Housing Department and Housing Society will conduct Environmental Assessment Studies (EAS) including Noise Impact Assessment (NIA) at a later stage and, where necessary, propose at-receiver end mitigation measures to mitigate the residual exceedances to meet the noise standard. While for private housing sites, Lands Department will set out requirements for conducting EAS/NIA on land leases and/or sale conditions to review the traffic noise impacts and the provision of at-receiver end mitigation measures to mitigate residual noise impacts. Owing to the high noise reduction performance of the INMMs, the predicted noise exceedances could be mitigated.

3.4.5 Non-compliances of respective noise criteria are also predicted at some assessment points

[1] https://www.epd.gov.hk/epd/Innovative/greeny/eng/innovation.html

at the proposed kindergartens and social welfare facilities. Nevertheless, the block layout is subject to change in the subsequent stage, this assessment serves the purpose of assessing all potential façades as a worst-case scenario and suggests applying non-sensitive use or acoustic insulation on the facades with noise exceedance. Such design constraints have been made known by CEDD to relevant parties (i.e. Housing Department / Housing Society / Architectural Services Department). Locations of proposed kindergartens and social welfare facilities predicted with noise exceedances are shown in **Figure nos. 60624717/G10/FIGURE 3.5** to **3.6**. The results of representative assessment points of kindergartens and social welfare facilities are presented in **Appendices 3.2-2** and **3.2-3** respectively.

4 ECOLOGICAL IMPACT ASSESSMENT

4.1 Introduction

4.1.1 The proposed OZP amendments propose the rezoning of two sites at Area 32 and Area 34 from "OU(B&TP)" with building height restriction of 40 – 55 mPD to "R(B)1" with building height restriction of 70 – 75 mPD. The planned and proposed land uses for Area 32 and Area 34 are illustrated in **Figure nos. 60624717/G10/FIGURE 4.1** and **4.2** respectively.

4.1.2 The section is to review the potential ecological impacts that are likely to be resulted from the rezoning of Area 32 and Area 34, due to their proximity to Long Valley Nature Park, with respect to the proposed changes in plot ratio and building height restriction.

4.2 Terrestrial Ecology

Ecological Baseline and Impact Assessment from Previous EIA Study

4.2.1 The Project Sites (i.e. Area 32 and 34) as well as the ecological sensitive receivers in the vicinity (i.e. Long Valley, Sheung Yue River and breeding ardeids from Ho Sheung Heung Egretry) fall entirely within the assessment area of the EIA study for the North East New Territories New Development Areas (NENT NDA Study) (CEDD and PlanD, 2013). The EIA study established the ecological baseline and assessed the potential ecological impact anticipated from the development of "Other Specified Uses (OU) (Business and Technology Park)" at Areas 32 and 34.

Project Sites at Area 32 and 34

4.2.2 The Project Sites are located along the western side of Sheung Yue River near Fanling Highway, and comprised a mosaic of habitats including mitigation ponds, mitigation plantation, plantation, grassland, and shrubland. The grassland and shrubland were potentially the results of natural succession on abandoned farmland, or colonisation of ruderal herbs and grass species after ponds have been filled. The mitigation plantation and wetland were the wetland habitats maintained by Agriculture, Fisheries and Conservation Department (AFCD) to provide mitigation for the ecological impacts resulting from channelisation of Sheung Yue River. These habitats were relatively fragmented and scattered in nature, while disturbances were evident from adjacent human activities. The ecological values of grassland, shrubland and plantation were considered as low, while the mitigation pond and plantation were considered as having low to moderate ecological value (CEDD and PlanD, 2013). These habitats were expected to be directly impacted by the construction of the Project, as according to CEDD and PlanD (2013), and the potential direct habitat and vegetation loss on these habitats were expected to be minor.

Sheung Yue River

4.2.3 Sheung Yue River is located at the immediate southeast of the Project Sites. It was a channelised watercourse subject to tidal influence with concrete banks and substrate. The floral diversity and abundance were low, but the Sheung Yue River was mainly used by wetland-dependent and wetland-associated birds such as Little Egret (*Egretta garzetta*), Great Egret (*Ardea alba*) and Grey Heron (*Ardea cinerea*). The number of individuals utilising the watercourse was higher during low tide. A total of 27 avifauna species was recorded along Sheung Yue River during the previous ecological survey (CEDD, 2013). The ecological value of Sheung Yue River was considered as moderate.

4.2.4 The KTN NDA development was expected to have moderate indirect disturbance to waterbirds foraging along the Sheung Yue River during the construction phase, but the disturbance impact during the operational phase was expected to be low given that these species were already exposed to disturbance from existing human activities along the Sheung Yue River. Mitigation measures to minimise construction phase disturbance impact includes the erection of noise / visual barriers, restriction of working hours during ardeid breeding season, etc. Planting buffers between the watercourse and areas with intensive human activities were also proposed during the operational phase (CEDD and PlanD, 2013).

Long Valley

4.2.5 Long Valley, situated at about 200 m east from the Project Sites, contains a variety of habitats including dry and wet agricultural land, ponds and marsh. Most of these habitats were under active management prior to the construction of Long Valley Nature Park. The area supported moderate floral diversity and also provided suitable habitats for a wide diversity of wetland fauna. Long Valley is also recognised as part of the Inner Deep Bay and Shenzhen River Catchment Important Bird Area. At least 278 bird species have been recorded at Long Valley since 2005 and about 30% of which are considered as species of conservation importance (CEDD and PlanD, 2013). The mosaic of habitats in Long Valley benefits bird species that utilised different habitats, such as Black-winged Stilt (*Himantopus Himantopus*), Little Ringed Plover (*Charadrius dubius*), Bluethroat (*Luscinia svecica*), etc. Long Valley also provides breeding and nursery grounds for some species such as Greater Painted-snipe (*Rostratula benghalensis*). The ecological value of habitats in Long Valley ranged from high to high to very high.

4.2.6 Indirect disturbance to Long Valley arising from the KTN NDA was expected. Light and glare impact would also affect nocturnal birds and herpetofauna in Long Valley and lowering the fauna utilisation. It was recommended that a 30 m exclusion zone from the boundary of Long Valley Nature Park should be implemented to minimise the disturbance impact from the construction and operation phases of the KTN NDA development, including the development in Areas 32 and 34, to the immediate northwest of Long Valley (CEDD and PlanD, 2013). Other mitigation measures including the erection of noise / visual barriers, good construction site practice and avoidance of unnecessary lighting during night time were recommended to minimise the disturbance impact on Long Valley.

Ho Sheung Heung Egretry

4.2.7 The Ho Sheung Heung Egretry was recorded at about 1.7 km northeast from the Project Sites. A total of 49 nests were recorded in 2012. According to the flight line studies conducted during the ecological survey by CEDD and PlanD (2013), around 40% of these breeding ardeids flew to the south of the egretry toward Long Valley and Sheung Yue River direction. Among which only about 5.6% of the breeding ardeids flew to the direction of the Project Sites. It suggested that both the Long Valley and Sheung Yue River were the key foraging ground for breeding ardeids from Ho Sheung Heung Egretry. The key impact on the breeding ardeids of Ho Sheung Heung Egretry was the disturbance of flight line due to the presence of obstacles along the route between their breeding and foraging sites. The recommended mitigation measures to minimise the disturbance were to avoid development along the flight lines between the egretry, Long Valley and Sheung Yue River, and to implement height bands for developments along the Sheung Yue River (i.e. maximum 7 stories for developments fronting the riverside and 10 stories for developments at the rear).

Ecological Baseline from Studies Conducted in Recent Years

4.2.8 While no major change to Sheung Yue River was observed in terms of habitats, the construction works for development at Kwu Tung North and Long Valley Nature Park are on-going. As shown in the monitoring data from the Environmental Monitoring and Audit Report for the First Phase Development of Kwu Tung North and Fanling North New Development Areas – Investigation of (CEDD, 2020 and 2021), the number of avifauna and species composition recorded along Sheung Yue River and Long Valley recorded in recent years were similar to the result from previous EIA study (CEDD and PlanD, 2013). The Ho Sheung Heung Egretry remains active and a total of 11 nests were recorded in 2021 (Anon, 2021).

4.3 Impact Assessment

Potential Direct Impact

4.3.1 ***Direct Habitat and Vegetation Loss***: The rezoning of Project Sites would not lead to additional habitat and vegetation loss. Hence the severity of direct habitat and vegetation loss due to the construction works within the Project Sites would remain unchanged from the previous EIA study (i.e. low ecological impact) (CEDD and PlanD, 2013).

4.3.2 ***Bird Collision***: Given that the Project Sites would be rezoned from OU (Business and Technology Park) to Residential zoning. The height of the proposed buildings for residential development would be increased from 40/55 mPD to 75 mPD in Area 32; and from 40/55 mPD to 70 mPD in Area 34. The increased building height may potentially lead to bird collision (especially with reflective window and glass curtain of the building) and resulted in direct injury or mortality on avifauna utilising the watercourse habitat. Given that only relatively fewer birds utilising the southern section of Sheung Yue River as a movement corridor due to the lack of suitable habitats on the upstream section to the south of Fanling Highway (CEDD and PlanD, 2013), with the implementation of proper precautionary measures recommended in **Section 4.4.1**, the direct injury / mortality on avifauna is expected to be minor.

Potential Indirect Impact

4.3.3 ***Disturbance on Flight Line of Breeding Ardeids***: The increase in building height in the current Project Areas may have potential disturbance on flight line of the breeding ardeids. In the flight line survey conducted by CEDD and PlanD (2013), it is noted that only 5.6% of the breeding ardeids from Ho Sheung Heung Egretry flew toward the direction to the Project Sites. And a previous study (Aspinwall & Co.,1997) shows that the majority of breeding ardeids flew less than 2km from their nest for foraging. Given that the Project Sites are approximately 1.5 to 1.8 km away from the Ho Sheung Heung Egretry and also situated at the margin of their preferred foraging locations, disturbance on flight line of breeding ardeids due to the increase of building height is expected to be minor.

4.3.4 ***Light and Glare Impact***: The rezoning of the Project Sites could lead to increases in lighting and associated glare due to increased building height in housing development. The impact would be more significant to nocturnal birds and herpetofauna, resulting in the reduction of fauna utilisation rate. Light and glare could also affect birds that migrate at night, and the intensified lighting and glare could also increase the disturbance level to wildlife utilising Long Valley at the opposite bank of Sheung Yue River. Nevertheless, with the implementation of proper migration measures and lighting design as discussed in **Section 4.4**, it is expected that the ecological impact arising from light and glare would be minor.

4.3.5 ***Other Disturbance***: Indirect disturbance impacts are anticipated from the construction and operational phases of the Project (e.g. dust emission and noise from site formation, and increased human activities), resulting in decreased habitat quality and fauna utilisation at nearby habitats (including Sheung Yue River and Long Valley). Nonetheless, it is expected that the disturbance level would not significantly increase compared with the assessed impact level in CEDD and PlanD (2013). With the implementation of proper mitigation measures as discussed in **Section 4.4**, the disturbance impact arising from the Project is expected to be acceptable.

4.4 Precautionary and Mitigation Measures

Minimisation of Bird Collision

4.4.1 As suggested in the approved EIA Report (CEDD and PlanD, 2013), the residential buildings within the Project Site should use low reflective glass to minimise the reflection of the natural environment in the surrounding. Other measures such as using glass that reflect UV light, avoiding using angled glass, and careful design of glass features should also be implemented in the building design to minimise the chance of bird collision.

Minimisation of Anthropogenic Disturbance

4.4.2 To minimise the disturbance impact from the construction and operation of the Project, the development in the Project Sites would not encroach upon the 30 m exclusion zone from Long Valley Nature Park as stated in the approved EIA Report. Under the current layout, the closest building in Area 34 would be about 90 m from the boundary of Long Valley Nature Park. Landscape planting at the periphery of the Project Sites and along the nearby section of Sheung Yue River may also act as a buffer and screening to minimise the disturbance impact arising from the operation phase of the Project (e.g. visual, noise disturbance, human activities, light and glare) to nearby habitats, including Sheung Yue River and Long Valley Nature Park. It could act as a green corridor for waterbirds that utilise Sheung Yue River, and also minimise the human disturbance on their flight line.

4.4.3 Good site practices and measures stated in CEDD and PlanD (2013) (refer to **Section 4.2.3** to **4.2.7**) and guidelines "ProPECC PN 1/94 Practice Note for Professional Persons – Construction Site Drainage", "Cut Down Construction Dust" and "Recommended Pollution Control Clauses for Construction Contracts" (EPD, 1994, 2018 and 2019) would be strictly implemented to minimise the disturbance impact arising from the construction stage. Examples of these good site practices are listed below:

- Restricting construction activities within clearly demarcated works boundary;
- Erecting hoarding and fencing around works areas, screening disturbances to adjacent habitats;
- Use of Quiet Mechanical Plant (QMP);
- Use of movable noise barrier / temporary noise screening structures or purpose-built temporary noise barriers;
- Use of well-maintained plant on site, which should be serviced regularly during the construction programme;
- Regular spraying to minimise impacts of dust deposition on adjacent vegetation and habitats during the construction activities;
- Covering trucks or transporting waste in enclosed containers to minimise windblown litter;
- Strictly prohibiting open burning on work sites;
- Isolating the works site with sandbags and silt curtains;
- Construction of catchpits and perimeter channels in advance of site formation works and earthworks; and
- Implementing treatment of construction effluent and sewage.

Minimisation of Light and Glare Impact

4.4.4 The light and glare arising from the construction and operation phase of the Project should be minimised as far as practicable. During the construction phase, properly implementing mitigation measures proposed in the approved EIA Report and other standard practices should minimise any potential impacts on light and glare. These measures include:

- Control of construction hours from 07:00 to 19:00;
- Night-time lighting control;
- Installation of hoarding at the Project boundary;
- Control intensity of artificial light from construction activities to lowest level;
- Avoid unnecessary lighting outside the working hours of the construction sites; and
- Avoid excessive lighting by using directional lighting.

4.4.5 During the operational phase, light spillage from the residential buildings and associated facilities should be limited as far as practicable. The following measures are proposed to minimise light spillage (Bat Conservation Fund, 2018; CEDD and PlanD, 2013; Commonwealth of Australia, 2020):

For outdoor and public lighting (e.g. public space / open space / staircase / corridor)

- Avoid uplighting from the top of buildings;
- Avoid unnecessary lighting;
- Control light intensity to the lowest level;
- Use directed or shielded lighting to avoid lighting to the non-targeted area;
- Use lower height lighting and low glare lighting;
- Use motion sensor lighting;

- Use LED luminaires and avoid blue lights;
- Restriction on lighting watt;
- Use of non-reflective dark coloured surface on buildings and facilities within Area 32 and 34; and
- Low light buffer (i.e. buildings would be setback around 30 m from Sheung Yue River to provide a low light zone between the Project Sites, Sheung Yue River and Long Valley).

For indoor lighting

- Avoid using floor-to-ceiling windows to minimise light spill from indoors (also reducing window height as far as practicable)

5 CONCLUSIONS

5.1.1 In view of the proposed changes, nature and scale of proposed developments, there would be no additional environmental impacts arising from the proposed changes during the construction of the proposed developments. In order to confirm the acceptability of the proposed developments due to proposed changes, an Environmental Assessment has been carried out to examine the impacts associated with the proposed developments during the operational phase. Potential environmental impacts including noise, air quality and ecology have been assessed. The key findings of these assessments are summarised as below.

5.1 Air Quality

5.1.1 With sufficient separation distance between the ASRs and the nearby roads as recommended in HKPSG, no adverse impact on the ASRs from vehicular emission is anticipated.

5.2 Noise

5.2.1 Based on the traffic forecast at year 2046, the predicted road traffic noise levels of most assessment points for residential use would comply with the noise standard of 70 dB(A). For the facades predicted with noise exceedances, at-receiver end noise mitigation measures (i.e. INMMs) in the form of acoustic windows or acoustic balconies, subject to detailed designs of the respective sites, will be adopted to mitigate the traffic noise impact to acceptable level.

5.2.2 For the assessment points of kindergartens and social welfare facilities predicted with noise exceedance, mitigation measures such as adoption of non-sensitive use at that particular façade or acoustic insulation could be adopted to avoid adverse traffic noise impact or minimise the traffic noise level to acceptable level respectively. With the adoption of mitigation measures, there would be no exceedance at these sensitive uses.

5.2.3 Based on the fixed plant noise assessment findings of the ERR submitted under VEP of Sheung Shui to Lok Ma Chau Spur Line (Application no.: VEP-604/2021), there would be no adverse fixed plant noise impact predicted at the proposed developments, and thus no mitigation measure is required.

5.3 Ecology

5.3.1 The rezoning of Area 32 and Area 34 would involve proposed changes in plot ratio and building height. The increased building height would potentially lead to bird collision, disturbance on flight line, as well as additional light and glare impact. The severity of other impacts including direct habitat and vegetation loss and other disturbance impacts (e.g. noise, dust, increase human activities) are anticipated to be similar to the approved NENT NDAs EIA report. Nevertheless, given that the Project Sites and adjacent area were not considered as important habitats to wildlife, these impacts are anticipated to be minor. Appropriate measures, such as the careful design of glass features on buildings, night-time lighting control, and proper lighting control measures during the operational phase should be implemented to minimise potential ecological impacts.

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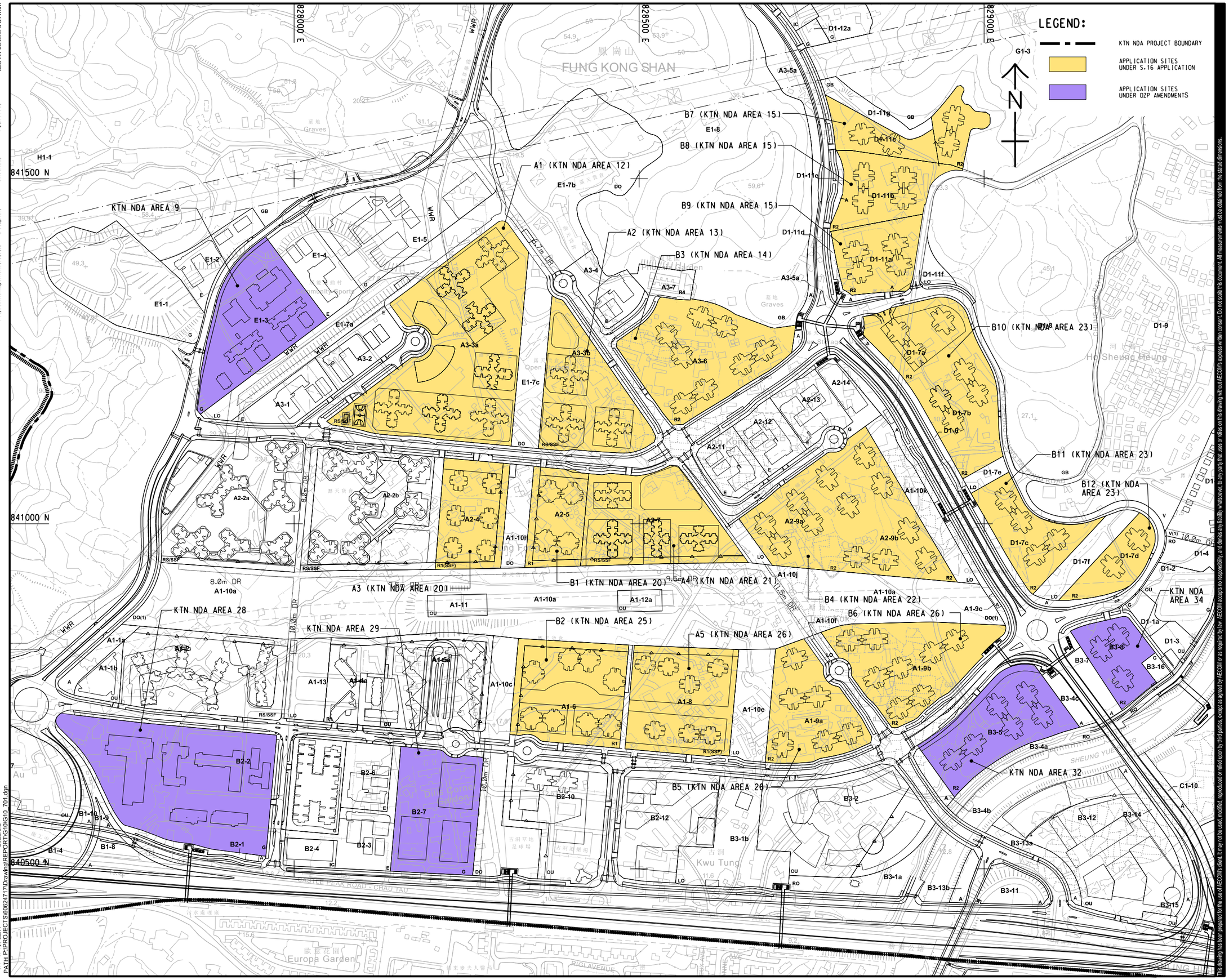

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LOCATIONS OF APPLICATION SITES

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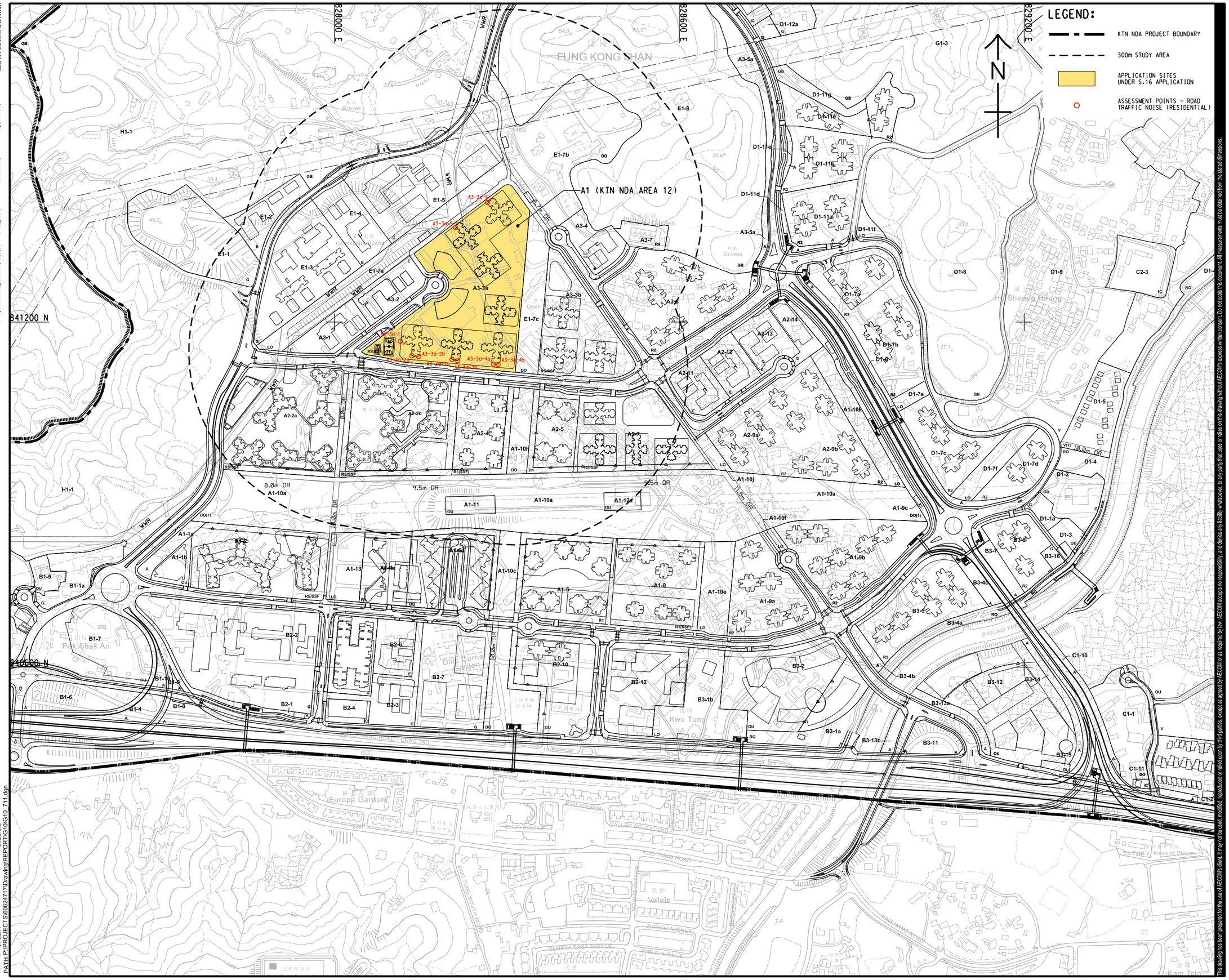

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LOCATIONS OF ASSESSMENT POINTS - ROAD TRAFFIC NOISE (RESIDENTIAL)

SHEET 1 OF 13

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60624717/G10/FIGURE 3.1.1

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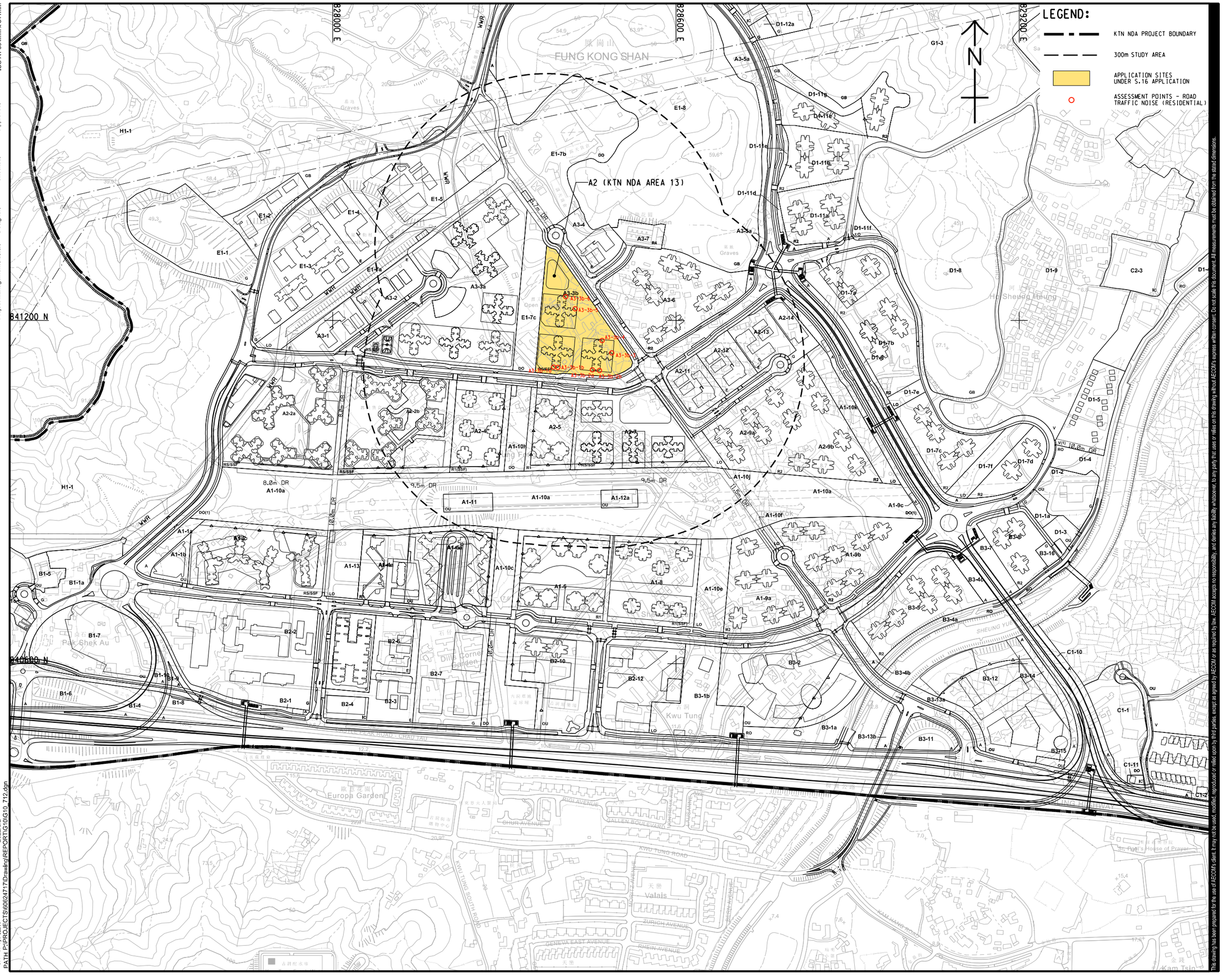

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LOCATIONS OF ASSESSMENT POINTS - ROAD TRAFFIC NOISE (RESIDENTIAL)

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60624717/G10/FIGURE 3.1.2

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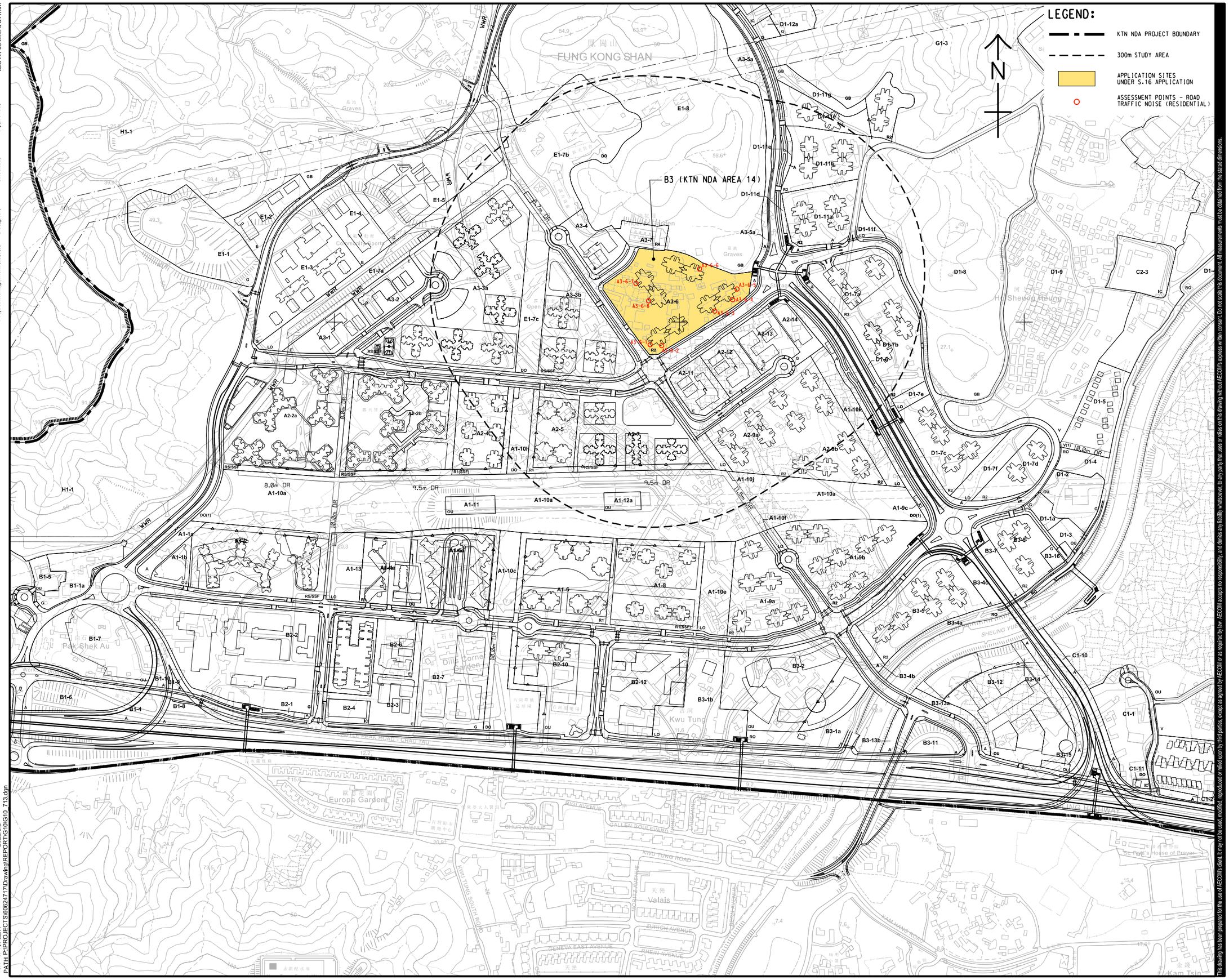

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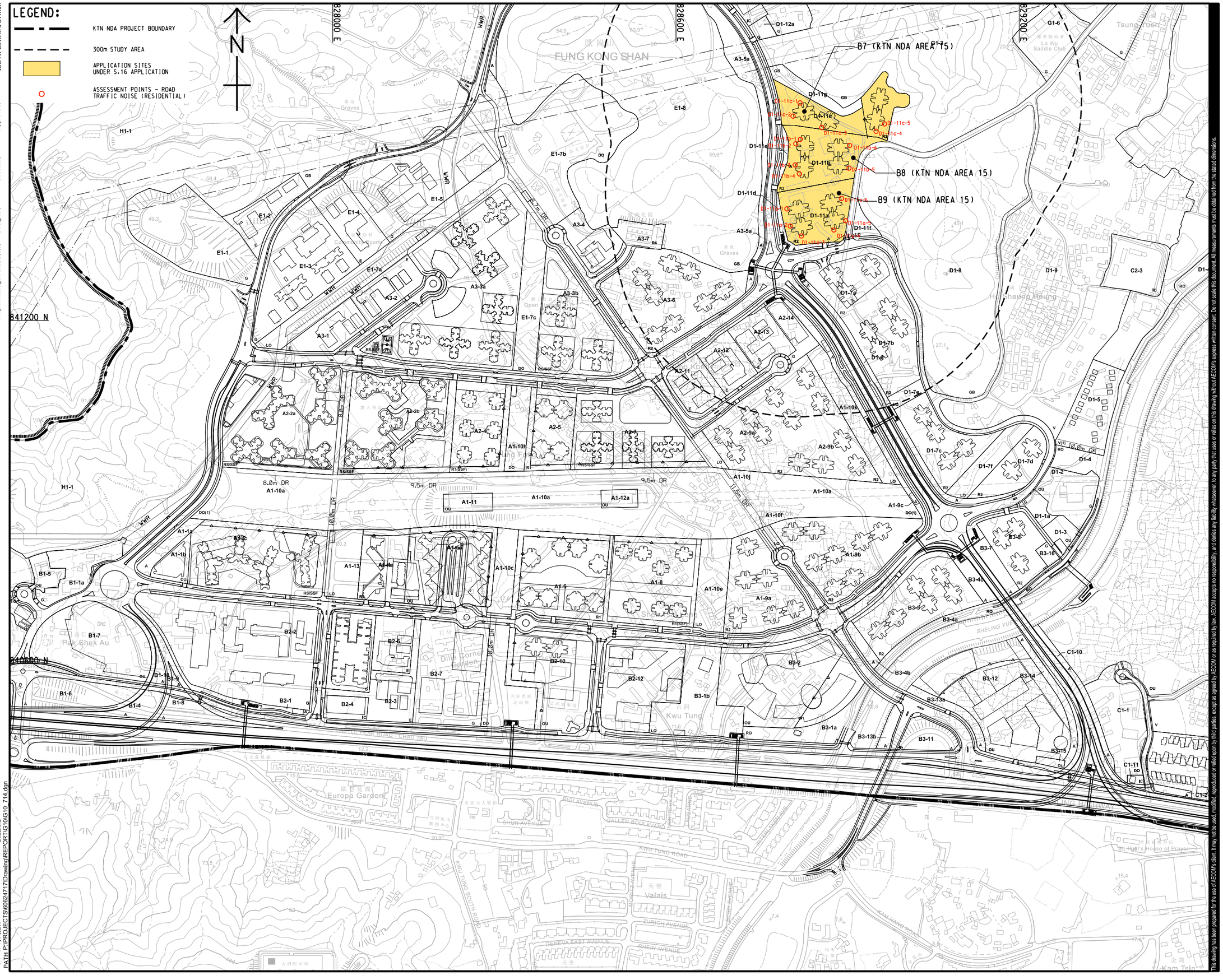

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LOCATIONS OF ASSESSMENT POINTS - ROAD TRAFFIC NOISE (RESIDENTIAL)

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60624717/G10/FIGURE 3.1.4

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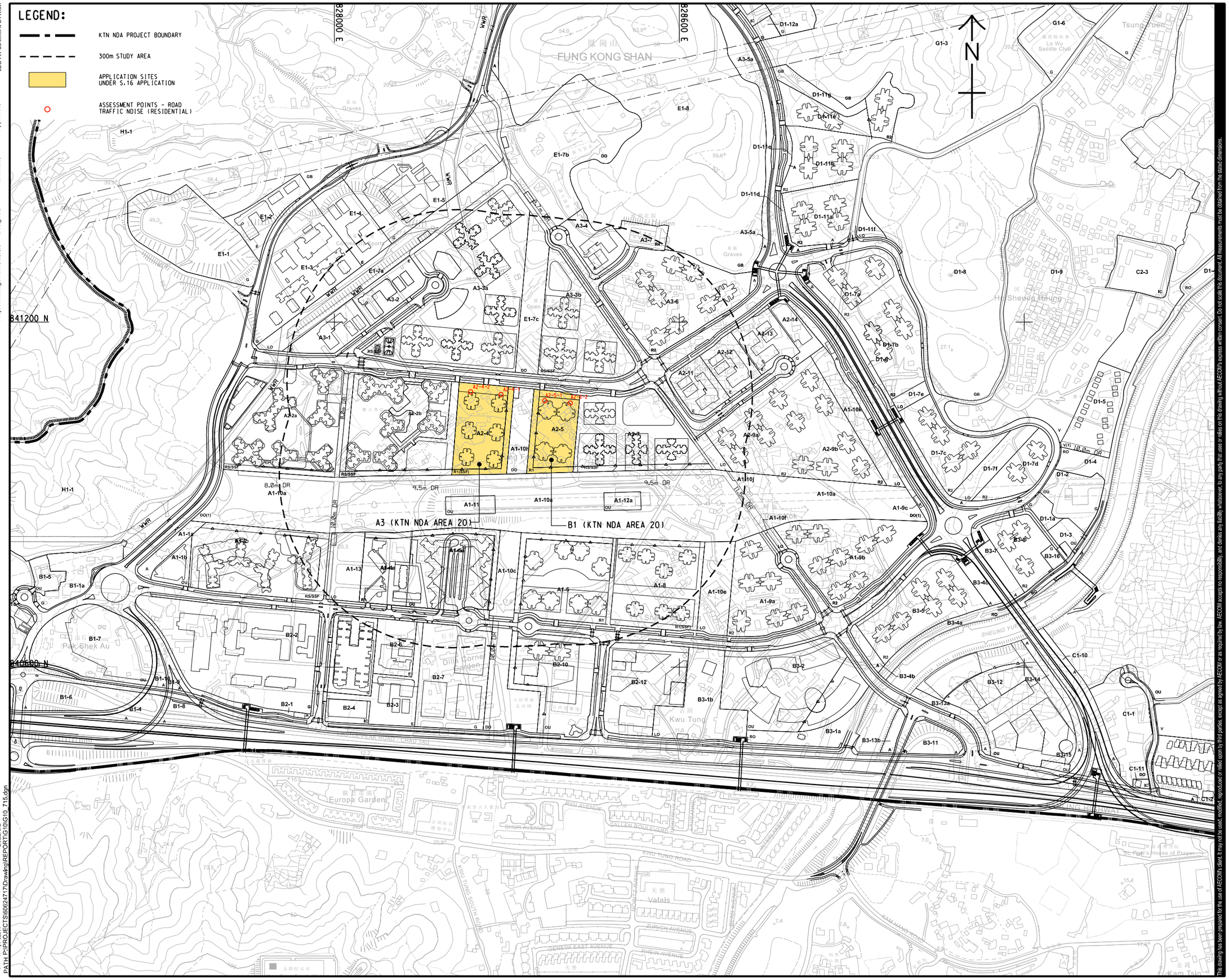

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LOCATIONS OF ASSESSMENT POINTS - ROAD TRAFFIC NOISE (RESIDENTIAL)

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60624717/G10/FIGURE 3.1.5

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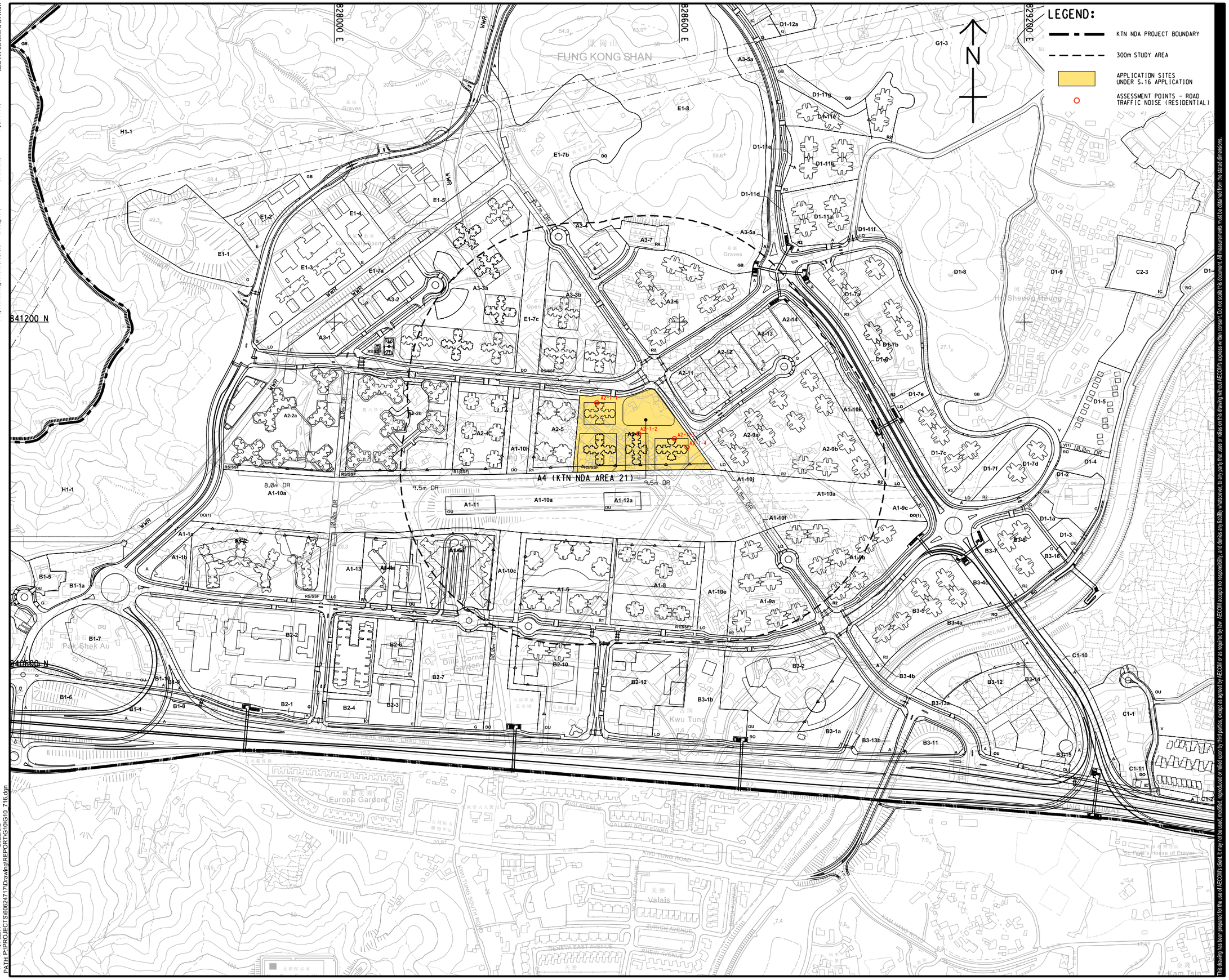

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LOCATIONS OF ASSESSMENT POINTS - ROAD TRAFFIC NOISE (RESIDENTIAL)

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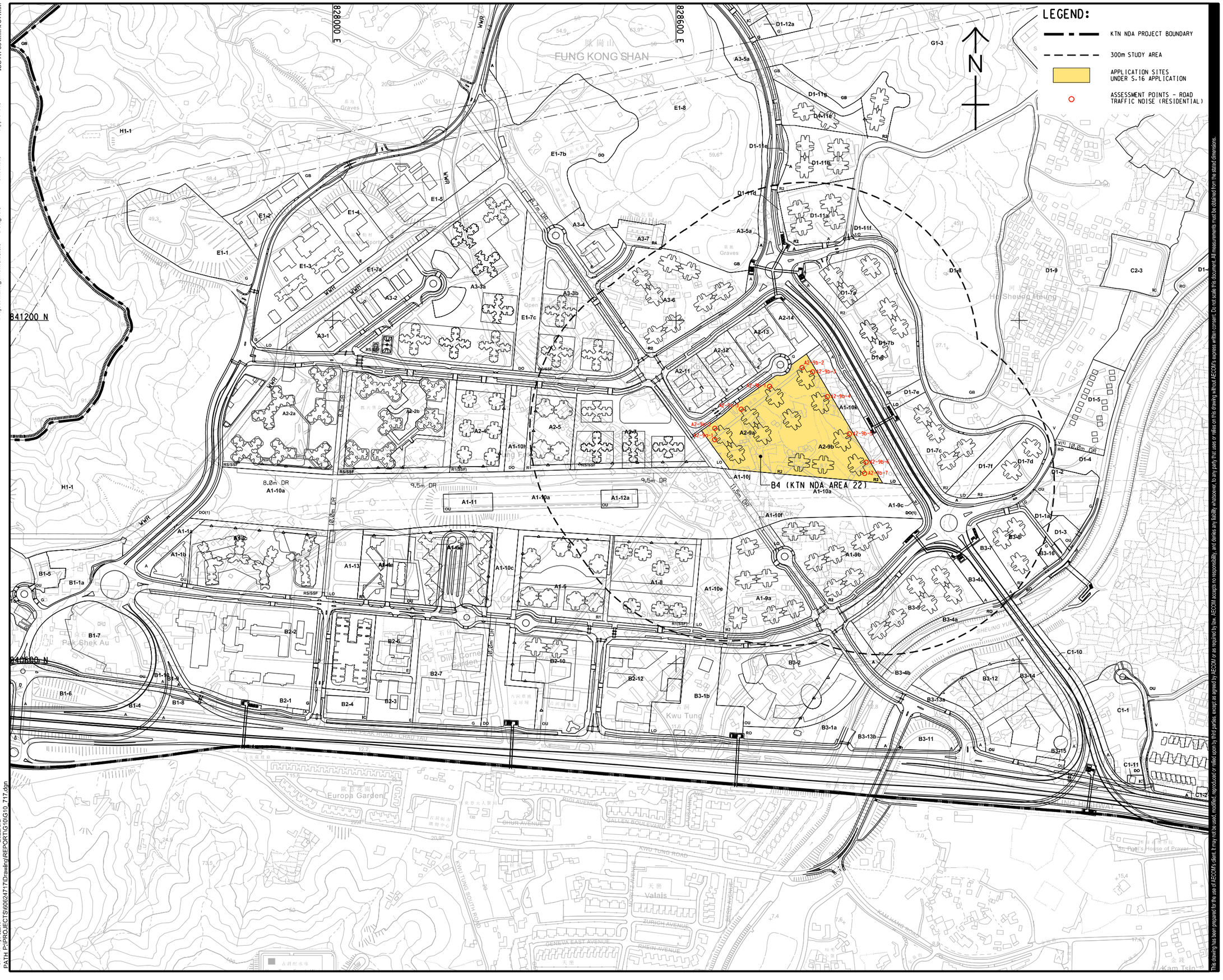

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DEVELOPMENT OF
KWU TUNG NORTH
NEW DEVELOPMENT AREA,
REMAINING PHASE -
DESIGN & CONSTRUCTION

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業主

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STATUS
階段

SCALE 比例
A1 1 : 3000

DIMENSION UNIT 尺寸單位
METRES

KEY PLAN
索引圖

PROJECT NO. 項目編號
60624717

CONTRACT NO. 合約編號
CE 19/2019 (CE)

SHEET TITLE
圖紙名稱

LOCATIONS OF ASSESSMENT POINTS - ROAD TRAFFIC NOISE (RESIDENTIAL)

SHEET 7 OF 13

SHEET NUMBER
圖紙編號

60624717/G10/FIGURE 3.1.7

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KTN NDA PROJECT BOUNDARY

300m STUDY AREA

APPLICATION SITES UNDER S.16 APPLICATION

ASSESSMENT POINTS - ROAD TRAFFIC NOISE (RESIDENTIAL)

N

828000 E

828600 E

829200 E

841200 N

840600 N

FUNG KONG SHAN

B10 (KTN NDA AREA 23)

B11 (KTN NDA AREA 23)

B12 (KTN NDA AREA 23)

Kwu Tung

Sheung Shui

Tsung Yuen

Lo Wu Saddle Club

Hoi Sheung Heung

Pak Shek Au

Europa Garden

Valais

Kam Tsin

St. Paul's House of Prayer

Queen Elizabeth Stadium

Dille Borne Garden

Open Air Theatre

Graves

Columbarium

Sports Ground

Public Toilet

Refuse Collection Point

Sewage Pumping Station

Footbridge

Underpass

Slope

Retaining Wall

Noise Barrier

Fence

Vehicular Access

Pedestrian Access

Building

Tree

Grass

Shrub

Water Body

Road

Railway

Contour

Spot Level

Boundary

Kwu Tung North New Development Area

Kwu Tung North Remaining Phase

Kwu Tung North Remaining Phase - Design & Construction

Kwu Tung North New Development Area, Remaining Phase - Design & Construction

Kwu Tung North New Development Area, Remaining Phase - Design & Construction

Kwu Tung North New Development Area,

ISO A1 594mm x 841mm

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Designer:

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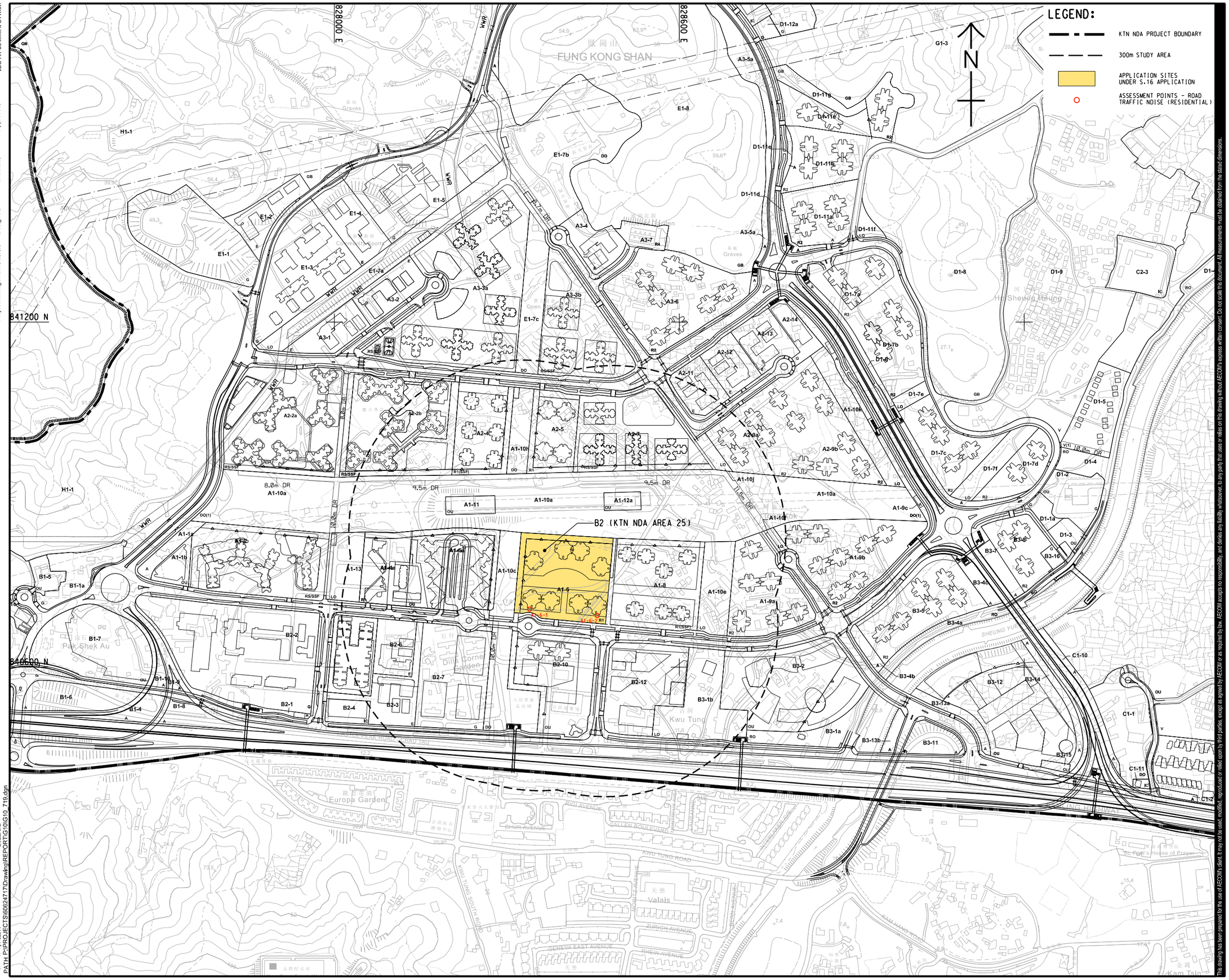

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SCALE 比例
A1 1 : 3000

DIMENSION UNIT 尺寸單位
METRES

KEY PLAN
索引圖

PROJECT NO. 項目編號
60624717

CONTRACT NO. 合約編號
CE 19/2019 (CE)

SHEET TITLE
圖紙名稱

LOCATIONS OF ASSESSMENT POINTS - ROAD TRAFFIC NOISE (RESIDENTIAL)

SHEET 9 OF 13

SHEET NUMBER
圖紙編號

60624717/G10/FIGURE 3.1.9

ISO A1 594mm x 841mm

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Designer:

Project Management Initials:

LEGEND:

KTN NDA PROJECT BOUNDARY

300m STUDY AREA

APPLICATION SITES UNDER S.16 APPLICATION

ASSESSMENT POINTS - ROAD TRAFFIC NOISE (RESIDENTIAL)

828000 E

828600 E

829200 E

841200 N

840600 N

FUNG KONG SHAN

A5 (KTN NDA AREA 26)

B5 (KTN NDA AREA 26)

B6 (KTN NDA AREA 26)

N

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STATUS
階段

SCALE 比例: A1 1 : 3000

DIMENSION UNIT 尺寸單位: METRES

KEY PLAN
索引圖

PROJECT NO. 項目編號: 60624717

CONTRACT NO. 合約編號: CE 19/2019 (CE)

SHEET TITLE
圖紙名稱

LOCATIONS OF ASSESSMENT POINTS - ROAD TRAFFIC NOISE (RESIDENTIAL)

SHEET 10 OF 13

SHEET NUMBER
圖紙編號

60624717/G10/FIGURE 3.1.10

ISO A1 594mm x 841mm

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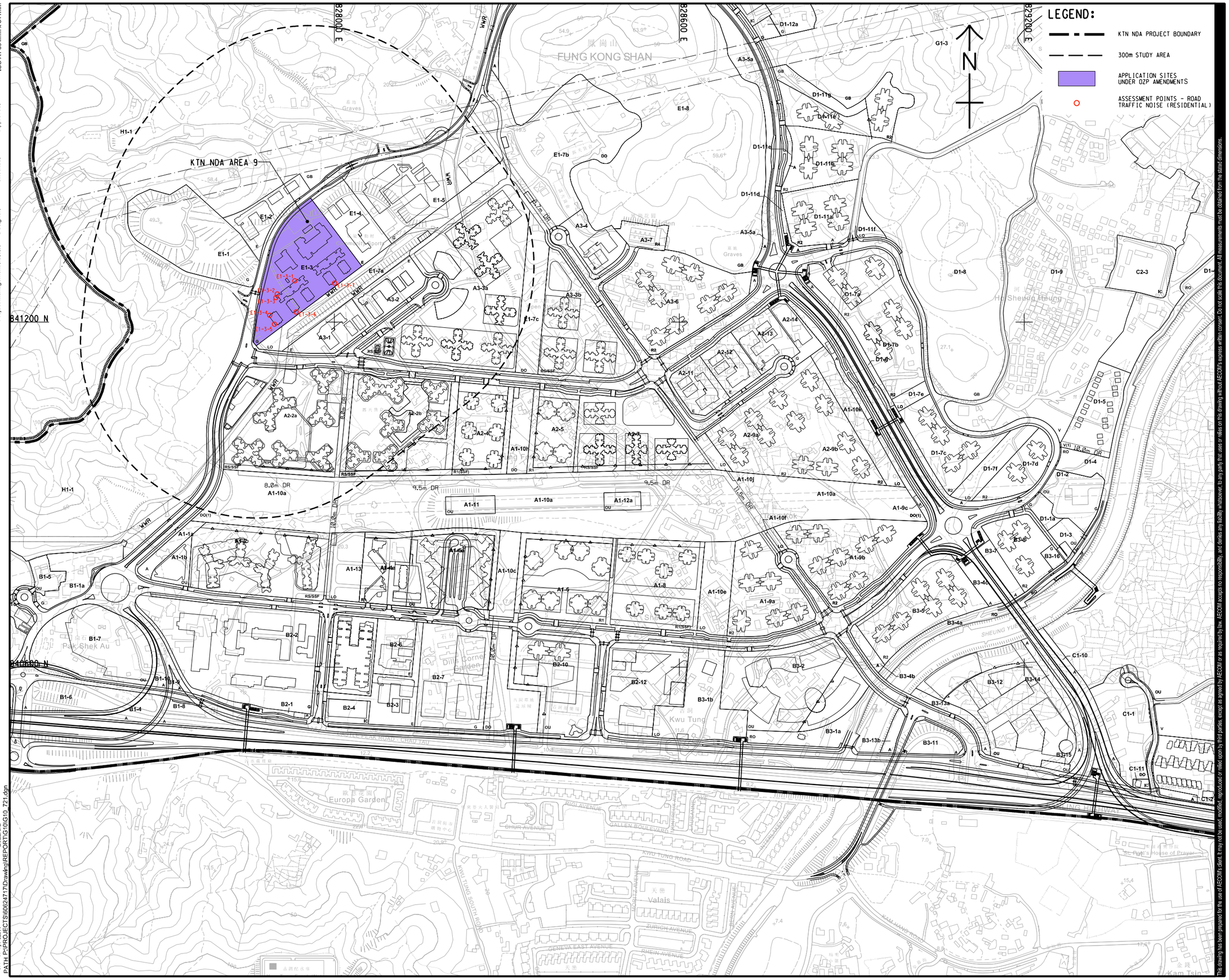

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SCALE 比例
A1 1 : 3000

DIMENSION UNIT 尺寸單位
METRES

KEY PLAN
索引圖

PROJECT NO. 項目編號
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CONTRACT NO. 合約編號
CE 19/2019 (CE)

SHEET TITLE
圖紙名稱

LOCATIONS OF ASSESSMENT POINTS - ROAD TRAFFIC NOISE (RESIDENTIAL)

SHEET 11 OF 13

SHEET NUMBER
圖紙編號

60624717/G10/FIGURE 3.1.11

ISO A1 594mm x 841mm

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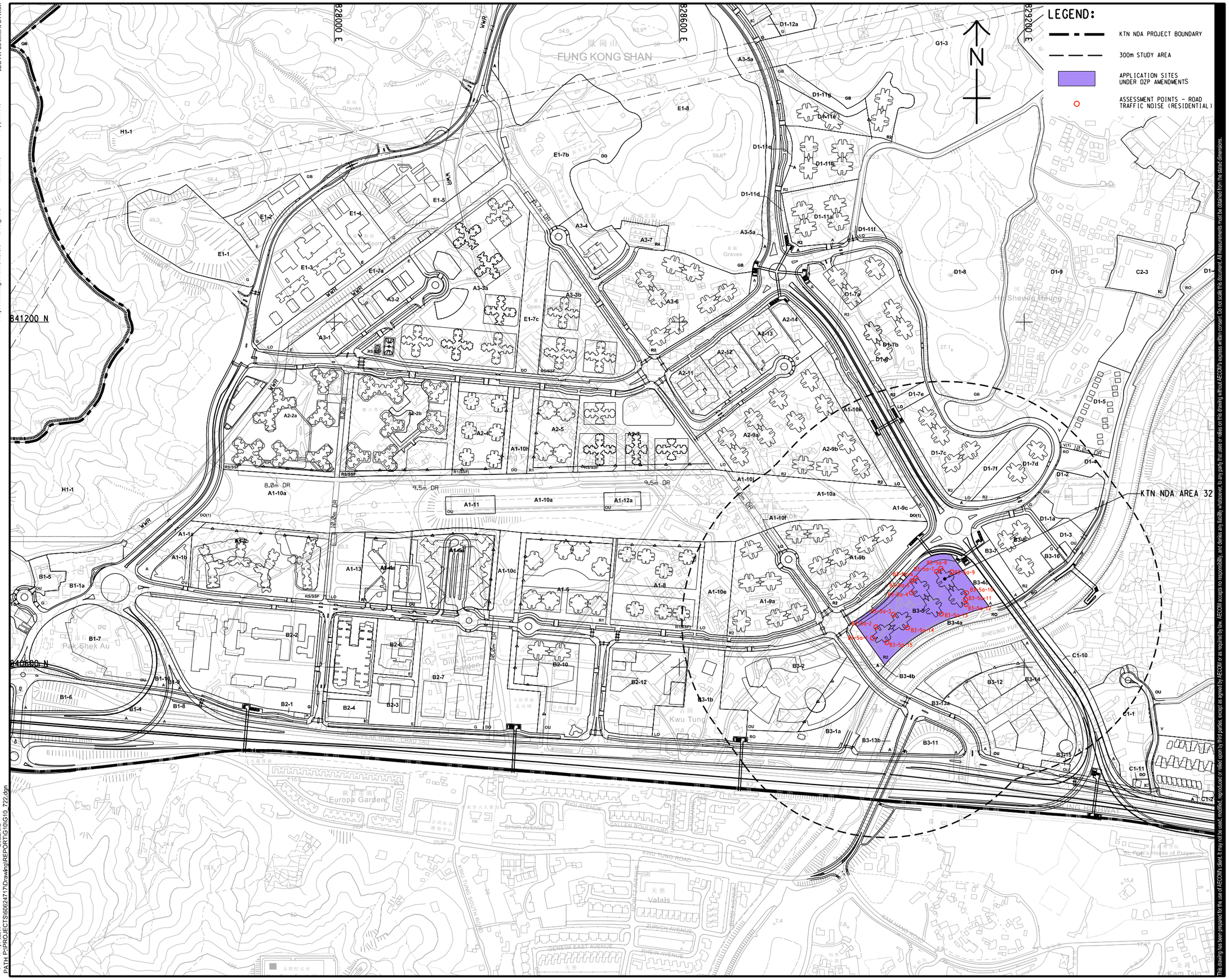

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SCALE 比例
A1 1 : 3000

DIMENSION UNIT 尺寸單位
METRES

KEY PLAN
索引圖

PROJECT NO. 項目編號
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CONTRACT NO. 合約編號
CE 19/2019 (CE)

SHEET TITLE
圖紙名稱

LOCATIONS OF ASSESSMENT POINTS - ROAD TRAFFIC NOISE (RESIDENTIAL)

SHEET 12 OF 13

SHEET NUMBER
圖紙編號

60624717/G10/FIGURE 3.1.12

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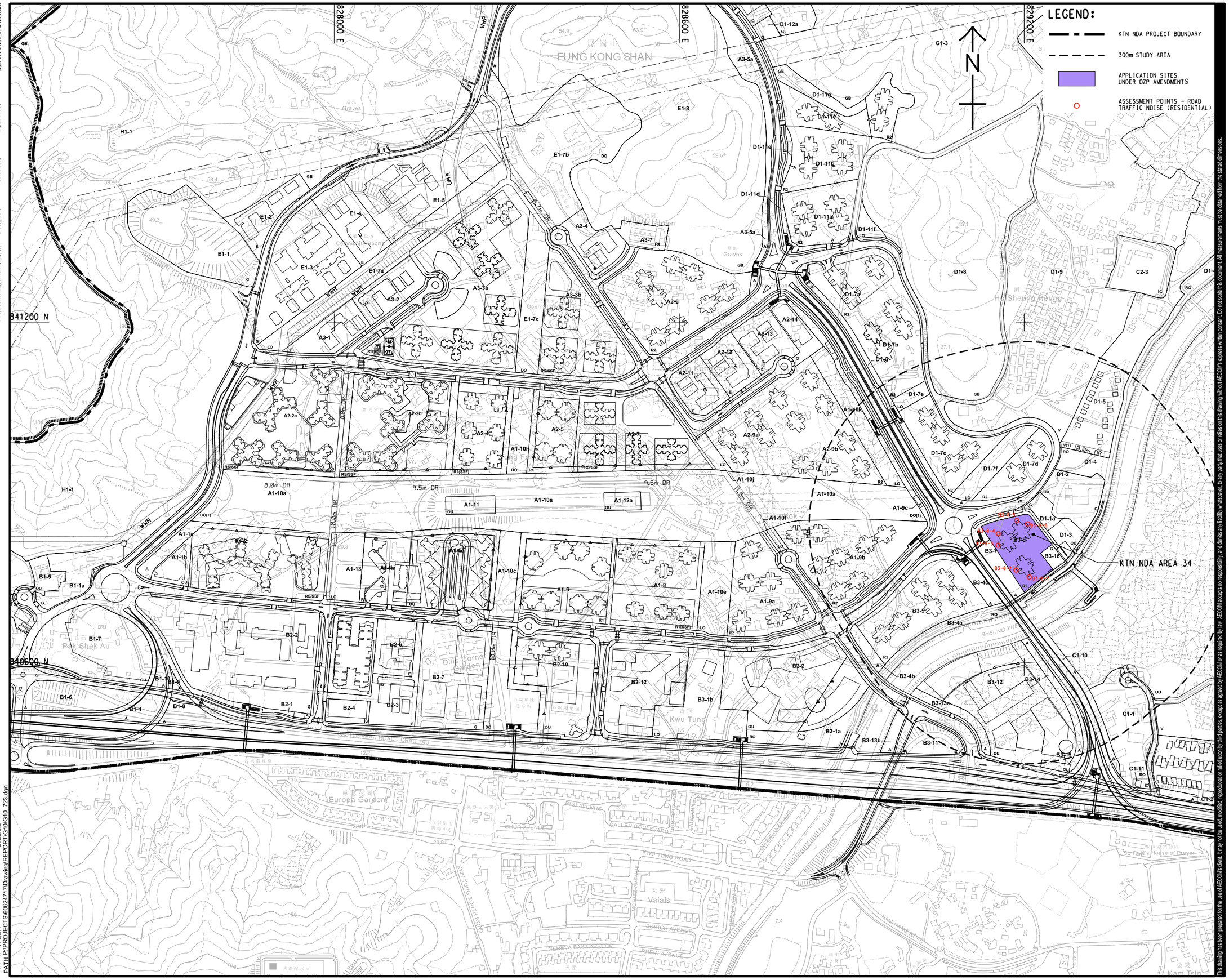

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SCALE 比例
A1 1 : 3000

DIMENSION UNIT 尺寸單位
METRES

KEY PLAN
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PROJECT NO. 項目編號
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CONTRACT NO. 合約編號
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SHEET TITLE
圖紙名稱

LOCATIONS OF ASSESSMENT POINTS - ROAD TRAFFIC NOISE (RESIDENTIAL)

SHEET 13 OF 13

SHEET NUMBER
圖紙編號

60624717/G10/FIGURE 3.1.13

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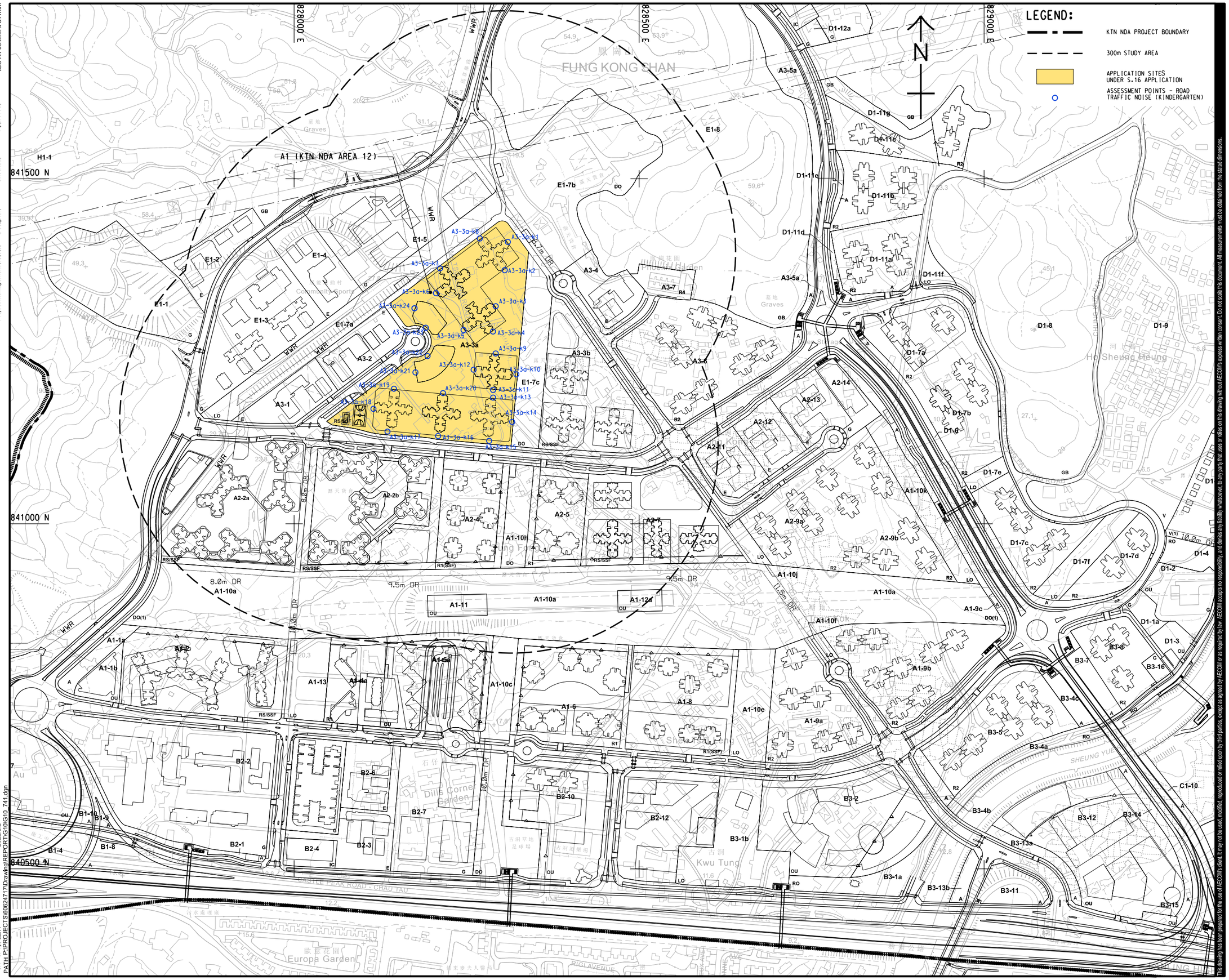

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SCALE 比例
A1 1 : 2500

DIMENSION UNIT 尺寸單位
METRES

KEY PLAN
索引圖

PROJECT NO. 項目編號
60624717

CONTRACT NO. 合約編號
CE 19/2019 (CE)

SHEET TITLE
圖紙名稱

LOCATIONS OF ASSESSMENT POINTS - ROAD TRAFFIC NOISE (KINDERGARTEN)

SHEET 1 OF 7

SHEET NUMBER
圖紙編號

60624717/G10/FIGURE 3.2.1

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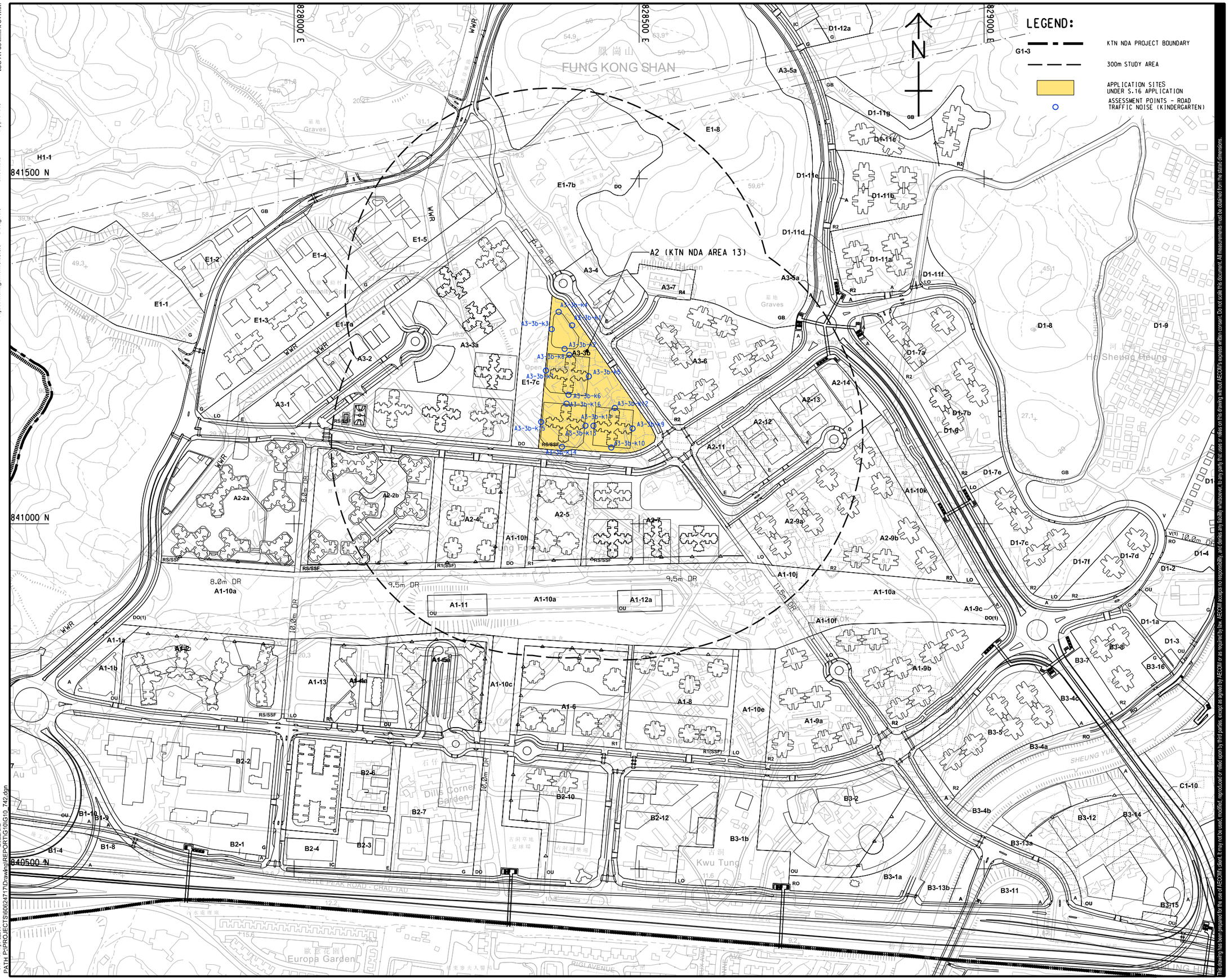

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階段

SCALE 比例: A1 1 : 2500

DIMENSION UNIT 尺寸單位: METRES

KEY PLAN
索引圖

PROJECT NO. 項目編號: 60624717

CONTRACT NO. 合約編號: CE 19/2019 (CE)

SHEET TITLE
圖紙名稱

LOCATIONS OF ASSESSMENT POINTS - ROAD TRAFFIC NOISE (KINDERGARTEN)

SHEET 2 OF 7

SHEET NUMBER
圖紙編號

60624717/G10/FIGURE 3.2.2

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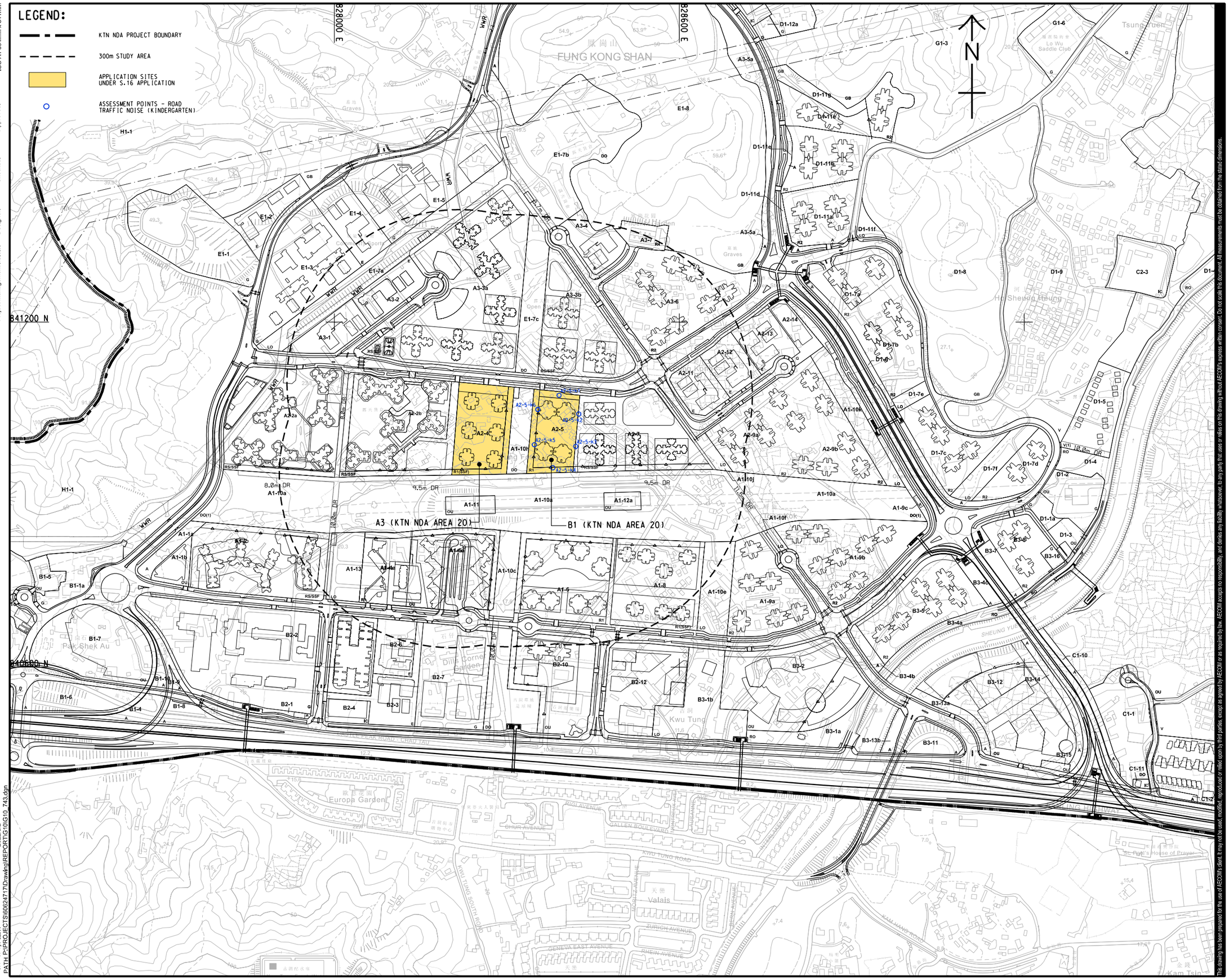

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DEVELOPMENT OF KWU TUNG NORTH NEW DEVELOPMENT AREA, REMAINING PHASE - DESIGN & CONSTRUCTION

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SCALE 比例: A1 1 : 3000

DIMENSION UNIT 尺寸單位: METRES

KEY PLAN
索引圖

PROJECT NO. 項目編號: 60624717

CONTRACT NO. 合約編號: CE 19/2019 (CE)

SHEET TITLE
圖紙名稱

LOCATIONS OF ASSESSMENT POINTS - ROAD TRAFFIC NOISE (KINDERGARTEN)

SHEET 3 OF 7

SHEET NUMBER
圖紙編號

60624717/G10/FIGURE 3.2.3

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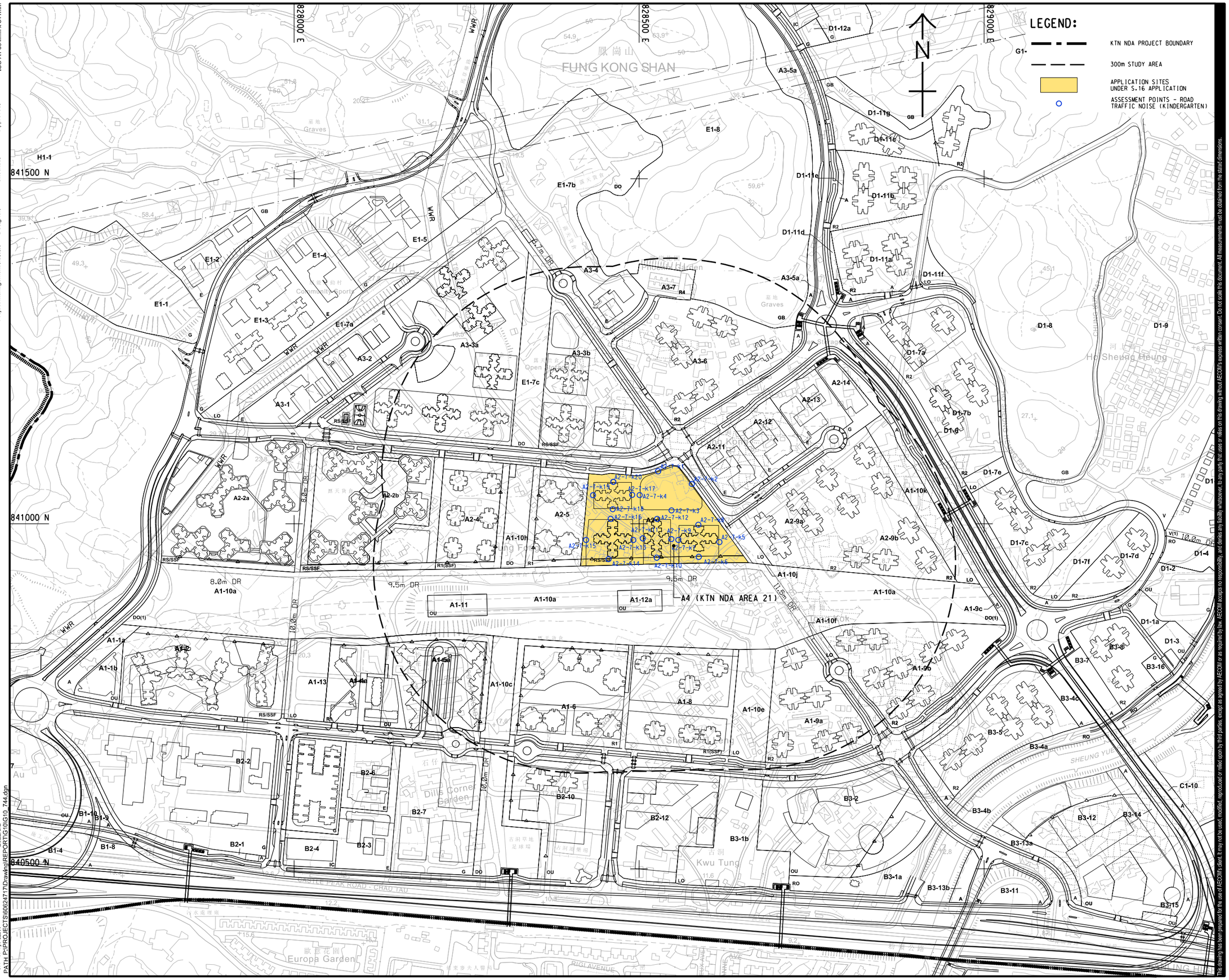

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階段

SCALE 比例
A1 1 : 2500

DIMENSION UNIT 尺寸單位
METRES

KEY PLAN
索引圖

PROJECT NO. 項目編號
60624717

CONTRACT NO. 合約編號
CE 19/2019 (CE)

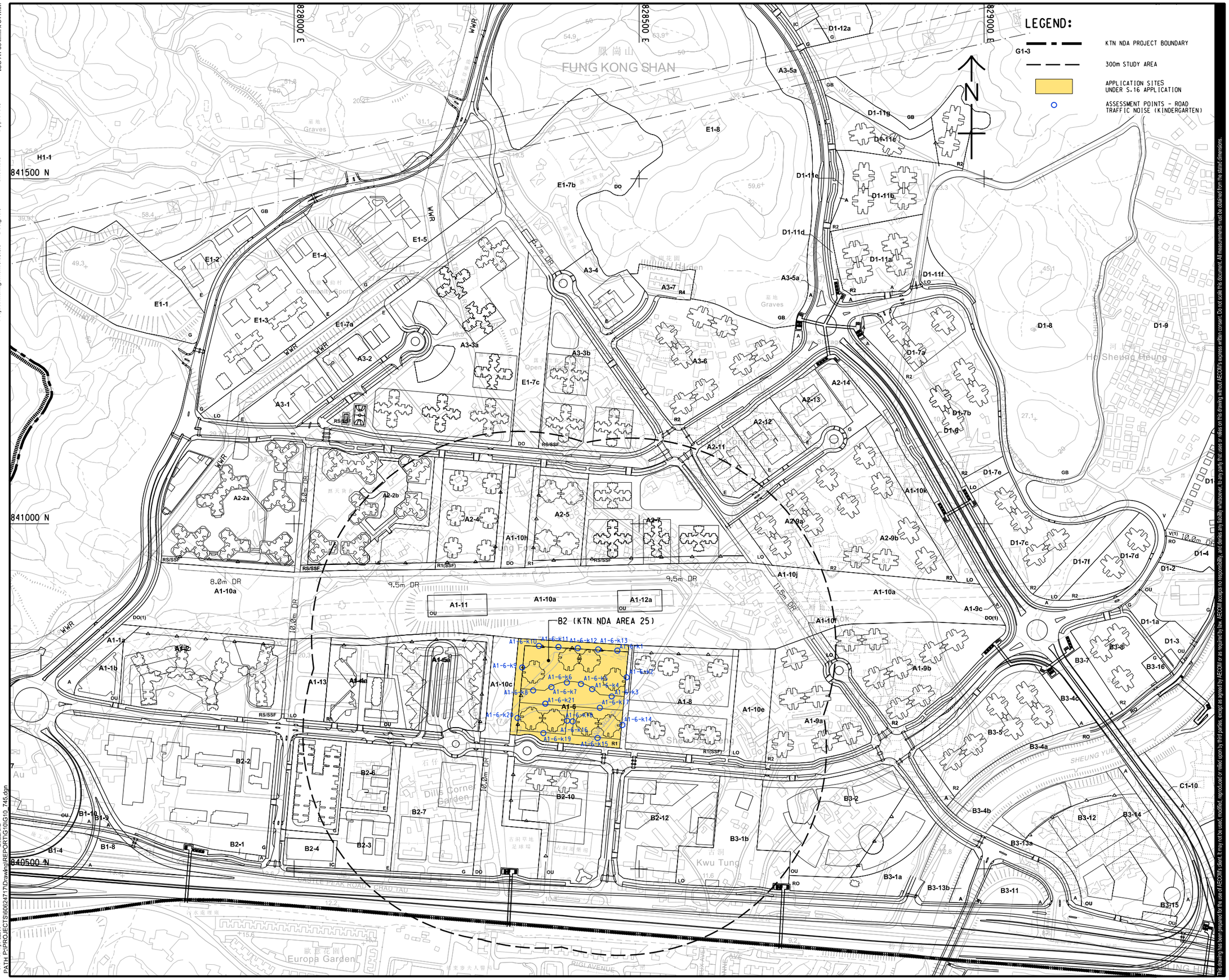
SHEET TITLE
圖紙名稱

LOCATIONS OF ASSESSMENT POINTS - ROAD TRAFFIC NOISE (KINDERGARTEN)

SHEET 4 OF 7

SHEET NUMBER
圖紙編號

60624717/G10/FIGURE 3.2.4



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SCALE 比例
A1 1 : 2500

DIMENSION UNIT 尺寸單位
METRES

KEY PLAN
索引圖

PROJECT NO. 項目編號
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CONTRACT NO. 合約編號
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SHEET TITLE
圖紙名稱

LOCATIONS OF ASSESSMENT POINTS - ROAD TRAFFIC NOISE (KINDERGARTEN)

SHEET 5 OF 7

SHEET NUMBER
圖紙編號

60624717/G10/FIGURE 3.2.5

ISO A1 594mm x 841mm

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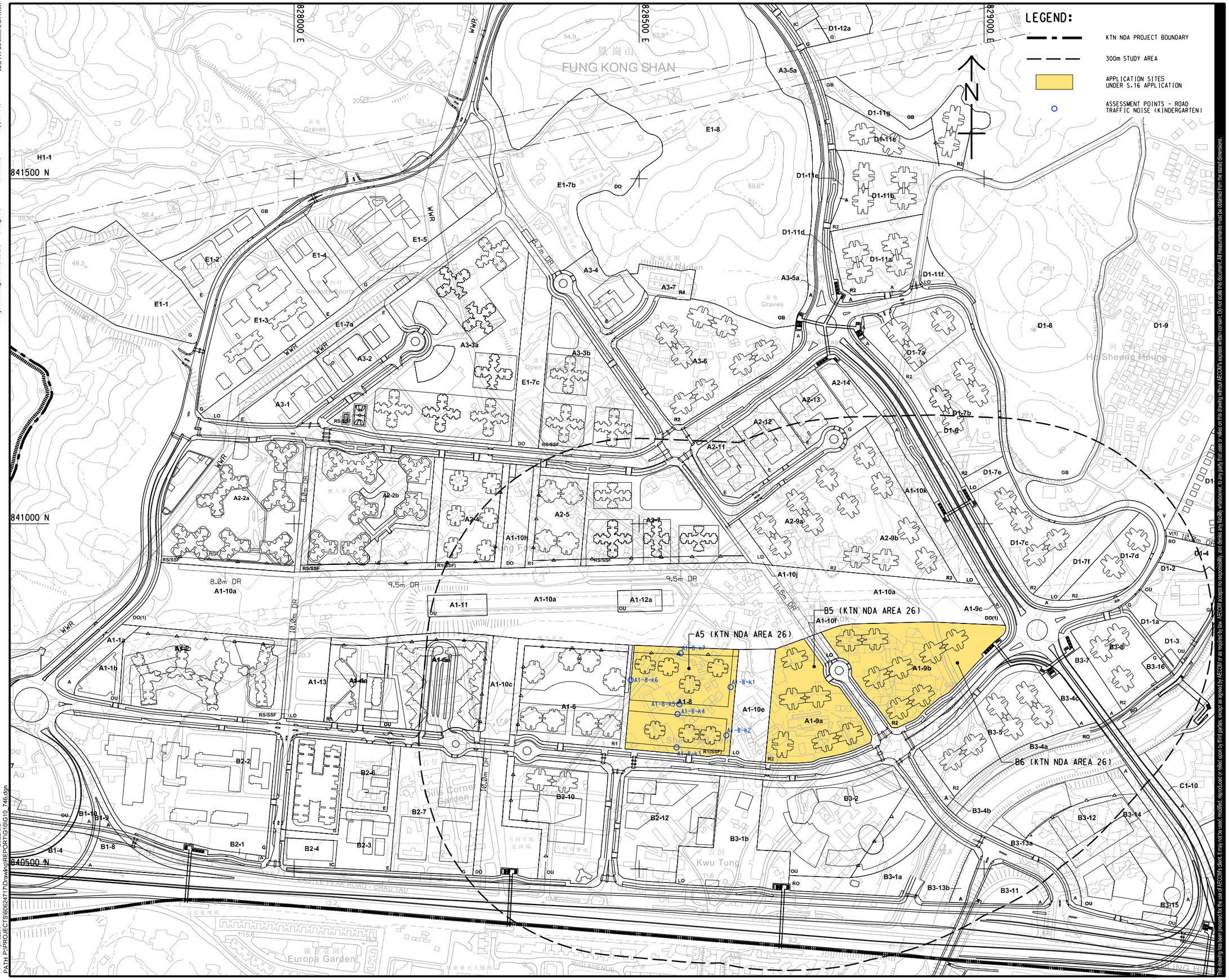

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DEVELOPMENT OF
KWU TUNG NORTH
NEW DEVELOPMENT AREA,
REMAINING PHASE -
DESIGN & CONSTRUCTION

CLIENT
業主

土木工程拓展署
Civil Engineering and Development Department

CONSULTANT
土木顧問公司

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修訂

I/R 修訂	DATE 日期	DESCRIPTION 內容摘要	CHK. 核對

STATUS
階段

SCALE 比例
A1 1 : 2500

DIMENSION UNIT 尺寸單位
METRES

KEY PLAN
索引圖

PROJECT NO. 項目編號
60624717

CONTRACT NO. 合約編號
CE 19/2019 (CE)

SHEET TITLE
圖紙名稱

LOCATIONS OF ASSESSMENT POINTS - ROAD TRAFFIC NOISE (KINDERGARTEN)

SHEET 6 OF 7

SHEET NUMBER
圖紙編號

60624717/G10/FIGURE 3.2.6

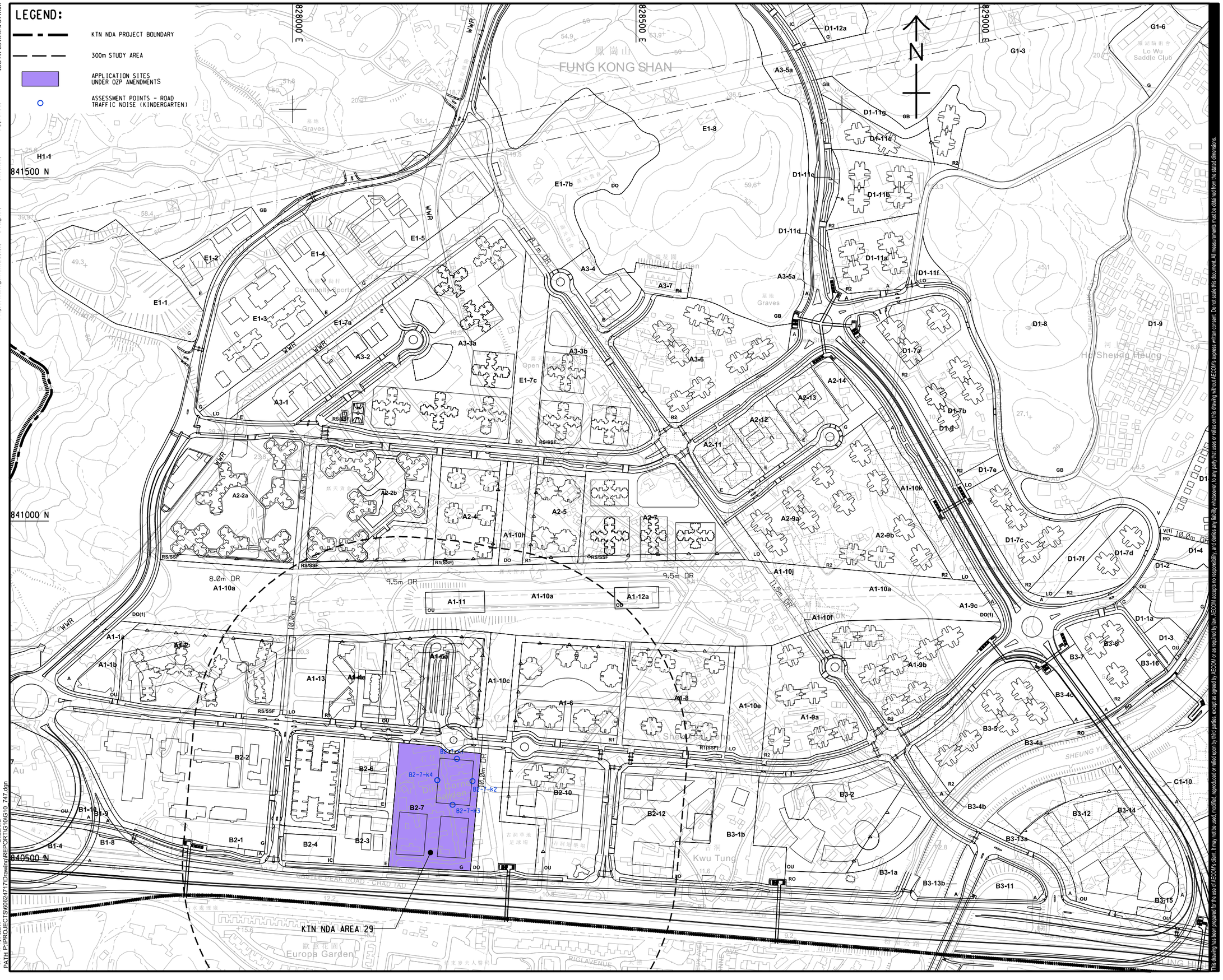
ISO A1 594mm x 841mm

Approved:

Checked:

Designer:

Project Management Initials:



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STATUS
階段

SCALE 比例
A1 1 : 2500

DIMENSION UNIT 尺寸單位
METRES

KEY PLAN
索引圖

PROJECT NO. 項目編號
60624717

CONTRACT NO. 合約編號
CE 19/2019 (CE)

SHEET TITLE
圖紙名稱

LOCATIONS OF ASSESSMENT POINTS - ROAD TRAFFIC NOISE (KINDERGARTEN)

SHEET 7 OF 7

SHEET NUMBER
圖紙編號

60624717/G10/FIGURE 3.2.7

Plot File by: JaW
PATH: P:\PROJECTS\60624717\D\raw\rpt\REPORT\G10\G10_747.dgn
2022/8/2

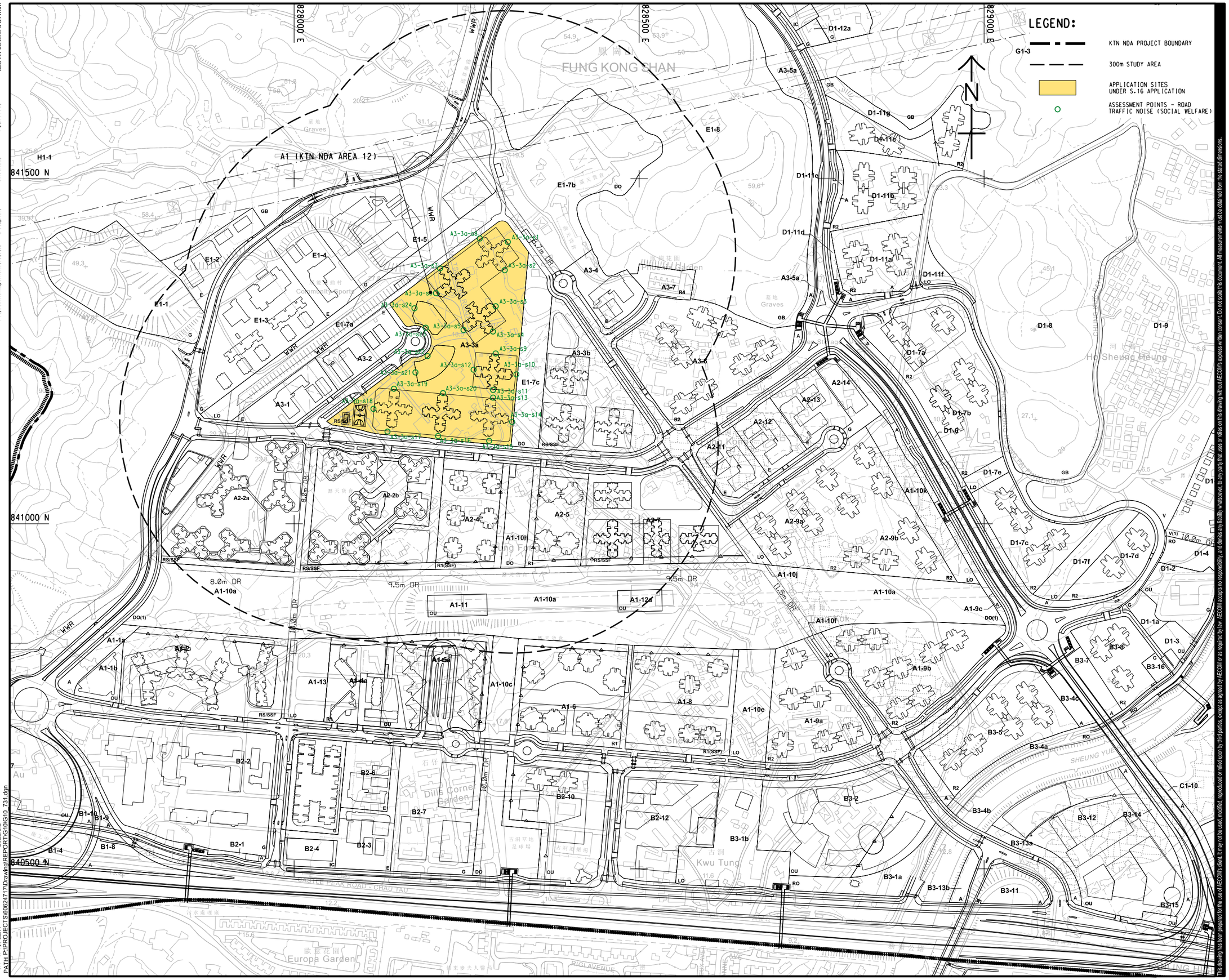
ISO A1 594mm x 841mm

Approved:

Checked:

Designer:

Project Management Initials:



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2022/8/2

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SCALE 比例	DIMENSION UNIT 尺寸單位
A1 1 : 2500	METRES

KEY PLAN
索引圖

PROJECT NO. 項目編號: 60624717

CONTRACT NO. 合約編號: CE 19/2019 (CE)

SHEET TITLE
圖紙名稱

LOCATIONS OF ASSESSMENT POINTS - ROAD TRAFFIC NOISE (SOCIAL WELFARE FACILITIES)

SHEET 1 OF 4

SHEET NUMBER
圖紙編號

60624717/G10/FIGURE 3.3.1

ISO A1 594mm x 841mm

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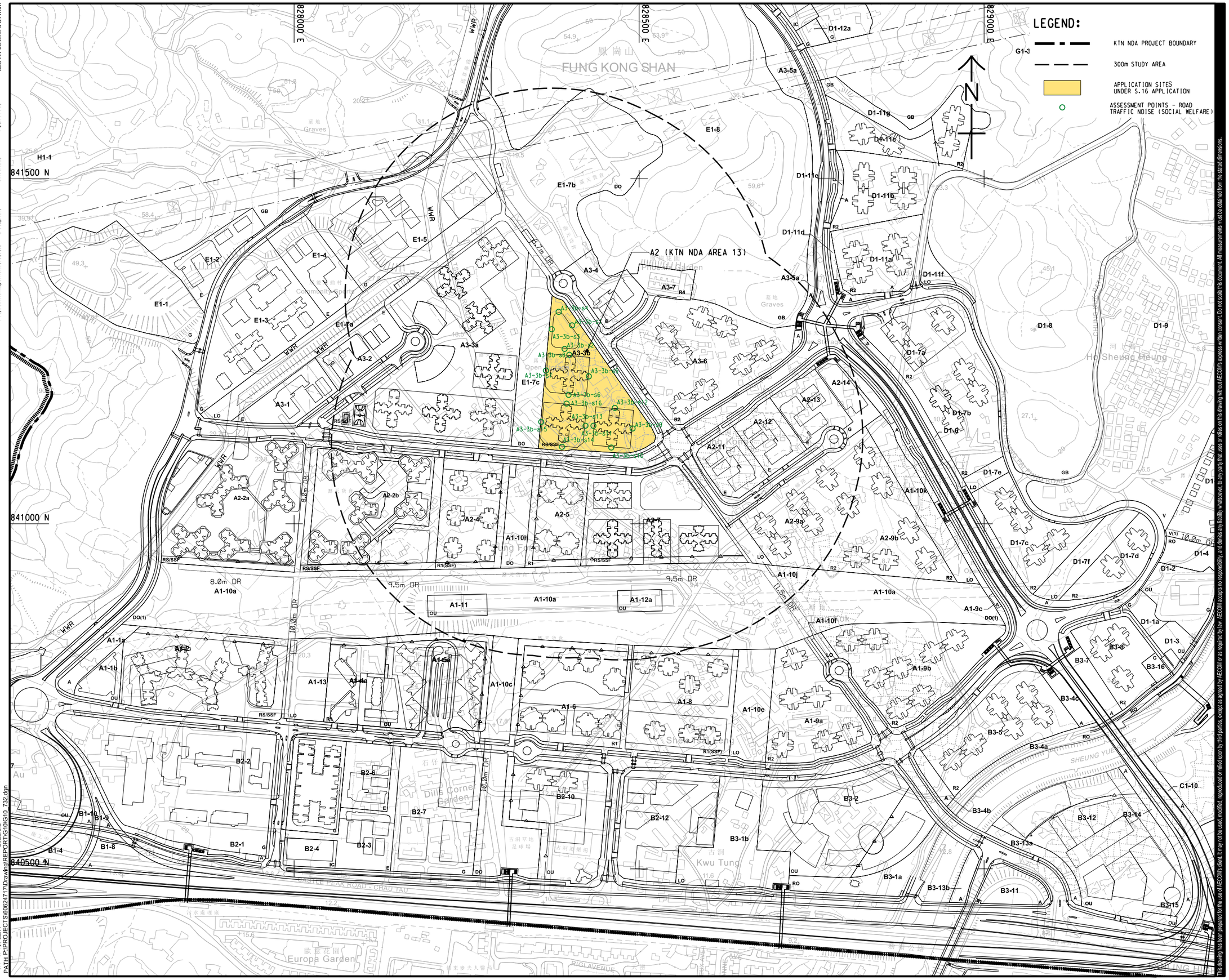
Checked:

Designer:

Project Management Initials:



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2022/8/2

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SCALE 比例
A1 1 : 2500

DIMENSION UNIT 尺寸單位
METRES

KEY PLAN
索引圖

PROJECT NO. 項目編號
60624717

CONTRACT NO. 合約編號
CE 19/2019 (CE)

SHEET TITLE
圖紙名稱

LOCATIONS OF ASSESSMENT POINTS - ROAD TRAFFIC NOISE (SOCIAL WELFARE FACILITIES)

SHEET 2 OF 4

SHEET NUMBER
圖紙編號

60624717/G10/FIGURE 3.3.2

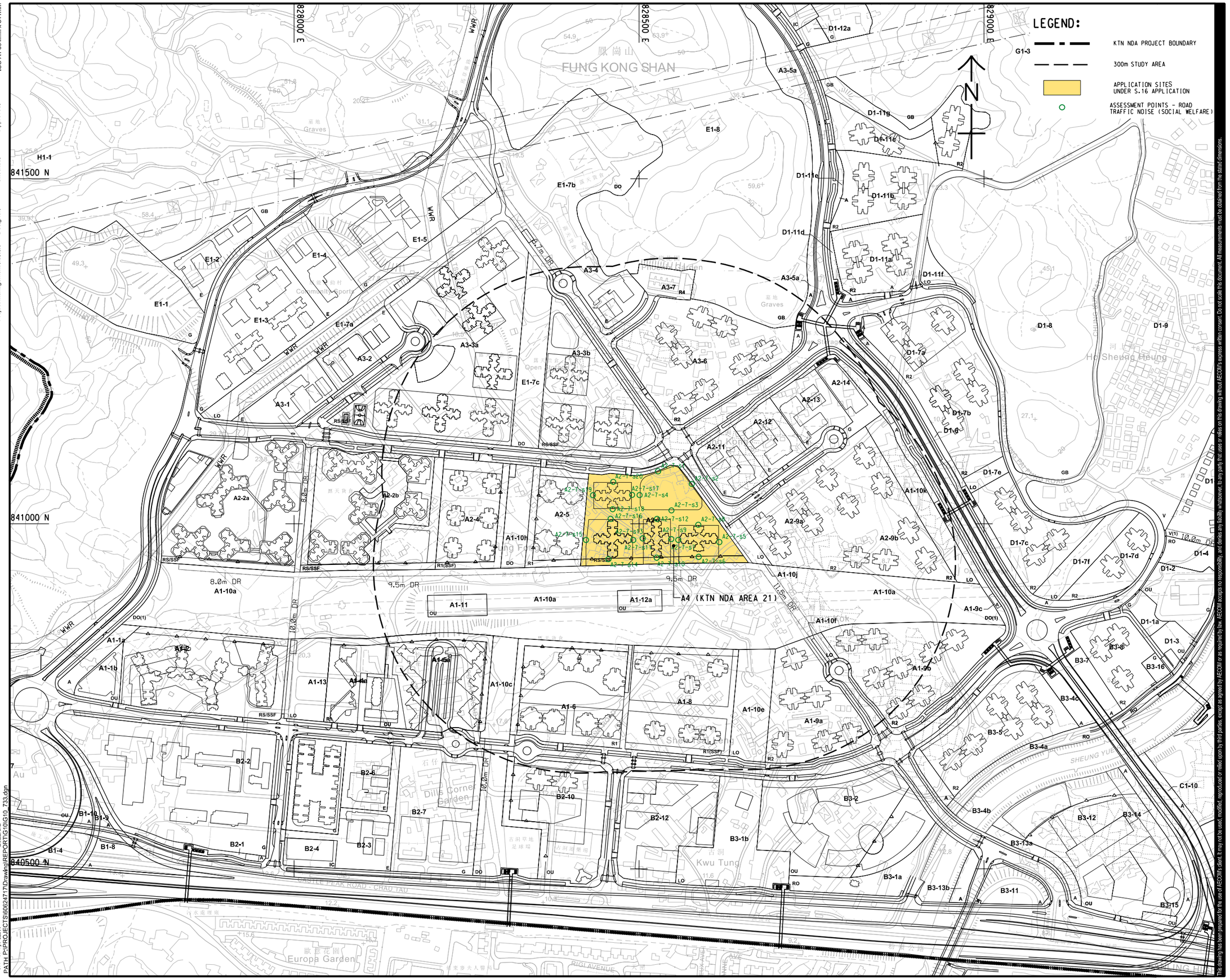
ISO A1 594mm x 841mm

Approved:

Checked:

Designer:

Project Management Initials:



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Plot File by: JsW

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階段

SCALE 比例
A1 1 : 2500

DIMENSION UNIT 尺寸單位
METRES

KEY PLAN
索引圖

PROJECT NO. 項目編號
60624717

CONTRACT NO. 合約編號
CE 19/2019 (CE)

SHEET TITLE
圖紙名稱

LOCATIONS OF ASSESSMENT POINTS - ROAD TRAFFIC NOISE (SOCIAL WELFARE FACILITIES)

SHEET 3 OF 4

SHEET NUMBER
圖紙編號

60624717/G10/FIGURE 3.3.3



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DEVELOPMENT OF KWU TUNG NORTH NEW DEVELOPMENT AREA, REMAINING PHASE - DESIGN & CONSTRUCTION

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階段

SCALE 比例
A1 1 : 2500

DIMENSION UNIT 尺寸單位
METRES

KEY PLAN
索引圖

PROJECT NO. 項目編號
60624717

CONTRACT NO. 合約編號
CE 19/2019 (CE)

SHEET TITLE
圖紙名稱

LOCATIONS OF ASSESSMENT POINTS - ROAD TRAFFIC NOISE (SOCIAL WELFARE FACILITIES)

SHEET 4 OF 4

SHEET NUMBER
圖紙編號

60624717/G10/FIGURE 3.3.4

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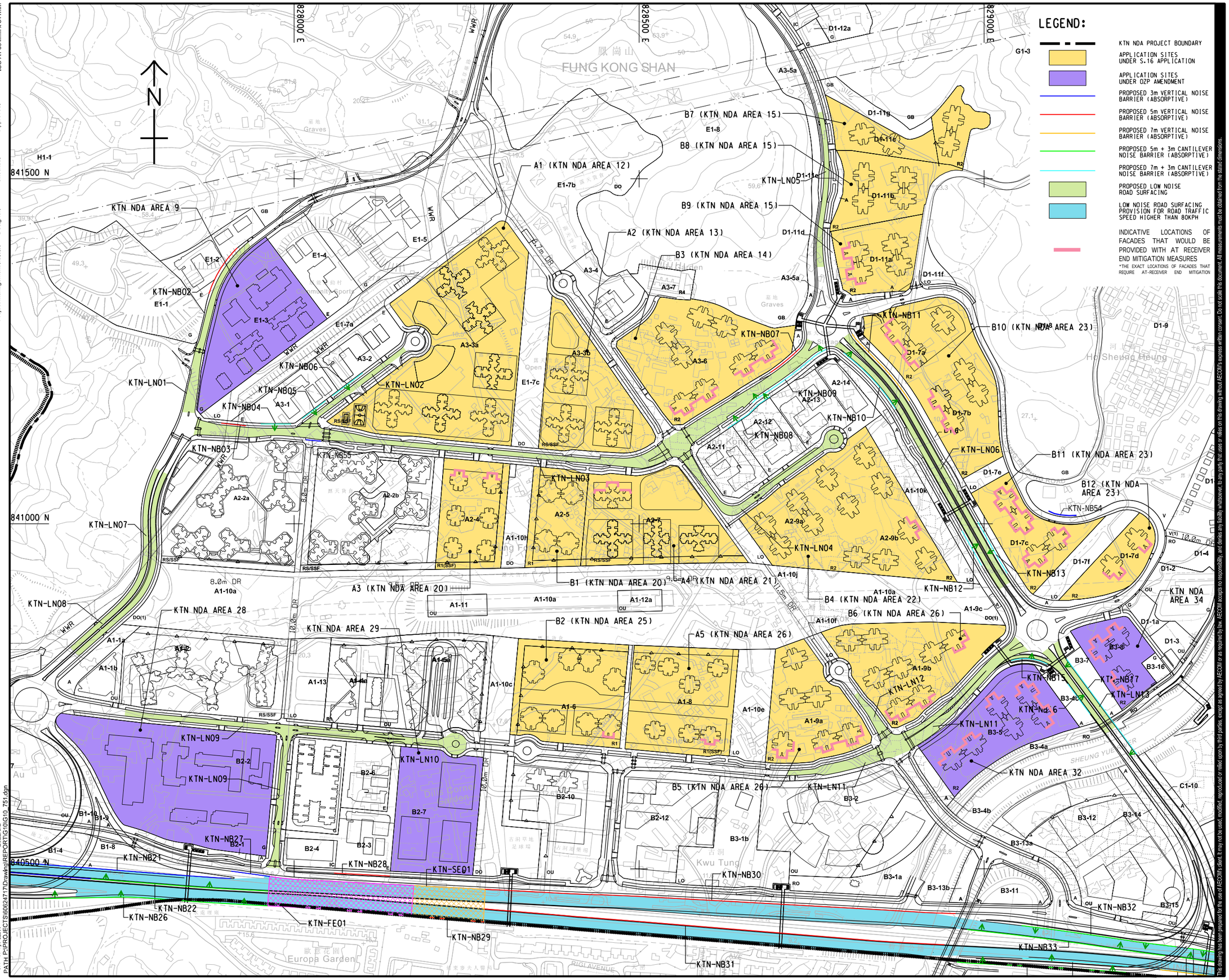
Project Management Initials:
Plot File by: JiaW
PATH P:\PROJECTS\60624717\Drawing\REPORT\G10\G10_734.dgn
2022/8/2



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SCALE 比例
A1 1 : 2500

DIMENSION UNIT 尺寸單位
METRES

KEY PLAN
索引圖

PROJECT NO. 項目編號
60624717

CONTRACT NO. 合約編號
CE 19/2019 (CE)

SHEET TITLE
圖紙名稱

PROPOSED DIRECT NOISE MITIGATION MEASURES

SHEET NUMBER
圖紙編號

60624717/G10/FIGURE 3.4

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2022/8/2

ISO A1 594mm x 841mm

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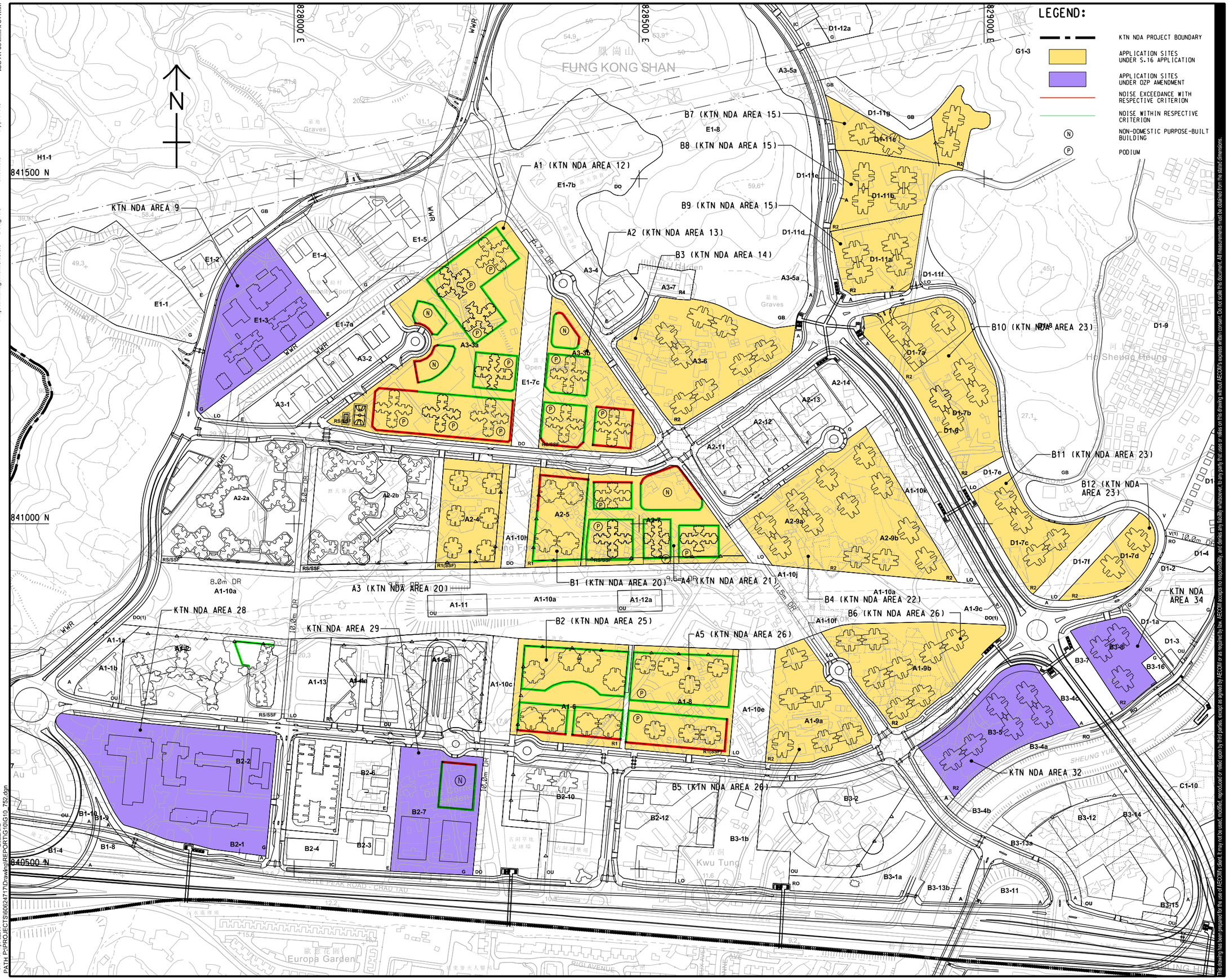
Designer:

Project Management Initials:



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SCALE 比例
A1 1 : 2500

DIMENSION UNIT 尺寸單位
METRES

KEY PLAN
索引圖

PROJECT NO. 項目編號
60624717

CONTRACT NO. 合約編號
CE 19/2019 (CE)

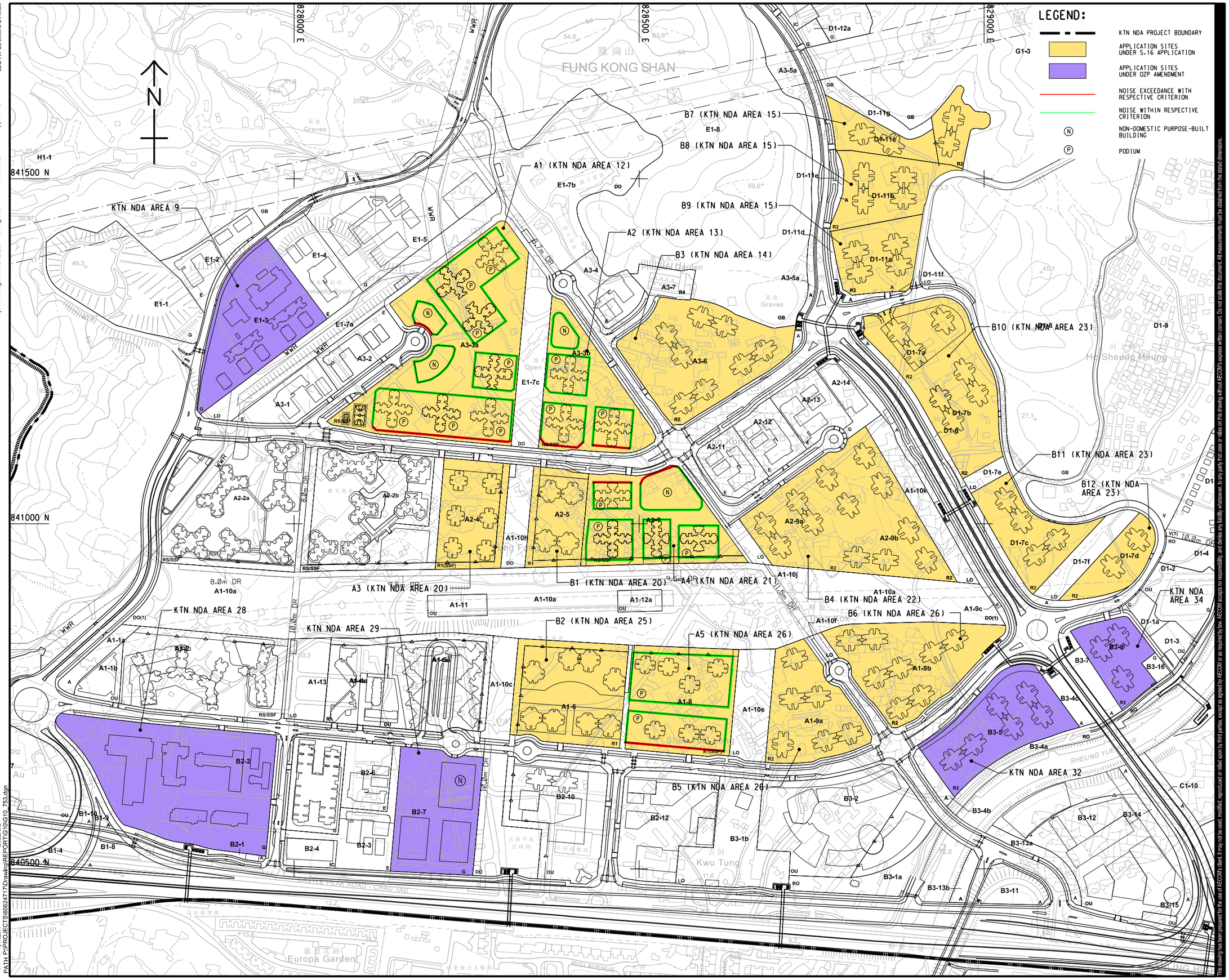
SHEET TITLE
圖紙名稱

LOCATIONS OF NOISE EXCEEDANCES PREDICTED AT PROPOSED KINDERGARTENS

SHEET NUMBER
圖紙編號

60624717/G10/FIGURE 3.5

Plot File by: JaW
PATH: P:\PROJECTS\60624717\D\raw\n\REPORT\G10\G10_752.dgn
2022/8/2



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DEVELOPMENT OF KWU TUNG NORTH NEW DEVELOPMENT AREA, REMAINING PHASE - DESIGN & CONSTRUCTION

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階段

SCALE 比例: A1 1 : 2500

DIMENSION UNIT 尺寸單位: METRES

KEY PLAN
索引圖

PROJECT NO. 項目編號: 60624717

CONTRACT NO. 合約編號: CE 19/2019 (CE)

SHEET TITLE
圖紙名稱

LOCATIONS OF NOISE EXCEEDANCES PREDICTED AT PROPOSED SOCIAL WELFARE FACILITIES

SHEET NUMBER
圖紙編號

60624717/G10/FIGURE 3.6

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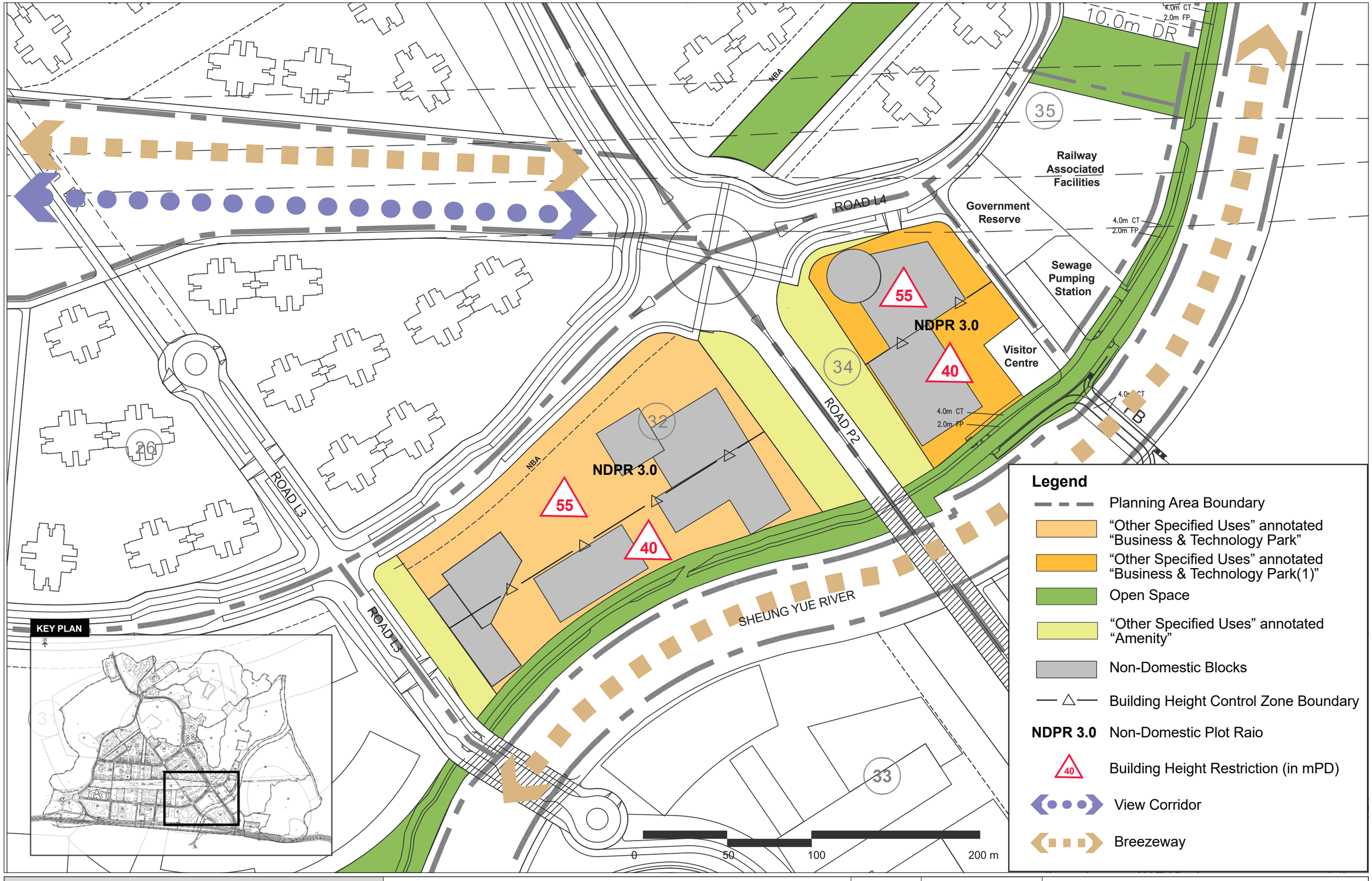
Project Management Initials:
Plot File by: JiaW
PATH P:\PROJECTS\60624717\Drawing\REPORT\G10\G10_753.dgn
2022/8/2



Project:
Agreement No. CE 19/2019 (CE)
Development of Kwu Tung North New Development Area
Remaining Phase – Design and Construction

Title:
60624717/G10/FIGURE 4.1 -
Kwu Tung North Outline Development Plan -
Area 32 & Area 34

N

Figure:
Date: Mar 2022
Scale: As Shown

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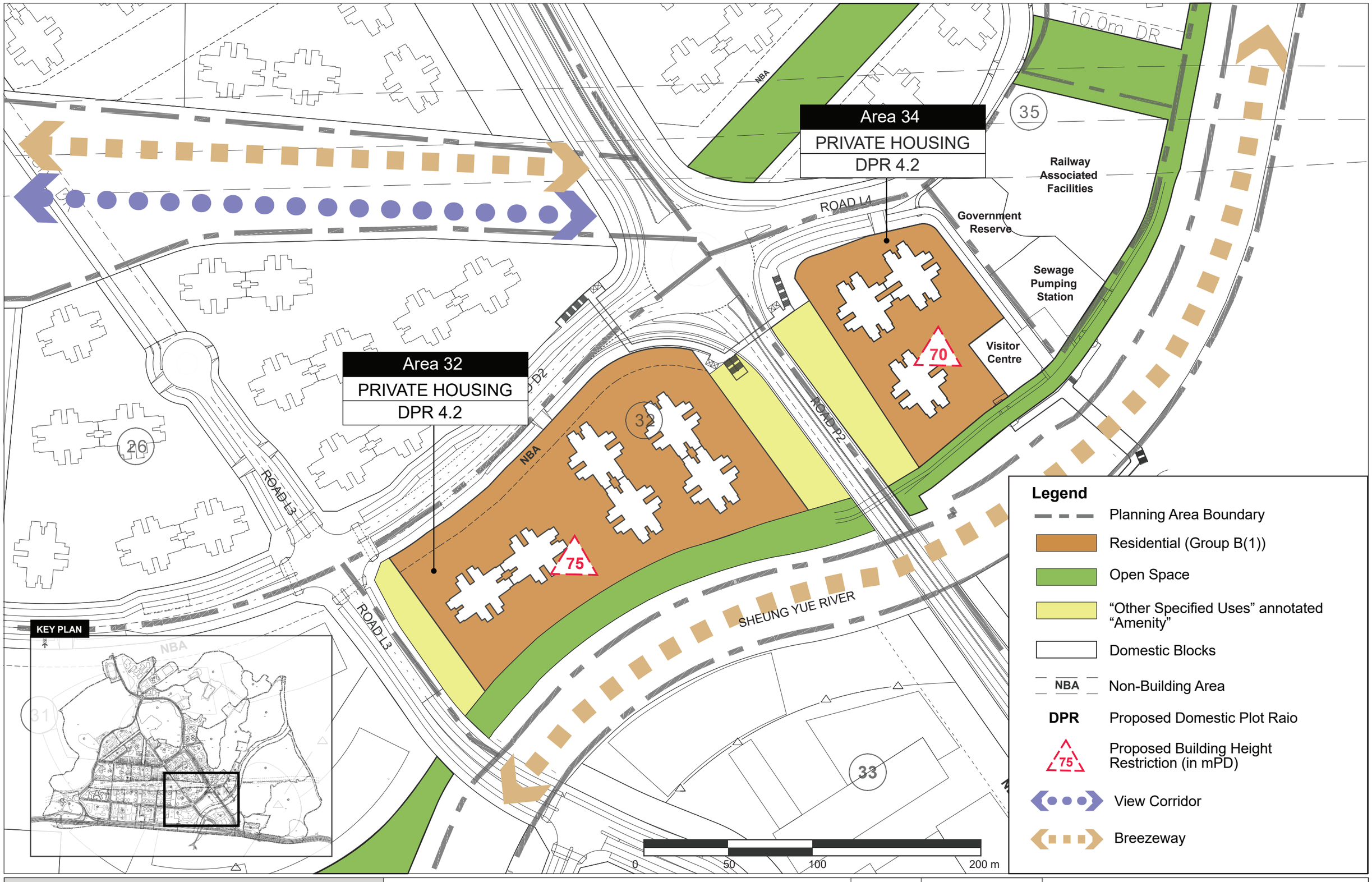

Project:
Agreement No. CE 19/2019 (CE)
Development of Kwu Tung North New Development Area
Remaining Phase – Design and Construction

Title:
60624717/G10/FIGURE 4.2 -
Revised Preferred Development Option Layout Plan -
Area 32 & Area 34

N

Figure:
Date: May 2022
Scale: As Shown

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APPENDICES

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Appendix 3.1
Traffic Forecast in Year 2046

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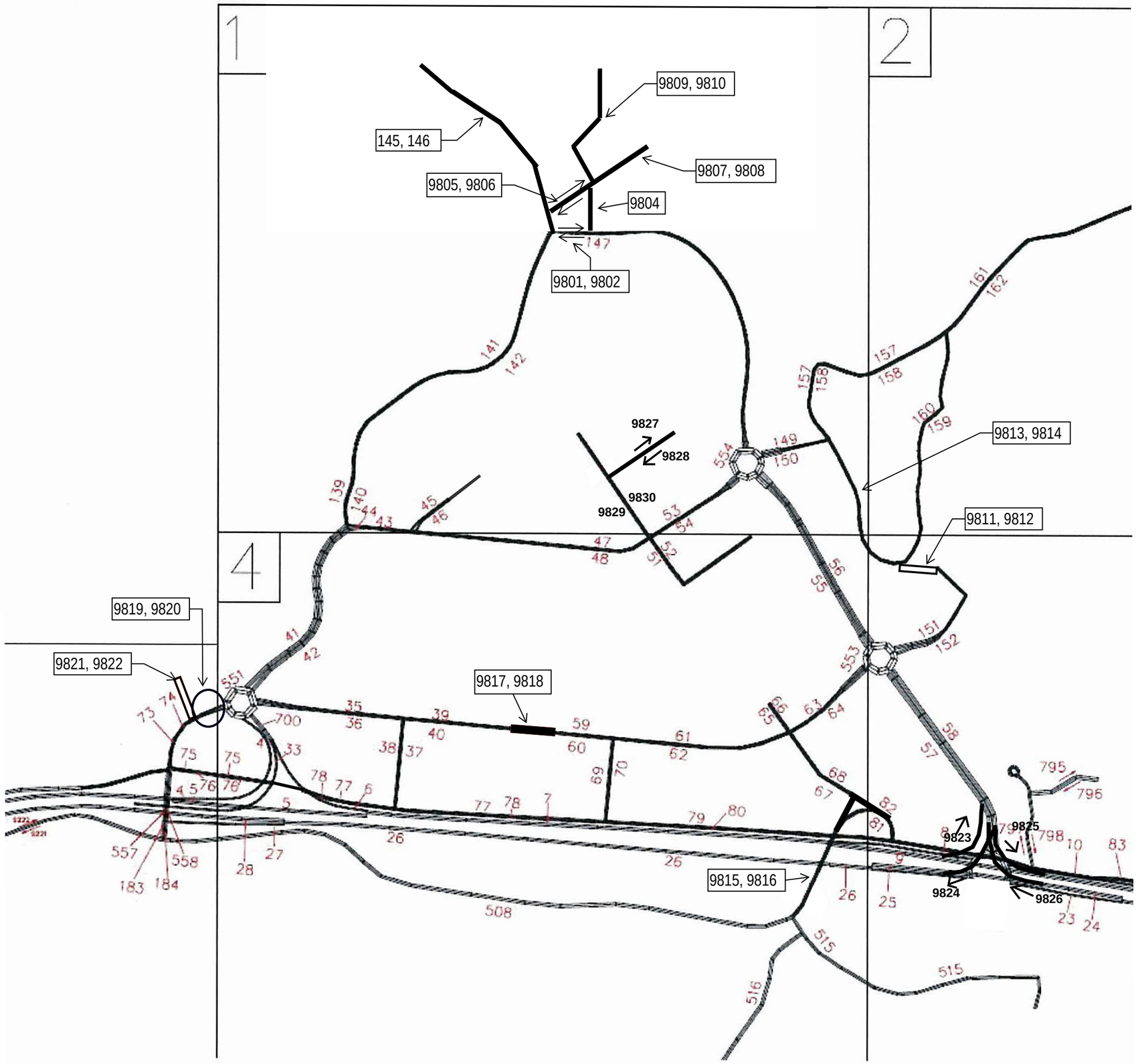
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9811, 9812
9819, 9820
9821, 9822
9817, 9818
9815, 9816
9823
9825
9824
9826

2046 Traffic Flows and Breakdown by 2 Vehicle Classes

Link No.	Total Vehicle	Total Vehicle	Heavy Vehicle %	Heavy Vehicle %	Speed Limit
	AM	PM	AM	PM	km/hr
4	1191	1099	19.1%	14.6%	50
5	3201	4401	41.0%	24.1%	100
6	601	660	22.8%	20.8%	50
7	3802	5059	38.1%	23.7%	100
8	81	127	21.5%	11.9%	50
9	3721	4932	38.5%	24.0%	100
10	1703	1464	23.2%	16.2%	50
23	1962	2071	22.3%	15.9%	50
24	4451	4595	32.1%	30.4%	100
25	282	141	17.7%	20.3%	50
26	4733	4735	31.2%	30.1%	100
27	688	616	28.9%	31.8%	50
28	4046	4121	31.6%	29.8%	100
33	1060	803	19.5%	25.7%	50
35	164	255	43.0%	29.1%	50
36	234	194	34.9%	38.0%	50
37	111	38	14.2%	17.7%	50
38	90	27	16.0%	14.2%	50
39	177	237	40.7%	29.9%	50
40	259	190	32.1%	38.3%	50
41	915	632	18.3%	21.7%	50
42	991	658	20.9%	27.7%	50
43	488	446	25.4%	19.6%	50
44	537	408	22.8%	27.4%	50
45	271	270	23.4%	16.7%	50
46	331	225	20.4%	22.6%	50
47	783	557	25.7%	27.5%	50
48	596	705	31.8%	22.2%	50
49	145	183	22.2%	9.7%	50
50	236	135	14.2%	17.8%	50
51	44	40	14.2%	17.8%	50
52	46	32	22.2%	12.2%	50
53	924	594	22.5%	28.4%	50
54	648	782	31.2%	20.7%	50
55	1402	1288	26.2%	20.7%	50
56	1318	1201	26.3%	20.7%	50
57	2043	2198	22.3%	15.7%	50
58	1985	1605	22.4%	16.6%	50
59	256	190	46.2%	55.7%	50
60	198	229	55.5%	45.6%	50
61	303	334	36.6%	31.2%	50
62	429	403	31.1%	31.2%	50
63	766	563	25.8%	27.3%	50
64	814	1070	26.7%	20.1%	50
65	273	108	19.0%	19.2%	50
66	123	178	21.4%	12.9%	50
67	115	44	25.6%	29.8%	50
68	261	310	22.0%	20.5%	50
69	243	394	35.4%	21.0%	50
70	415	384	26.6%	30.0%	50
73	730	819	22.4%	22.9%	50
74	384	462	22.2%	16.4%	50
75	280	281	24.9%	16.2%	50
76	344	272	17.9%	27.4%	50
77	295	306	24.9%	16.5%	50
78	385	312	20.2%	25.1%	50
79	262	259	38.0%	34.4%	50
80	172	224	43.8%	32.7%	50
81	280	325	31.8%	28.7%	50
82	502	537	27.3%	24.8%	50
83	755	805	31.0%	27.8%	50
139	440	198	14.5%	25.6%	50
140	468	262	22.8%	27.4%	50
141	348	178	12.5%	25.2%	50
142	406	239	29.2%	27.2%	50
145	355	120	16.6%	32.4%	50
146	85	242	57.2%	17.4%	50
147	760	394	23.1%	30.8%	50
149	172	156	37.5%	35.1%	50
150	213	146	35.4%	39.7%	50
151	131	136	27.8%	19.3%	50
152	205	135	32.1%	20.2%	50
157	55	46	25.0%	24.0%	50
158	62	62	28.3%	22.7%	50
159	38	66	76.4%	10.6%	50
160	43	49	24.4%	14.7%	50
161	98	95	24.7%	19.2%	50
162	96	128	47.9%	16.5%	50
183	629	520	18.5%	20.7%	50
184	381	209	20.1%	20.3%	50
508	784	649	23.4%	25.9%	50
515	110	74	28.2%	32.0%	50
516*	27	21	24.1%	20.3%	50
551	1749	1578	21.7%	21.3%	50
553	2052	2003	24.9%	18.9%	50
554	1332	1210	28.2%	23.0%	50
557	629	520	18.5%	20.7%	50
558	381	209	20.1%	20.3%	50
700	1661	1463	20.7%	23.5%	50
795	32	31	42.7%	23.4%	50
796	31	47	30.8%	28.2%	50
797	32	31	42.7%	23.4%	50
798	31	47	30.8%	28.2%	50
9221	574	199	21.8%	36.4%	50
9222	77	97	27.8%	41.3%	50
9801	142	290	54.7%	23.3%	50
9802	760	394	23.1%	30.8%	50
9804	137	244	38.9%	9.2%	50
9805	540	312	19.8%	30.3%	50
9806	251	148	37.7%	39.1%	50
9807	29	25	15.7%	23.0%	50
9808	12	13	28.1%	25.7%	50
9809	454	228	19.5%	33.0%	50
9810	353	372	38.6%	20.9%	50
9811	94	101	32.2%	25.9%	50
9812	125	139	43.7%	21.9%	50
9813	21	22	58.5%	56.5%	50
9814	35	22	38.0%	56.5%	50
9815	422	315	26.0%	29.9%	50
9816	320	337	33.0%	23.1%	50
9817	98	99	91.0%	90.4%	50
9818	98	99	91.0%	90.4%	50
9819	730	819	22.4%	22.9%	50
9820	384	462	22.2%	16.4%	50
9821	12	13	28.1%	25.7%	50
9822	12	13	28.1%	25.7%	50
9823	81	127	21.5%	11.9%	50
9824	282	141	17.7%	20.3%	50
9825	1703	1464	23.2%	16.2%	50
9826	1962	2071	22.3%	15.9%	50
9827	12	13	28.1%	25.7%	50
9828	12	13	28.1%	25.7%	50
9829	145	183	22.2%	9.7%	50
9830	236	135	14.2%	17.8%	50

* Results from traffic model show that only 5% of the traffic flow at Kam Hang Road (road link ID: 516) contributed to the development of KTN NDA.

Appendix 3.2-1
Details of Road Traffic Noise Impacts on NSRs (Residential) at Year 2046

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Title: Detailed Calculation of Road Traffic Noise with Direct Mitigation Measures in place
Scenario: Existing and Planned Residential and Educational Uses in KTN NDA (Mitigated Case on Proposed Roads)

Assessment Point			Location	WITH PROJECT														
				Existing Road in 2046 dB(A)	Other Roads in 2046 dB(A)[1]	New Roads[2]					New Roads in 2046 dB(A) [3] [B]	Overall Noise Level in 2046 dB(A) [C]	Noise Criteria dB(A)	Exceedance C > Criteria (Y/N)	Check Project Impact Significance		Check Direct Mitigation			At Receiver-end Mitigation Measures Required [4,5] (Y/N)
						PD	DD	LD	EX	TR					C - A dB(A) [D]	D ≥ 1dB(A)	New Road Contribution dB(A) [E]	New Road Contribution ≥ 1dB(A) E ≥ 1dB(A)	New Road > Criteria B > Criteria	
ID	Floor	Floor Level (mPD)		dB (A)																
A1 (KTN NDA Area 12)																				
A3-3a-1	1	56.2	A3-3a	0	0	51.7	66.8	63.5	0	0	68.5	68.5	70	N	-	-	68.5	Y	N	N
A3-3a-1	2	59	A3-3a	0	0	52.1	66.7	63.4	0	0	68.5	68.5	70	N	-	-	68.5	Y	N	N
A3-3a-1	3	61.8	A3-3a	0	0	52.5	66.6	63.2	0	0	68.3	68.3	70	N	-	-	68.3	Y	N	N
A3-3a-1	4	64.6	A3-3a	0	0	53	66.5	63.1	0	0	68.3	68.3	70	N	-	-	68.3	Y	N	N
A3-3a-1	5	67.4	A3-3a	0	0	53.4	66.4	62.9	0	0	68.1	68.1	70	N	-	-	68.1	Y	N	N
A3-3a-1	6	70.2	A3-3a	0	0	53.6	66.3	62.8	0	0	68.1	68.1	70	N	-	-	68.1	Y	N	N
A3-3a-1	7	73	A3-3a	0	0	53.7	66.2	62.6	0	0	67.9	67.9	70	N	-	-	67.9	Y	N	N
A3-3a-1	8	75.8	A3-3a	0	0	53.7	66.1	62.5	0	0	67.8	67.8	70	N	-	-	67.8	Y	N	N
A3-3a-1	9	78.6	A3-3a	0	0	53.7	65.9	62.4	0	0	67.7	67.7	70	N	-	-	67.7	Y	N	N
A3-3a-1	10	81.4	A3-3a	0	0	53.7	65.8	62.3	0	0	67.6	67.6	70	N	-	-	67.6	Y	N	N
A3-3a-1	11	84.2	A3-3a	0	0	53.7	65.7	62.2	0	0	67.5	67.5	70	N	-	-	67.5	Y	N	N
A3-3a-1	12	87	A3-3a	0	0	53.7	65.6	62.1	0	0	67.4	67.4	70	N	-	-	67.4	Y	N	N
A3-3a-1	13	89.8	A3-3a	0	0	53.7	65.5	62	0	0	67.3	67.3	70	N	-	-	67.3	Y	N	N
A3-3a-1	14	92.6	A3-3a	0	0	53.7	65.4	61.9	0	0	67.2	67.2	70	N	-	-	67.2	Y	N	N
A3-3a-1	15	95.4	A3-3a	0	0	53.7	65.3	61.7	0	0	67.1	67.1	70	N	-	-	67.1	Y	N	N
A3-3a-1	16	98.2	A3-3a	0	0	53.7	65.2	61.6	0	0	67	67	70	N	-	-	67.0	Y	N	N
A3-3a-1	17	101	A3-3a	0	0	53.6	65.2	61.5	0	0	66.9	66.9	70	N	-	-	66.9	Y	N	N
A3-3a-1	18	103.8	A3-3a	0	0	53.6	65.1	61.4	0	0	66.9	66.9	70	N	-	-	66.9	Y	N	N
A3-3a-1	19	106.6	A3-3a	0	0	53.6	65	61.4	0	0	66.8	66.8	70	N	-	-	66.8	Y	N	N
A3-3a-1	20	109.4	A3-3a	0	0	53.6	65	61.2	0	0	66.7	66.7	70	N	-	-	66.7	Y	N	N
A3-3a-1	21	112.2	A3-3a	0	0	53.6	65	61.1	0	0	66.7	66.7	70	N	-	-	66.7	Y	N	N
A3-3a-1	22	115	A3-3a	0	0	53.6	65	61	0	0	66.7	66.7	70	N	-	-	66.7	Y	N	N
A3-3a-1	23	117.8	A3-3a	0	0	53.6	65	60.9	0	0	66.6	66.6	70	N	-	-	66.6	Y	N	N
A3-3a-1	24	120.6	A3-3a	0	0	53.5	64.9	60.8	0	0	66.6	66.6	70	N	-	-	66.6	Y	N	N
A3-3a-1	25	123.4	A3-3a	0	0	53.5	64.9	60.7	0	0	66.5	66.5	70	N	-	-	66.5	Y	N	N
A3-3a-1	26	126.2	A3-3a	0	0	53.5	64.9	60.6	0	0	66.5	66.5	70	N	-	-	66.5	Y	N	N
A3-3a-1	27	129	A3-3a	0	0	53.5	64.9	60.5	0	0	66.5	66.5	70	N	-	-	66.5	Y	N	N
A3-3a-1	28	131.8	A3-3a	0	0	53.5	64.9	60.4	0	0	66.4	66.4	70	N	-	-	66.4	Y	N	N
A3-3a-1	29	134.6	A3-3a	0	0	53.5	64.8	60.3	0	0	66.4	66.4	70	N	-	-	66.4	Y	N	N
A3-3a-1	30	137.4	A3-3a	0	0	53.4	64.8	60.2	0	0	66.3	66.3	70	N	-	-	66.3	Y	N	N
A3-3a-1	31	140.2	A3-3a	0	0	53.4	64.8	60.1	0	0	66.3	66.3	70	N	-	-	66.3	Y	N	N
A3-3a-1	32	143	A3-3a	0	0	53.4	64.7	60	0	0	66.2	66.2	70	N	-	-	66.2	Y	N	N
A3-3a-1	33	145.8	A3-3a	0	0	53.4	64.6	59.9	0	0	66.1	66.1	70	N	-	-	66.1	Y	N	N
A3-3a-1	34	148.6	A3-3a	0	0	53.4	64.5	59.8	0	0	66	66	70	N	-	-	66.0	Y	N	N
A3-3a-1	35	151.4	A3-3a	0	0	53.4	64.5	59.8	0	0	66	66	70	N	-	-	66.0	Y	N	N
A3-3a-1	36	154.2	A3-3a	0	0	53.3	64.4	59.7	0	0	65.9	65.9	70	N	-	-	65.9	Y	N	N
A3-3a-1	37	157	A3-3a	0	0	53.3	64.4	59.6	0	0	65.9	65.9	70	N	-	-	65.9	Y	N	N
A3-3a-1	38	159.8	A3-3a	0	0	53.3	64.3	59.5	0	0	65.8	65.8	70	N	-	-	65.8	Y	N	N
A3-3a-1	39	162.6	A3-3a	0	0	53.3	64.2	59.4	0	0	65.7	65.7	70	N	-	-	65.7	Y	N	N
A3-3a-1	40	165.4	A3-3a	0	0	53.3	64.1	59.4	0	0	65.7	65.7	70	N	-	-	65.7	Y	N	N
A3-3a-1	41	168.2	A3-3a	0	0	53.2	64.1	59.3	0	0	65.6	65.6	70	N	-	-	65.6	Y	N	N
A3-3a-2a	1	56.2	A3-3a	0	0	46.5	52.1	41.3	0	0	53.5	53.5	70	N	-	-	53.5	Y	N	N
A3-3a-2a	2	59	A3-3a	0	0	52	55.6	44	0	0	57.4	57.4	70	N	-	-	57.4	Y	N	N
A3-3a-2a	3	61.8	A3-3a	0	0	52.9	58.4	47.8	0	0	59.8	59.8	70	N	-	-	59.8	Y	N	N
A3-3a-2a	4	64.6	A3-3a	0	0	53	61.1	52	0	0	62.1	62.1	70	N	-	-	62.1	Y	N	N
A3-3a-2a	5	67.4	A3-3a	0	0	53	63.6	54.1	0	0	64.4	64.4	70	N	-	-	64.4	Y	N	N
A3-3a-2a	6	70.2	A3-3a	0	0	53	65.7	55.9	0	0	66.3	66.3	70	N	-	-	66.3	Y	N	N
A3-3a-2a	7	73	A3-3a	0	0	53.1	67.7	57.4	0	0	68.2	68.2	70	N	-	-	68.2	Y	N	N
A3-3a-2a	8	75.8	A3-3a	0	0	53	68.5	57.7	0	0	68.9	68.9	70	N	-	-	68.9	Y	N	N
A3-3a-2a	9	78.6	A3-3a	0	0	53	68.8	57.7	0	0	69.2	69.2	70	N	-	-	69.2	Y	N	N
A3-3a-2a	10	81.4	A3-3a	0	0	53	68.8	57.7	0	0	69.3	69.3	70	N	-	-	69.3	Y	N	N
A3-3a-2a	11	84.2	A3-3a	0	0	53	68.8	57.7	0	0	69.2	69.2	70	N	-	-	69.2	Y	N	N
A3-3a-2a	12	87	A3-3a	0	0	53	68.7	57.6	0	0	69.2	69.2	70	N	-	-	69.2	Y	N	N
A3-3a-2a	13	89.8	A3-3a	0	0	53	68.6	57.5	0	0	69	69	70	N	-	-	69.0	Y	N	N
A3-3a-2a	14	92.6	A3-3a	0	0	53	68.4	57.4	0	0	68.9	68.9	70	N	-	-	68.9	Y	N	N
A3-3a-2a	15	95.4	A3-3a	0	0	53	68.4	57.3	0	0	68.8	68.8	70	N	-	-	68.8	Y	N	N
A3-3a-2a	16	98.2	A3-3a	0	0	53	68.2	57.2	0	0	68.7	68.7	70	N	-	-	68.7	Y	N	N
A3-3a-2a	17	101	A3-3a	0	0	53	68.1	57.2	0	0	68.6	68.6	70	N	-	-	68.6	Y	N	N
A3-3a-2a	18	103.8	A3-3a	0	0	53	68	57.1	0	0	68.5	68.5	70	N	-	-	68.5	Y	N	N
A3-3a-2a	19	106.6	A3-3a	0	0	52.9	67.8	57	0	0	68.3	68.3	70	N	-	-	68.3	Y	N	N
A3-3a-2a	20	109.4	A3-3a	0	0	52.9	67.7	56.9	0	0	68.2	68.2	70	N	-	-	68.2	Y	N	N
A3-3a-2a	21	112.2	A3-3a	0	0	52.9	67.6	56.8	0	0	68.1	68.1	70	N	-	-	68.1	Y	N	N
A3-3a-2a	22	115	A3-3a	0	0	52.9	67.5	56.8	0	0	68	68	70	N	-	-	68.0	Y	N	N
A3-3a-2a	23	117.8	A3-3a	0	0	52.9	67.4	56.7	0	0	67.9	67.9	70	N	-	-	67.9	Y	N	N
A3-3a-2a	24	120.6	A3-3a	0	0	52.9	67.2	56.6	0	0	67.7	67.7	70	N	-	-	67.7	Y	N	N
A3-3a-2a	25	123.4	A3-3a	0	0	52.9	67.1	56.5	0	0	67.6	67.6	70	N	-	-	67.6	Y	N	N
A3-3a-2a	26	126.2	A3-3a	0	0	52.9	67	56.4	0	0	67.6	67.6	70	N	-	-	67.6	Y	N	N
A3-3a-2a	27	129	A3-3a	0	0	52.8	66.9	56.4	0	0	67.5	67.5	70	N	-	-	67.5	Y	N	N
A3-3a-2a	28	131.8	A3-3a	0	0	52.8	66.8	56.3	0	0	67.4	67.4	70	N	-	-	67.4	Y	N	N
A3-3a-2a	29	134.6	A3-3a	0	0	52.8	66.7	56.2	0	0	67.3	67.3	70	N	-	-	67.3	Y	N	N
A3-3a-2a	30	137.4	A3-3a	0	0	52.8	66.6	56.2	0	0	67.2	67.2	70	N	-	-	67.2	Y	N	N
A3-3a-2a	31	140.2	A3-3a	0	0	52.8	66.5	56.1	0	0	67.1	67.1	70	N	-	-	67.1	Y	N	N
A3-3a-2a	32	143	A3-3a	0	0	52.7	66.4	56	0	0	67	67	70	N	-	-	67.0	Y	N	N
A3-3a-2a	33	145.8	A3-3a	0	0	52.7	66.3	55.9	0	0	66.9	66.9	70	N	-	-	66.9	Y	N	N
A3-3a-2a	34	148.6	A3-3a	0	0	52.7	66.3	55.9	0	0	66.8	66.8	70	N	-	-	66.8	Y	N	N
A3-3a-2a	35	151.4	A3-3a	0	0	52.7	66.2	55.8	0	0	66.7	66.7	70	N	-	-	66.7	Y	N	N
A3-3a-2a	36	154.2	A3-3a	0	0	52.7	66.1	55.7	0	0	66.6	66.6	70	N	-	-	66.6	Y	N	N
A3-3a-2a	37	157	A3-3a	0	0	52.6	66	55.7	0	0	66.6	66.6	70	N	-	-	66.6	Y	N	N

Title: Detailed Calculation of Road Traffic Noise with Direct Mitigation Measures in place
Scenario: Existing and Planned Residential and Educational Uses in KTN NDA (Mitigated Case on Proposed Roads)

Assessment Point			Location	WITH PROJECT														
				Existing Road in 2046 dB(A)	Other Roads in 2046 dB(A)[1]	New Roads[2]						Overall Noise Level in 2046 dB(A) [C]	Noise Criteria dB(A)	Exceedance C > Criteria (Y/N)	Check Project Impact Significance		Check Direct Mitigation			At Receiver-end Mitigation Measures Required [4,5] (Y/N)
						PD	DD	LD	EX	TR	New Roads in 2046 dB(A) [3] [B]				C - A dB(A) [D]	D ≥ 1dB(A)	New Road Contribution dB(A) [E]	New Road Contribution ≥ 1dB(A) E ≥ 1dB(A)	New Road > Criteria B > Criteria	
ID	Floor	Floor Level (mPD)		dB (A)																
A3-3a-2a	38	159.8	A3-3a	0	0	52.6	65.9	55.6	0	0	66.5	66.5	70	N	-	-	66.5	Y	N	N
A3-3a-2a	39	162.6	A3-3a	0	0	52.6	65.9	55.6	0	0	66.4	66.4	70	N	-	-	66.4	Y	N	N
A3-3a-2a	40	165.4	A3-3a	0	0	52.6	65.8	55.5	0	0	66.3	66.3	70	N	-	-	66.3	Y	N	N
A3-3a-2a	41	168.2	A3-3a	0	0	52.6	65.7	55.5	0	0	66.2	66.2	70	N	-	-	66.2	Y	N	N
A3-3a-2b	1	56.2	A3-3a	0	0	18.5	51.9	6.1	0	0	51.9	51.9	70	N	-	-	51.9	Y	N	N
A3-3a-2b	2	59	A3-3a	0	0	18.5	55	6.1	0	0	55	55	70	N	-	-	55.0	Y	N	N
A3-3a-2b	3	61.8	A3-3a	0	0	18.5	57.8	6.1	0	0	57.8	57.8	70	N	-	-	57.8	Y	N	N
A3-3a-2b	4	64.6	A3-3a	0	0	18.5	60.6	6	0	0	60.6	60.6	70	N	-	-	60.6	Y	N	N
A3-3a-2b	5	67.4	A3-3a	0	0	18.5	63.3	6	0	0	63.3	63.3	70	N	-	-	63.3	Y	N	N
A3-3a-2b	6	70.2	A3-3a	0	0	18.5	65.7	6	0	0	65.7	65.7	70	N	-	-	65.7	Y	N	N
A3-3a-2b	7	73	A3-3a	0	0	18.4	67.8	6	0	0	67.8	67.8	70	N	-	-	67.8	Y	N	N
A3-3a-2b	8	75.8	A3-3a	0	0	18.4	68.5	5.9	0	0	68.5	68.5	70	N	-	-	68.5	Y	N	N
A3-3a-2b	9	78.6	A3-3a	0	0	18.4	68.8	5.8	0	0	68.8	68.8	70	N	-	-	68.8	Y	N	N
A3-3a-2b	10	81.4	A3-3a	0	0	18.4	68.9	5.8	0	0	68.9	68.9	70	N	-	-	68.9	Y	N	N
A3-3a-2b	11	84.2	A3-3a	0	0	18.3	68.9	5.8	0	0	68.9	68.9	70	N	-	-	68.9	Y	N	N
A3-3a-2b	12	87	A3-3a	0	0	18.3	68.8	5.7	0	0	68.8	68.8	70	N	-	-	68.8	Y	N	N
A3-3a-2b	13	89.8	A3-3a	0	0	18.3	68.7	5.7	0	0	68.7	68.7	70	N	-	-	68.7	Y	N	N
A3-3a-2b	14	92.6	A3-3a	0	0	18.3	68.5	5.6	0	0	68.5	68.5	70	N	-	-	68.5	Y	N	N
A3-3a-2b	15	95.4	A3-3a	0	0	18.2	68.5	5.6	0	0	68.5	68.5	70	N	-	-	68.5	Y	N	N
A3-3a-2b	16	98.2	A3-3a	0	0	18.2	68.3	5.5	0	0	68.3	68.3	70	N	-	-	68.3	Y	N	N
A3-3a-2b	17	101	A3-3a	0	0	18.2	68.2	5.5	0	0	68.2	68.2	70	N	-	-	68.2	Y	N	N
A3-3a-2b	18	103.8	A3-3a	0	0	18.1	68.1	5.5	0	0	68.1	68.1	70	N	-	-	68.1	Y	N	N
A3-3a-2b	19	106.6	A3-3a	0	0	18.1	67.9	5.4	0	0	67.9	67.9	70	N	-	-	67.9	Y	N	N
A3-3a-2b	20	109.4	A3-3a	0	0	18	67.8	5.4	0	0	67.8	67.8	70	N	-	-	67.8	Y	N	N
A3-3a-2b	21	112.2	A3-3a	0	0	18	67.7	5.4	0	0	67.7	67.7	70	N	-	-	67.7	Y	N	N
A3-3a-2b	22	115	A3-3a	0	0	18	67.5	5.4	0	0	67.5	67.5	70	N	-	-	67.5	Y	N	N
A3-3a-2b	23	117.8	A3-3a	0	0	18	67.4	5.5	0	0	67.4	67.4	70	N	-	-	67.4	Y	N	N
A3-3a-2b	24	120.6	A3-3a	0	0	17.9	67.3	5.5	0	0	67.3	67.3	70	N	-	-	67.3	Y	N	N
A3-3a-2b	25	123.4	A3-3a	0	0	17.9	67.2	5.6	0	0	67.2	67.2	70	N	-	-	67.2	Y	N	N
A3-3a-2b	26	126.2	A3-3a	0	0	17.8	67.1	5.5	0	0	67.1	67.1	70	N	-	-	67.1	Y	N	N
A3-3a-2b	27	129	A3-3a	0	0	17.8	67	5.5	0	0	67	67	70	N	-	-	67.0	Y	N	N
A3-3a-2b	28	131.8	A3-3a	0	0	17.8	66.9	5.6	0	0	66.9	66.9	70	N	-	-	66.9	Y	N	N
A3-3a-2b	29	134.6	A3-3a	0	0	17.7	66.8	5.6	0	0	66.8	66.8	70	N	-	-	66.8	Y	N	N
A3-3a-2b	30	137.4	A3-3a	0	0	17.5	66.7	5.6	0	0	66.7	66.7	70	N	-	-	66.7	Y	N	N
A3-3a-2b	31	140.2	A3-3a	0	0	17.7	66.6	5.5	0	0	66.6	66.6	70	N	-	-	66.6	Y	N	N
A3-3a-2b	32	143	A3-3a	0	0	17.5	66.5	5.5	0	0	66.5	66.5	70	N	-	-	66.5	Y	N	N
A3-3a-2b	33	145.8	A3-3a	0	0	17.5	66.4	5.5	0	0	66.4	66.4	70	N	-	-	66.4	Y	N	N
A3-3a-2b	34	148.6	A3-3a	0	0	17.6	66.3	5.5	0	0	66.3	66.3	70	N	-	-	66.3	Y	N	N
A3-3a-2b	35	151.4	A3-3a	0	0	17.5	66.2	5.3	0	0	66.2	66.2	70	N	-	-	66.2	Y	N	N
A3-3a-2b	36	154.2	A3-3a	0	0	17.5	66.1	5.3	0	0	66.1	66.1	70	N	-	-	66.1	Y	N	N
A3-3a-2b	37	157	A3-3a	0	0	17.4	66	5.3	0	0	66	66	70	N	-	-	66.0	Y	N	N
A3-3a-2b	38	159.8	A3-3a	0	0	17.4	66	5.2	0	0	66	66	70	N	-	-	66.0	Y	N	N
A3-3a-2b	39	162.6	A3-3a	0	0	17.4	65.9	5.3	0	0	65.9	65.9	70	N	-	-	65.9	Y	N	N
A3-3a-2b	40	165.4	A3-3a	0	0	17.4	65.8	5.3	0	0	65.8	65.8	70	N	-	-	65.8	Y	N	N
A3-3a-2b	41	168.2	A3-3a	0	0	17.3	65.7	5.3	0	0	65.7	65.7	70	N	-	-	65.7	Y	N	N
A3-3a-3a	1	56.2	A3-3a	0	0	18.8	51.5	27.2	0	0	51.5	51.5	70	N	-	-	51.5	Y	N	N
A3-3a-3a	2	59	A3-3a	0	0	18.8	54.5	27.6	0	0	54.5	54.5	70	N	-	-	54.5	Y	N	N
A3-3a-3a	3	61.8	A3-3a	0	0	18.7	57.2	28.1	0	0	57.3	57.3	70	N	-	-	57.3	Y	N	N
A3-3a-3a	4	64.6	A3-3a	0	0	18.7	59.9	28.7	0	0	59.9	59.9	70	N	-	-	59.9	Y	N	N
A3-3a-3a	5	67.4	A3-3a	0	0	18.7	62.4	29.3	0	0	62.4	62.4	70	N	-	-	62.4	Y	N	N
A3-3a-3a	6	70.2	A3-3a	0	0	18.7	64.9	30.2	0	0	64.9	64.9	70	N	-	-	64.9	Y	N	N
A3-3a-3a	7	73	A3-3a	0	0	18.7	67.1	31.2	0	0	67.1	67.1	70	N	-	-	67.1	Y	N	N
A3-3a-3a	8	75.8	A3-3a	0	0	18.7	68.2	32.4	0	0	68.2	68.2	70	N	-	-	68.2	Y	N	N
A3-3a-3a	9	78.6	A3-3a	0	0	18.7	68.6	33.9	0	0	68.6	68.6	70	N	-	-	68.6	Y	N	N
A3-3a-3a	10	81.4	A3-3a	0	0	18.6	68.7	36.3	0	0	68.7	68.7	70	N	-	-	68.7	Y	N	N
A3-3a-3a	11	84.2	A3-3a	0	0	18.6	68.8	37.9	0	0	68.8	68.8	70	N	-	-	68.8	Y	N	N
A3-3a-3a	12	87	A3-3a	0	0	18.6	68.7	39.6	0	0	68.7	68.7	70	N	-	-	68.7	Y	N	N
A3-3a-3a	13	89.8	A3-3a	0	0	18.5	68.6	40.8	0	0	68.6	68.6	70	N	-	-	68.6	Y	N	N
A3-3a-3a	14	92.6	A3-3a	0	0	18.5	68.5	41.4	0	0	68.5	68.5	70	N	-	-	68.5	Y	N	N
A3-3a-3a	15	95.4	A3-3a	0	0	18.5	68.4	41.7	0	0	68.4	68.4	70	N	-	-	68.4	Y	N	N
A3-3a-3a	16	98.2	A3-3a	0	0	18.5	68.3	41.8	0	0	68.3	68.3	70	N	-	-	68.3	Y	N	N
A3-3a-3a	17	101	A3-3a	0	0	18.4	68.2	41.9	0	0	68.2	68.2	70	N	-	-	68.2	Y	N	N
A3-3a-3a	18	103.8	A3-3a	0	0	18.4	68	41.9	0	0	68	68	70	N	-	-	68.0	Y	N	N
A3-3a-3a	19	106.6	A3-3a	0	0	18.3	67.9	41.8	0	0	67.9	67.9	70	N	-	-	67.9	Y	N	N
A3-3a-3a	20	109.4	A3-3a	0	0	18.3	67.8	41.8	0	0	67.8	67.8	70	N	-	-	67.8	Y	N	N
A3-3a-3a	21	112.2	A3-3a	0	0	18.3	67.7	41.8	0	0	67.7	67.7	70	N	-	-	67.7	Y	N	N
A3-3a-3a	22	115	A3-3a	0	0	18.2	67.6	41.7	0	0	67.6	67.6	70	N	-	-	67.6	Y	N	N
A3-3a-3a	23	117.8	A3-3a	0	0	18.2	67.4	41.7	0	0	67.4	67.4	70	N	-	-	67.4	Y	N	N
A3-3a-3a	24	120.6	A3-3a	0	0	18.1	67.3	41.7	0	0	67.3	67.3	70	N	-	-	67.3	Y	N	N
A3-3a-3a	25	123.4	A3-3a	0	0	18.1	67.2	41.6	0	0	67.2	67.2	70	N	-	-	67.2	Y	N	N
A3-3a-3a	26	126.2	A3-3a	0	0	18	67.1	41.6	0	0	67.1	67.1	70	N	-	-	67.1	Y	N	N
A3-3a-3a	27	129	A3-3a	0	0	18	67	41.5	0	0	67	67	70	N	-	-	67.0	Y	N	N
A3-3a-3a	28	131.8	A3-3a	0	0	17.9	66.9	41.5	0	0	66.9	66.9	70	N	-	-	66.9	Y	N	N
A3-3a-3a	29	134.6	A3-3a	0	0	17.9	66.8	41.4	0	0	66.8	66.8	70	N	-	-	66.8	Y	N	N
A3-3a-3a	30	137.4	A3-3a	0	0	17.9	66.7	41.4	0	0	66.7	66.7	70	N	-	-	66.7	Y	N	N
A3-3a-3a	31	140.2	A3-3a	0	0	17.7	66.6	41.4	0	0	66.6	66.6	70	N	-	-	66.6	Y	N	N
A3-3a-3a	32	143	A3-3a	0	0	17.6	66.5	41.3	0	0	66.5	66.5	70	N	-	-	66.5	Y	N	N
A3-3a-3a	33	145.8	A3-3a	0	0	17.7	66.4	41.3	0	0	66.4	66.4	70	N	-	-	66.4	Y	N	N
A3-3a-3a	34	148.6	A3-3a	0	0	17.8	66.3	41.3	0	0	66.3	66.3	70	N	-	-	66.3	Y	N	N

Title: Detailed Calculation of Road Traffic Noise with Direct Mitigation Measures in place
Scenario: Existing and Planned Residential and Educational Uses in KTN NDA (Mitigated Case on Proposed Roads)

Assessment Point			Location	WITH PROJECT														
				Existing Road in 2046 dB(A)	Other Roads in 2046 dB(A)[1]	New Roads[2]						Overall Noise Level in 2046 dB(A) [C]	Noise Criteria dB(A)	Exceedance C > Criteria (Y/N)	Check Project Impact Significance		Check Direct Mitigation			At Receiver-end Mitigation Measures Required [4,5] (Y/N)
						PD	DD	LD	EX	TR	New Roads in 2046 dB(A) [3] [B]				C - A dB(A) [D]	D ≥ 1dB(A)	New Road Contribution dB(A) [E]	New Road Contribution ≥ 1dB(A) E ≥ 1dB(A)	New Road > Criteria B > Criteria	
ID	Floor	Floor Level (mPD)		dB (A)																
A3-3a-3a	35	151.4	A3-3a	0	0	17.8	66.2	41.2	0	0	66.2	66.2	70	N	-	-	66.2	Y	N	N
A3-3a-3a	36	154.2	A3-3a	0	0	17.9	66.2	41.2	0	0	66.2	66.2	70	N	-	-	66.2	Y	N	N
A3-3a-3a	37	157	A3-3a	0	0	17.9	66.1	41.2	0	0	66.1	66.1	70	N	-	-	66.1	Y	N	N
A3-3a-3a	38	159.8	A3-3a	0	0	18	66	41.1	0	0	66	66	70	N	-	-	66.0	Y	N	N
A3-3a-3a	39	162.6	A3-3a	0	0	18	65.9	41.1	0	0	65.9	65.9	70	N	-	-	65.9	Y	N	N
A3-3a-3a	40	165.4	A3-3a	0	0	17.9	65.8	41	0	0	65.8	65.8	70	N	-	-	65.8	Y	N	N
A3-3a-3a	41	168.2	A3-3a	0	0	18	65.7	41	0	0	65.7	65.7	70	N	-	-	65.7	Y	N	N
A3-3a-3b	1	56.2	A3-3a	0	0	19.6	53.2	22.6	0	0	53.2	53.2	70	N	-	-	53.2	Y	N	N
A3-3a-3b	2	59	A3-3a	0	0	19.6	56.8	22.9	0	0	56.8	56.8	70	N	-	-	56.8	Y	N	N
A3-3a-3b	3	61.8	A3-3a	0	0	19.6	60	23.3	0	0	60	60	70	N	-	-	60.0	Y	N	N
A3-3a-3b	4	64.6	A3-3a	0	0	19.6	62.9	23.9	0	0	62.9	62.9	70	N	-	-	62.9	Y	N	N
A3-3a-3b	5	67.4	A3-3a	0	0	19.6	65.8	24.8	0	0	65.8	65.8	70	N	-	-	65.8	Y	N	N
A3-3a-3b	6	70.2	A3-3a	0	0	19.6	68.1	26.5	0	0	68.1	68.1	70	N	-	-	68.1	Y	N	N
A3-3a-3b	7	73	A3-3a	0	0	19.6	69	28.1	0	0	69	69	70	N	-	-	69.0	Y	N	N
A3-3a-3b	8	75.8	A3-3a	0	0	19.5	69.3	29.7	0	0	69.3	69.3	70	N	-	-	69.3	Y	N	N
A3-3a-3b	9	78.6	A3-3a	0	0	19.5	69.3	30.5	0	0	69.3	69.3	70	N	-	-	69.3	Y	N	N
A3-3a-3b	10	81.4	A3-3a	0	0	19.5	69.3	31	0	0	69.3	69.3	70	N	-	-	69.3	Y	N	N
A3-3a-3b	11	84.2	A3-3a	0	0	19.4	69.2	31.2	0	0	69.2	69.2	70	N	-	-	69.2	Y	N	N
A3-3a-3b	12	87	A3-3a	0	0	19.4	69.1	31.5	0	0	69.1	69.1	70	N	-	-	69.1	Y	N	N
A3-3a-3b	13	89.8	A3-3a	0	0	19.4	69	31.9	0	0	69	69	70	N	-	-	69.0	Y	N	N
A3-3a-3b	14	92.6	A3-3a	0	0	19.4	68.9	32.1	0	0	68.9	68.9	70	N	-	-	68.9	Y	N	N
A3-3a-3b	15	95.4	A3-3a	0	0	19.3	68.8	32.2	0	0	68.8	68.8	70	N	-	-	68.8	Y	N	N
A3-3a-3b	16	98.2	A3-3a	0	0	19.3	68.6	32.2	0	0	68.6	68.6	70	N	-	-	68.6	Y	N	N
A3-3a-3b	17	101	A3-3a	0	0	19.3	68.5	32.3	0	0	68.5	68.5	70	N	-	-	68.5	Y	N	N
A3-3a-3b	18	103.8	A3-3a	0	0	19.2	68.3	32.3	0	0	68.3	68.3	70	N	-	-	68.3	Y	N	N
A3-3a-3b	19	106.6	A3-3a	0	0	19.2	68.2	32.3	0	0	68.2	68.2	70	N	-	-	68.2	Y	N	N
A3-3a-3b	20	109.4	A3-3a	0	0	19.2	68.1	32.3	0	0	68.1	68.1	70	N	-	-	68.1	Y	N	N
A3-3a-3b	21	112.2	A3-3a	0	0	19.2	68	32.3	0	0	68	68	70	N	-	-	68.0	Y	N	N
A3-3a-3b	22	115	A3-3a	0	0	19.1	67.8	32.3	0	0	67.8	67.8	70	N	-	-	67.8	Y	N	N
A3-3a-3b	23	117.8	A3-3a	0	0	19.1	67.7	32.2	0	0	67.7	67.7	70	N	-	-	67.7	Y	N	N
A3-3a-3b	24	120.6	A3-3a	0	0	19	67.6	32.2	0	0	67.6	67.6	70	N	-	-	67.6	Y	N	N
A3-3a-3b	25	123.4	A3-3a	0	0	19	67.5	32.2	0	0	67.5	67.5	70	N	-	-	67.5	Y	N	N
A3-3a-3b	26	126.2	A3-3a	0	0	18.9	67.4	32.2	0	0	67.4	67.4	70	N	-	-	67.4	Y	N	N
A3-3a-3b	27	129	A3-3a	0	0	18.9	67.3	32.2	0	0	67.3	67.3	70	N	-	-	67.3	Y	N	N
A3-3a-3b	28	131.8	A3-3a	0	0	18.9	67.2	32.2	0	0	67.2	67.2	70	N	-	-	67.2	Y	N	N
A3-3a-3b	29	134.6	A3-3a	0	0	18.8	67.1	32.1	0	0	67.1	67.1	70	N	-	-	67.1	Y	N	N
A3-3a-3b	30	137.4	A3-3a	0	0	18.8	67	32.1	0	0	67	67	70	N	-	-	67.0	Y	N	N
A3-3a-3b	31	140.2	A3-3a	0	0	18.7	66.9	32.1	0	0	66.9	66.9	70	N	-	-	66.9	Y	N	N
A3-3a-3b	32	143	A3-3a	0	0	18.7	66.8	32.1	0	0	66.8	66.8	70	N	-	-	66.8	Y	N	N
A3-3a-3b	33	145.8	A3-3a	0	0	18.6	66.7	32.1	0	0	66.7	66.7	70	N	-	-	66.7	Y	N	N
A3-3a-3b	34	148.6	A3-3a	0	0	18.8	66.6	32.1	0	0	66.6	66.6	70	N	-	-	66.6	Y	N	N
A3-3a-3b	35	151.4	A3-3a	0	0	18.8	66.5	32.1	0	0	66.5	66.5	70	N	-	-	66.5	Y	N	N
A3-3a-3b	36	154.2	A3-3a	0	0	18.9	66.4	32.1	0	0	66.4	66.4	70	N	-	-	66.4	Y	N	N
A3-3a-3b	37	157	A3-3a	0	0	19	66.4	32.1	0	0	66.4	66.4	70	N	-	-	66.4	Y	N	N
A3-3a-3b	38	159.8	A3-3a	0	0	19	66.3	32.1	0	0	66.3	66.3	70	N	-	-	66.3	Y	N	N
A3-3a-3b	39	162.6	A3-3a	0	0	19	66.2	32.1	0	0	66.2	66.2	70	N	-	-	66.2	Y	N	N
A3-3a-3b	40	165.4	A3-3a	0	0	19	66.1	32	0	0	66.1	66.1	70	N	-	-	66.1	Y	N	N
A3-3a-3b	41	168.2	A3-3a	0	0	19	66	32	0	0	66	66	70	N	-	-	66.0	Y	N	N
A3-3a-4a	1	56.2	A3-3a	0	0	19.3	52.5	25.3	0	0	52.5	52.5	70	N	-	-	52.5	Y	N	N
A3-3a-4a	2	59	A3-3a	0	0	19.3	56.1	25.5	0	0	56.1	56.1	70	N	-	-	56.1	Y	N	N
A3-3a-4a	3	61.8	A3-3a	0	0	19.3	59.2	25.8	0	0	59.3	59.3	70	N	-	-	59.3	Y	N	N
A3-3a-4a	4	64.6	A3-3a	0	0	19.3	62.2	26.1	0	0	62.2	62.2	70	N	-	-	62.2	Y	N	N

Title: Detailed Calculation of Road Traffic Noise with Direct Mitigation Measures in place
Scenario: Existing and Planned Residential and Educational Uses in KTN NDA (Mitigated Case on Proposed Roads)

Assessment Point			Location	WITH PROJECT														
				Existing Road in 2046 dB(A)	Other Roads in 2046 dB(A)[1]	New Roads[2]						Overall Noise Level in 2046 dB(A) [C]	Noise Criteria dB(A)	Exceedance C > Criteria (Y/N)	Check Project Impact Significance		Check Direct Mitigation			At Receiver-end Mitigation Measures Required [4,5] (Y/N)
						PD	DD	LD	EX	TR	New Roads in 2046 dB(A) [3] [B]				C - A dB(A) [D]	D ≥ 1dB(A)	New Road Contribution dB(A) [E]	New Road Contribution ≥ 1dB(A) E ≥ 1dB(A)	New Road > Criteria B > Criteria	
ID	Floor	Floor Level (mPD)		dB (A)																
A3-3a-4a	5	67.4	A3-3a	0	0	19.3	65.1	26.5	0	0	65.1	65.1	70	N	-	-	65.1	Y	N	N
A3-3a-4a	6	70.2	A3-3a	0	0	19.3	67.4	27	0	0	67.4	67.4	70	N	-	-	67.4	Y	N	N
A3-3a-4a	7	73	A3-3a	0	0	19.2	68.2	27.4	0	0	68.2	68.2	70	N	-	-	68.2	Y	N	N
A3-3a-4a	8	75.8	A3-3a	0	0	19.2	68.5	28	0	0	68.5	68.5	70	N	-	-	68.5	Y	N	N
A3-3a-4a	9	78.6	A3-3a	0	0	19.2	68.6	28.8	0	0	68.6	68.6	70	N	-	-	68.6	Y	N	N
A3-3a-4a	10	81.4	A3-3a	0	0	19.2	68.7	29.6	0	0	68.7	68.7	70	N	-	-	68.7	Y	N	N
A3-3a-4a	11	84.2	A3-3a	0	0	19.2	68.5	31.2	0	0	68.5	68.5	70	N	-	-	68.5	Y	N	N
A3-3a-4a	12	87	A3-3a	0	0	19.2	68.4	32.1	0	0	68.4	68.4	70	N	-	-	68.4	Y	N	N
A3-3a-4a	13	89.8	A3-3a	0	0	19.2	68.3	33.4	0	0	68.3	68.3	70	N	-	-	68.3	Y	N	N
A3-3a-4a	14	92.6	A3-3a	0	0	19.1	68.2	34.3	0	0	68.2	68.2	70	N	-	-	68.2	Y	N	N
A3-3a-4a	15	95.4	A3-3a	0	0	19.1	68.1	35.1	0	0	68.1	68.1	70	N	-	-	68.1	Y	N	N
A3-3a-4a	16	98.2	A3-3a	0	0	19.1	68	35.7	0	0	68	68	70	N	-	-	68.0	Y	N	N
A3-3a-4a	17	101	A3-3a	0	0	19.1	67.8	36.1	0	0	67.8	67.8	70	N	-	-	67.8	Y	N	N
A3-3a-4a	18	103.8	A3-3a	0	0	19.1	67.7	36.8	0	0	67.7	67.7	70	N	-	-	67.7	Y	N	N
A3-3a-4a	19	106.6	A3-3a	0	0	19	67.6	37.3	0	0	67.6	67.6	70	N	-	-	67.6	Y	N	N
A3-3a-4a	20	109.4	A3-3a	0	0	19	67.4	37.9	0	0	67.4	67.4	70	N	-	-	67.4	Y	N	N
A3-3a-4a	21	112.2	A3-3a	0	0	19	67.3	38.6	0	0	67.3	67.3	70	N	-	-	67.3	Y	N	N
A3-3a-4a	22	115	A3-3a	0	0	19	67.2	39.1	0	0	67.2	67.2	70	N	-	-	67.2	Y	N	N
A3-3a-4a	23	117.8	A3-3a	0	0	19	67.1	39.5	0	0	67.1	67.1	70	N	-	-	67.1	Y	N	N
A3-3a-4a	24	120.6	A3-3a	0	0	19	67	39.7	0	0	67	67	70	N	-	-	67.0	Y	N	N
A3-3a-4a	25	123.4	A3-3a	0	0	18.9	66.9	39.9	0	0	66.9	66.9	70	N	-	-	66.9	Y	N	N
A3-3a-4a	26	126.2	A3-3a	0	0	18.9	66.8	40	0	0	66.8	66.8	70	N	-	-	66.8	Y	N	N
A3-3a-4a	27	129	A3-3a	0	0	18.8	66.7	40	0	0	66.7	66.7	70	N	-	-	66.7	Y	N	N
A3-3a-4a	28	131.8	A3-3a	0	0	18.9	66.6	40.1	0	0	66.6	66.6	70	N	-	-	66.6	Y	N	N
A3-3a-4a	29	134.6	A3-3a	0	0	18.9	66.5	40.1	0	0	66.5	66.5	70	N	-	-	66.5	Y	N	N
A3-3a-4a	30	137.4	A3-3a	0	0	19	66.4	40	0	0	66.4	66.4	70	N	-	-	66.4	Y	N	N
A3-3a-4a	31	140.2	A3-3a	0	0	19.1	66.3	40.1	0	0	66.3	66.3	70	N	-	-	66.3	Y	N	N
A3-3a-4a	32	143	A3-3a	0	0	19.1	66.2	40.1	0	0	66.2	66.2	70	N	-	-	66.2	Y	N	N
A3-3a-4a	33	145.8	A3-3a	0	0	19.1	66.1	40	0	0	66.1	66.1	70	N	-	-	66.1	Y	N	N
A3-3a-4a	34	148.6	A3-3a	0	0	19.3	66	40	0	0	66	66	70	N	-	-	66.0	Y	N	N
A3-3a-4a	35	151.4	A3-3a	0	0	19.3	65.9	40	0	0	65.9	65.9	70	N	-	-	65.9	Y	N	N
A3-3a-4a	36	154.2	A3-3a	0	0	19.3	65.8	40	0	0	65.8	65.8	70	N	-	-	65.8	Y	N	N
A3-3a-4a	37	157	A3-3a	0	0	19.3	65.7	39.9	0	0	65.7	65.7	70	N	-	-	65.7	Y	N	N
A3-3a-4a	38	159.8	A3-3a	0	0	19.3	65.6	39.9	0	0	65.6	65.6	70	N	-	-	65.6	Y	N	N
A3-3a-4a	39	162.6	A3-3a	0	0	19.3	65.6	39.9	0	0	65.6	65.6	70	N	-	-	65.6	Y	N	N
A3-3a-4a	40	165.4	A3-3a	0	0	19.3	65.5	39.9	0	0	65.5	65.5	70	N	-	-	65.5	Y	N	N
A3-3a-4a	41	168.2	A3-3a	0	0	19.3	65.4	39.8	0	0	65.4	65.4	70	N	-	-	65.4	Y	N	N
A3-3a-4b	1	56.2	A3-3a	0	0	19.2	52.2	27.8	0	0	52.2	52.2	70	N	-	-	52.2	Y	N	N
A3-3a-4b	2	59	A3-3a	0	0	19.2	55.8	29.3	0	0	55.8	55.8	70	N	-	-	55.8	Y	N	N
A3-3a-4b	3	61.8	A3-3a	0	0	19.2	59.1	31.9	0	0	59.1	59.1	70	N	-	-	59.1	Y	N	N
A3-3a-4b	4	64.6	A3-3a	0	0	19.2	62	32.9	0	0	62	62	70	N	-	-	62.0	Y	N	N
A3-3a-4b	5	67.4	A3-3a	0	0	19.2	64.7	33.6	0	0	64.7	64.7	70	N	-	-	64.7	Y	N	N
A3-3a-4b	6	70.2	A3-3a	0	0	19.2	67	34.1	0	0	67	67	70	N	-	-	67.0	Y	N	N
A3-3a-4b	7	73	A3-3a	0	0	19.2	68	34.8	0	0	68	68	70	N	-	-	68.0	Y	N	N
A3-3a-4b	8	75.8	A3-3a	0	0	19.2	68.3	35.1	0	0	68.3	68.3	70	N	-	-	68.3	Y	N	N
A3-3a-4b	9	78.6	A3-3a	0	0	19.2	68.4	35.4	0	0	68.4	68.4	70	N	-	-	68.4	Y	N	N
A3-3a-4b	10	81.4	A3-3a	0	0	19.2	68.4	35.7	0	0	68.4	68.4	70	N	-	-	68.4	Y	N	N
A3-3a-4b	11	84.2	A3-3a	0	0	19.2	68.3	35.8	0	0	68.3	68.3	70	N	-	-	68.3	Y	N	N
A3-3a-4b	12	87	A3-3a	0	0	19.1	68.2	36	0	0	68.2	68.2	70	N	-	-	68.2	Y	N	N
A3-3a-4b	13	89.8	A3-3a	0	0	19.1	68.1	36.1	0	0	68.1	68.1	70	N	-	-	68.1	Y	N	N
A3-3a-4b	14	92.6	A3-3a	0	0	19.1	68	36.3	0	0	68	68	70	N	-	-	68.0	Y	N	N
A3-3a-4b	15	95.4	A3-3a	0	0	19.1	67.9	36.4	0	0	67.9	67.9	70	N	-	-	67.9	Y	N	N
A3-3a-4b	16	98.2	A3-3a	0	0	19.1	67.8	36.7	0	0	67.8	67.8	70	N	-	-	67.8	Y	N	N
A3-3a-4b	17	101	A3-3a	0	0	19	67.6	37	0	0	67.6	67.6	70	N	-	-	67.6	Y	N	N
A3-3a-4b	18	103.8	A3-3a	0	0	19	67.5	37.4	0	0	67.5	67.5	70	N	-	-	67.5	Y	N	N
A3-3a-4b	19	106.6	A3-3a	0	0	19	67.4	37.7	0	0	67.4	67.4	70	N	-	-	67.4	Y	N	N
A3-3a-4b	20	109.4	A3-3a	0	0	19	67.2	38.2	0	0	67.2	67.2	70	N	-	-	67.2	Y	N	N
A3-3a-4b	21	112.2	A3-3a	0	0	19	67.1	38.7	0	0	67.1	67.1	70	N	-	-	67.1	Y	N	N
A3-3a-4b	22	115	A3-3a	0	0	18.9	67	39.3	0	0	67	67	70	N	-	-	67.0	Y	N	N
A3-3a-4b	23	117.8	A3-3a	0	0	18.9	66.9	40.2	0	0	66.9	66.9	70	N	-	-	66.9	Y	N	N
A3-3a-4b	24	120.6	A3-3a	0	0	18.9	66.8	40.6	0	0	66.8	66.8	70	N	-	-	66.8	Y	N	N
A3-3a-4b	25	123.4	A3-3a	0	0	18.9	66.7	41.2	0	0	66.7	66.7	70	N	-	-	66.7	Y	N	N
A3-3a-4b	26	126.2	A3-3a	0	0	18.8	66.6	42.1	0	0	66.6	66.6	70	N	-	-	66.6	Y	N	N
A3-3a-4b	27	129	A3-3a	0	0	18.8	66.5	42.6	0	0	66.5	66.5	70	N	-	-	66.5	Y	N	N
A3-3a-4b	28	131.8	A3-3a	0	0	18.9	66.4	43	0	0	66.4	66.4	70	N	-	-	66.4	Y	N	N
A3-3a-4b	29	134.6	A3-3a	0	0	18.8	66.3	43.3	0	0	66.3	66.3	70	N	-	-	66.3	Y	N	N
A3-3a-4b	30	137.4	A3-3a	0	0	18.9	66.2	43.6	0	0	66.2	66.2	70	N	-	-	66.2	Y	N	N
A3-3a-4b	31	140.2	A3-3a	0	0	19	66.1	43.7	0	0	66.1	66.1	70	N	-	-	66.1	Y	N	N
A3-3a-4b	32	143	A3-3a	0	0	19	66	43.8	0	0	66	66	70	N	-	-	66.0	Y	N	N
A3-3a-4b	33	145.8	A3-3a	0	0	19	65.9	43.9	0	0	65.9	65.9	70	N	-	-	65.9	Y	N	N
A3-3a-4b	34	148.6	A3-3a	0	0	19.2	65.8	44	0	0	65.8	65.8	70	N	-	-	65.8	Y	N	N
A3-3a-4b	35	151.4	A3-3a	0	0	19.2	65.7	43.9	0	0	65.7	65.7	70	N	-	-	65.7	Y	N	N
A3-3a-4b	36	154.2	A3-3a	0	0	19.2	65.6	44	0	0	65.6	65.6	70	N	-	-	65.6	Y	N	N
A3-3a-4b	37	157	A3-3a	0	0	19.2	65.5	44.1	0	0	65.5	65.5	70	N	-	-	65.5	Y	N	N
A3-3a-4b	38	159.8	A3-3a	0	0	19.2	65.4	44.1	0	0	65.4	65.4	70	N	-	-	65.4	Y	N	N
A3-3a-4b	39	162.6	A3-3a	0	0	19.2	65.4	44	0	0	65.4	65.4	70	N	-	-	65.4	Y	N	N
A3-3a-4b	40	165.4	A3-3a	0	0	19.2	65.3	44	0	0	65.3	65.3	70	N	-	-	65.3	Y	N	N
A3-3a-4b	41	168.2	A3-3a	0	0	19.2	65.2	44	0	0	65.2	65.2	70	N	-	-	65.2	Y	N	N
A3-3a-5	1	45.7	A3-3a	0	0	46.8	57.2	37	0	0	57.6	57.6	70	N	-	-	57.6	Y	N	N

Title: Detailed Calculation of Road Traffic Noise with Direct Mitigation Measures in place
Scenario: Existing and Planned Residential and Educational Uses in KTN NDA (Mitigated Case on Proposed Roads)

Assessment Point			Location	WITH PROJECT														
				Existing Road in 2046 dB(A)	Other Roads in 2046 dB(A)[1]	New Roads[2]						Overall Noise Level in 2046 dB(A) [C]	Noise Criteria dB(A)	Exceedance C > Criteria (Y/N)	Check Project Impact Significance		Check Direct Mitigation			At Receiver-end Mitigation Measures Required [4,5] (Y/N)
						PD	DD	LD	EX	TR	New Roads in 2046 dB(A) [3] [B]				C - A dB(A) [D]	D ≥ 1dB(A)	New Road Contribution dB(A) [E]	New Road Contribution ≥ 1dB(A) E ≥ 1dB(A)	New Road > Criteria B > Criteria	
ID	Floor	Floor Level (mPD)				dB (A)														
A3-3a-5	2	48.5	A3-3a	0	0	50.1	58.4	38.5	0	0	59.1	59.1	70	N	-	-	59.1	Y	N	N
A3-3a-5	3	51.3	A3-3a	0	0	50.3	58.6	40.1	0	0	59.2	59.2	70	N	-	-	59.2	Y	N	N
A3-3a-5	4	54.1	A3-3a	0	0	50.3	58.8	42.5	0	0	59.5	59.5	70	N	-	-	59.5	Y	N	N
A3-3a-5	5	56.9	A3-3a	0	0	50.4	59	45.3	0	0	59.7	59.7	70	N	-	-	59.7	Y	N	N
A3-3a-5	6	59.7	A3-3a	0	0	50.5	59.1	47.8	0	0	59.9	59.9	70	N	-	-	59.9	Y	N	N
A3-3a-5	7	62.5	A3-3a	0	0	50.5	59.2	48.9	0	0	60.1	60.1	70	N	-	-	60.1	Y	N	N
A3-3a-5	8	65.3	A3-3a	0	0	50.5	59.2	49.3	0	0	60.1	60.1	70	N	-	-	60.1	Y	N	N
A3-3a-5	9	68.1	A3-3a	0	0	50.6	59.2	49.6	0	0	60.2	60.2	70	N	-	-	60.2	Y	N	N
A3-3a-5	10	70.9	A3-3a	0	0	50.6	59.2	50	0	0	60.2	60.2	70	N	-	-	60.2	Y	N	N
A3-3a-5	11	73.7	A3-3a	0	0	50.6	59.2	50.6	0	0	60.3	60.3	70	N	-	-	60.3	Y	N	N
A3-3a-5	12	76.5	A3-3a	0	0	50.6	59.2	51.4	0	0	60.4	60.4	70	N	-	-	60.4	Y	N	N
A3-3a-5	13	79.3	A3-3a	0	0	50.6	59.3	51.9	0	0	60.5	60.5	70	N	-	-	60.5	Y	N	N
A3-3a-5	14	82.1	A3-3a	0	0	50.6	59.3	52.2	0	0	60.5	60.5	70	N	-	-	60.5	Y	N	N
A3-3a-5	15	84.9	A3-3a	0	0	50.6	59.4	52.4	0	0	60.6	60.6	70	N	-	-	60.6	Y	N	N
A3-3a-5	16	87.7	A3-3a	0	0	50.6	59.5	52.7	0	0	60.7	60.7	70	N	-	-	60.7	Y	N	N
A3-3a-5	17	90.5	A3-3a	0	0	50.6	59.6	52.9	0	0	60.9	60.9	70	N	-	-	60.9	Y	N	N
A3-3a-5	18	93.3	A3-3a	0	0	50.5	59.6	53.2	0	0	60.9	60.9	70	N	-	-	60.9	Y	N	N
A3-3a-5	19	96.1	A3-3a	0	0	50.5	59.7	53.6	0	0	61	61	70	N	-	-	61.0	Y	N	N
A3-3a-5	20	98.9	A3-3a	0	0	50.5	59.7	53.9	0	0	61.1	61.1	70	N	-	-	61.1	Y	N	N
A3-3a-5	21	101.7	A3-3a	0	0	50.5	59.7	54.2	0	0	61.2	61.2	70	N	-	-	61.2	Y	N	N
A3-3a-5	22	104.5	A3-3a	0	0	50.5	59.7	54.4	0	0	61.2	61.2	70	N	-	-	61.2	Y	N	N
A3-3a-5	23	107.3	A3-3a	0	0	50.5	59.7	54.5	0	0	61.2	61.2	70	N	-	-	61.2	Y	N	N
A3-3a-5	24	110.1	A3-3a	0	0	50.5	59.7	54.6	0	0	61.3	61.3	70	N	-	-	61.3	Y	N	N
A3-3a-5	25	112.9	A3-3a	0	0	50.5	59.7	54.6	0	0	61.3	61.3	70	N	-	-	61.3	Y	N	N
A3-3a-5	26	115.7	A3-3a	0	0	50.4	59.7	54.7	0	0	61.3	61.3	70	N	-	-	61.3	Y	N	N
A3-3a-5	27	118.5	A3-3a	0	0	50.4	59.8	54.7	0	0	61.3	61.3	70	N	-	-	61.3	Y	N	N
A3-3a-5	28	121.3	A3-3a	0	0	50.4	59.8	54.8	0	0	61.3	61.3	70	N	-	-	61.3	Y	N	N
A3-3a-5	29	124.1	A3-3a	0	0	50.4	59.8	54.7	0	0	61.3	61.3	70	N	-	-	61.3	Y	N	N
A3-3a-5	30	126.9	A3-3a	0	0	50.4	59.9	54.7	0	0	61.4	61.4	70	N	-	-	61.4	Y	N	N
A3-3a-5	31	129.7	A3-3a	0	0	50.4	59.9	54.7	0	0	61.4	61.4	70	N	-	-	61.4	Y	N	N
A3-3a-5	32	132.5	A3-3a	0	0	50.3	60	54.7	0	0	61.4	61.4	70	N	-	-	61.4	Y	N	N
A3-3a-5	33	135.3	A3-3a	0	0	50.3	60	54.7	0	0	61.5	61.5	70	N	-	-	61.5	Y	N	N
A3-3a-5	34	138.1	A3-3a	0	0	50.3	60	54.7	0	0	61.5	61.5	70	N	-	-	61.5	Y	N	N
A3-3a-5	35	140.9	A3-3a	0	0	50.3	60.1	54.7	0	0	61.5	61.5	70	N	-	-	61.5	Y	N	N
A3-3a-5	36	143.7	A3-3a	0	0	50.2	60.1	54.7	0	0	61.5	61.5	70	N	-	-	61.5	Y	N	N
A3-3a-5	37	146.5	A3-3a	0	0	50.2	60.1	54.7	0	0	61.5	61.5	70	N	-	-	61.5	Y	N	N
A3-3a-5	38	149.3	A3-3a	0	0	50.2	60.1	54.8	0	0	61.6	61.6	70	N	-	-	61.6	Y	N	N
A3-3a-5	39	152.1	A3-3a	0	0	50.2	60.1	54.8	0	0	61.6	61.6	70	N	-	-	61.6	Y	N	N
A3-3a-5	40	154.9	A3-3a	0	0	50.1	60.1	54.8	0	0	61.6	61.6	70	N	-	-	61.6	Y	N	N
A3-3a-5	41	157.7	A3-3a	0	0	50.1	60.1	54.8	0	0	61.6	61.6	70	N	-	-	61.6	Y	N	N
A3-3a-6	1	45.7	A3-3a	0	44.1	41.8	61.5	24.1	0	0	61.6	61.6	70	N	-	-	17.5	Y	N	N
A3-3a-6	2	48.5	A3-3a	0	44.2	45.4	61.8	24.1	0	0	61.9	62	70	N	-	-	17.8	Y	N	N
A3-3a-6	3	51.3	A3-3a	0	44.2	45.8	61.8	24.1	0	0	61.9	62	70	N	-	-	17.8	Y	N	N
A3-3a-6	4	54.1	A3-3a	0	44.2	45.9	61.8	24	0	0	61.9	62	70	N	-	-	17.8	Y	N	N
A3-3a-6	5	56.9	A3-3a	0	44.2	45.9	61.7	24	0	0	61.9	61.9	70	N	-	-	17.7	Y	N	N
A3-3a-6	6	59.7	A3-3a	0	44.2	45.9	61.7	24	0	0	61.8	61.9	70	N	-	-	17.7	Y	N	N
A3-3a-6	7	62.5	A3-3a	0	44.2	46	61.7	23.9	0	0	61.8	61.9	70	N	-	-	17.7	Y	N	N
A3-3a-6	8	65.3	A3-3a	0	44.2	46.1	61.7	23.9	0	0	61.8	61.9	70	N	-	-	17.7	Y	N	N
A3-3a-6	9	68.1	A3-3a	0	44.2	46.1	61.6	23.8	0	0	61.7	61.8	70	N	-	-	17.6	Y	N	N
A3-3a-6	10	70.9	A3-3a	0	44.2	46.1	61.6	23.8	0	0	61.7	61.8	70	N	-	-	17.6	Y	N	N
A3-3a-6	11	73.7	A3-3a	0	44.2	46.2	61.5	23.7	0	0	61.7	61.7	70	N	-	-	17.5	Y	N	N
A3-3a-6	12	76.5	A3-3a	0	44.3	46.2	61.5	23.7	0	0	61.6	61.7	70	N	-	-	17.4	Y	N	N
A3-3a-6	13	79.3	A3-3a	0	44.3	46.2	61.5	23.6	0	0	61.6	61.7	70	N	-	-	17.4	Y	N	N
A3-3a-6	14	82.1	A3-3a	0	44.3	46.2	61.4	23.6	0	0	61.6	61.6	70	N	-	-	17.3	Y	N	N
A3-3a-6	15	84.9	A3-3a	0	44.4	46.2	61.4	23.5	0	0	61.5	61.6	70	N	-	-	17.2	Y	N	N
A3-3a-6	16	87.7	A3-3a	0	44.4	46.2	61.4	23.4	0	0	61.5	61.6	70	N	-	-	17.2	Y	N	N
A3-3a-6	17	90.5	A3-3a	0	44.4	46.2	61.4	23.4	0	0	61.5	61.6	70	N	-	-	17.2	Y	N	N
A3-3a-6	18	93.3	A3-3a	0	44.5	46.2	61.3	23.3	0	0	61.5	61.6	70	N	-	-	17.1	Y	N	N
A3-3a-6	19	96.1	A3-3a	0	44.5	46.2	61.3	23.3	0	0	61.4	61.5	70	N	-	-	17.0	Y	N	N
A3-3a-6	20	98.9	A3-3a	0	44.5	46.2	61.3	23.2	0	0	61.4	61.5	70	N	-	-	17.0	Y	N	N
A3-3a-6	21	101.7	A3-3a	0	44.5	46.2	61.3	23.2	0	0	61.4	61.5	70	N	-	-	17.0	Y	N	N
A3-3a-6	22	104.5	A3-3a	0	44.6	46.2	61.2	23.1	0	0	61.4	61.5	70	N	-	-	16.9	Y	N	N
A3-3a-6	23	107.3	A3-3a	0	44.6	46.2	61.2	23	0	0	61.4	61.4	70	N	-	-	16.8	Y	N	N
A3-3a-6	24	110.1	A3-3a	0	44.6	46.1	61.2	23	0	0	61.3	61.4	70	N	-	-	16.8	Y	N	N
A3-3a-6	25	112.9	A3-3a	0	44.6	46.1	61.2	22.9	0	0	61.3	61.4	70	N	-	-	16.8	Y	N	N
A3-3a-6	26	115.7	A3-3a	0	44.7	46.1	61.2	22.9	0	0	61.3	61.4	70	N	-	-	16.7	Y	N	N
A3-3a-6	27	118.5	A3-3a	0	44.7	46.1	61.1	22.8	0	0	61.3	61.4	70	N	-	-	16.7	Y	N	N
A3-3a-6	28	121.3	A3-3a	0	44.7	46.1	61.1	22.7	0	0	61.2	61.3	70	N	-	-	16.6	Y	N	N
A3-3a-6	29	124.1	A3-3a	0	44.8	46.1	61.1	22.7	0	0	61.2	61.3	70	N	-	-	16.5	Y	N	N
A3-3a-6	30	126.9	A3-3a	0	44.9	46	61.1	22.6	0	0	61.2	61.3	70	N	-	-	16.4	Y	N	N
A3-3a-6	31	129.7	A3-3a	0	45	46	61.1	22.5	0	0	61.2	61.3	70	N	-	-	16.3	Y	N	N
A3-3a-6	32	132.5	A3-3a	0	45	46	61.1	22.5	0	0	61.2	61.3	70	N	-	-	16.3	Y	N	N
A3-3a-6	33	135.3	A3-3a	0	45	46	61.1	22.5	0	0	61.2	61.3	70	N	-	-	16.3	Y	N	N
A3-3a-6	34	138.1	A3-3a	0	45	46	61	22.4	0	0	61.2	61.3	70	N	-	-	16.3	Y	N	N
A3-3a-6	35	140.9	A3-3a	0	45	46	61	22.4	0	0	61.2	61.3	70	N	-	-	16.3	Y	N	N
A3-3a-6	36	143.7	A3-3a	0	45	45.9	61	22.3	0	0	61.1	61.2	70	N	-	-	16.2	Y	N	N
A3-3a-6	37	146.5	A3-3a	0	45	45.9	61	22.2	0	0	61.1	61.2	70	N	-	-	16.2	Y	N	N
A3-3a-6	38	149.3	A3-3a	0	45	45.9	60.9	22.2	0	0	61.1	61.2	70	N	-	-	16.2	Y	N	N
A3-3a-6	39	152.1	A3-3a	0	45	45.9	60.9	22.1	0	0	61	61.2	70	N	-	-	16.2	Y	N	N

Title: Detailed Calculation of Road Traffic Noise with Direct Mitigation Measures in place
Scenario: Existing and Planned Residential and Educational Uses in KTN NDA (Mitigated Case on Proposed Roads)

Assessment Point			Location	WITH PROJECT													
				Existing Road in 2046 dB(A)	Other Roads in 2046 dB(A)[1]	New Roads[2]					Overall Noise Level in 2046 dB(A) [C]	Noise Criteria dB(A)	Exceedance C > Criteria (Y/N)	Check Project Impact Significance		Check Direct Mitigation			At Receiver-end Mitigation Measures Required [4,5] (Y/N)
						PD	DD	LD	EX	TR	New Roads in 2046 dB(A) [3] [B]								
ID	Floor	Floor Level (mPD)				dB (A)								C - A dB(A) [D]	D ≥ 1dB(A)	New Road Contribution dB(A) [E]	New Road Contribution ≥ 1dB(A) E ≥ 1dB(A)	New Road > Criteria B > Criteria	
A3-3a-6	40	154.9	A3-3a	0	44.9	45.9	60.9	22.1	0	0	61	61.1	70	N	-	-	16.2	Y	N	N
A3-3a-6	41	157.7	A3-3a	0	44.9	45.9	60.8	22	0	0	61	61.1	70	N	-	-	16.2	Y	N	N
A2 (KTN NDA Area 13)																				
A3-3b-1a	1	43.2	A3-3b	0	0	17.8	54.6	23.8	0	0	54.6	54.6	70	N	-	-	54.6	Y	N	N
A3-3b-1a	2	46	A3-3b	0	0	17.8	59.4	24	0	0	59.4	59.4	70	N	-	-	59.4	Y	N	N
A3-3b-1a	3	48.8	A3-3b	0	0	17.8	63.5	24.2	0	0	63.5	63.5	70	N	-	-	63.5	Y	N	N
A3-3b-1a	4	51.6	A3-3b	0	0	17.8	67	24.4	0	0	67	67	70	N	-	-	67.0	Y	N	N
A3-3b-1a	5	54.4	A3-3b	0	0	17.8	69.1	24.6	0	0	69.1	69.1	70	N	-	-	69.1	Y	N	N
A3-3b-1a	6	57.2	A3-3b	0	0	17.8	69.5	24.8	0	0	69.5	69.5	70	N	-	-	69.5	Y	N	N
A3-3b-1a	7	60	A3-3b	0	0	17.8	69.5	25.1	0	0	69.5	69.5	70	N	-	-	69.5	Y	N	N
A3-3b-1a	8	62.8	A3-3b	0	0	17.8	69.4	25.3	0	0	69.4	69.4	70	N	-	-	69.4	Y	N	N
A3-3b-1a	9	65.6	A3-3b	0	0	17.8	69.2	25.5	0	0	69.2	69.2	70	N	-	-	69.2	Y	N	N
A3-3b-1a	10	68.4	A3-3b	0	0	17.8	69	25.8	0	0	69	69	70	N	-	-	69.0	Y	N	N
A3-3b-1a	11	71.2	A3-3b	0	0	17.8	68.9	26	0	0	68.9	68.9	70	N	-	-	68.9	Y	N	N
A3-3b-1a	12	74	A3-3b	0	0	17.8	68.7	26.2	0	0	68.7	68.7	70	N	-	-	68.7	Y	N	N
A3-3b-1a	13	76.8	A3-3b	0	0	17.8	68.5	26.5	0	0	68.5	68.5	70	N	-	-	68.5	Y	N	N
A3-3b-1a	14	79.6	A3-3b	0	0	17.8	68.4	26.8	0	0	68.4	68.4	70	N	-	-	68.4	Y	N	N
A3-3b-1a	15	82.4	A3-3b	0	0	17.8	68.2	27.1	0	0	68.2	68.2	70	N	-	-	68.2	Y	N	N
A3-3b-1a	16	85.2	A3-3b	0	0	17.8	68	27.5	0	0	68	68	70	N	-	-	68.0	Y	N	N
A3-3b-1a	17	88	A3-3b	0	0	17.8	67.9	27.9	0	0	67.9	67.9	70	N	-	-	67.9	Y	N	N
A3-3b-1a	18	90.8	A3-3b	0	0	17.8	67.7	28.4	0	0	67.7	67.7	70	N	-	-	67.7	Y	N	N
A3-3b-1a	19	93.6	A3-3b	0	0	17.8	67.6	29	0	0	67.6	67.6	70	N	-	-	67.6	Y	N	N
A3-3b-1a	20	96.4	A3-3b	0	0	17.8	67.5	29.7	0	0	67.5	67.5	70	N	-	-	67.5	Y	N	N
A3-3b-1a	21	99.2	A3-3b	0	0	17.7	67.3	30.5	0	0	67.3	67.3	70	N	-	-	67.3	Y	N	N
A3-3b-1a	22	102	A3-3b	0	0	17.7	67.2	31.4	0	0	67.2	67.2	70	N	-	-	67.2	Y	N	N
A3-3b-1a	23	104.8	A3-3b	0	0	17.7	67.1	31.8	0	0	67.1	67.1	70	N	-	-	67.1	Y	N	N
A3-3b-1a	24	107.6	A3-3b	0	0	17.7	66.9	32.2	0	0	66.9	66.9	70	N	-	-	66.9	Y	N	N
A3-3b-1a	25	110.4	A3-3b	0	0	17.6	66.8	32.5	0	0	66.8	66.8	70	N	-	-	66.8	Y	N	N
A3-3b-1a	26	113.2	A3-3b	0	0	17.8	66.7	32.7	0	0	66.7	66.7	70	N	-	-	66.7	Y	N	N
A3-3b-1a	27	116	A3-3b	0	0	17.9	66.6	32.9	0	0	66.6	66.6	70	N	-	-	66.6	Y	N	N
A3-3b-1a	28	118.8	A3-3b	0	0	17.9	66.5	33.1	0	0	66.5	66.5	70	N	-	-	66.5	Y	N	N
A3-3b-1a	29	121.6	A3-3b	0	0	17.9	66.4	33.2	0	0	66.4	66.4	70	N	-	-	66.4	Y	N	N
A3-3b-1a	30	124.4	A3-3b	0	0	17.9	66.3	33.4	0	0	66.3	66.3	70	N	-	-	66.3	Y	N	N
A3-3b-1a	31	127.2	A3-3b	0	0	17.9	66.2	33.5	0	0	66.2	66.2	70	N	-	-	66.2	Y	N	N
A3-3b-1a	32	130	A3-3b	0	0	17.9	66.1	33.7	0	0	66.1	66.1	70	N	-	-	66.1	Y	N	N
A3-3b-1a	33	132.8	A3-3b	0	0	17.9	66	33.9	0	0	66	66	70	N	-	-	66.0	Y	N	N
A3-3b-1a	34	135.6	A3-3b	0	0	17.9	65.9	34.1	0	0	65.9	65.9	70	N	-	-	65.9	Y	N	N
A3-3b-1a	35	138.4	A3-3b	0	0	17.7	65.8	34.4	0	0	65.8	65.8	70	N	-	-	65.8	Y	N	N
A3-3b-1a	36	141.2	A3-3b	0	0	17.8	65.7	34.6	0	0	65.7	65.7	70	N	-	-	65.7	Y	N	N
A3-3b-1a	37	144	A3-3b	0	0	17.9	65.6	34.9	0	0	65.6	65.6	70	N	-	-	65.6	Y	N	N
A3-3b-1a	38	146.8	A3-3b	0	0	17.9	65.5	35.2	0	0	65.5	65.5	70	N	-	-	65.5	Y	N	N
A3-3b-1a	39	149.6	A3-3b	0	0	18	65.4	35.5	0	0	65.4	65.4	70	N	-	-	65.4	Y	N	N
A3-3b-1a	40	152.4	A3-3b	0	0	18	65.3	35.8	0	0	65.3	65.3	70	N	-	-	65.3	Y	N	N
A3-3b-1a	41	155.2	A3-3b	0	0	17.9	65.2	36	0	0	65.2	65.2	70	N	-	-	65.2	Y	N	N
A3-3b-1b	1	43.2	A3-3b	0	0	17.7	54.1	29.8	0	0	54.1	54.1	70	N	-	-	54.1	Y	N	N
A3-3b-1b	2	46	A3-3b	0	0	17.7	58.2	34.4	0	0	58.2	58.2	70	N	-	-	58.2	Y	N	N
A3-3b-1b	3	48.8	A3-3b	0	0	17.7	62.3	38.2	0	0	62.3	62.3	70	N	-	-	62.3	Y	N	N
A3-3b-1b	4	51.6	A3-3b	0	0	17.7	66.2	38.8	0	0	66.2	66.2	70	N	-	-	66.2	Y	N	N
A3-3b-1b	5	54.4	A3-3b	0	0	17.7	68.8	38.9	0	0	68.8	68.8	70	N	-	-	68.8	Y	N	N
A3-3b-1b	6	57.2	A3-3b	0	0	17.7	69.4	38.8	0	0	69.4	69.4	70	N	-	-	69.4	Y	N	N
A3-3b-1b	7	60	A3-3b	0	0	17.7	69.4	38.9	0	0	69.4	69.4	70	N	-	-	69.4	Y	N	N
A3-3b-1b	8	62.8	A3-3b	0	0	17.7	69.3	38.9	0	0	69.3	69.3	70	N	-	-	69.3	Y	N	N
A3-3b-1b	9	65.6	A3-3b	0	0	17.7	69.2	38.8	0	0	69.2	69.2	70	N	-	-	69.2	Y	N	N
A3-3b-1b	10	68.4	A3-3b	0	0	17.7	69.1	38.9	0	0	69.1	69.1	70	N	-	-	69.1	Y	N	N
A3-3b-1b	11	71.2	A3-3b	0	0	17.7	68.9	38.9	0	0	68.9	68.9	70	N	-	-	68.9	Y	N	N
A3-3b-1b	12	74	A3-3b	0	0	17.7	68.7	38.9	0	0	68.7	68.7	70	N	-	-	68.7	Y	N	N
A3-3b-1b	13	76.8	A3-3b	0	0	17.7	68.5	39	0	0	68.5	68.5	70	N	-	-	68.5	Y	N	N
A3-3b-1b	14	79.6	A3-3b	0	0	17.7	68.4	39.1	0	0	68.4	68.4	70	N	-	-	68.4	Y	N	N
A3-3b-1b	15	82.4	A3-3b	0	0	17.7	68.2	39.2	0	0	68.2	68.2	70	N	-	-	68.2	Y	N	N
A3-3b-1b	16	85.2	A3-3b	0	0	17.7	68.1	39.3	0	0	68.1	68.1	70	N	-	-	68.1	Y	N	N
A3-3b-1b	17	88	A3-3b	0	0	17.7	67.9	39.5	0	0	68	68	70	N	-	-	68.0	Y	N	N
A3-3b-1b	18	90.8	A3-3b	0	0	17.7	67.8	39.8	0	0	67.8	67.8	70	N	-	-	67.8	Y	N	N
A3-3b-1b	19	93.6	A3-3b	0	0	17.7	67.7	39.9	0	0	67.7	67.7	70	N	-	-	67.7	Y	N	N
A3-3b-1b	20	96.4	A3-3b	0	0	17.7	67.6	40	0	0	67.6	67.6	70	N	-	-	67.6	Y	N	N
A3-3b-1b	21	99.2	A3-3b	0	0	17.6	67.4	40.1	0	0	67.4	67.4	70	N	-	-	67.4	Y	N	N
A3-3b-1b	22	102	A3-3b	0	0	17.6	67.3	40.1	0	0	67.3	67.3	70	N	-	-	67.3	Y	N	N
A3-3b-1b	23	104.8	A3-3b	0	0	17.6	67.2	40.2	0	0	67.2	67.2	70	N	-	-	67.2	Y	N	N
A3-3b-1b	24	107.6	A3-3b	0	0	17.6	67	40.2	0	0	67	67	70	N	-	-	67.0	Y	N	N
A3-3b-1b	25	110.4	A3-3b	0	0	17.5	66.9	40.2	0	0	66.9	66.9	70	N	-	-	66.9	Y	N	N
A3-3b-1b	26	113.2	A3-3b	0	0	17.8	66.8	40.3	0	0	66.8	66.8	70	N	-	-	66.8	Y	N	N
A3-3b-1b	27	116	A3-3b	0	0	17.8	66.7	40.2	0	0	66.7	66.7	70	N	-	-	66.7	Y	N	N
A3-3b-1b	28	118.8	A3-3b	0	0	17.9	66.6	40.3	0	0	66.6	66.6	70	N	-	-	66.6	Y	N	N
A3-3b-1b	29	121.6	A3-3b	0	0	17.9	66.5	40.3	0	0	66.5	66.5	70	N	-	-	66.5	Y	N	N
A3-3b-1b	30	124.4	A3-3b	0	0	17.9	66.4	40.4	0	0	66.4	66.4	70	N	-	-	66.4	Y	N	N
A3-3b-1b	31	127.2	A3-3b	0	0	17.8	66.3	40.5	0	0	66.3	66.3	70	N	-	-	66.3	Y	N	N
A3-3b-1b	32	130	A3-3b	0	0	17.8	66.2	40.5	0	0	66.2	66.2	70	N	-	-	66.2	Y	N	N
A3-3b-1b	33	132.8	A3-3b	0	0	17.8	66.1	40.4	0	0	66.1	66.1	70	N	-	-	66.1	Y	N	N
A3-3b-1b	34	135.6	A3-3b	0	0	17.8	66	40.5	0	0	66	66	70	N	-	-	66.0	Y	N	N
A3-3b-1b	35	138.4	A3-3b	0	0	17.7	65.9	40.5	0	0	65.9	65.9	70	N	-	-	65.9	Y	N	N

Title: Detailed Calculation of Road Traffic Noise with Direct Mitigation Measures in place
Scenario: Existing and Planned Residential and Educational Uses in KTN NDA (Mitigated Case on Proposed Roads)

Assessment Point			Location	WITH PROJECT														
				Existing Road in 2046 dB(A)	Other Roads in 2046 dB(A)[1]	New Roads[2]						Overall Noise Level in 2046 dB(A) [C]	Noise Criteria dB(A)	Exceedance C > Criteria (Y/N)	Check Project Impact Significance		Check Direct Mitigation			At Receiver-end Mitigation Measures Required [4,5] (Y/N)
						PD	DD	LD	EX	TR	New Roads in 2046 dB(A) [3] [B]				C - A dB(A) [D]	D ≥ 1dB(A)	New Road Contribution dB(A) [E]	New Road Contribution ≥ 1dB(A) E ≥ 1dB(A)	New Road > Criteria B > Criteria	
ID	Floor	Floor Level (mPD)		dB (A)																
A3-3b-1b	36	141.2	A3-3b	0	0	17.7	65.8	40.5	0	0	65.8	65.8	70	N	-	-	65.8	Y	N	N
A3-3b-1b	37	144	A3-3b	0	0	17.8	65.7	40.5	0	0	65.7	65.7	70	N	-	-	65.7	Y	N	N
A3-3b-1b	38	146.8	A3-3b	0	0	17.8	65.6	40.5	0	0	65.6	65.6	70	N	-	-	65.6	Y	N	N
A3-3b-1b	39	149.6	A3-3b	0	0	17.9	65.5	40.5	0	0	65.5	65.5	70	N	-	-	65.5	Y	N	N
A3-3b-1b	40	152.4	A3-3b	0	0	17.9	65.4	40.5	0	0	65.4	65.4	70	N	-	-	65.4	Y	N	N
A3-3b-1b	41	155.2	A3-3b	0	0	17.9	65.3	40.6	0	0	65.3	65.3	70	N	-	-	65.3	Y	N	N
A3-3b-2a	1	43.2	A3-3b	0	0	15.5	61.9	17.7	0	0	61.9	61.9	70	N	-	-	61.9	Y	N	N
A3-3b-2a	2	46	A3-3b	0	0	15.5	69.5	17.7	0	0	69.5	69.5	70	N	-	-	69.5	Y	N	N
A3-3b-2a	3	48.8	A3-3b	0	0	15.5	69.9	17.7	0	0	69.9	69.9	70	N	-	-	69.9	Y	N	N
A3-3b-2a	4	51.6	A3-3b	0	0	15.5	69.9	17.7	0	0	69.9	69.9	70	N	-	-	69.9	Y	N	N
A3-3b-2a	5	54.4	A3-3b	0	0	15.5	69.7	17.8	0	0	69.7	69.7	70	N	-	-	69.7	Y	N	N
A3-3b-2a	6	57.2	A3-3b	0	0	15.5	69.5	17.7	0	0	69.5	69.5	70	N	-	-	69.5	Y	N	N
A3-3b-2a	7	60	A3-3b	0	0	15.5	69.3	17.8	0	0	69.3	69.3	70	N	-	-	69.3	Y	N	N
A3-3b-2a	8	62.8	A3-3b	0	0	15.5	69.1	17.8	0	0	69.1	69.1	70	N	-	-	69.1	Y	N	N
A3-3b-2a	9	65.6	A3-3b	0	0	15.5	69	17.7	0	0	69	69	70	N	-	-	69.0	Y	N	N
A3-3b-2a	10	68.4	A3-3b	0	0	15.5	68.8	17.7	0	0	68.8	68.8	70	N	-	-	68.8	Y	N	N
A3-3b-2a	11	71.2	A3-3b	0	0	15.5	68.6	17.7	0	0	68.6	68.6	70	N	-	-	68.6	Y	N	N
A3-3b-2a	12	74	A3-3b	0	0	15.5	68.4	17.7	0	0	68.4	68.4	70	N	-	-	68.4	Y	N	N
A3-3b-2a	13	76.8	A3-3b	0	0	15.5	68.2	17.7	0	0	68.2	68.2	70	N	-	-	68.2	Y	N	N
A3-3b-2a	14	79.6	A3-3b	0	0	15.4	68.1	17.7	0	0	68.1	68.1	70	N	-	-	68.1	Y	N	N
A3-3b-2a	15	82.4	A3-3b	0	0	15.4	67.9	17.7	0	0	67.9	67.9	70	N	-	-	67.9	Y	N	N
A3-3b-2a	16	85.2	A3-3b	0	0	15.4	67.8	17.7	0	0	67.8	67.8	70	N	-	-	67.8	Y	N	N
A3-3b-2a	17	88	A3-3b	0	0	15.4	67.6	17.7	0	0	67.6	67.6	70	N	-	-	67.6	Y	N	N
A3-3b-2a	18	90.8	A3-3b	0	0	15.4	67.5	17.7	0	0	67.5	67.5	70	N	-	-	67.5	Y	N	N
A3-3b-2a	19	93.6	A3-3b	0	0	15.4	67.3	17.7	0	0	67.3	67.3	70	N	-	-	67.3	Y	N	N
A3-3b-2a	20	96.4	A3-3b	0	0	15.4	67.2	17.7	0	0	67.2	67.2	70	N	-	-	67.2	Y	N	N
A3-3b-2a	21	99.2	A3-3b	0	0	15.4	67.1	17.6	0	0	67.1	67.1	70	N	-	-	67.1	Y	N	N
A3-3b-2a	22	102	A3-3b	0	0	15.4	66.9	17.6	0	0	66.9	66.9	70	N	-	-	66.9	Y	N	N
A3-3b-2a	23	104.8	A3-3b	0	0	15.4	66.8	17.6	0	0	66.8	66.8	70	N	-	-	66.8	Y	N	N
A3-3b-2a	24	107.6	A3-3b	0	0	15.2	66.7	17.6	0	0	66.7	66.7	70	N	-	-	66.7	Y	N	N
A3-3b-2a	25	110.4	A3-3b	0	0	15.5	66.6	17.6	0	0	66.6	66.6	70	N	-	-	66.6	Y	N	N
A3-3b-2a	26	113.2	A3-3b	0	0	15.6	66.5	17.6	0	0	66.5	66.5	70	N	-	-	66.5	Y	N	N
A3-3b-2a	27	116	A3-3b	0	0	15.6	66.3	17.6	0	0	66.3	66.3	70	N	-	-	66.3	Y	N	N
A3-3b-2a	28	118.8	A3-3b	0	0	15.7	66.2	17.6	0	0	66.2	66.2	70	N	-	-	66.2	Y	N	N
A3-3b-2a	29	121.6	A3-3b	0	0	15.7	66.1	17.6	0	0	66.1	66.1	70	N	-	-	66.1	Y	N	N
A3-3b-2a	30	124.4	A3-3b	0	0	15.7	66	17.6	0	0	66	66	70	N	-	-	66.0	Y	N	N
A3-3b-2a	31	127.2	A3-3b	0	0	15.7	65.9	17.6	0	0	65.9	65.9	70	N	-	-	65.9	Y	N	N
A3-3b-2a	32	130	A3-3b	0	0	15.7	65.8	17.6	0	0	65.8	65.8	70	N	-	-	65.8	Y	N	N
A3-3b-2a	33	132.8	A3-3b	0	0	15.7	65.7	17.5	0	0	65.7	65.7	70	N	-	-	65.7	Y	N	N
A3-3b-2a	34	135.6	A3-3b	0	0	15.7	65.6	17.5	0	0	65.6	65.6	70	N	-	-	65.6	Y	N	N
A3-3b-2a	35	138.4	A3-3b	0	0	15.6	65.5	17.5	0	0	65.5	65.5	70	N	-	-	65.5	Y	N	N
A3-3b-2a	36	141.2	A3-3b	0	0	15.6	65.4	17.5	0	0	65.4	65.4	70	N	-	-	65.4	Y	N	N
A3-3b-2a	37	144	A3-3b	0	0	15.7	65.3	17.4	0	0	65.3	65.3	70	N	-	-	65.3	Y	N	N
A3-3b-2a	38	146.8	A3-3b	0	0	15.7	65.3	17.5	0	0	65.3	65.3	70	N	-	-	65.3	Y	N	N
A3-3b-2a	39	149.6	A3-3b	0	0	15.7	65.2	17.7	0	0	65.2	65.2	70	N	-	-	65.2	Y	N	N
A3-3b-2a	40	152.4	A3-3b	0	0	15.7	65.1	18	0	0	65.1	65.1	70	N	-	-	65.1	Y	N	N
A3-3b-2a	41	155.2	A3-3b	0	0	15.6	65	18.2	0	0	65	65	70	N	-	-	65.0	Y	N	N
A3-3b-2b	1	43.2	A3-3b	0	0	9.5	61.6	41	0	0	61.7	61.7	70	N	-	-	61.7	Y	N	N
A3-3b-2b	2	46	A3-3b	0	0	9.5	69.2	45	0	0	69.2	69.2	70	N	-	-	69.2	Y	N	N
A3-3b-2b	3	48.8	A3-3b	0	0	9.5	70.1	46.5	0	0	70.1	70.1	70	N	-	-	70.1	Y	N	N
A3-3b-2b	4	51.6	A3-3b	0	0	9.5	70.2	48.7	0	0	70.3	70.3	70	N	-	-	70.3	Y	N	N
A3-3b-2b	5	54.4	A3-3b	0	0	9.5	70.2	51.5	0	0	70.3	70.3	70	N	-	-	70.3	Y	N	N
A3-3b-2b	6	57.2	A3-3b	0	0	9.5	70	54.9	0	0	70.2	70.2	70	N	-	-	70.2	Y	N	N
A3-3b-2b	7	60	A3-3b	0	0	9.5	69.9	56.6	0	0	70.1	70.1	70	N	-	-	70.1	Y	N	N
A3-3b-2b	8	62.8	A3-3b	0	0	9.5	69.7	57	0	0	70	70	70	N	-	-	70.0	Y	N	N
A3-3b-2b	9	65.6	A3-3b	0	0	9.5	69.6	57.2	0	0	69.8	69.8	70	N	-	-	69.8	Y	N	N
A3-3b-2b	10	68.4	A3-3b	0	0	9.5	69.4	57.1	0	0	69.7	69.7	70	N	-	-	69.7	Y	N	N
A3-3b-2b	11	71.2	A3-3b	0	0	9.5	69.3	57	0	0	69.5	69.5	70	N	-	-	69.5	Y	N	N
A3-3b-2b	12	74	A3-3b	0	0	9.5	69.1	56.9	0	0	69.4	69.4	70	N	-	-	69.4	Y	N	N
A3-3b-2b	13	76.8	A3-3b	0	0	9.5	68.9	56.9	0	0	69.2	69.2	70	N	-	-	69.2	Y	N	N
A3-3b-2b	14	79.6	A3-3b	0	0	9.5	68.8	56.8	0	0	69.1	69.1	70	N	-	-	69.1	Y	N	N
A3-3b-2b	15	82.4	A3-3b	0	0	9.5	68.6	56.7	0	0	68.9	68.9	70	N	-	-	68.9	Y	N	N
A3-3b-2b	16	85.2	A3-3b	0	0	9.4	68.5	56.6	0	0	68.8	68.8	70	N	-	-	68.8	Y	N	N
A3-3b-2b	17	88	A3-3b	0	0	9.4	68.3	56.5	0	0	68.6	68.6	70	N	-	-	68.6	Y	N	N
A3-3b-2b	18	90.8	A3-3b	0	0	9.4	68.2	56.4	0	0	68.5	68.5	70	N	-	-	68.5	Y	N	N
A3-3b-2b	19	93.6	A3-3b	0	0	9.4	68.1	56.4	0	0	68.4	68.4	70	N	-	-	68.4	Y	N	N
A3-3b-2b	20	96.4	A3-3b	0	0	9.4	67.9	56.3	0	0	68.2	68.2	70	N	-	-	68.2	Y	N	N
A3-3b-2b	21	99.2	A3-3b	0	0	9.4	67.8	56.3	0	0	68.1	68.1	70	N	-	-	68.1	Y	N	N
A3-3b-2b	22	102	A3-3b	0	0	9.4	67.7	56.2	0	0	68	68	70	N	-	-	68.0	Y	N	N
A3-3b-2b	23	104.8	A3-3b	0	0	9.4	67.6	56.1	0	0	67.9	67.9	70	N	-	-	67.9	Y	N	N
A3-3b-2b	24	107.6	A3-3b	0	0	9.1	67.5	56.1	0	0	67.8	67.8	70	N	-	-	67.8	Y	N	N
A3-3b-2b	25	110.4	A3-3b	0	0	9.5	67.4	56	0	0	67.7	67.7	70	N	-	-	67.7	Y	N	N
A3-3b-2b	26	113.2	A3-3b	0	0	9.6	67.3	55.9	0	0	67.6	67.6	70	N	-	-	67.6	Y	N	N
A3-3b-2b	27	116	A3-3b	0	0	9.7	67.1	55.9	0	0	67.4	67.4	70	N	-	-	67.4	Y	N	N
A3-3b-2b	28	118.8	A3-3b	0	0	9.7	67	55.9	0	0	67.3	67.3	70	N	-	-	67.3	Y	N	N
A3-3b-2b	29	121.6	A3-3b	0	0	9.7	66.9	55.8	0	0	67.2	67.2	70	N	-	-	67.2	Y	N	N
A3-3b-2b	30	124.4	A3-3b	0	0	9.7	66.8	55.7	0	0	67.1	67.1	70	N	-	-	67.1	Y	N	N
A3-3b-2b	31	127.2	A3-3b	0	0	9.7	66.7	55.7	0	0	67	67	70	N	-	-	67.0	Y	N	N
A3-3b-2b	32	130	A3-3b	0	0	9.7	66.6	55.6	0	0	66.9	66.9	70	N	-	-	66.9	Y	N	N

Title: Detailed Calculation of Road Traffic Noise with Direct Mitigation Measures in place
Scenario: Existing and Planned Residential and Educational Uses in KTN NDA (Mitigated Case on Proposed Roads)

Assessment Point			Location	WITH PROJECT														
				Existing Road in 2046 dB(A)	Other Roads in 2046 dB(A)[1]	New Roads[2]						Overall Noise Level in 2046 dB(A) [C]	Noise Criteria dB(A)	Exceedance C > Criteria (Y/N)	Check Project Impact Significance		Check Direct Mitigation			At Receiver-end Mitigation Measures Required [4,5] (Y/N)
						PD	DD	LD	EX	TR	New Roads in 2046 dB(A) [3] [B]				C - A dB(A) [D]	D ≥ 1dB(A)	New Road Contribution dB(A) [E]	New Road Contribution ≥ 1dB(A) E ≥ 1dB(A)	New Road > Criteria B > Criteria	
ID	Floor	Floor Level (mPD)		dB (A)																
A3-3b-2b	33	132.8	A3-3b	0	0	9.7	66.5	55.7	0	0	66.8	66.8	70	N	-	-	66.8	Y	N	N
A3-3b-2b	34	135.6	A3-3b	0	0	9.7	66.4	55.6	0	0	66.8	66.8	70	N	-	-	66.8	Y	N	N
A3-3b-2b	35	138.4	A3-3b	0	0	9.7	66.3	55.5	0	0	66.7	66.7	70	N	-	-	66.7	Y	N	N
A3-3b-2b	36	141.2	A3-3b	0	0	9.7	66.2	55.6	0	0	66.6	66.6	70	N	-	-	66.6	Y	N	N
A3-3b-2b	37	144	A3-3b	0	0	9.7	66.1	55.5	0	0	66.5	66.5	70	N	-	-	66.5	Y	N	N
A3-3b-2b	38	146.8	A3-3b	0	0	9.8	66.1	55.4	0	0	66.5	66.5	70	N	-	-	66.5	Y	N	N
A3-3b-2b	39	149.6	A3-3b	0	0	9.7	66	55.4	0	0	66.4	66.4	70	N	-	-	66.4	Y	N	N
A3-3b-2b	40	152.4	A3-3b	0	0	9.7	65.9	55.4	0	0	66.3	66.3	70	N	-	-	66.3	Y	N	N
A3-3b-2b	41	155.2	A3-3b	0	0	9.7	65.8	55.3	0	0	66.2	66.2	70	N	-	-	66.2	Y	N	N
A3-3b-3	1	43.2	A3-3b	0	0	24.2	60.6	54.9	0	0	61.6	61.6	70	N	-	-	61.6	Y	N	N
A3-3b-3	2	46	A3-3b	0	0	24.2	63.5	63.2	0	0	66.4	66.4	70	N	-	-	66.4	Y	N	N
A3-3b-3	3	48.8	A3-3b	0	0	24.2	63.5	63.7	0	0	66.6	66.6	70	N	-	-	66.6	Y	N	N
A3-3b-3	4	51.6	A3-3b	0	0	24.3	63.3	64	0	0	66.7	66.7	70	N	-	-	66.7	Y	N	N
A3-3b-3	5	54.4	A3-3b	0	0	24.3	63.3	64.3	0	0	66.8	66.8	70	N	-	-	66.8	Y	N	N
A3-3b-3	6	57.2	A3-3b	0	0	24.4	63.2	64.3	0	0	66.8	66.8	70	N	-	-	66.8	Y	N	N
A3-3b-3	7	60	A3-3b	0	0	24.5	63.1	64.3	0	0	66.7	66.7	70	N	-	-	66.7	Y	N	N
A3-3b-3	8	62.8	A3-3b	0	0	24.7	62.9	64.1	0	0	66.6	66.6	70	N	-	-	66.6	Y	N	N
A3-3b-3	9	65.6	A3-3b	0	0	25	62.8	64	0	0	66.5	66.5	70	N	-	-	66.5	Y	N	N
A3-3b-3	10	68.4	A3-3b	0	0	25.3	62.8	63.8	0	0	66.3	66.3	70	N	-	-	66.3	Y	N	N
A3-3b-3	11	71.2	A3-3b	0	0	25.7	62.7	63.7	0	0	66.2	66.2	70	N	-	-	66.2	Y	N	N
A3-3b-3	12	74	A3-3b	0	0	26.1	62.6	63.6	0	0	66.1	66.1	70	N	-	-	66.1	Y	N	N
A3-3b-3	13	76.8	A3-3b	0	0	26.4	62.4	63.4	0	0	66	66	70	N	-	-	66.0	Y	N	N
A3-3b-3	14	79.6	A3-3b	0	0	26.9	62.3	63.3	0	0	65.9	65.9	70	N	-	-	65.9	Y	N	N
A3-3b-3	15	82.4	A3-3b	0	0	27.3	62.2	63.2	0	0	65.8	65.8	70	N	-	-	65.8	Y	N	N
A3-3b-3	16	85.2	A3-3b	0	0	27.8	62.1	63	0	0	65.6	65.6	70	N	-	-	65.6	Y	N	N
A3-3b-3	17	88	A3-3b	0	0	28.3	62.1	62.9	0	0	65.5	65.5	70	N	-	-	65.5	Y	N	N
A3-3b-3	18	90.8	A3-3b	0	0	28.6	62	62.8	0	0	65.4	65.4	70	N	-	-	65.4	Y	N	N
A3-3b-3	19	93.6	A3-3b	0	0	29	61.9	62.6	0	0	65.3	65.3	70	N	-	-	65.3	Y	N	N
A3-3b-3	20	96.4	A3-3b	0	0	29.4	61.8	62.5	0	0	65.2	65.2	70	N	-	-	65.2	Y	N	N
A3-3b-3	21	99.2	A3-3b	0	0	29.8	61.7	62.4	0	0	65.1	65.1	70	N	-	-	65.1	Y	N	N
A3-3b-3	22	102	A3-3b	0	0	30.2	61.6	62.3	0	0	65	65	70	N	-	-	65.0	Y	N	N
A3-3b-3	23	104.8	A3-3b	0	0	30.6	61.5	62.2	0	0	64.9	64.9	70	N	-	-	64.9	Y	N	N
A3-3b-3	24	107.6	A3-3b	0	0	31	61.4	62.1	0	0	64.8	64.8	70	N	-	-	64.8	Y	N	N
A3-3b-3	25	110.4	A3-3b	0	0	31.4	61.3	62	0	0	64.7	64.7	70	N	-	-	64.7	Y	N	N
A3-3b-3	26	113.2	A3-3b	0	0	31.8	61.2	62	0	0	64.6	64.6	70	N	-	-	64.6	Y	N	N
A3-3b-3	27	116	A3-3b	0	0	32.3	61.2	61.9	0	0	64.5	64.5	70	N	-	-	64.5	Y	N	N
A3-3b-3	28	118.8	A3-3b	0	0	32.7	61.1	61.7	0	0	64.4	64.4	70	N	-	-	64.4	Y	N	N
A3-3b-3	29	121.6	A3-3b	0	0	33.2	61	61.6	0	0	64.3	64.3	70	N	-	-	64.3	Y	N	N
A3-3b-3	30	124.4	A3-3b	0	0	33.7	60.9	61.6	0	0	64.3	64.3	70	N	-	-	64.3	Y	N	N
A3-3b-3	31	127.2	A3-3b	0	0	34.4	60.9	61.5	0	0	64.2	64.2	70	N	-	-	64.2	Y	N	N
A3-3b-3	32	130	A3-3b	0	0	35.2	60.8	61.4	0	0	64.1	64.1	70	N	-	-	64.1	Y	N	N
A3-3b-3	33	132.8	A3-3b	0	0	36.1	60.7	61.3	0	0	64	64	70	N	-	-	64.0	Y	N	N
A3-3b-3	34	135.6	A3-3b	0	0	37.4	60.6	61.2	0	0	63.9	63.9	70	N	-	-	63.9	Y	N	N
A3-3b-3	35	138.4	A3-3b	0	0	39.1	60.6	61.1	0	0	63.9	63.9	70	N	-	-	63.9	Y	N	N
A3-3b-3	36	141.2	A3-3b	0	0	40.6	60.5	61	0	0	63.8	63.8	70	N	-	-	63.8	Y	N	N
A3-3b-3	37	144	A3-3b	0	0	42.1	60.5	60.9	0	0	63.7	63.7	70	N	-	-	63.7	Y	N	N
A3-3b-3	38	146.8	A3-3b	0	0	43.1	60.5	60.8	0	0	63.7	63.7	70	N	-	-	63.7	Y	N	N
A3-3b-3	39	149.6	A3-3b	0	0	43.6	60.4	60.8	0	0	63.7	63.7	70	N	-	-	63.7	Y	N	N
A3-3b-3	40	152.4	A3-3b	0	0	44	60.4	60.7	0	0	63.6	63.6	70	N	-	-	63.6	Y	N	N
A3-3b-3	41	155.2	A3-3b	0	0	44.2	60.4	60.7	0	0	63.6	63.6	70	N	-	-	63.6	Y	N	N
A3-3b-4	1	43.2	A3-3b	0	0	23.1	49.1	59.7	0	0	60	60	70	N	-	-	60.0	Y	N	N
A3-3b-4	2	46	A3-3b	0	0	23	51.4	64.1	0	0	64.3	64.3	70	N	-	-	64.3	Y	N	N
A3-3b-4	3	48.8	A3-3b	0	0	23.1	55.2	64.1	0	0	64.6	64.6	70	N	-	-	64.6	Y	N	N
A3-3b-4	4	51.6	A3-3b	0	0	23.1	58.7	64	0	0	65.1	65.1	70	N	-	-	65.1	Y	N	N
A3-3b-4	5	54.4	A3-3b	0	0	23.1	60.2	63.9	0	0	65.4	65.4	70	N	-	-	65.4	Y	N	N
A3-3b-4	6	57.2	A3-3b	0	0	23.2	61	63.9	0	0	65.7	65.7	70	N	-	-	65.7	Y	N	N
A3-3b-4	7	60	A3-3b	0	0	23.2	61.3	64.1	0	0	65.9	65.9	70	N	-	-	65.9	Y	N	N
A3-3b-4	8	62.8	A3-3b	0	0	23.4	61.5	64.2	0	0	66.1	66.1	70	N	-	-	66.1	Y	N	N
A3-3b-4	9	65.6	A3-3b	0	0	23.6	61.5	64.1	0	0	66	66	70	N	-	-	66.0	Y	N	N
A3-3b-4	10	68.4	A3-3b	0	0	23.9	61.5	64	0	0	65.9	65.9	70	N	-	-	65.9	Y	N	N
A3-3b-4	11	71.2	A3-3b	0	0	24.3	61.5	63.9	0	0	65.9	65.9	70	N	-	-	65.9	Y	N	N
A3-3b-4	12	74	A3-3b	0	0	24.6	61.4	63.8	0	0	65.8	65.8	70	N	-	-	65.8	Y	N	N
A3-3b-4	13	76.8	A3-3b	0	0	24.9	61.3	63.6	0	0	65.6	65.6	70	N	-	-	65.6	Y	N	N
A3-3b-4	14	79.6	A3-3b	0	0	25.3	61.3	63.5	0	0	65.5	65.5	70	N	-	-	65.5	Y	N	N
A3-3b-4	15	82.4	A3-3b	0	0	25.6	61.2	63.4	0	0	65.5	65.5	70	N	-	-	65.5	Y	N	N
A3-3b-4	16	85.2	A3-3b	0	0	26.1	61.1	63.2	0	0	65.3	65.3	70	N	-	-	65.3	Y	N	N
A3-3b-4	17	88	A3-3b	0	0	26.5	61	63.1	0	0	65.2	65.2	70	N	-	-	65.2	Y	N	N
A3-3b-4	18	90.8	A3-3b	0	0	27	61	63	0	0	65.1	65.1	70	N	-	-	65.1	Y	N	N
A3-3b-4	19	93.6	A3-3b	0	0	27.5	60.9	62.9	0	0	65	65	70	N	-	-	65.0	Y	N	N
A3-3b-4	20	96.4	A3-3b	0	0	27.9	60.8	62.7	0	0	64.9	64.9	70	N	-	-	64.9	Y	N	N
A3-3b-4	21	99.2	A3-3b	0	0	28.4	60.8	62.6	0	0	64.8	64.8	70	N	-	-	64.8	Y	N	N
A3-3b-4	22	102	A3-3b	0	0	28.8	60.7	62.5	0	0	64.7	64.7	70	N	-	-	64.7	Y	N	N
A3-3b-4	23	104.8	A3-3b	0	0	29.1	60.7	62.4	0	0	64.7	64.7	70	N	-	-	64.7	Y	N	N
A3-3b-4	24	107.6	A3-3b	0	0	29.5	60.6	62.3	0	0	64.6	64.6	70	N	-	-	64.6	Y	N	N
A3-3b-4	25	110.4	A3-3b	0	0	29.8	60.5	62.3	0	0	64.5	64.5	70	N	-	-	64.5	Y	N	N
A3-3b-4	26	113.2	A3-3b	0	0	30.2	60.4	62.2	0	0	64.4	64.4	70	N	-	-	64.4	Y	N	N
A3-3b-4	27	116	A3-3b	0	0	30.6	60.4	62.1	0	0	64.3	64.3	70	N	-	-	64.3	Y	N	N
A3-3b-4	28	118.8	A3-3b	0	0	31	60.3	62	0	0	64.2	64.2	70	N	-	-	64.2	Y	N	N
A3-3b-4	29	121.6	A3-3b	0	0	31.4	60.2	61.9	0	0	64.1	64.1	70	N	-	-	64.1	Y	N	N

Title: Detailed Calculation of Road Traffic Noise with Direct Mitigation Measures in place
Scenario: Existing and Planned Residential and Educational Uses in KTN NDA (Mitigated Case on Proposed Roads)

Assessment Point			Location	WITH PROJECT														
				Existing Road in 2046 dB(A)	Other Roads in 2046 dB(A)[1]	New Roads[2]						Overall Noise Level in 2046 dB(A) [C]	Noise Criteria dB(A)	Exceedance C > Criteria (Y/N)	Check Project Impact Significance		Check Direct Mitigation			At Receiver-end Mitigation Measures Required [4,5] (Y/N)
						PD	DD	LD	EX	TR	New Roads in 2046 dB(A) [3] [B]				C - A dB(A) [D]	D ≥ 1dB(A)	New Road Contribution dB(A) [E]	New Road Contribution ≥ 1dB(A) E ≥ 1dB(A)	New Road > Criteria B > Criteria	
ID	Floor	Floor Level (mPD)		dB (A)																
A3-3b-4	30	124.4	A3-3b	0	0	31.8	60.2	61.8	0	0	64.1	64.1	70	N	-	-	64.1	Y	N	N
A3-3b-4	31	127.2	A3-3b	0	0	32.4	60.1	61.7	0	0	64	64	70	N	-	-	64.0	Y	N	N
A3-3b-4	32	130	A3-3b	0	0	33	60.1	61.6	0	0	63.9	63.9	70	N	-	-	63.9	Y	N	N
A3-3b-4	33	132.8	A3-3b	0	0	33.7	60	61.5	0	0	63.8	63.8	70	N	-	-	63.8	Y	N	N
A3-3b-4	34	135.6	A3-3b	0	0	34.8	59.9	61.4	0	0	63.7	63.7	70	N	-	-	63.7	Y	N	N
A3-3b-4	35	138.4	A3-3b	0	0	35.9	59.9	61.3	0	0	63.7	63.7	70	N	-	-	63.7	Y	N	N
A3-3b-4	36	141.2	A3-3b	0	0	37.5	59.9	61.2	0	0	63.6	63.6	70	N	-	-	63.6	Y	N	N
A3-3b-4	37	144	A3-3b	0	0	38.6	59.8	61.1	0	0	63.5	63.5	70	N	-	-	63.5	Y	N	N
A3-3b-4	38	146.8	A3-3b	0	0	39.1	59.8	61	0	0	63.5	63.5	70	N	-	-	63.5	Y	N	N
A3-3b-4	39	149.6	A3-3b	0	0	39.6	59.8	61	0	0	63.5	63.5	70	N	-	-	63.5	Y	N	N
A3-3b-4	40	152.4	A3-3b	0	0	39.7	59.7	60.9	0	0	63.4	63.4	70	N	-	-	63.4	Y	N	N
A3-3b-4	41	155.2	A3-3b	0	0	39.8	59.7	60.8	0	0	63.3	63.3	70	N	-	-	63.3	Y	N	N
A3-3b-5	1	43.2	A3-3b	0	0	22.3	53.4	56	0	0	57.9	57.9	70	N	-	-	57.9	Y	N	N
A3-3b-5	2	46	A3-3b	0	0	22.3	54.8	63.4	0	0	63.9	63.9	70	N	-	-	63.9	Y	N	N
A3-3b-5	3	48.8	A3-3b	0	0	22.3	55.2	63.7	0	0	64.3	64.3	70	N	-	-	64.3	Y	N	N
A3-3b-5	4	51.6	A3-3b	0	0	22.3	55.4	63.8	0	0	64.4	64.4	70	N	-	-	64.4	Y	N	N
A3-3b-5	5	54.4	A3-3b	0	0	22.3	55.6	64.1	0	0	64.7	64.7	70	N	-	-	64.7	Y	N	N
A3-3b-5	6	57.2	A3-3b	0	0	22.4	55.6	64.2	0	0	64.8	64.8	70	N	-	-	64.8	Y	N	N
A3-3b-5	7	60	A3-3b	0	0	22.4	55.5	64.1	0	0	64.7	64.7	70	N	-	-	64.7	Y	N	N
A3-3b-5	8	62.8	A3-3b	0	0	22.5	55.5	64	0	0	64.5	64.5	70	N	-	-	64.5	Y	N	N
A3-3b-5	9	65.6	A3-3b	0	0	22.5	55.5	63.9	0	0	64.5	64.5	70	N	-	-	64.5	Y	N	N
A3-3b-5	10	68.4	A3-3b	0	0	22.6	55.5	63.8	0	0	64.4	64.4	70	N	-	-	64.4	Y	N	N
A3-3b-5	11	71.2	A3-3b	0	0	22.7	55.5	63.8	0	0	64.4	64.4	70	N	-	-	64.4	Y	N	N
A3-3b-5	12	74	A3-3b	0	0	22.8	55.5	63.6	0	0	64.2	64.2	70	N	-	-	64.2	Y	N	N
A3-3b-5	13	76.8	A3-3b	0	0	22.8	55.6	63.5	0	0	64.2	64.2	70	N	-	-	64.2	Y	N	N
A3-3b-5	14	79.6	A3-3b	0	0	22.9	55.6	63.4	0	0	64.1	64.1	70	N	-	-	64.1	Y	N	N
A3-3b-5	15	82.4	A3-3b	0	0	23.1	55.6	63.3	0	0	64	64	70	N	-	-	64.0	Y	N	N
A3-3b-5	16	85.2	A3-3b	0	0	23.2	55.7	63.2	0	0	63.9	63.9	70	N	-	-	63.9	Y	N	N
A3-3b-5	17	88	A3-3b	0	0	23.4	55.7	63.1	0	0	63.8	63.8	70	N	-	-	63.8	Y	N	N
A3-3b-5	18	90.8	A3-3b	0	0	23.6	55.7	63	0	0	63.7	63.7	70	N	-	-	63.7	Y	N	N
A3-3b-5	19	93.6	A3-3b	0	0	23.8	55.7	62.9	0	0	63.6	63.6	70	N	-	-	63.6	Y	N	N
A3-3b-5	20	96.4	A3-3b	0	0	24.1	55.7	62.8	0	0	63.5	63.5	70	N	-	-	63.5	Y	N	N
A3-3b-5	21	99.2	A3-3b	0	0	24.3	55.7	62.7	0	0	63.5	63.5	70	N	-	-	63.5	Y	N	N
A3-3b-5	22	102	A3-3b	0	0	24.5	55.7	62.6	0	0	63.4	63.4	70	N	-	-	63.4	Y	N	N
A3-3b-5	23	104.8	A3-3b	0	0	24.8	55.7	62.5	0	0	63.3	63.3	70	N	-	-	63.3	Y	N	N
A3-3b-5	24	107.6	A3-3b	0	0	25.1	55.6	62.4	0	0	63.2	63.2	70	N	-	-	63.2	Y	N	N
A3-3b-5	25	110.4	A3-3b	0	0	25.4	55.6	62.3	0	0	63.1	63.1	70	N	-	-	63.1	Y	N	N
A3-3b-5	26	113.2	A3-3b	0	0	25.7	55.6	62.2	0	0	63	63	70	N	-	-	63.0	Y	N	N
A3-3b-5	27	116	A3-3b	0	0	26.1	55.6	62.1	0	0	62.9	62.9	70	N	-	-	62.9	Y	N	N
A3-3b-5	28	118.8	A3-3b	0	0	26.5	55.6	62	0	0	62.9	62.9	70	N	-	-	62.9	Y	N	N
A3-3b-5	29	121.6	A3-3b	0	0	26.8	55.5	61.9	0	0	62.8	62.8	70	N	-	-	62.8	Y	N	N
A3-3b-5	30	124.4	A3-3b	0	0	27.2	55.5	61.8	0	0	62.7	62.7	70	N	-	-	62.7	Y	N	N
A3-3b-5	31	127.2	A3-3b	0	0	27.5	55.4	61.7	0	0	62.6	62.6	70	N	-	-	62.6	Y	N	N
A3-3b-5	32	130	A3-3b	0	0	27.9	55.4	61.6	0	0	62.5	62.5	70	N	-	-	62.5	Y	N	N
A3-3b-5	33	132.8	A3-3b	0	0	28.2	55.4	61.5	0	0	62.4	62.4	70	N	-	-	62.4	Y	N	N
A3-3b-5	34	135.6	A3-3b	0	0	28.6	55.3	61.4	0	0	62.4	62.4	70	N	-	-	62.4	Y	N	N
A3-3b-5	35	138.4	A3-3b	0	0	29	55.3	61.3	0	0	62.3	62.3	70	N	-	-	62.3	Y	N	N
A3-3b-5	36	141.2	A3-3b	0	0	29.3	55.3	61.2	0	0	62.2	62.2	70	N	-	-	62.2	Y	N	N
A3-3b-5	37	144	A3-3b	0	0	29.7	55.3	61.1	0	0	62.1	62.1	70	N	-	-	62.1	Y	N	N
A3-3b-5	38	146.8	A3-3b	0	0	30	55.3	61.1	0	0	62.1	62.1	70	N	-	-	62.1	Y	N	N
A3-3b-5	39	149.6	A3-3b	0	0	30.4	55.2	61	0	0	62	62	70	N	-	-	62.0	Y	N	N
A3-3b-5	40	152.4	A3-3b	0	0	30.8	55.2	60.9	0	0	62	62	70	N	-	-	62.0	Y	N	N
A3-3b-5	41	155.2	A3-3b	0	0	31.3	55.2	60.8	0	0	61.9	61.9	70	N	-	-	61.9	Y	N	N
A3-3b-6	1	43.2	A3-3b	0	0	21.3	46.1	58.7	0	0	58.9	58.9	70	N	-	-	58.9	Y	N	N
A3-3b-6	2	46	A3-3b	0	0	21.4	51.3	62	0	0	62.4	62.4	70	N	-	-	62.4	Y	N	N
A3-3b-6	3	48.8	A3-3b	0	0	21.3	54.7	62.2	0	0	62.9	62.9	70	N	-	-	62.9	Y	N	N
A3-3b-6	4	51.6	A3-3b	0	0	21.3	55.6	62.5	0	0	63.3	63.3	70	N	-	-	63.3	Y	N	N
A3-3b-6	5	54.4	A3-3b	0	0	21.4	55.9	63.2	0	0	63.9	63.9	70	N	-	-	63.9	Y	N	N
A3-3b-6	6	57.2	A3-3b	0	0	21.4	55.9	63.5	0	0	64.2	64.2	70	N	-	-	64.2	Y	N	N
A3-3b-6	7	60	A3-3b	0	0	21.4	55.9	63.6	0	0	64.3	64.3	70	N	-	-	64.3	Y	N	N
A3-3b-6	8	62.8	A3-3b	0	0	21.4	55.9	63.6	0	0	64.3	64.3	70	N	-	-	64.3	Y	N	N
A3-3b-6	9	65.6	A3-3b	0	0	21.4	55.9	63.6	0	0	64.3	64.3	70	N	-	-	64.3	Y	N	N
A3-3b-6	10	68.4	A3-3b	0	0	21.6	55.9	63.7	0	0	64.4	64.4	70	N	-	-	64.4	Y	N	N
A3-3b-6	11	71.2	A3-3b	0	0	21.6	55.9	63.7	0	0	64.3	64.3	70	N	-	-	64.3	Y	N	N
A3-3b-6	12	74	A3-3b	0	0	21.7	55.9	63.6	0	0	64.3	64.3	70	N	-	-	64.3	Y	N	N
A3-3b-6	13	76.8	A3-3b	0	0	21.9	55.9	63.5	0	0	64.2	64.2	70	N	-	-	64.2	Y	N	N
A3-3b-6	14	79.6	A3-3b	0	0	21.9	55.9	63.4	0	0	64.1	64.1	70	N	-	-	64.1	Y	N	N
A3-3b-6	15	82.4	A3-3b	0	0	22	55.9	63.4	0	0	64.1	64.1	70	N	-	-	64.1	Y	N	N
A3-3b-6	16	85.2	A3-3b	0	0	22.2	55.9	63.2	0	0	63.9	63.9	70	N	-	-	63.9	Y	N	N
A3-3b-6	17	88	A3-3b	0	0	22.3	56	63.1	0	0	63.9	63.9	70	N	-	-	63.9	Y	N	N
A3-3b-6	18	90.8	A3-3b	0	0	22.6	56	63	0	0	63.8	63.8	70	N	-	-	63.8	Y	N	N
A3-3b-6	19	93.6	A3-3b	0	0	22.8	56.1	62.9	0	0	63.7	63.7	70	N	-	-	63.7	Y	N	N
A3-3b-6	20	96.4	A3-3b	0	0	23	56.2	62.8	0	0	63.6	63.6	70	N	-	-	63.6	Y	N	N
A3-3b-6	21	99.2	A3-3b	0	0	23.2	56.3	62.7	0	0	63.6	63.6	70	N	-	-	63.6	Y	N	N
A3-3b-6	22	102	A3-3b	0	0	23.5	56.3	62.6	0	0	63.5	63.5	70	N	-	-	63.5	Y	N	N
A3-3b-6	23	104.8	A3-3b	0	0	23.7	56.4	62.5	0	0	63.5	63.5	70	N	-	-	63.5	Y	N	N
A3-3b-6	24	107.6	A3-3b	0	0	24	56.5	62.4	0	0	63.4	63.4	70	N	-	-	63.4	Y	N	N
A3-3b-6	25	110.4	A3-3b	0	0	24.4	56.5	62.3	0	0	63.3	63.3	70	N	-	-	63.3	Y	N	N
A3-3b-6	26	113.2	A3-3b	0	0	24.8	56.6	62.2	0	0	63.3	63.3	70	N	-	-	63.3	Y	N	N

Title: Detailed Calculation of Road Traffic Noise with Direct Mitigation Measures in place
Scenario: Existing and Planned Residential and Educational Uses in KTN NDA (Mitigated Case on Proposed Roads)

Assessment Point			Location	WITH PROJECT										Check Project Impact Significance		Check Direct Mitigation			At Receiver-end Mitigation Measures Required [4,5] (Y/N)
				Existing Road in 2046 dB(A)	Other Roads in 2046 dB(A)[1]	New Roads[2]					New Roads in 2046 dB(A) [3] [B]	Overall Noise Level in 2046 dB(A) [C]	Noise Criteria dB(A)	Exceedance C > Criteria (Y/N)	C - A dB(A) [D]	D ≥ 1dB(A)	New Road Contribution dB(A) [E]	New Road Contribution ≥ 1dB(A) E ≥ 1dB(A)	New Road > Criteria B > Criteria	
						PD	DD	LD	EX	TR										
ID	Floor	Floor Level (mPD)		dB (A)																
A3-3b-6	27	116	A3-3b	0	0	25.1	56.6	62.1	0	0	63.2	63.2	70	N	-	-	63.2	Y	N	N
A3-3b-6	28	118.8	A3-3b	0	0	25.5	56.6	62	0	0	63.1	63.1	70	N	-	-	63.1	Y	N	N
A3-3b-6	29	121.6	A3-3b	0	0	25.9	56.6	61.9	0	0	63	63	70	N	-	-	63.0	Y	N	N
A3-3b-6	30	124.4	A3-3b	0	0	26.2	56.6	61.8	0	0	63	63	70	N	-	-	63.0	Y	N	N
A3-3b-6	31	127.2	A3-3b	0	0	26.6	56.6	61.7	0	0	62.9	62.9	70	N	-	-	62.9	Y	N	N
A3-3b-6	32	130	A3-3b	0	0	27	56.6	61.6	0	0	62.8	62.8	70	N	-	-	62.8	Y	N	N
A3-3b-6	33	132.8	A3-3b	0	0	27.4	56.6	61.5	0	0	62.7	62.7	70	N	-	-	62.7	Y	N	N
A3-3b-6	34	135.6	A3-3b	0	0	27.8	56.6	61.4	0	0	62.7	62.7	70	N	-	-	62.7	Y	N	N
A3-3b-6	35	138.4	A3-3b	0	0	28.1	56.6	61.3	0	0	62.6	62.6	70	N	-	-	62.6	Y	N	N
A3-3b-6	36	141.2	A3-3b	0	0	28.5	56.6	61.2	0	0	62.5	62.5	70	N	-	-	62.5	Y	N	N
A3-3b-6	37	144	A3-3b	0	0	28.9	56.5	61.2	0	0	62.5	62.5	70	N	-	-	62.5	Y	N	N
A3-3b-6	38	146.8	A3-3b	0	0	29.3	56.5	61.1	0	0	62.4	62.4	70	N	-	-	62.4	Y	N	N
A3-3b-6	39	149.6	A3-3b	0	0	29.7	56.5	61	0	0	62.3	62.3	70	N	-	-	62.3	Y	N	N
A3-3b-6	40	152.4	A3-3b	0	0	30.1	56.5	60.9	0	0	62.3	62.3	70	N	-	-	62.3	Y	N	N
A3-3b-6	41	155.2	A3-3b	0	0	30.5	56.4	60.8	0	0	62.2	62.2	70	N	-	-	62.2	Y	N	N
B3 (KTN NDA Area 14)																				
A3-6-1	1	22.7	A3-6	0	0	0	68.5	68.4	0	0	71.4	71.4	70	Y	-	-	71.4	Y	Y	Y
A3-6-1	2	25.9	A3-6	0	0	0	68.4	68.1	0	0	71.3	71.3	70	Y	-	-	71.3	Y	Y	Y
A3-6-1	3	29.1	A3-6	0	0	0	68.3	67.8	0	0	71	71	70	Y	-	-	71.0	Y	Y	Y
A3-6-1	4	32.3	A3-6	0	0	0	68.1	67.5	0	0	70.8	70.8	70	Y	-	-	70.8	Y	Y	Y
A3-6-1	5	35.5	A3-6	0	0	0	68	67.3	0	0	70.7	70.7	70	Y	-	-	70.7	Y	Y	Y
A3-6-1	6	38.7	A3-6	0	0	0	67.8	67	0	0	70.4	70.4	70	N	-	-	70.4	Y	N	N
A3-6-1	7	41.9	A3-6	0	0	0	67.6	66.7	0	0	70.2	70.2	70	N	-	-	70.2	Y	N	N
A3-6-1	8	45.1	A3-6	0	0	0	67.5	66.4	0	0	70	70	70	N	-	-	70.0	Y	N	N
A3-6-1	9	48.3	A3-6	0	0	0	67.3	66.1	0	0	69.8	69.8	70	N	-	-	69.8	Y	N	N
A3-6-1	10	51.5	A3-6	0	0	0	67.1	65.8	0	0	69.5	69.5	70	N	-	-	69.5	Y	N	N
A3-6-1	11	54.7	A3-6	0	0	0	67	65.6	0	0	69.4	69.4	70	N	-	-	69.4	Y	N	N
A3-6-1	12	57.9	A3-6	0	0	0	66.8	65.3	0	0	69.1	69.1	70	N	-	-	69.1	Y	N	N
A3-6-1	13	61.1	A3-6	0	0	0	66.7	65.1	0	0	69	69	70	N	-	-	69.0	Y	N	N
A3-6-1	14	64.3	A3-6	0	0	0	66.5	64.9	0	0	68.8	68.8	70	N	-	-	68.8	Y	N	N
A3-6-1	15	67.5	A3-6	0	0	0	66.3	64.8	0	0	68.6	68.6	70	N	-	-	68.6	Y	N	N
A3-6-1	16	70.7	A3-6	0	0	0	66.2	64.6	0	0	68.5	68.5	70	N	-	-	68.5	Y	N	N
A3-6-1	17	73.9	A3-6	0	0	0	66	64.4	0	0	68.3	68.3	70	N	-	-	68.3	Y	N	N
A3-6-1	18	77.1	A3-6	0	0	0	65.9	64.2	0	0	68.1	68.1	70	N	-	-	68.1	Y	N	N
A3-6-1	19	80.3	A3-6	0	0	0	65.8	64	0	0	68	68	70	N	-	-	68.0	Y	N	N
A3-6-1	20	83.5	A3-6	0	0	0	65.6	63.8	0	0	67.8	67.8	70	N	-	-	67.8	Y	N	N
A3-6-1	21	86.7	A3-6	0	0	0	65.5	63.6	0	0	67.7	67.7	70	N	-	-	67.7	Y	N	N
A3-6-1	22	89.9	A3-6	0	0	0	65.3	63.5	0	0	67.5	67.5	70	N	-	-	67.5	Y	N	N
A3-6-2	1	22.7	A3-6	0	0	42.1	72.6	62.8	0	0	73	73	70	Y	-	-	73.0	Y	Y	Y
A3-6-2	2	25.9	A3-6	0	0	42.6	72.4	62.7	0	0	72.8	72.8	70	Y	-	-	72.8	Y	Y	Y
A3-6-2	3	29.1	A3-6	0	0	43.3	72.2	62.6	0	0	72.6	72.6	70	Y	-	-	72.6	Y	Y	Y
A3-6-2	4	32.3	A3-6	0	0	43.9	71.9	62.4	0	0	72.3	72.3	70	Y	-	-	72.3	Y	Y	Y
A3-6-2	5	35.5	A3-6	0	0	44.6	71.6	62.3	0	0	72.1	72.1	70	Y	-	-	72.1	Y	Y	Y
A3-6-2	6	38.7	A3-6	0	0	45.4	71.3	62.2	0	0	71.8	71.8	70	Y	-	-	71.8	Y	Y	Y
A3-6-2	7	41.9	A3-6	0	0	46.3	71.1	62	0	0	71.6	71.6	70	Y	-	-	71.6	Y	Y	Y
A3-6-2	8	45.1	A3-6	0	0	47.3	70.8	62	0	0	71.4	71.4	70	Y	-	-	71.4	Y	Y	Y
A3-6-2	9	48.3	A3-6	0	0	48.1	70.6	61.8	0	0	71.2	71.2	70	Y	-	-	71.2	Y	Y	Y
A3-6-2	10	51.5	A3-6	0	0	48.9	70.4	61.6	0	0	71	71	70	Y	-	-	71.0	Y	Y	Y
A3-6-2	11	54.7	A3-6	0	0	49.6	70.2	61.4	0	0	70.7	70.7	70	Y	-	-	70.7	Y	Y	Y
A3-6-2	12	57.9	A3-6	0	0	50.4	70	61.3	0	0	70.6	70.6	70	Y	-	-	70.6	Y	Y	Y
A3-6-2	13	61.1	A3-6	0	0	51.1	69.7	61.1	0	0	70.4	70.4	70	N	-	-	70.4	Y	N	N
A3-6-2	14	64.3	A3-6	0	0	52	69.6	60.9	0	0	70.2	70.2	70	N	-	-	70.2	Y	N	N
A3-6-2	15	67.5	A3-6	0	0	52.6	69.4	60.8	0	0	70	70	70	N	-	-	70.0	Y	N	N
A3-6-2	16	70.7	A3-6	0	0	53.4	69.2	60.7	0	0	69.9	69.9	70	N	-	-	69.9	Y	N	N
A3-6-2	17	73.9	A3-6	0	0	53.9	69	60.5	0	0	69.7	69.7	70	N	-	-	69.7	Y	N	N
A3-6-2	18	77.1	A3-6	0	0	54.3	68.9	60.4	0	0	69.6	69.6	70	N	-	-	69.6	Y	N	N
A3-6-2	19	80.3	A3-6	0	0	54.5	68.7	60.2	0	0	69.4	69.4	70	N	-	-	69.4	Y	N	N
A3-6-2	20	83.5	A3-6	0	0	54.6	68.5	60	0	0	69.3	69.3	70	N	-	-	69.3	Y	N	N
A3-6-2	21	86.7	A3-6	0	0	54.7	68.4	59.9	0	0	69.1	69.1	70	N	-	-	69.1	Y	N	N
A3-6-2	22	89.9	A3-6	0	0	54.8	68.2	59.8	0	0	69	69	70	N	-	-	69.0	Y	N	N
A3-6-3	1	22.7	A3-6	3.8	0	49.8	72.3	55.8	0	0	72.4	72.4	70	Y	-	-	68.6	Y	Y	Y
A3-6-3	2	25.9	A3-6	3.8	0	55	72.1	56.5	0	0	72.3	72.3	70	Y	-	-	68.5	Y	Y	Y
A3-6-3	3	29.1	A3-6	3.9	0	56.5	71.9	56.7	0	0	72.2	72.2	70	Y	-	-	68.3	Y	Y	Y
A3-6-3	4	32.3	A3-6	3.9	0	56.8	71.7	56.7	0	0	72	72	70	Y	-	-	68.1	Y	Y	Y
A3-6-3	5	35.5	A3-6	3.9	0	57.2	71.6	56.6	0	0	71.9	71.9	70	Y	-	-	68.0	Y	Y	Y
A3-6-3	6	38.7	A3-6	3.9	0	57.6	71.4	56.6	0	0	71.7	71.7	70	Y	-	-	67.8	Y	Y	Y
A3-6-3	7	41.9	A3-6	3.9	0	58.1	71.2	56.5	0	0	71.6	71.6	70	Y	-	-	67.7	Y	Y	Y
A3-6-3	8	45.1	A3-6	4	0	58.5	71	56.4	0	0	71.4	71.4	70	Y	-	-	67.4	Y	Y	Y
A3-6-3	9	48.3	A3-6	4	0	58.8	70.8	56.3	0	0	71.2	71.2	70	Y	-	-	67.2	Y	Y	Y
A3-6-3	10	51.5	A3-6	4	0	59.1	70.6	56.3	0	0	71.1	71.1	70	Y	-	-	67.1	Y	Y	Y
A3-6-3	11	54.7	A3-6	4.1	0	59.2	70.4	56.2	0	0	70.9	70.9	70	Y	-	-	66.8	Y	Y	Y
A3-6-3	12	57.9	A3-6	4	0	59.3	70.3	56.1	0	0	70.7	70.7	70	Y	-	-	66.7	Y	Y	Y
A3-6-3	13	61.1	A3-6	4	0	59.3	70.1	56	0	0	70.6	70.6	70	Y	-	-	66.6	Y	Y	Y
A3-6-3	14	64.3	A3-6	4.1	0	59.3	69.9	55.9	0	0	70.4	70.4	70	N	-	-	66.3	Y	N	N
A3-6-3	15	67.5	A3-6	4.1	0	59.3	69.7	55.8	0	0	70.3	70.3	70	N	-	-	66.2	Y	N	N
A3-6-3	16	70.7	A3-6	4.1	0	59.3	69.6	55.8	0	0	70.1	70.1	70	N	-	-	66.0	Y	N	N
A3-6-3	17	73.9	A3-6	4	0	59.3	69.4	55.7	0	0	70	70	70	N	-	-	66.0	Y	N	N
A3-6-3	18	77.1	A3-6	4	0	59.3	69.3	55.6	0	0	69.8	69.8	70	N	-	-	65.8	Y	N	N
A3-6-3	19	80.3	A3-6	4	0	59.4	69.1	55.6	0	0	69.7	69.7	70	N	-	-	65.7	Y	N	N

Title: Detailed Calculation of Road Traffic Noise with Direct Mitigation Measures in place
Scenario: Existing and Planned Residential and Educational Uses in KTN NDA (Mitigated Case on Proposed Roads)

Assessment Point			Location	WITH PROJECT										Check Project Impact Significance		Check Direct Mitigation			At Receiver-end Mitigation Measures Required [4,5] (Y/N)
				Existing Road in 2046 dB(A)	Other Roads in 2046 dB(A)[1]	New Roads[2]					New Roads in 2046 dB(A) [3] [B]	Overall Noise Level in 2046 dB(A) [C]	Noise Criteria dB(A)	Exceedance C > Criteria (Y/N)	C - A dB(A) [D]	D ≥ 1dB(A)	New Road Contribution dB(A) [E]	New Road Contribution ≥ 1dB(A) E ≥ 1dB(A)	New Road > Criteria B > Criteria	
						PD	DD	LD	EX	TR										
ID	Floor	Floor Level (mPD)		dB (A)																
A3-6-3	20	83.5	A3-6	4	0	59.4	68.9	55.5	0	0	69.6	69.6	70	N	-	-	65.6	Y	N	N
A3-6-3	21	86.7	A3-6	3.9	0	59.4	68.8	55.5	0	0	69.4	69.4	70	N	-	-	65.5	Y	N	N
A3-6-3	22	89.9	A3-6	3.9	0	59.4	68.6	55.4	0	0	69.3	69.3	70	N	-	-	65.4	Y	N	N
A3-6-4	1	22.7	A3-6	9.5	0	45.7	69.7	57.7	0	0	70	70	70	N	-	-	60.5	Y	N	N
A3-6-4	2	25.9	A3-6	9.6	0	48.7	69.8	57.6	0	0	70	70	70	N	-	-	60.4	Y	N	N
A3-6-4	3	29.1	A3-6	9.6	0	53.6	69.9	57.5	0	0	70.3	70.3	70	N	-	-	60.7	Y	N	N
A3-6-4	4	32.3	A3-6	9.7	0	58.9	70.1	57.5	0	0	70.6	70.6	70	Y	-	-	60.9	Y	Y	Y
A3-6-4	5	35.5	A3-6	9.7	0	60.5	70.2	57.4	0	0	70.9	70.9	70	Y	-	-	61.2	Y	Y	Y
A3-6-4	6	38.7	A3-6	9.8	0	60.8	70.4	57.3	0	0	71	71	70	Y	-	-	61.2	Y	Y	Y
A3-6-4	7	41.9	A3-6	9.8	0	61	70.6	57.2	0	0	71.2	71.2	70	Y	-	-	61.4	Y	Y	Y
A3-6-4	8	45.1	A3-6	9.9	0	61.1	70.7	57.1	0	0	71.3	71.3	70	Y	-	-	61.4	Y	Y	Y
A3-6-4	9	48.3	A3-6	9.8	0	61.2	70.7	56.9	0	0	71.3	71.3	70	Y	-	-	61.5	Y	Y	Y
A3-6-4	10	51.5	A3-6	10.1	0	61.3	70.8	56.8	0	0	71.4	71.4	70	Y	-	-	61.3	Y	Y	Y
A3-6-4	11	54.7	A3-6	10.5	0	61.3	70.7	56.7	0	0	71.3	71.3	70	Y	-	-	60.8	Y	Y	Y
A3-6-4	12	57.9	A3-6	11	0	61.3	70.7	56.6	0	0	71.3	71.3	70	Y	-	-	60.3	Y	Y	Y
A3-6-4	13	61.1	A3-6	11.5	0	61.3	70.7	56.5	0	0	71.3	71.3	70	Y	-	-	59.8	Y	Y	Y
A3-6-4	14	64.3	A3-6	12.1	0	61.3	70.6	56.4	0	0	71.2	71.2	70	Y	-	-	59.1	Y	Y	Y
A3-6-4	15	67.5	A3-6	12.7	0	61.4	70.5	56.2	0	0	71.1	71.1	70	Y	-	-	58.4	Y	Y	Y
A3-6-4	16	70.7	A3-6	13.4	0	61.4	70.3	56.2	0	0	71	71	70	Y	-	-	57.6	Y	Y	Y
A3-6-4	17	73.9	A3-6	14.2	0	61.4	70.2	56.1	0	0	70.9	70.9	70	Y	-	-	56.7	Y	Y	Y
A3-6-4	18	77.1	A3-6	15	0	61.5	70.1	56	0	0	70.8	70.8	70	Y	-	-	55.8	Y	Y	Y
A3-6-4	19	80.3	A3-6	15.9	0	61.6	70	55.9	0	0	70.7	70.7	70	Y	-	-	54.8	Y	Y	Y
A3-6-4	20	83.5	A3-6	16.9	0	61.6	69.8	55.8	0	0	70.6	70.6	70	Y	-	-	53.7	Y	Y	Y
A3-6-4	21	86.7	A3-6	17.9	0	61.7	69.7	55.7	0	0	70.5	70.5	70	Y	-	-	52.6	Y	Y	Y
A3-6-4	22	89.9	A3-6	19	0	61.7	69.5	55.6	0	0	70.4	70.4	70	N	-	-	51.4	Y	N	N
A3-6-5	1	22.7	A3-6	11.4	11.1	57.5	70.1	57.1	0	0	70.5	70.5	70	Y	-	-	56.2	Y	Y	Y
A3-6-5	2	25.9	A3-6	11.7	11.5	58.4	70	56.9	0	0	70.5	70.5	70	Y	-	-	55.9	Y	Y	Y
A3-6-5	3	29.1	A3-6	11.9	11.8	60.9	69.9	56.7	0	0	70.6	70.6	70	Y	-	-	55.7	Y	Y	Y
A3-6-5	4	32.3	A3-6	12.2	12.1	61.2	69.9	56.4	0	0	70.6	70.6	70	Y	-	-	55.4	Y	Y	Y
A3-6-5	5	35.5	A3-6	12.5	12.5	61.3	69.8	56.2	0	0	70.5	70.5	70	Y	-	-	55.0	Y	Y	Y
A3-6-5	6	38.7	A3-6	12.8	12.8	61.5	69.8	55.9	0	0	70.5	70.5	70	Y	-	-	54.7	Y	Y	Y
A3-6-5	7	41.9	A3-6	13.1	13.1	61.6	69.8	55.7	0	0	70.5	70.5	70	Y	-	-	54.4	Y	Y	Y
A3-6-5	8	45.1	A3-6	13.4	13.5	61.7	69.7	55.5	0	0	70.5	70.5	70	Y	-	-	54.0	Y	Y	Y
A3-6-5	9	48.3	A3-6	13.7	13.9	61.7	69.7	55.3	0	0	70.5	70.5	70	Y	-	-	53.7	Y	Y	Y
A3-6-5	10	51.5	A3-6	14.2	14.2	61.8	69.7	55.1	0	0	70.5	70.5	70	Y	-	-	53.3	Y	Y	Y
A3-6-5	11	54.7	A3-6	14.7	14.6	61.8	69.7	54.9	0	0	70.5	70.5	70	Y	-	-	52.8	Y	Y	Y
A3-6-5	12	57.9	A3-6	15.2	15	61.8	69.6	54.7	0	0	70.4	70.4	70	N	-	-	52.3	Y	N	N
A3-6-5	13	61.1	A3-6	15.8	15.3	61.8	69.6	54.5	0	0	70.4	70.4	70	N	-	-	51.8	Y	N	N
A3-6-5	14	64.3	A3-6	16.4	15.7	61.9	69.6	54.4	0	0	70.4	70.4	70	N	-	-	51.3	Y	N	N
A3-6-5	15	67.5	A3-6	16.9	16.1	61.9	69.5	54.2	0	0	70.3	70.3	70	N	-	-	50.8	Y	N	N
A3-6-5	16	70.7	A3-6	17.5	16.4	62	69.4	54.1	0	0	70.2	70.2	70	N	-	-	50.2	Y	N	N
A3-6-5	17	73.9	A3-6	18.3	16.8	62.1	69.3	53.9	0	0	70.2	70.2	70	N	-	-	49.6	Y	N	N
A3-6-5	18	77.1	A3-6	19	17.1	62.1	69.2	53.8	0	0	70.1	70.1	70	N	-	-	48.9	Y	N	N
A3-6-5	19	80.3	A3-6	19.8	17.5	62.1	69.2	53.7	0	0	70.1	70.1	70	N	-	-	48.3	Y	N	N
A3-6-5	20	83.5	A3-6	20.6	17.9	62.1	69.1	53.6	0	0	70	70	70	N	-	-	47.5	Y	N	N
A3-6-5	21	86.7	A3-6	21.5	18.3	62.1	69	53.4	0	0	69.9	69.9	70	N	-	-	46.7	Y	N	N
A3-6-5	22	89.9	A3-6	22.5	18.8	62.1	68.9	53.3	0	0	69.9	69.9	70	N	-	-	45.9	Y	N	N
A3-6-6	1	22.7	A3-6	7.2	0	55.2	65.1	52.3	0	0	65.8	65.8	70	N	-	-	58.6	Y	N	N
A3-6-6	2	25.9	A3-6	7.5	0	55.2	65.1	52.1	0	0	65.7	65.7	70	N	-	-	58.2	Y	N	N
A3-6-6	3	29.1	A3-6	7.8	0	55.2	65.1	51.9	0	0	65.7	65.7	70	N	-	-	57.9	Y	N	N
A3-6-6	4	32.3	A3-6	8.1	0	55.2	65.1	51.7	0	0	65.7	65.7	70	N	-	-	57.6	Y	N	N
A3-6-6	5	35.5	A3-6	8.4	0	55.1	65.1	51.4	0	0	65.7	65.7	70	N	-	-	57.3	Y	N	N
A3-6-6	6	38.7	A3-6	8.7	0	55.1	65.1	51.2	0	0	65.7	65.7	70	N	-	-	57.0	Y	N	N
A3-6-6	7	41.9	A3-6	9	0	55.1	65.1	51	0	0	65.7	65.7	70	N	-	-	56.7	Y	N	N
A3-6-6	8	45.1	A3-6	9.3	0	55.1	65.1	50.9	0	0	65.7	65.7	70	N	-	-	56.4	Y	N	N
A3-6-6	9	48.3	A3-6	9.7	0	55	65.1	50.7	0	0	65.6	65.6	70	N	-	-	55.9	Y	N	N
A3-6-6	10	51.5	A3-6	10	0	55	65	50.5	0	0	65.6	65.6	70	N	-	-	55.6	Y	N	N
A3-6-6	11	54.7	A3-6	10.4	0	55	65	50.3	0	0	65.5	65.5	70	N	-	-	55.1	Y	N	N
A3-6-6	12	57.9	A3-6	10.8	0	55	64.9	50.1	0	0	65.5	65.5	70	N	-	-	54.7	Y	N	N
A3-6-6	13	61.1	A3-6	11	0	54.9	64.9	50	0	0	65.4	65.4	70	N	-	-	54.4	Y	N	N
A3-6-6	14	64.3	A3-6	11.4	0	54.9	64.8	49.8	0	0	65.4	65.4	70	N	-	-	54.0	Y	N	N
A3-6-6	15	67.5	A3-6	11.8	0	54.9	64.8	49.7	0	0	65.3	65.3	70	N	-	-	53.5	Y	N	N
A3-6-6	16	70.7	A3-6	12	0	55	64.7	49.5	0	0	65.3	65.3	70	N	-	-	53.3	Y	N	N
A3-6-6	17	73.9	A3-6	12.4	0	55	64.7	49.3	0	0	65.2	65.2	70	N	-	-	52.8	Y	N	N
A3-6-6	18	77.1	A3-6	12.8	0	55.1	64.6	49.2	0	0	65.2	65.2	70	N	-	-	52.4	Y	N	N
A3-6-6	19	80.3	A3-6	13.2	0	55.2	64.6	49.1	0	0	65.2	65.2	70	N	-	-	52.0	Y	N	N
A3-6-6	20	83.5	A3-6	13.6	0	55.3	64.5	49	0	0	65.1	65.1	70	N	-	-	51.5	Y	N	N
A3-6-6	21	86.7	A3-6	14	0	55.4	64.5	48.9	0	0	65.1	65.1	70	N	-	-	51.1	Y	N	N
A3-6-6	22	89.9	A3-6	14.4	0	55.5	64.5	48.7	0	0	65.1	65.1	70	N	-	-	50.7	Y	N	N
A3-6-7	1	22.7	A3-6	0	18.4	11.1	57.1	64.2	0	0	65	65	70	N	-	-	46.6	Y	N	N
A3-6-7	2	25.9	A3-6	0	18.9	11.1	57.1	64.2	0	0	65	65	70	N	-	-	46.1	Y	N	N
A3-6-7	3	29.1	A3-6	0	19.5	11.1	57.1	64.1	0	0	64.9	64.9	70	N	-	-	45.4	Y	N	N
A3-6-7	4	32.3	A3-6	0	20	11.1	57.1	64.1	0	0	64.9	64.9	70	N	-	-	44.9	Y	N	N
A3-6-7	5	35.5	A3-6	0	20.4	11.1	57	64	0	0	64.8	64.8	70	N	-	-	44.4	Y	N	N
A3-6-7	6	38.7	A3-6	0	20.9	11.1	57	64	0	0	64.8	64.8	70	N	-	-	43.9	Y	N	N
A3-6-7	7	41.9	A3-6	0	21.5	11.1	57	63.8	0	0	64.7	64.7	70	N	-	-	43.2	Y	N	N
A3-6-7	8	45.1	A3-6	0	22	11.1	57	63.7	0	0	64.6	64.6	70	N	-	-	42.6	Y	N	N
A3-6-7	9	48.3	A3-6	0	22.5	11.2	57	63.6	0	0	64.5	64.5	70	N	-	-	42.0	Y	N	N
A3-6-7	10	51.5	A3-6	0	23	11.2	57	63.5	0	0	64.4	64.4	70	N	-	-	41.4	Y	N	N

Title: Detailed Calculation of Road Traffic Noise with Direct Mitigation Measures in place
Scenario: Existing and Planned Residential and Educational Uses in KTN NDA (Mitigated Case on Proposed Roads)

Assessment Point			Location	WITH PROJECT									Check Project Impact Significance		Check Direct Mitigation			At Receiver-end Mitigation Measures Required [4,5] (Y/N)
				Existing Road in 2046 dB(A)	Other Roads in 2046 dB(A)[1]	New Roads[2]					New Roads in 2046 dB(A) [3] [B]	Overall Noise Level in 2046 dB(A) [C]	Noise Criteria dB(A)	Exceedance C > Criteria (Y/N)	C - A dB(A) [D]	D ≥ 1dB(A)	New Road Contribution dB(A) [E]	New Road Contribution ≥ 1dB(A) E ≥ 1dB(A)	New Road > Criteria B > Criteria	
						PD	DD	LD	EX	TR										
ID	Floor	Floor Level (mPD)		dB (A)																
A3-6-7	11	54.7	A3-6	0	23.6	11.2	56.9	63.4	0	0	64.3	64.3	70	N	-	-	40.7	Y	N	N
A3-6-7	12	57.9	A3-6	0	24.2	11.2	56.9	63.3	0	0	64.2	64.2	70	N	-	-	40.0	Y	N	N
A3-6-7	13	61.1	A3-6	0	24.9	11.2	56.9	63.2	0	0	64.1	64.1	70	N	-	-	39.2	Y	N	N
A3-6-7	14	64.3	A3-6	0	25.4	11.2	56.9	63.1	0	0	64	64	70	N	-	-	38.6	Y	N	N
A3-6-7	15	67.5	A3-6	0	25.9	11.2	56.8	63	0	0	63.9	63.9	70	N	-	-	38.0	Y	N	N
A3-6-7	16	70.7	A3-6	0	26.6	11.2	56.8	62.9	0	0	63.9	63.9	70	N	-	-	37.3	Y	N	N
A3-6-7	17	73.9	A3-6	0	27.2	11.2	56.8	62.8	0	0	63.8	63.8	70	N	-	-	36.6	Y	N	N
A3-6-7	18	77.1	A3-6	0	27.9	11.1	56.7	62.7	0	0	63.7	63.7	70	N	-	-	35.8	Y	N	N
A3-6-7	19	80.3	A3-6	0	28.7	11.1	56.7	62.6	0	0	63.6	63.6	70	N	-	-	34.9	Y	N	N
A3-6-7	20	83.5	A3-6	0	29.5	11.1	56.7	62.5	0	0	63.5	63.5	70	N	-	-	34.0	Y	N	N
A3-6-7	21	86.7	A3-6	0	30.3	11.1	56.6	62.4	0	0	63.4	63.4	70	N	-	-	33.1	Y	N	N
A3-6-7	22	89.9	A3-6	0	31.1	11.1	56.6	62.3	0	0	63.4	63.4	70	N	-	-	32.3	Y	N	N
A3-6-8	1	22.7	A3-6	0	0	13.1	57.6	63.5	0	0	64.5	64.5	70	N	-	-	64.5	Y	N	N
A3-6-8	2	25.9	A3-6	0	0	13.1	57.6	63.5	0	0	64.5	64.5	70	N	-	-	64.5	Y	N	N
A3-6-8	3	29.1	A3-6	0	0	13.1	57.6	63.5	0	0	64.5	64.5	70	N	-	-	64.5	Y	N	N
A3-6-8	4	32.3	A3-6	0	0	13.1	57.6	63.4	0	0	64.4	64.4	70	N	-	-	64.4	Y	N	N
A3-6-8	5	35.5	A3-6	0	0	13.1	57.6	63.4	0	0	64.4	64.4	70	N	-	-	64.4	Y	N	N
A3-6-8	6	38.7	A3-6	0	0	13.1	57.5	63.3	0	0	64.3	64.3	70	N	-	-	64.3	Y	N	N
A3-6-8	7	41.9	A3-6	0	0	13.1	57.5	63.2	0	0	64.2	64.2	70	N	-	-	64.2	Y	N	N
A3-6-8	8	45.1	A3-6	0	0	13.1	57.5	63.1	0	0	64.2	64.2	70	N	-	-	64.2	Y	N	N
A3-6-8	9	48.3	A3-6	0	0	13.1	57.4	63	0	0	64.1	64.1	70	N	-	-	64.1	Y	N	N
A3-6-8	10	51.5	A3-6	0	0	13.1	57.4	63	0	0	64.1	64.1	70	N	-	-	64.1	Y	N	N
A3-6-8	11	54.7	A3-6	0	0	13.1	57.4	62.9	0	0	64	64	70	N	-	-	64.0	Y	N	N
A3-6-8	12	57.9	A3-6	0	0	13.1	57.3	62.8	0	0	63.9	63.9	70	N	-	-	63.9	Y	N	N
A3-6-8	13	61.1	A3-6	0	0	13.1	57.3	62.7	0	0	63.8	63.8	70	N	-	-	63.8	Y	N	N
A3-6-8	14	64.3	A3-6	0	0	13.1	57.2	62.6	0	0	63.7	63.7	70	N	-	-	63.7	Y	N	N
A3-6-8	15	67.5	A3-6	0	0	13.1	57.2	62.4	0	0	63.6	63.6	70	N	-	-	63.6	Y	N	N
A3-6-8	16	70.7	A3-6	0	0	13.1	57.2	62.3	0	0	63.5	63.5	70	N	-	-	63.5	Y	N	N
A3-6-8	17	73.9	A3-6	0	0	13.1	57.1	62.2	0	0	63.4	63.4	70	N	-	-	63.4	Y	N	N
A3-6-8	18	77.1	A3-6	0	0	13.1	57.1	62.1	0	0	63.3	63.3	70	N	-	-	63.3	Y	N	N
A3-6-8	19	80.3	A3-6	0	0	13.1	57	62	0	0	63.2	63.2	70	N	-	-	63.2	Y	N	N
A3-6-8	20	83.5	A3-6	0	0	13.1	57	61.9	0	0	63.1	63.1	70	N	-	-	63.1	Y	N	N
A3-6-8	21	86.7	A3-6	0	0	13.1	56.9	61.8	0	0	63.1	63.1	70	N	-	-	63.1	Y	N	N
A3-6-8	22	89.9	A3-6	0	0	13.1	56.9	61.7	0	0	63	63	70	N	-	-	63.0	Y	N	N
B7 (KTN NDA Area 15)																				
D1-11c-1	1	25.2	D1-11c	42.2	17	0	64.4	8.1	0	0	64.4	64.4	70	N	-	-	22.2	Y	N	N
D1-11c-1	2	28.4	D1-11c	42.2	17.4	0	65.8	8	0	0	65.8	65.8	70	N	-	-	23.6	Y	N	N
D1-11c-1	3	31.6	D1-11c	42.2	17.9	0	66.6	7.9	0	0	66.6	66.7	70	N	-	-	24.5	Y	N	N
D1-11c-1	4	34.8	D1-11c	42.2	18.5	0	67.1	8.3	0	0	67.1	67.1	70	N	-	-	24.9	Y	N	N
D1-11c-1	5	38	D1-11c	42.2	19	0	67.4	8.6	0	0	67.4	67.4	70	N	-	-	25.2	Y	N	N
D1-11c-1	6	41.2	D1-11c	42.2	19.5	0	67.5	8.9	0	0	67.5	67.5	70	N	-	-	25.3	Y	N	N
D1-11c-1	7	44.4	D1-11c	42.2	20.1	0	67.5	9.1	0	0	67.5	67.6	70	N	-	-	25.4	Y	N	N
D1-11c-1	8	47.6	D1-11c	42.2	20.8	0	67.5	9.3	0	0	67.5	67.5	70	N	-	-	25.3	Y	N	N
D1-11c-1	9	50.8	D1-11c	42.2	21.4	0	67.5	9.4	0	0	67.5	67.5	70	N	-	-	25.3	Y	N	N
D1-11c-1	10	54	D1-11c	42.1	22	0	67.4	9.4	0	0	67.4	67.4	70	N	-	-	25.3	Y	N	N
D1-11c-1	11	57.2	D1-11c	42.1	22.7	0	67.2	9.5	0	0	67.2	67.2	70	N	-	-	25.1	Y	N	N
D1-11c-1	12	60.4	D1-11c	42.1	23.3	0	67.1	9.5	0	0	67.1	67.2	70	N	-	-	25.0	Y	N	N
D1-11c-1	13	63.6	D1-11c	42.1	24	0	67	9.5	0	0	67	67	70	N	-	-	24.8	Y	N	N
D1-11c-1	14	66.8	D1-11c	42.1	24.7	0	66.9	9.4	0	0	66.9	66.9	70	N	-	-	24.7	Y	N	N
D1-11c-1	15	70	D1-11c	42.1	25.3	0	66.7	9.4	0	0	66.7	66.8	70	N	-	-	24.6	Y	N	N
D1-11c-1	16	73.2	D1-11c	42.1	26.1	0	66.6	9.4	0	0	66.6	66.6	70	N	-	-	24.4	Y	N	N
D1-11c-1	17	76.4	D1-11c	42.1	26.8	0	66.5	9.3	0	0	66.5	66.5	70	N	-	-	24.3	Y	N	N
D1-11c-1	18	79.6	D1-11c	42.1	27.5	0	66.3	9.3	0	0	66.3	66.3	70	N	-	-	24.1	Y	N	N
D1-11c-1	19	82.8	D1-11c	42.1	28.3	0	66.2	9.4	0	0	66.2	66.2	70	N	-	-	23.9	Y	N	N
D1-11c-1	20	86	D1-11c	42.1	29	0	66.1	9.3	0	0	66.1	66.1	70	N	-	-	23.8	Y	N	N
D1-11c-2	1	25.2	D1-11c	0	15.3	27.6	68.6	23.6	0	0	68.6	68.6	70	N	-	-	53.3	Y	N	N
D1-11c-2	2	28.4	D1-11c	0	15.7	27.6	69.6	23.6	0	0	69.6	69.6	70	N	-	-	53.9	Y	N	N
D1-11c-2	3	31.6	D1-11c	0	16.1	27.5	70.1	23.6	0	0	70.1	70.1	70	N	-	-	54.0	Y	N	N
D1-11c-2	4	34.8	D1-11c	0	16.6	27.5	70.3	23.6	0	0	70.3	70.3	70	N	-	-	53.7	Y	N	N
D1-11c-2	5	38	D1-11c	0	17.1	27.5	70.3	23.6	0	0	70.3	70.3	70	N	-	-	53.2	Y	N	N
D1-11c-2	6	41.2	D1-11c	0	17.6	27.5	70.2	23.6	0	0	70.2	70.2	70	N	-	-	52.6	Y	N	N
D1-11c-2	7	44.4	D1-11c	0	18.1	27.5	70	23.6	0	0	70	70	70	N	-	-	51.9	Y	N	N
D1-11c-2	8	47.6	D1-11c	0	18.8	27.5	69.9	23.7	0	0	69.9	69.9	70	N	-	-	51.1	Y	N	N
D1-11c-2	9	50.8	D1-11c	0	19.4	27.5	69.7	23.7	0	0	69.7	69.7	70	N	-	-	50.3	Y	N	N
D1-11c-2	10	54	D1-11c	0	20	27.4	69.5	23.8	0	0	69.5	69.5	70	N	-	-	49.5	Y	N	N
D1-11c-2	11	57.2	D1-11c	0	20.6	27.4	69.3	23.8	0	0	69.3	69.3	70	N	-	-	48.7	Y	N	N
D1-11c-2	12	60.4	D1-11c	0	21.2	27.4	69.1	23.9	0	0	69.1	69.1	70	N	-	-	47.9	Y	N	N
D1-11c-2	13	63.6	D1-11c	0	21.9	27.4	68.9	24.2	0	0	68.9	68.9	70	N	-	-	47.0	Y	N	N
D1-11c-2	14	66.8	D1-11c	0	22.6	27.4	68.8	24.5	0	0	68.8	68.8	70	N	-	-	46.2	Y	N	N
D1-11c-2	15	70	D1-11c	0	23.4	27.5	68.6	25.1	0	0	68.6	68.6	70	N	-	-	45.2	Y	N	N
D1-11c-2	16	73.2	D1-11c	0	24	27.7	68.4	25.8	0	0	68.4	68.4	70	N	-	-	44.4	Y	N	N
D1-11c-2	17	76.4	D1-11c	0	24.8	28.2	68.2	27.1	0	0	68.2	68.2	70	N	-	-	43.4	Y	N	N
D1-11c-2	18	79.6	D1-11c	0	25.5	28.6	68.1	28.3	0	0	68.1	68.1	70	N	-	-	42.6	Y	N	N
D1-11c-2	19	82.8	D1-11c	0	26.2	29.1	67.9	29.4	0	0	67.9	67.9	70	N	-	-	41.7	Y	N	N
D1-11c-2	20	86	D1-11c	0	27.1	29.5	67.8	30	0	0	67.8	67.8	70	N	-	-	40.7	Y	N	N
D1-11c-3	1	25.2	D1-11c	11.9	12.9	34	56	48.9	0	0	56.8	56.8	70	N	-	-	41.4	Y	N	N
D1-11c-3	2	28.4	D1-11c	11.9	13	34.3	57.1	49.4	0	0	57.8	57.8	70	N	-	-	42.3	Y	N	N
D1-11c-3	3	31.6	D1-11c	12	13	34.5	57.7	49.7	0	0	58.4	58.4	70	N	-	-	42.9	Y	N	N
D1-11c-3	4	34.8	D1-11c	12	13.1	34.7	58.3	49.9	0	0	58.9	58.9	70	N	-	-	43.3	Y	N	N
D1-11c-3	5	38	D1-11c	12	13.2	34.9	58.9	50.1	0	0	59.5	59.5	70	N	-	-	43.8	Y	N	N
D1-11c-3	6	41.2	D1-11c	12.1	13.3	35.2	59.3	50.2	0	0	59.8	59.8	70	N	-	-	44.0	Y	N	N
D1-11c-3	7	44.4	D1-11c	12.1	13.4	35.4	59.6	50.3	0	0	60.1	60.1	70	N	-	-	44.3	Y	N	N
D1-11c-3	8	47.6	D1-11c	12.1	13.4	35.7	59.8	50.3	0	0	60.3	60.3	70	N	-	-	44.5	Y	N	N

Title: Detailed Calculation of Road Traffic Noise with Direct Mitigation Measures in place
Scenario: Existing and Planned Residential and Educational Uses in KTN NDA (Mitigated Case on Proposed Roads)

Assessment Point			Location	WITH PROJECT										Check Project Impact Significance		Check Direct Mitigation			
				Existing Road in 2046 dB(A)	Other Roads in 2046 dB(A)[1]	New Roads[2]					New Roads in 2046 dB(A) [3] [B]	Overall Noise Level in 2046 dB(A) [C]	Noise Criteria dB(A)	Exceedance C > Criteria (Y/N)	C - A dB(A) [D]	D ≥ 1dB(A)	New Road Contribution dB(A) [E]	New Road Contribution ≥ 1dB(A) E ≥ 1dB(A)	New Road > Criteria B > Criteria	At Receiver-end Mitigation Measures Required [4,5] (Y/N)
						PD	DD	LD	EX	TR										
ID	Floor	Floor Level (mPD)		dB (A)																
D1-11c-3	9	50.8	D1-11c	12.1	13.4	35.9	59.9	50.3	0	0	60.4	60.4	70	N	-	-	44.6	Y	N	N
D1-11c-3	10	54	D1-11c	12.1	13.5	36.2	60	50.3	0	0	60.4	60.4	70	N	-	-	44.5	Y	N	N
D1-11c-3	11	57.2	D1-11c	12.2	13.5	36.5	60.1	50.3	0	0	60.5	60.5	70	N	-	-	44.6	Y	N	N
D1-11c-3	12	60.4	D1-11c	12.1	13.5	36.8	60	50.3	0	0	60.5	60.5	70	N	-	-	44.6	Y	N	N
D1-11c-3	13	63.6	D1-11c	12.3	13.6	37.1	60.1	50.3	0	0	60.5	60.5	70	N	-	-	44.5	Y	N	N
D1-11c-3	14	66.8	D1-11c	13.3	13.5	37.4	60.1	50.2	0	0	60.5	60.5	70	N	-	-	44.1	Y	N	N
D1-11c-3	15	70	D1-11c	14.7	13.5	37.8	60	50.1	0	0	60.4	60.4	70	N	-	-	43.2	Y	N	N
D1-11c-3	16	73.2	D1-11c	16.3	14.4	38.2	60	50.1	0	0	60.4	60.4	70	N	-	-	41.9	Y	N	N
D1-11c-3	17	76.4	D1-11c	18.1	16.3	38.6	59.9	50	0	0	60.3	60.3	70	N	-	-	40.0	Y	N	N
D1-11c-3	18	79.6	D1-11c	19.9	18.8	39	59.9	50	0	0	60.3	60.3	70	N	-	-	37.9	Y	N	N
D1-11c-3	19	82.8	D1-11c	21.8	21.5	39.4	59.8	49.9	0	0	60.3	60.3	70	N	-	-	35.6	Y	N	N
D1-11c-3	20	86	D1-11c	23.7	24.4	39.8	59.8	49.8	0	0	60.2	60.2	70	N	-	-	33.1	Y	N	N
D1-11c-4	1	36.2	D1-11c	54.7	0	28.3	44.8	67.3	0	0	67.4	67.6	70	N	-	-	12.9	Y	N	N
D1-11c-4	2	39.4	D1-11c	54.7	0	28.3	45.2	67	0	0	67	67.3	70	N	-	-	12.6	Y	N	N
D1-11c-4	3	42.6	D1-11c	54.7	0	28.2	45.7	66.7	0	0	66.7	67	70	N	-	-	12.3	Y	N	N
D1-11c-4	4	45.8	D1-11c	54.7	0	28.2	46	66.3	0	0	66.3	66.6	70	N	-	-	11.9	Y	N	N
D1-11c-4	5	49	D1-11c	54.8	0	28.2	46.3	65.9	0	0	66	66.3	70	N	-	-	11.5	Y	N	N
D1-11c-4	6	52.2	D1-11c	54.8	0	28.2	46.6	65.6	0	0	65.7	66	70	N	-	-	11.2	Y	N	N
D1-11c-4	7	55.4	D1-11c	54.8	0	28.2	46.9	65.3	0	0	65.3	65.7	70	N	-	-	10.9	Y	N	N
D1-11c-4	8	58.6	D1-11c	54.9	0	28.3	47.1	64.9	0	0	65	65.4	70	N	-	-	10.5	Y	N	N
D1-11c-4	9	61.8	D1-11c	54.9	0	28.3	47.3	64.6	0	0	64.7	65.2	70	N	-	-	10.3	Y	N	N
D1-11c-4	10	65	D1-11c	55	0	28.4	47.4	64.3	0	0	64.4	64.9	70	N	-	-	9.9	Y	N	N
D1-11c-4	11	68.2	D1-11c	55.1	0	28.5	47.5	64	0	0	64.1	64.6	70	N	-	-	9.5	Y	N	N
D1-11c-4	12	71.4	D1-11c	55.1	0	28.5	47.7	63.8	0	0	63.9	64.4	70	N	-	-	9.3	Y	N	N
D1-11c-4	13	74.6	D1-11c	55.1	0	28.6	47.8	63.6	0	0	63.7	64.3	70	N	-	-	9.2	Y	N	N
D1-11c-4	14	77.8	D1-11c	55.2	0	28.8	47.9	63.3	0	0	63.4	64	70	N	-	-	8.8	Y	N	N
D1-11c-4	15	81	D1-11c	55.2	0	28.9	47.9	63.1	0	0	63.2	63.8	70	N	-	-	8.6	Y	N	N
D1-11c-4	16	84.2	D1-11c	55.1	0	29	48	62.9	0	0	63	63.7	70	N	-	-	8.6	Y	N	N
D1-11c-4	17	87.4	D1-11c	55.2	0	29.2	48	62.7	0	0	62.8	63.5	70	N	-	-	8.3	Y	N	N
D1-11c-4	18	90.6	D1-11c	55.2	0	29.4	48.1	62.5	0	0	62.7	63.4	70	N	-	-	8.2	Y	N	N
D1-11c-4	19	93.8	D1-11c	55.1	0	29.6	48	62.3	0	0	62.5	63.2	70	N	-	-	8.1	Y	N	N
D1-11c-4	20	97	D1-11c	55.1	0	29.7	48.1	62.1	0	0	62.3	63.1	70	N	-	-	8.0	Y	N	N
D1-11c-5	1	36.2	D1-11c	56.3	0	26.7	24	64.6	0	0	64.6	65.2	70	N	-	-	8.9	Y	N	N
D1-11c-5	2	39.4	D1-11c	56.3	0	26.7	24	64.5	0	0	64.5	65.1	70	N	-	-	8.8	Y	N	N
D1-11c-5	3	42.6	D1-11c	56.3	0	26.7	24	64.4	0	0	64.4	65	70	N	-	-	8.7	Y	N	N
D1-11c-5	4	45.8	D1-11c	56.4	0	26.7	23.9	64.3	0	0	64.3	64.9	70	N	-	-	8.5	Y	N	N
D1-11c-5	5	49	D1-11c	56.4	0	26.7	23.9	64.1	0	0	64.1	64.8	70	N	-	-	8.4	Y	N	N
D1-11c-5	6	52.2	D1-11c	56.4	0	26.7	23.9	63.9	0	0	63.9	64.6	70	N	-	-	8.2	Y	N	N
D1-11c-5	7	55.4	D1-11c	56.4	0	26.7	23.8	63.7	0	0	63.7	64.4	70	N	-	-	8.0	Y	N	N
D1-11c-5	8	58.6	D1-11c	56.5	0	26.7	23.9	63.5	0	0	63.5	64.3	70	N	-	-	7.8	Y	N	N
D1-11c-5	9	61.8	D1-11c	56.6	0	26.7	24	63.3	0	0	63.3	64.1	70	N	-	-	7.5	Y	N	N
D1-11c-5	10	65	D1-11c	56.6	0	26.6	24.1	63.1	0	0	63.1	64	70	N	-	-	7.4	Y	N	N
D1-11c-5	11	68.2	D1-11c	56.6	0	26.6	24.1	62.9	0	0	62.9	63.8	70	N	-	-	7.2	Y	N	N
D1-11c-5	12	71.4	D1-11c	56.6	0	26.6	24.1	62.7	0	0	62.7	63.7	70	N	-	-	7.1	Y	N	N
D1-11c-5	13	74.6	D1-11c	56.7	0	26.6	24.3	62.5	0	0	62.5	63.5	70	N	-	-	6.8	Y	N	N
D1-11c-5	14	77.8	D1-11c	56.7	0	26.6	24.5	62.3	0	0	62.3	63.4	70	N	-	-	6.7	Y	N	N
D1-11c-5	15	81	D1-11c	56.7	0	26.6	24.7	62.2	0	0	62.2	63.2	70	N	-	-	6.5	Y	N	N
D1-11c-5	16	84.2	D1-11c	56.7	0	26.6	24.9	62	0	0	62	63.1	70	N	-	-	6.4	Y	N	N
D1-11c-5	17	87.4	D1-11c	56.6	0	26.6	25.1	61.8	0	0	61.8	63	70	N	-	-	6.4	Y	N	N
D1-11c-5	18	90.6	D1-11c	56.7	0	26.5	25.3	61.7	0	0	61.7	62.9	70	N	-	-	6.2	Y	N	N
D1-11c-5	19	93.8	D1-11c	56.7	0	26.5	25.5	61.5	0	0	61.5	62.7	70	N	-	-	6.0	Y	N	N
D1-11c-5	20	97	D1-11c	56.6	0	26.5	25.8	61.3	0	0	61.4	62.6	70	N	-	-	6.0	Y	N	N
B8 (KTN NDA Area 15)																				
D1-11b-1	1	25.2	D1-11b	0	0	0	66.5	14	0	0	66.5	66.5	70	N	-	-	66.5	Y	N	N
D1-11b-1	2	28.4	D1-11b	0	0	0	67.3	14.7	0	0	67.3	67.3	70	N	-	-	67.3	Y	N	N
D1-11b-1	3	31.6	D1-11b	0	0	0	67.7	15.5	0	0	67.7	67.7	70	N	-	-	67.7	Y	N	N
D1-11b-1	4	34.8	D1-11b	0	0	0	67.8	16.3	0	0	67.8	67.8	70	N	-	-	67.8	Y	N	N
D1-11b-1	5	38	D1-11b	0	0	0	67.9	17.2	0	0	67.9	67.9	70	N	-	-	67.9	Y	N	N
D1-11b-1	6	41.2	D1-11b	0	0	0	67.7	18.2	0	0	67.7	67.7	70	N	-	-	67.7	Y	N	N
D1-11b-1	7	44.4	D1-11b	0	0	0	67.7	19.2	0	0	67.7	67.7	70	N	-	-	67.7	Y	N	N
D1-11b-1	8	47.6	D1-11b	0	0	0	67.6	20.4	0	0	67.6	67.6	70	N	-	-	67.6	Y	N	N
D1-11b-1	9	50.8	D1-11b	0	0	0	67.4	21.6	0	0	67.4	67.4	70	N	-	-	67.4	Y	N	N
D1-11b-1	10	54	D1-11b	0	0	0	67.3	22.9	0	0	67.3	67.3	70	N	-	-	67.3	Y	N	N
D1-11b-1	11	57.2	D1-11b	0	0	0	67.1	24.5	0	0	67.1	67.1	70	N	-	-	67.1	Y	N	N
D1-11b-1	12	60.4	D1-11b	0	0	0	67	26.2	0	0	67	67	70	N	-	-	67.0	Y	N	N
D1-11b-1	13	63.6	D1-11b	0	0	0	66.8	28.4	0	0	66.8	66.8	70	N	-	-	66.8	Y	N	N
D1-11b-1	14	66.8	D1-11b	0	0	0	66.7	31.2	0	0	66.7	66.7	70	N	-	-	66.7	Y	N	N
D1-11b-1	15	70	D1-11b	0	0	0	66.5	33.9	0	0	66.5	66.5	70	N	-	-	66.5	Y	N	N
D1-11b-1	16	73.2	D1-11b	0	0	0	66.4	35.7	0	0	66.4	66.4	70	N	-	-	66.4	Y	N	N
D1-11b-1	17	76.4	D1-11b	0	0	0	66.2	36.4	0	0	66.2	66.2	70	N	-	-	66.2	Y	N	N
D1-11b-1	18	79.6	D1-11b	0	0	0	66.1	36.7	0	0	66.1	66.1	70	N	-	-	66.1	Y	N	N
D1-11b-1	19	82.8	D1-11b	0	0	0	65.9	36.8	0	0	65.9	65.9	70	N	-	-	65.9	Y	N	N
D1-11b-1	20	86	D1-11b	0	0	0	65.8	36.8	0	0	65.8	65.8	70	N	-	-	65.8	Y	N	N
D1-11b-2	1	25.2	D1-11b	0	3.7	19.7	68.9	18.4	0	0	68.9	68.9	70	N	-	-	65.2	Y	N	N
D1-11b-2	2	28.4	D1-11b	0	3.6	19.7	69.6	18.7	0	0	69.6	69.6	70	N	-	-	66.0	Y	N	N
D1-11b-2	3	31.6	D1-11b	0	3.6	19.7	69.8	19.1	0	0	69.8	69.8	70	N	-	-	66.2	Y	N	N
D1-11b-2	4	34.8	D1-11b	0	3.7	19.7	69.8	19.6	0	0	69.8	69.8	70	N	-	-	66.1	Y	N	N
D1-11b-2	5	38	D1-11b	0	3.7	19.6	69.8	20.2	0	0	69.8	69.8	70	N	-	-	66.1	Y	N	N
D1-11b-2	6	41.2	D1-11b	0	3.7	19.6	69.7	20.8	0	0	69.7	69.7	70	N	-	-	66.0	Y	N	N
D1-11b-2	7	44.4	D1-11b	0	3.7	19.6	69.6	21.6	0	0	69.6	69.6	70	N	-	-	65.9	Y	N	N
D1-11b-2	8	47.6	D1-11b	0	3.7	19.6	69.4	22.5	0	0	69.4	69.4	70	N	-	-	65.7	Y	N	N

Title: Detailed Calculation of Road Traffic Noise with Direct Mitigation Measures in place
Scenario: Existing and Planned Residential and Educational Uses in KTN NDA (Mitigated Case on Proposed Roads)

Assessment Point			Location	WITH PROJECT														
				Existing Road in 2046 dB(A)	Other Roads in 2046 dB(A)[1]	New Roads[2]						Overall Noise Level in 2046 dB(A) [C]	Noise Criteria dB(A)	Exceedance C > Criteria (Y/N)	Check Project Impact Significance		Check Direct Mitigation			At Receiver-end Mitigation Measures Required [4,5] (Y/N)
						PD	DD	LD	EX	TR	New Roads in 2046 dB(A) [3] [B]				C - A dB(A) [D]	D ≥ 1dB(A)	New Road Contribution dB(A) [E]	New Road Contribution ≥ 1dB(A) E ≥ 1dB(A)	New Road > Criteria B > Criteria	
ID	Floor	Floor Level (mPD)		dB (A)																
D1-11b-2	9	50.8	D1-11b	0	3.8	19.6	69.2	23.5	0	0	69.2	69.2	70	N	-	-	65.4	Y	N	N
D1-11b-2	10	54	D1-11b	0	3.8	19.6	69	24.7	0	0	69	69	70	N	-	-	65.2	Y	N	N
D1-11b-2	11	57.2	D1-11b	0	3.8	19.5	68.9	26.1	0	0	68.9	68.9	70	N	-	-	65.1	Y	N	N
D1-11b-2	12	60.4	D1-11b	0	3.8	19.5	68.7	27.9	0	0	68.7	68.7	70	N	-	-	64.9	Y	N	N
D1-11b-2	13	63.6	D1-11b	0	3.8	19.7	68.5	30.4	0	0	68.5	68.5	70	N	-	-	64.7	Y	N	N
D1-11b-2	14	66.8	D1-11b	0	3.8	19.9	68.4	33	0	0	68.4	68.4	70	N	-	-	64.6	Y	N	N
D1-11b-2	15	70	D1-11b	0	3.8	20.2	68.2	35.5	0	0	68.2	68.2	70	N	-	-	64.4	Y	N	N
D1-11b-2	16	73.2	D1-11b	0	3.8	20.5	68	36.5	0	0	68	68	70	N	-	-	64.2	Y	N	N
D1-11b-2	17	76.4	D1-11b	0	3.8	21.1	67.9	36.9	0	0	67.9	67.9	70	N	-	-	64.1	Y	N	N
D1-11b-2	18	79.6	D1-11b	0	3.7	21.6	67.7	37.1	0	0	67.7	67.7	70	N	-	-	64.0	Y	N	N
D1-11b-2	19	82.8	D1-11b	0	3.8	22.2	67.6	37.1	0	0	67.6	67.6	70	N	-	-	63.8	Y	N	N
D1-11b-2	20	86	D1-11b	0	3.5	22.9	67.5	37.1	0	0	67.5	67.5	70	N	-	-	64.0	Y	N	N
D1-11b-3	1	25.2	D1-11b	0	3.1	24.2	68.7	22	0	0	68.7	68.7	70	N	-	-	65.6	Y	N	N
D1-11b-3	2	28.4	D1-11b	0	3.2	24.2	69.3	22.6	0	0	69.3	69.3	70	N	-	-	66.1	Y	N	N
D1-11b-3	3	31.6	D1-11b	0	3.2	24.2	69.5	23.3	0	0	69.5	69.5	70	N	-	-	66.3	Y	N	N
D1-11b-3	4	34.8	D1-11b	0	3.2	24.1	69.5	24.2	0	0	69.5	69.5	70	N	-	-	66.3	Y	N	N
D1-11b-3	5	38	D1-11b	0	3.2	24.1	69.5	25.4	0	0	69.5	69.5	70	N	-	-	66.3	Y	N	N
D1-11b-3	6	41.2	D1-11b	0	3.3	24.1	69.4	26.9	0	0	69.4	69.4	70	N	-	-	66.1	Y	N	N
D1-11b-3	7	44.4	D1-11b	0	3.3	24.1	69.3	29.2	0	0	69.3	69.3	70	N	-	-	66.0	Y	N	N
D1-11b-3	8	47.6	D1-11b	0	3.2	24.1	69.2	32.5	0	0	69.2	69.2	70	N	-	-	66.0	Y	N	N
D1-11b-3	9	50.8	D1-11b	0	3.2	24.1	69	35.6	0	0	69	69	70	N	-	-	65.8	Y	N	N
D1-11b-3	10	54	D1-11b	0	3.3	24	68.9	36.9	0	0	68.9	68.9	70	N	-	-	65.6	Y	N	N
D1-11b-3	11	57.2	D1-11b	0	3.3	23.9	68.7	37.9	0	0	68.7	68.7	70	N	-	-	65.4	Y	N	N
D1-11b-3	12	60.4	D1-11b	0	3.3	23.9	68.5	38.9	0	0	68.5	68.5	70	N	-	-	65.2	Y	N	N
D1-11b-3	13	63.6	D1-11b	0	3.3	24.1	68.4	39.3	0	0	68.4	68.4	70	N	-	-	65.1	Y	N	N
D1-11b-3	14	66.8	D1-11b	0	3.3	24.3	68.3	39.4	0	0	68.3	68.3	70	N	-	-	65.0	Y	N	N
D1-11b-3	15	70	D1-11b	0	3.3	24.8	68.1	39.4	0	0	68.1	68.1	70	N	-	-	64.8	Y	N	N
D1-11b-3	16	73.2	D1-11b	0	3.4	25.4	67.9	39.3	0	0	68	68	70	N	-	-	64.6	Y	N	N
D1-11b-3	17	76.4	D1-11b	0	3.4	26.1	67.8	39.3	0	0	67.8	67.8	70	N	-	-	64.4	Y	N	N
D1-11b-3	18	79.6	D1-11b	0	3.4	26.9	67.7	39.2	0	0	67.7	67.7	70	N	-	-	64.3	Y	N	N
D1-11b-3	19	82.8	D1-11b	0	3.1	27.7	67.5	39.2	0	0	67.5	67.5	70	N	-	-	64.4	Y	N	N
D1-11b-3	20	86	D1-11b	0	3.2	28.6	67.4	39.1	0	0	67.4	67.4	70	N	-	-	64.2	Y	N	N
D1-11b-4	1	25.2	D1-11b	0	0	28.2	65.7	25	0	0	65.7	65.7	70	N	-	-	65.7	Y	N	N
D1-11b-4	2	28.4	D1-11b	0	0	28.2	66.4	25.5	0	0	66.4	66.4	70	N	-	-	66.4	Y	N	N
D1-11b-4	3	31.6	D1-11b	0	0	28.2	66.8	26.1	0	0	66.8	66.8	70	N	-	-	66.8	Y	N	N
D1-11b-4	4	34.8	D1-11b	0	0	28.2	67	27.1	0	0	67	67	70	N	-	-	67.0	Y	N	N
D1-11b-4	5	38	D1-11b	0	0	28.2	67.1	28.6	0	0	67.1	67.1	70	N	-	-	67.1	Y	N	N
D1-11b-4	6	41.2	D1-11b	0	0	28.2	67.1	31.6	0	0	67.1	67.1	70	N	-	-	67.1	Y	N	N
D1-11b-4	7	44.4	D1-11b	0	0	28.1	67.1	35	0	0	67.1	67.1	70	N	-	-	67.1	Y	N	N
D1-11b-4	8	47.6	D1-11b	0	0	28.1	67	36.4	0	0	67	67	70	N	-	-	67.0	Y	N	N
D1-11b-4	9	50.8	D1-11b	0	0	28.1	66.9	36.9	0	0	66.9	66.9	70	N	-	-	66.9	Y	N	N
D1-11b-4	10	54	D1-11b	0	0	28.1	66.8	37.1	0	0	66.8	66.8	70	N	-	-	66.8	Y	N	N
D1-11b-4	11	57.2	D1-11b	0	0	28	66.7	37.2	0	0	66.7	66.7	70	N	-	-	66.7	Y	N	N
D1-11b-4	12	60.4	D1-11b	0	0	27.9	66.6	37.2	0	0	66.6	66.6	70	N	-	-	66.6	Y	N	N
D1-11b-4	13	63.6	D1-11b	0	0	27.9	66.4	37.2	0	0	66.4	66.4	70	N	-	-	66.4	Y	N	N
D1-11b-4	14	66.8	D1-11b	0	0	28.4	66.3	37.1	0	0	66.3	66.3	70	N	-	-	66.3	Y	N	N
D1-11b-4	15	70	D1-11b	0	0	29.2	66.2	37.1	0	0	66.2	66.2	70	N	-	-	66.2	Y	N	N
D1-11b-4	16	73.2	D1-11b	0	0	30	66.1	37	0	0	66.1	66.1	70	N	-	-	66.1	Y	N	N
D1-11b-4	17	76.4	D1-11b	0	0	31	65.9	37	0	0	65.9	65.9	70	N	-	-	65.9	Y	N	N
D1-11b-4	18	79.6	D1-11b	0	0	32	65.8	36.9	0	0	65.8	65.8	70	N	-	-	65.8	Y	N	N
D1-11b-4	19	82.8	D1-11b	0	0	33	65.7	36.9	0	0	65.7	65.7	70	N	-	-	65.7	Y	N	N
D1-11b-4	20	86	D1-11b	0	0	34.1	65.5	36.8	0	0	65.5	65.5	70	N	-	-	65.5	Y	N	N
D1-11b-5	1	25.2	D1-11b	45.8	0	29.9	0	67.6	0	0	67.6	67.7	70	N	-	-	21.9	Y	N	N
D1-11b-5	2	28.4	D1-11b	47.2	0	29.9	0	67.7	0	0	67.7	67.8	70	N	-	-	20.6	Y	N	N
D1-11b-5	3	31.6	D1-11b	49.9	0	29.9	0	67.6	0	0	67.6	67.7	70	N	-	-	17.8	Y	N	N
D1-11b-5	4	34.8	D1-11b	52.2	0	29.9	0	67.3	0	0	67.3	67.4	70	N	-	-	15.2	Y	N	N
D1-11b-5	5	38	D1-11b	52.9	0	29.9	0	67	0	0	67	67.1	70	N	-	-	14.2	Y	N	N
D1-11b-5	6	41.2	D1-11b	53.1	0	29.9	0	66.7	0	0	66.7	66.9	70	N	-	-	13.8	Y	N	N
D1-11b-5	7	44.4	D1-11b	53.1	0	29.9	0	66.4	0	0	66.4	66.6	70	N	-	-	13.5	Y	N	N
D1-11b-5	8	47.6	D1-11b	53.1	0	29.9	0	66	0	0	66	66.3	70	N	-	-	13.2	Y	N	N
D1-11b-5	9	50.8	D1-11b	53.1	0	29.9	0	65.8	0	0	65.8	66	70	N	-	-	12.9	Y	N	N
D1-11b-5	10	54	D1-11b	53.1	0	29.9	0	65.5	0	0	65.5	65.7	70	N	-	-	12.6	Y	N	N
D1-11b-5	11	57.2	D1-11b	53.1	0	30	0	65.2	0	0	65.2	65.5	70	N	-	-	12.4	Y	N	N
D1-11b-5	12	60.4	D1-11b	53	0	30.1	0	65	0	0	65	65.2	70	N	-	-	12.2	Y	N	N
D1-11b-5	13	63.6	D1-11b	53	0	30.3	0	64.7	0	0	64.7	65	70	N	-	-	12.0	Y	N	N
D1-11b-5	14	66.8	D1-11b	53	0	30.5	0	64.5	0	0	64.5	64.8	70	N	-	-	11.8	Y	N	N
D1-11b-5	15	70	D1-11b	53	0	30.8	0	64.3	0	0	64.3	64.6	70	N	-	-	11.6	Y	N	N
D1-11b-5	16	73.2	D1-11b	52.9	0	31.1	0	64.1	0	0	64.1	64.4	70	N	-	-	11.5	Y	N	N
D1-11b-5	17	76.4	D1-11b	52.9	0	31.4	0	63.9	0	0	63.9	64.2	70	N	-	-	11.3	Y	N	N
D1-11b-5	18	79.6	D1-11b	52.8	0	31.8	0	63.7	0	0	63.7	64.1	70	N	-	-	11.3	Y	N	N
D1-11b-5	19	82.8	D1-11b	52.8	0	32.3	0	63.5	0	0	63.5	63.9	70	N	-	-	11.1	Y	N	N
D1-11b-5	20	86	D1-11b	52.7	0	32.8	0	63.3	0	0	63.4	63.7	70	N	-	-	11.0	Y	N	N
D1-11b-6	1	25.2	D1-11b	48.6	0	26.7	0	65	0	0	65	65.1	70	N	-	-	16.5	Y	N	N
D1-11b-6	2	28.4	D1-11b	52.7	0	26.7	0	66.1	0	0	66.1	66.3	70	N	-	-	13.6	Y	N	N
D1-11b-6	3	31.6	D1-11b	53.2	0	26.7	0	66.2	0	0	66.2	66.4	70	N	-	-	13.2	Y	N	N
D1-11b-6	4	34.8	D1-11b	53.3	0	26.7	0	66.1	0	0	66.1	66.3	70	N	-	-	13.0	Y	N	N
D1-11b-6	5	38	D1-11b	53.3	0	26.8	0	65.8	0	0	65.8	66.1	70	N	-	-	12.8	Y	N	N
D1-11b-6	6	41.2	D1-11b	53.3	0	26.8	0	65.6	0	0	65.6	65.9	70	N	-	-	12.6	Y	N	N
D1-11b-6	7	44.4	D1-11b	53.3	0	26.8	0	65.4	0	0	65.4	65.6	70	N	-	-	12.3	Y	N	N

Title: Detailed Calculation of Road Traffic Noise with Direct Mitigation Measures in place
Scenario: Existing and Planned Residential and Educational Uses in KTN NDA (Mitigated Case on Proposed Roads)

Assessment Point			Location	WITH PROJECT									Check Project Impact Significance		Check Direct Mitigation			At Receiver-end Mitigation Measures Required [4,5] (Y/N)
				Existing Road in 2046 dB(A)	Other Roads in 2046 dB(A)[1]	New Roads[2]					New Roads in 2046 dB(A) [3] [B]	Overall Noise Level in 2046 dB(A) [C]	Noise Criteria dB(A)	Exceedance C > Criteria (Y/N)	C - A dB(A) [D]	D ≥ 1dB(A)	New Road Contribution dB(A) [E]	New Road Contribution ≥ 1dB(A) E ≥ 1dB(A)	New Road > Criteria B > Criteria	
						PD	DD	LD	EX	TR										
ID	Floor	Floor Level (mPD)		dB (A)																
D1-11b-6	8	47.6	D1-11b	53.3	0	26.8	0	65.1	0	0	65.1	65.3	70	N	-	-	12.0	Y	N	N
D1-11b-6	9	50.8	D1-11b	53.3	0	26.8	0	64.8	0	0	64.8	65.1	70	N	-	-	11.8	Y	N	N
D1-11b-6	10	54	D1-11b	53.3	0	26.9	0	64.5	0	0	64.5	64.8	70	N	-	-	11.5	Y	N	N
D1-11b-6	11	57.2	D1-11b	53.3	0	26.9	0	64.2	0	0	64.2	64.5	70	N	-	-	11.2	Y	N	N
D1-11b-6	12	60.4	D1-11b	53.3	0	27	0	63.9	0	0	63.9	64.3	70	N	-	-	11.0	Y	N	N
D1-11b-6	13	63.6	D1-11b	53.3	0	27	0	63.6	0	0	63.6	64	70	N	-	-	10.7	Y	N	N
D1-11b-6	14	66.8	D1-11b	53.3	0	27.2	0	63.5	0	0	63.5	63.9	70	N	-	-	10.6	Y	N	N
D1-11b-6	15	70	D1-11b	53.3	0	27.4	0	63.2	0	0	63.2	63.6	70	N	-	-	10.3	Y	N	N
D1-11b-6	16	73.2	D1-11b	53.3	0	27.6	0	63	0	0	63	63.4	70	N	-	-	10.1	Y	N	N
D1-11b-6	17	76.4	D1-11b	53.3	0	27.9	0	62.7	0	0	62.7	63.2	70	N	-	-	9.9	Y	N	N
D1-11b-6	18	79.6	D1-11b	53.3	0	28.5	0	62.6	0	0	62.6	63	70	N	-	-	9.7	Y	N	N
D1-11b-6	19	82.8	D1-11b	53.3	0	29.1	0	62.4	0	0	62.4	62.9	70	N	-	-	9.6	Y	N	N
D1-11b-6	20	86	D1-11b	53.3	0	30	0	62.2	0	0	62.2	62.7	70	N	-	-	9.4	Y	N	N
B9 (KTN NDA Area 15)																				
D1-11a-1	1	23.2	D1-11a	0	0	56.5	71.2	53.2	0	0	71.5	71.5	70	Y	-	-	71.5	Y	Y	Y
D1-11a-1	2	26.4	D1-11a	0	0	56.4	71.6	53.2	0	0	71.8	71.8	70	Y	-	-	71.8	Y	Y	Y
D1-11a-1	3	29.6	D1-11a	0	0	56.4	71.6	53.2	0	0	71.8	71.8	70	Y	-	-	71.8	Y	Y	Y
D1-11a-1	4	32.8	D1-11a	0	0	56.4	71.6	53.2	0	0	71.8	71.8	70	Y	-	-	71.8	Y	Y	Y
D1-11a-1	5	36	D1-11a	0	0	56.4	71.5	53.2	0	0	71.7	71.7	70	Y	-	-	71.7	Y	Y	Y
D1-11a-1	6	39.2	D1-11a	0	0	56.5	71.3	53.2	0	0	71.5	71.5	70	Y	-	-	71.5	Y	Y	Y
D1-11a-1	7	42.4	D1-11a	0	0	56.5	71.2	53.1	0	0	71.4	71.4	70	Y	-	-	71.4	Y	Y	Y
D1-11a-1	8	45.6	D1-11a	0	0	56.6	71	53.1	0	0	71.2	71.2	70	Y	-	-	71.2	Y	Y	Y
D1-11a-1	9	48.8	D1-11a	0	0	56.7	70.8	53.1	0	0	71.1	71.1	70	Y	-	-	71.1	Y	Y	Y
D1-11a-1	10	52	D1-11a	0	0	56.9	70.6	53	0	0	70.9	70.9	70	Y	-	-	70.9	Y	Y	Y
D1-11a-1	11	55.2	D1-11a	0	0	57	70.5	52.9	0	0	70.7	70.7	70	Y	-	-	70.7	Y	Y	Y
D1-11a-1	12	58.4	D1-11a	0	0	57	70.3	52.9	0	0	70.6	70.6	70	Y	-	-	70.6	Y	Y	Y
D1-11a-1	13	61.6	D1-11a	0	0	57.1	70.1	52.8	0	0	70.4	70.4	70	N	-	-	70.4	Y	N	N
D1-11a-1	14	64.8	D1-11a	0	0	57.1	70	52.8	0	0	70.3	70.3	70	N	-	-	70.3	Y	N	N
D1-11a-1	15	68	D1-11a	0	0	57.1	69.8	52.7	0	0	70.1	70.1	70	N	-	-	70.1	Y	N	N
D1-11a-1	16	71.2	D1-11a	0	0	57	69.7	52.6	0	0	70	70	70	N	-	-	70.0	Y	N	N
D1-11a-1	17	74.4	D1-11a	0	0	57	69.5	52.5	0	0	69.8	69.8	70	N	-	-	69.8	Y	N	N
D1-11a-1	18	77.6	D1-11a	0	0	57	69.4	52.5	0	0	69.7	69.7	70	N	-	-	69.7	Y	N	N
D1-11a-2	1	23.2	D1-11a	0	0	58.6	72.1	57.5	0	0	72.5	72.5	70	Y	-	-	72.5	Y	Y	Y
D1-11a-2	2	26.4	D1-11a	0	0	58.5	72.3	57.5	0	0	72.6	72.6	70	Y	-	-	72.6	Y	Y	Y
D1-11a-2	3	29.6	D1-11a	0	0	58.6	72.3	57.4	0	0	72.6	72.6	70	Y	-	-	72.6	Y	Y	Y
D1-11a-2	4	32.8	D1-11a	0	0	58.6	72.3	57.4	0	0	72.6	72.6	70	Y	-	-	72.6	Y	Y	Y
D1-11a-2	5	36	D1-11a	0	0	58.6	72.1	57.3	0	0	72.5	72.5	70	Y	-	-	72.5	Y	Y	Y
D1-11a-2	6	39.2	D1-11a	0	0	58.8	72	57.2	0	0	72.4	72.4	70	Y	-	-	72.4	Y	Y	Y
D1-11a-2	7	42.4	D1-11a	0	0	59	71.9	57.1	0	0	72.2	72.2	70	Y	-	-	72.2	Y	Y	Y
D1-11a-2	8	45.6	D1-11a	0	0	59.3	71.7	57	0	0	72.1	72.1	70	Y	-	-	72.1	Y	Y	Y
D1-11a-2	9	48.8	D1-11a	0	0	59.6	71.5	56.9	0	0	71.9	71.9	70	Y	-	-	71.9	Y	Y	Y
D1-11a-2	10	52	D1-11a	0	0	59.7	71.4	56.8	0	0	71.8	71.8	70	Y	-	-	71.8	Y	Y	Y
D1-11a-2	11	55.2	D1-11a	0	0	59.7	71.2	56.7	0	0	71.6	71.6	70	Y	-	-	71.6	Y	Y	Y
D1-11a-2	12	58.4	D1-11a	0	0	59.8	71	56.6	0	0	71.5	71.5	70	Y	-	-	71.5	Y	Y	Y
D1-11a-2	13	61.6	D1-11a	0	0	59.7	70.8	56.4	0	0	71.3	71.3	70	Y	-	-	71.3	Y	Y	Y
D1-11a-2	14	64.8	D1-11a	0	0	59.7	70.7	56.3	0	0	71.2	71.2	70	Y	-	-	71.2	Y	Y	Y
D1-11a-2	15	68	D1-11a	0	0	59.7	70.5	56.2	0	0	71	71	70	Y	-	-	71.0	Y	Y	Y
D1-11a-2	16	71.2	D1-11a	0	0	59.8	70.4	56.1	0	0	70.9	70.9	70	Y	-	-	70.9	Y	Y	Y
D1-11a-2	17	74.4	D1-11a	0	0	59.7	70.2	56	0	0	70.7	70.7	70	Y	-	-	70.7	Y	Y	Y
D1-11a-2	18	77.6	D1-11a	0	0	59.8	70.1	55.9	0	0	70.6	70.6	70	Y	-	-	70.6	Y	Y	Y
D1-11a-3	1	23.2	D1-11a	15.7	0	59.7	70.1	67.3	0	0	72.2	72.2	70	Y	-	-	56.5	Y	Y	Y
D1-11a-3	2	26.4	D1-11a	16.3	0	59.8	70.1	67.2	0	0	72.2	72.2	70	Y	-	-	55.9	Y	Y	Y
D1-11a-3	3	29.6	D1-11a	16.8	0	60.1	70.1	67.1	0	0	72.1	72.1	70	Y	-	-	55.3	Y	Y	Y
D1-11a-3	4	32.8	D1-11a	17.4	0	60.5	70	66.9	0	0	72	72	70	Y	-	-	54.6	Y	Y	Y
D1-11a-3	5	36	D1-11a	18	0	60.9	69.9	66.8	0	0	72	72	70	Y	-	-	54.0	Y	Y	Y
D1-11a-3	6	39.2	D1-11a	18.6	0	61.3	69.7	66.6	0	0	71.9	71.9	70	Y	-	-	53.3	Y	Y	Y
D1-11a-3	7	42.4	D1-11a	19.2	0	61.8	69.6	66.4	0	0	71.8	71.8	70	Y	-	-	52.6	Y	Y	Y
D1-11a-3	8	45.6	D1-11a	19.7	0	62.3	69.5	66.2	0	0	71.7	71.7	70	Y	-	-	52.0	Y	Y	Y
D1-11a-3	9	48.8	D1-11a	20.3	0	62.6	69.4	66	0	0	71.6	71.6	70	Y	-	-	51.3	Y	Y	Y
D1-11a-3	10	52	D1-11a	21	0	62.8	69.2	65.8	0	0	71.5	71.5	70	Y	-	-	50.5	Y	Y	Y
D1-11a-3	11	55.2	D1-11a	21.8	0	62.9	69.1	65.7	0	0	71.4	71.4	70	Y	-	-	49.6	Y	Y	Y
D1-11a-3	12	58.4	D1-11a	22.4	0	63	68.9	65.5	0	0	71.3	71.3	70	Y	-	-	48.9	Y	Y	Y
D1-11a-3	13	61.6	D1-11a	23.1	0	63	68.8	65.3	0	0	71.1	71.1	70	Y	-	-	48.0	Y	Y	Y
D1-11a-3	14	64.8	D1-11a	23.9	0	63	68.6	65.1	0	0	71	71	70	Y	-	-	47.1	Y	Y	Y
D1-11a-3	15	68	D1-11a	24.6	0	63	68.5	65	0	0	70.9	70.9	70	Y	-	-	46.3	Y	Y	Y
D1-11a-3	16	71.2	D1-11a	25.4	0	63.1	68.4	64.8	0	0	70.8	70.8	70	Y	-	-	45.4	Y	Y	Y
D1-11a-3	17	74.4	D1-11a	26.2	0	63	68.2	64.6	0	0	70.6	70.6	70	Y	-	-	44.4	Y	Y	Y
D1-11a-3	18	77.6	D1-11a	27	0	63.1	68.1	64.5	0	0	70.5	70.5	70	Y	-	-	43.5	Y	Y	Y
D1-11a-4	1	23.2	D1-11a	26.1	0	53	64.3	68.8	0	0	70.2	70.2	70	N	-	-	44.1	Y	N	N
D1-11a-4	2	26.4	D1-11a	26.7	0	53.1	64.2	68.7	0	0	70.1	70.1	70	N	-	-	43.4	Y	N	N
D1-11a-4	3	29.6	D1-11a	27.3	0	53.2	64.2	68.5	0	0	70	70	70	N	-	-	42.7	Y	N	N
D1-11a-4	4	32.8	D1-11a	28	0	53.2	64.1	68.4	0	0	69.9	69.9	70	N	-	-	41.9	Y	N	N
D1-11a-4	5	36	D1-11a	28.7	0	53.4	64.1	68.2	0	0	69.7	69.7	70	N	-	-	41.0	Y	N	N
D1-11a-4	6	39.2	D1-11a	29.4	0	53.5	64.1	68	0	0	69.6	69.6	70	N	-	-	40.2	Y	N	N
D1-11a-4	7	42.4	D1-11a	30.2	0	53.7	64	67.8	0	0	69.4	69.4	70	N	-	-	39.2	Y	N	N
D1-11a-4	8	45.6	D1-11a	31.2	0	53.9	63.9	67.6	0	0	69.3	69.3	70	N	-	-	38.1	Y	N	N
D1-11a-4	9	48.8	D1-11a	32.1	0	54.3	63.8	67.4	0	0	69.1	69.1	70	N	-	-	37.0	Y	N	N
D1-11a-4	10	52	D1-11a	33.3	0	54.8	63.8	67.2	0	0	69	69	70	N	-	-	35.7	Y	N	N
D1-11a-4	11	55.2	D1-11a	34.4	0	55.1	63.7	67	0	0	68.8	68.8	70	N	-	-	34.4	Y	N	N

Title: Detailed Calculation of Road Traffic Noise with Direct Mitigation Measures in place
Scenario: Existing and Planned Residential and Educational Uses in KTN NDA (Mitigated Case on Proposed Roads)

Assessment Point			Location	WITH PROJECT										Check Project Impact Significance		Check Direct Mitigation			At Receiver-end Mitigation Measures Required [4,5] (Y/N)
				Existing Road in 2046 dB(A)	Other Roads in 2046 dB(A)[1]	New Roads[2]					New Roads in 2046 dB(A) [3] [B]	Overall Noise Level in 2046 dB(A) [C]	Noise Criteria dB(A)	Exceedance C > Criteria (Y/N)	C - A dB(A) [D]	D ≥ 1dB(A)	New Road Contribution dB(A) [E]	New Road Contribution ≥ 1dB(A) E ≥ 1dB(A)	New Road > Criteria B > Criteria	
						PD	DD	LD	EX	TR										
ID	Floor	Floor Level (mPD)		dB (A)																
D1-11a-4	12	58.4	D1-11a	35.6	0	55.7	63.6	66.8	0	0	68.7	68.7	70	N	-	-	33.1	Y	N	N
D1-11a-4	13	61.6	D1-11a	36.7	0	56.3	63.6	66.6	0	0	68.6	68.6	70	N	-	-	31.9	Y	N	N
D1-11a-4	14	64.8	D1-11a	37.5	0	56.7	63.5	66.4	0	0	68.5	68.5	70	N	-	-	31.0	Y	N	N
D1-11a-4	15	68	D1-11a	38.4	0	57.1	63.4	66.2	0	0	68.4	68.4	70	N	-	-	30.0	Y	N	N
D1-11a-4	16	71.2	D1-11a	39.2	0	57.4	63.3	66	0	0	68.3	68.3	70	N	-	-	29.1	Y	N	N
D1-11a-4	17	74.4	D1-11a	39.9	0	57.7	63.3	65.8	0	0	68.2	68.2	70	N	-	-	28.3	Y	N	N
D1-11a-4	18	77.6	D1-11a	40.5	0	57.9	63.2	65.7	0	0	68.1	68.1	70	N	-	-	27.6	Y	N	N
D1-11a-5	1	23.2	D1-11a	31.5	0	31.3	0	69.7	0	0	69.7	69.7	70	N	-	-	38.2	Y	N	N
D1-11a-5	2	26.4	D1-11a	33.1	0	31.3	0	69.2	0	0	69.2	69.2	70	N	-	-	36.1	Y	N	N
D1-11a-5	3	29.6	D1-11a	36.2	0	31.3	0	68.8	0	0	68.8	68.8	70	N	-	-	32.6	Y	N	N
D1-11a-5	4	32.8	D1-11a	40.8	0	31.3	0	68.4	0	0	68.4	68.4	70	N	-	-	27.6	Y	N	N
D1-11a-5	5	36	D1-11a	41.9	0	31.3	0	68	0	0	68	68	70	N	-	-	26.1	Y	N	N
D1-11a-5	6	39.2	D1-11a	42.4	0	31.3	0	67.7	0	0	67.7	67.7	70	N	-	-	25.3	Y	N	N
D1-11a-5	7	42.4	D1-11a	42.9	0	31.3	0	67.4	0	0	67.4	67.4	70	N	-	-	24.5	Y	N	N
D1-11a-5	8	45.6	D1-11a	43.4	0	31.2	0	67.1	0	0	67.1	67.1	70	N	-	-	23.7	Y	N	N
D1-11a-5	9	48.8	D1-11a	44.2	0	31.2	0	66.8	0	0	66.8	66.9	70	N	-	-	22.7	Y	N	N
D1-11a-5	10	52	D1-11a	45.2	0	31.2	0	66.6	0	0	66.6	66.7	70	N	-	-	21.5	Y	N	N
D1-11a-5	11	55.2	D1-11a	46.2	0	31.1	0	66.4	0	0	66.4	66.4	70	N	-	-	20.2	Y	N	N
D1-11a-5	12	58.4	D1-11a	47.3	0	31.1	0	66.2	0	0	66.2	66.2	70	N	-	-	18.9	Y	N	N
D1-11a-5	13	61.6	D1-11a	48.4	0	31	0	65.9	0	0	65.9	66	70	N	-	-	17.6	Y	N	N
D1-11a-5	14	64.8	D1-11a	49.2	0	31	0	65.7	0	0	65.7	65.8	70	N	-	-	16.6	Y	N	N
D1-11a-5	15	68	D1-11a	49.7	0	31	0	65.5	0	0	65.5	65.7	70	N	-	-	16.0	Y	N	N
D1-11a-5	16	71.2	D1-11a	49.9	0	30.9	0	65.4	0	0	65.4	65.5	70	N	-	-	15.6	Y	N	N
D1-11a-5	17	74.4	D1-11a	50	0	30.9	0	65.2	0	0	65.2	65.3	70	N	-	-	15.3	Y	N	N
D1-11a-5	18	77.6	D1-11a	50.1	0	30.9	0	65	0	0	65	65.2	70	N	-	-	15.1	Y	N	N
D1-11a-6	1	23.2	D1-11a	29.8	0	25.3	21.1	66.2	0	0	66.2	66.2	70	N	-	-	36.4	Y	N	N
D1-11a-6	2	26.4	D1-11a	31.4	0	25.4	21	66.4	0	0	66.4	66.4	70	N	-	-	35.0	Y	N	N
D1-11a-6	3	29.6	D1-11a	33.5	0	25.4	21	66.4	0	0	66.4	66.4	70	N	-	-	32.9	Y	N	N
D1-11a-6	4	32.8	D1-11a	36.8	0	25.4	20.9	66.2	0	0	66.2	66.3	70	N	-	-	29.5	Y	N	N
D1-11a-6	5	36	D1-11a	41.4	0	25.4	20.9	66	0	0	66	66	70	N	-	-	24.6	Y	N	N
D1-11a-6	6	39.2	D1-11a	43	0	25.4	20.9	65.8	0	0	65.8	65.8	70	N	-	-	22.8	Y	N	N
D1-11a-6	7	42.4	D1-11a	43.4	0	25.3	20.8	65.5	0	0	65.5	65.6	70	N	-	-	22.2	Y	N	N
D1-11a-6	8	45.6	D1-11a	43.4	0	25.3	20.7	65.3	0	0	65.3	65.3	70	N	-	-	21.9	Y	N	N
D1-11a-6	9	48.8	D1-11a	43.5	0	25.3	20.6	65	0	0	65	65.1	70	N	-	-	21.6	Y	N	N
D1-11a-6	10	52	D1-11a	43.5	0	25.3	20.6	64.8	0	0	64.8	64.9	70	N	-	-	21.4	Y	N	N
D1-11a-6	11	55.2	D1-11a	43.6	0	25.3	20.5	64.6	0	0	64.6	64.7	70	N	-	-	21.1	Y	N	N
D1-11a-6	12	58.4	D1-11a	43.7	0	25.2	20.4	64.4	0	0	64.4	64.4	70	N	-	-	20.7	Y	N	N
D1-11a-6	13	61.6	D1-11a	43.8	0	25.2	20.3	64.2	0	0	64.2	64.2	70	N	-	-	20.4	Y	N	N
D1-11a-6	14	64.8	D1-11a	44.1	0	25.2	20.3	64	0	0	64	64.1	70	N	-	-	20.0	Y	N	N
D1-11a-6	15	68	D1-11a	44.4	0	25.1	20.2	63.8	0	0	63.8	63.9	70	N	-	-	19.5	Y	N	N
D1-11a-6	16	71.2	D1-11a	44.7	0	25.1	20.4	63.7	0	0	63.7	63.7	70	N	-	-	19.0	Y	N	N
D1-11a-6	17	74.4	D1-11a	45	0	25.1	20.9	63.5	0	0	63.5	63.6	70	N	-	-	18.6	Y	N	N
D1-11a-6	18	77.6	D1-11a	45.4	0	25	21.4	63.4	0	0	63.4	63.4	70	N	-	-	18.0	Y	N	N
A3 (KTN NDA Area 20)																				
A2-4-1	1	41.7	A2-4	0	0	0	71.9	45.7	0	0	71.9	71.9	70	Y	-	-	71.9	Y	Y	Y
A2-4-1	2	44.5	A2-4	0	0	0	71.7	45.7	0	0	71.7	71.7	70	Y	-	-	71.7	Y	Y	Y
A2-4-1	3	47.3	A2-4	0	0	0	71.5	45.7	0	0	71.5	71.5	70	Y	-	-	71.5	Y	Y	Y
A2-4-1	4	50.1	A2-4	0	0	0	71.3	45.7	0	0	71.4	71.4	70	Y	-	-	71.4	Y	Y	Y
A2-4-1	5	52.9	A2-4	0	0	0	71.1	45.7	0	0	71.2	71.2	70	Y	-	-	71.2	Y	Y	Y
A2-4-1	6	55.7	A2-4	0	0	0	70.9	45.7	0	0	71	71	70	Y	-	-	71.0	Y	Y	Y
A2-4-1	7	58.5	A2-4	0	0	0	70.7	45.7	0	0	70.8	70.8	70	Y	-	-	70.8	Y	Y	Y
A2-4-1	8	61.3	A2-4	0	0	0	70.6	45.8	0	0	70.6	70.6	70	Y	-	-	70.6	Y	Y	Y
A2-4-1	9	64.1	A2-4	0	0	0	70.4	46	0	0	70.4	70.4	70	N	-	-	70.4	Y	N	N
A2-4-1	10	66.9	A2-4	0	0	0	70.2	46.3	0	0	70.2	70.2	70	N	-	-	70.2	Y	N	N
A2-4-1	11	69.7	A2-4	0	0	0	70.1	46.8	0	0	70.1	70.1	70	N	-	-	70.1	Y	N	N
A2-4-1	12	72.5	A2-4	0	0	0	69.9	47.2	0	0	69.9	69.9	70	N	-	-	69.9	Y	N	N
A2-4-1	13	75.3	A2-4	0	0	0	69.7	47.3	0	0	69.7	69.7	70	N	-	-	69.7	Y	N	N
A2-4-1	14	78.1	A2-4	0	0	0	69.6	47.4	0	0	69.6	69.6	70	N	-	-	69.6	Y	N	N
A2-4-1	15	80.9	A2-4	0	0	0	69.4	47.4	0	0	69.4	69.4	70	N	-	-	69.4	Y	N	N
A2-4-1	16	83.7	A2-4	0	0	0	69.3	47.4	0	0	69.3	69.3	70	N	-	-	69.3	Y	N	N
A2-4-1	17	86.5	A2-4	0	0	0	69.1	47.4	0	0	69.1	69.1	70	N	-	-	69.1	Y	N	N
A2-4-1	18	89.3	A2-4	0	0	0	69	47.4	0	0	69	69	70	N	-	-	69.0	Y	N	N
A2-4-1	19	92.1	A2-4	0	0	0	68.8	47.4	0	0	68.8	68.8	70	N	-	-	68.8	Y	N	N
A2-4-1	20	94.9	A2-4	0	0	0	68.7	47.3	0	0	68.7	68.7	70	N	-	-	68.7	Y	N	N
A2-4-1	21	97.7	A2-4	0	0	0	68.6	47.3	0	0	68.6	68.6	70	N	-	-	68.6	Y	N	N
A2-4-1	22	100.5	A2-4	0	0	0	68.4	47.3	0	0	68.4	68.4	70	N	-	-	68.4	Y	N	N
A2-4-1	23	103.3	A2-4	0	0	0	68.3	47.3	0	0	68.3	68.3	70	N	-	-	68.3	Y	N	N
A2-4-1	24	106.1	A2-4	0	0	0	68.2	47.3	0	0	68.2	68.2	70	N	-	-	68.2	Y	N	N
A2-4-1	25	108.9	A2-4	0	0	0	68.1	47.3	0	0	68.1	68.1	70	N	-	-	68.1	Y	N	N
A2-4-1	26	111.7	A2-4	0	0	0	68	47.3	0	0	68	68	70	N	-	-	68.0	Y	N	N
A2-4-1	27	114.5	A2-4	0	0	0	67.8	47.3	0	0	67.8	67.8	70	N	-	-	67.8	Y	N	N
A2-4-1	28	117.3	A2-4	0	0	0	67.7	47.3	0	0	67.7	67.7	70	N	-	-	67.7	Y	N	N
A2-4-1	29	120.1	A2-4	0	0	0	67.6	47.3	0	0	67.6	67.6	70	N	-	-	67.6	Y	N	N
A2-4-1	30	122.9	A2-4	0	0	0	67.5	47.3	0	0	67.5	67.5	70	N	-	-	67.5	Y	N	N
A2-4-1	31	125.7	A2-4	0	0	0	67.4	47.4	0	0	67.5	67.5	70	N	-	-	67.5	Y	N	N
A2-4-1	32	128.5	A2-4	0	0	0	67.3	47.4	0	0	67.4	67.4	70	N	-	-	67.4	Y	N	N
A2-4-2	1	41.7	A2-4	0	0	0	72.1	45.6	0	0	72.1	72.1	70	Y	-	-	72.1	Y	Y	Y
A2-4-2	2	44.5	A2-4	0	0	0	71.9	45.8	0	0	71.9	71.9	70	Y	-	-	71.9	Y	Y	Y
A2-4-2	3	47.3	A2-4	0	0	0	71.7	45.9	0	0	71.7	71.7	70	Y	-	-	71.7	Y	Y	Y

Title: Detailed Calculation of Road Traffic Noise with Direct Mitigation Measures in place
Scenario: Existing and Planned Residential and Educational Uses in KTN NDA (Mitigated Case on Proposed Roads)

Assessment Point			Location	WITH PROJECT								Noise Criteria dB(A)	Exceedance C > Criteria (Y/N)	Check Project Impact Significance		Check Direct Mitigation			At Receiver-end Mitigation Measures Required [4,5] (Y/N)
				Existing Road in 2046 dB(A)	Other Roads in 2046 dB(A)[1]	New Roads[2]					New Roads in 2046 dB(A) [3] [B]	Overall Noise Level in 2046 dB(A) [C]			C - A dB(A) [D]	D ≥ 1dB(A)	New Road Contribution dB(A) [E]	New Road Contribution ≥ 1dB(A) E ≥ 1dB(A)	New Road > Criteria B > Criteria	
						PD	DD	LD	EX	TR										
ID	Floor	Floor Level (mPD)				dB (A)														
A2-4-2	4	50.1	A2-4	0	0	0	71.5	45.9	0	0	71.6	71.6	70	Y	-	-	71.6	Y	Y	Y
A2-4-2	5	52.9	A2-4	0	0	0	71.4	45.9	0	0	71.4	71.4	70	Y	-	-	71.4	Y	Y	Y
A2-4-2	6	55.7	A2-4	0	0	0	71.2	45.9	0	0	71.2	71.2	70	Y	-	-	71.2	Y	Y	Y
A2-4-2	7	58.5	A2-4	0	0	0	71	45.9	0	0	71	71	70	Y	-	-	71.0	Y	Y	Y
A2-4-2	8	61.3	A2-4	0	0	0	70.8	45.9	0	0	70.8	70.8	70	Y	-	-	70.8	Y	Y	Y
A2-4-2	9	64.1	A2-4	0	0	0	70.6	45.9	0	0	70.7	70.7	70	Y	-	-	70.7	Y	Y	Y
A2-4-2	10	66.9	A2-4	0	0	0	70.4	45.9	0	0	70.5	70.5	70	Y	-	-	70.5	Y	Y	Y
A2-4-2	11	69.7	A2-4	0	0	0	70.3	45.8	0	0	70.3	70.3	70	N	-	-	70.3	Y	N	N
A2-4-2	12	72.5	A2-4	0	0	0	70.1	45.8	0	0	70.1	70.1	70	N	-	-	70.1	Y	N	N
A2-4-2	13	75.3	A2-4	0	0	0	70	45.8	0	0	70	70	70	N	-	-	70.0	Y	N	N
A2-4-2	14	78.1	A2-4	0	0	0	69.8	45.8	0	0	69.8	69.8	70	N	-	-	69.8	Y	N	N
A2-4-2	15	80.9	A2-4	0	0	0	69.6	45.8	0	0	69.7	69.7	70	N	-	-	69.7	Y	N	N
A2-4-2	16	83.7	A2-4	0	0	0	69.5	45.8	0	0	69.5	69.5	70	N	-	-	69.5	Y	N	N
A2-4-2	17	86.5	A2-4	0	0	0	69.3	45.8	0	0	69.4	69.4	70	N	-	-	69.4	Y	N	N
A2-4-2	18	89.3	A2-4	0	0	0	69.2	45.8	0	0	69.2	69.2	70	N	-	-	69.2	Y	N	N
A2-4-2	19	92.1	A2-4	0	0	0	69.1	45.8	0	0	69.1	69.1	70	N	-	-	69.1	Y	N	N
A2-4-2	20	94.9	A2-4	0	0	0	68.9	45.8	0	0	68.9	68.9	70	N	-	-	68.9	Y	N	N
A2-4-2	21	97.7	A2-4	0	0	0	68.8	45.8	0	0	68.8	68.8	70	N	-	-	68.8	Y	N	N
A2-4-2	22	100.5	A2-4	0	0	0	68.7	45.8	0	0	68.7	68.7	70	N	-	-	68.7	Y	N	N
A2-4-2	23	103.3	A2-4	0	0	0	68.5	45.8	0	0	68.5	68.5	70	N	-	-	68.5	Y	N	N
A2-4-2	24	106.1	A2-4	0	0	0	68.4	45.8	0	0	68.4	68.4	70	N	-	-	68.4	Y	N	N
A2-4-2	25	108.9	A2-4	0	0	0	68.3	45.9	0	0	68.3	68.3	70	N	-	-	68.3	Y	N	N
A2-4-2	26	111.7	A2-4	0	0	0	68.2	46	0	0	68.2	68.2	70	N	-	-	68.2	Y	N	N
A2-4-2	27	114.5	A2-4	0	0	0	68.1	46	0	0	68.1	68.1	70	N	-	-	68.1	Y	N	N
A2-4-2	28	117.3	A2-4	0	0	0	68	46.2	0	0	68	68	70	N	-	-	68.0	Y	N	N
A2-4-2	29	120.1	A2-4	0	0	0	67.9	46.3	0	0	67.9	67.9	70	N	-	-	67.9	Y	N	N
A2-4-2	30	122.9	A2-4	0	0	0	67.7	46.4	0	0	67.7	67.7	70	N	-	-	67.7	Y	N	N
A2-4-2	31	125.7	A2-4	0	0	0	67.6	46.4	0	0	67.6	67.6	70	N	-	-	67.6	Y	N	N
A2-4-2	32	128.5	A2-4	0	0	0	67.5	46.5	0	0	67.5	67.5	70	N	-	-	67.5	Y	N	N
B1 (KTN NDA Area 20)																				
A2-5-1	1	33.7	A2-5	0	0	18.4	59	37.4	0	0	59	59	70	N	-	-	59.0	Y	N	N
A2-5-1	2	36.9	A2-5	0	0	18.4	64.6	39	0	0	64.6	64.6	70	N	-	-	64.6	Y	N	N
A2-5-1	3	40.1	A2-5	0	0	18.5	66.8	39	0	0	66.8	66.8	70	N	-	-	66.8	Y	N	N
A2-5-1	4	43.3	A2-5	0	0	18.5	69.4	39	0	0	69.4	69.4	70	N	-	-	69.4	Y	N	N
A2-5-1	5	46.5	A2-5	0	0	18.5	70.2	39	0	0	70.2	70.2	70	N	-	-	70.2	Y	N	N
A2-5-1	6	49.7	A2-5	0	0	18.5	70.2	39	0	0	70.2	70.2	70	N	-	-	70.2	Y	N	N
A2-5-1	7	52.9	A2-5	0	0	18.5	70	39.1	0	0	70	70	70	N	-	-	70.0	Y	N	N
A2-5-1	8	56.1	A2-5	0	0	18.5	69.8	39.1	0	0	69.8	69.8	70	N	-	-	69.8	Y	N	N
A2-5-1	9	59.3	A2-5	0	0	18.5	69.6	39.1	0	0	69.6	69.6	70	N	-	-	69.6	Y	N	N
A2-5-1	10	62.5	A2-5	0	0	18.5	69.4	39.1	0	0	69.4	69.4	70	N	-	-	69.4	Y	N	N
A2-5-1	11	65.7	A2-5	0	0	18.5	69.2	39.1	0	0	69.2	69.2	70	N	-	-	69.2	Y	N	N
A2-5-1	12	68.9	A2-5	0	0	18.5	69	39.1	0	0	69	69	70	N	-	-	69.0	Y	N	N
A2-5-1	13	72.1	A2-5	0	0	18.5	68.8	39.1	0	0	68.8	68.8	70	N	-	-	68.8	Y	N	N
A2-5-1	14	75.3	A2-5	0	0	18.5	68.7	39.1	0	0	68.7	68.7	70	N	-	-	68.7	Y	N	N
A2-5-1	15	78.5	A2-5	0	0	18.5	68.5	39.2	0	0	68.6	68.6	70	N	-	-	68.6	Y	N	N
A2-5-1	16	81.7	A2-5	0	0	18.4	68.3	39.2	0	0	68.4	68.4	70	N	-	-	68.4	Y	N	N
A2-5-1	17	84.9	A2-5	0	0	18.4	68.2	39.2	0	0	68.2	68.2	70	N	-	-	68.2	Y	N	N
A2-5-1	18	88.1	A2-5	0	0	18.4	68	39.3	0	0	68.1	68.1	70	N	-	-	68.1	Y	N	N
A2-5-1	19	91.3	A2-5	0	0	18.4	67.8	39.4	0	0	67.9	67.9	70	N	-	-	67.9	Y	N	N
A2-5-1	20	94.5	A2-5	0	0	18.4	67.7	39.4	0	0	67.8	67.8	70	N	-	-	67.8	Y	N	N
A2-5-1	21	97.7	A2-5	0	0	18.4	67.6	39.5	0	0	67.6	67.6	70	N	-	-	67.6	Y	N	N
A2-5-1	22	100.9	A2-5	0	0	18.4	67.4	39.6	0	0	67.5	67.5	70	N	-	-	67.5	Y	N	N
A2-5-1	23	104.1	A2-5	0	0	18.4	67.3	39.8	0	0	67.3	67.3	70	N	-	-	67.3	Y	N	N
A2-5-1	24	107.3	A2-5	0	0	18.4	67.1	39.9	0	0	67.2	67.2	70	N	-	-	67.2	Y	N	N
A2-5-1	25	110.5	A2-5	0	0	18.4	67	40.1	0	0	67.1	67.1	70	N	-	-	67.1	Y	N	N
A2-5-1	26	113.7	A2-5	0	0	18.5	66.9	40.4	0	0	67	67	70	N	-	-	67.0	Y	N	N
A2-5-2	1	33.7	A2-5	0	0	0	55.1	46.4	0	0	55.7	55.7	70	N	-	-	55.7	Y	N	N
A2-5-2	2	36.9	A2-5	0	0	0	60.6	51.3	0	0	61.1	61.1	70	N	-	-	61.1	Y	N	N
A2-5-2	3	40.1	A2-5	0	0	0	64.1	52	0	0	64.4	64.4	70	N	-	-	64.4	Y	N	N
A2-5-2	4	43.3	A2-5	0	0	0	68.2	52.1	0	0	68.3	68.3	70	N	-	-	68.3	Y	N	N
A2-5-2	5	46.5	A2-5	0	0	0	69.4	52.1	0	0	69.5	69.5	70	N	-	-	69.5	Y	N	N
A2-5-2	6	49.7	A2-5	0	0	0	69.5	52.1	0	0	69.6	69.6	70	N	-	-	69.6	Y	N	N
A2-5-2	7	52.9	A2-5	0	0	0	69.3	52.2	0	0	69.4	69.4	70	N	-	-	69.4	Y	N	N
A2-5-2	8	56.1	A2-5	0	0	0	69.1	52.3	0	0	69.2	69.2	70	N	-	-	69.2	Y	N	N
A2-5-2	9	59.3	A2-5	0	0	0	68.9	52.4	0	0	69	69	70	N	-	-	69.0	Y	N	N
A2-5-2	10	62.5	A2-5	0	0	0	68.8	52.5	0	0	68.9	68.9	70	N	-	-	68.9	Y	N	N
A2-5-2	11	65.7	A2-5	0	0	0	68.6	52.6	0	0	68.7	68.7	70	N	-	-	68.7	Y	N	N
A2-5-2	12	68.9	A2-5	0	0	0	68.4	52.5	0	0	68.5	68.5	70	N	-	-	68.5	Y	N	N
A2-5-2	13	72.1	A2-5	0	0	0	68.2	52.5	0	0	68.3	68.3	70	N	-	-	68.3	Y	N	N
A2-5-2	14	75.3	A2-5	0	0	0	68	52.5	0	0	68.1	68.1	70	N	-	-	68.1	Y	N	N
A2-5-2	15	78.5	A2-5	0	0	0	67.8	52.5	0	0	67.9	67.9	70	N	-	-	67.9	Y	N	N
A2-5-2	16	81.7	A2-5	0	0	0	67.7	52.5	0	0	67.8	67.8	70	N	-	-	67.8	Y	N	N
A2-5-2	17	84.9	A2-5	0	0	0	67.5	52.5	0	0	67.6	67.6	70	N	-	-	67.6	Y	N	N
A2-5-2	18	88.1	A2-5	0	0	0	67.4	52.4	0	0	67.5	67.5	70	N	-	-	67.5	Y	N	N
A2-5-2	19	91.3	A2-5	0	0	0	67.2	52.4	0	0	67.3	67.3	70	N	-	-	67.3	Y	N	N
A2-5-2	20	94.5	A2-5	0	0	0	67.1	52.4	0	0	67.2	67.2	70	N	-	-	67.2	Y	N	N
A2-5-2	21	97.7	A2-5	0	0	0	66.9	52.4	0	0	67	67	70	N	-	-	67.0	Y	N	N
A2-5-2	22	100.9	A2-5	0	0	0	66.8	52.5	0	0	66.9	66.9	70	N	-	-	66.9	Y	N	N
A2-5-2	23	104.1	A2-5	0	0	0	66.6	52.5	0	0	66.8	66.8	70	N	-	-	66.8	Y	N	N

Title: Detailed Calculation of Road Traffic Noise with Direct Mitigation Measures in place
Scenario: Existing and Planned Residential and Educational Uses in KTN NDA (Mitigated Case on Proposed Roads)

Assessment Point			Location	WITH PROJECT										Check Project Impact Significance		Check Direct Mitigation			At Receiver-end Mitigation Measures Required [4,5] (Y/N)
				Existing Road in 2046 dB(A)	Other Roads in 2046 dB(A)[1]	New Roads[2]					New Roads in 2046 dB(A) [3] [B]	Overall Noise Level in 2046 dB(A) [C]	Noise Criteria dB(A)	Exceedance C > Criteria (Y/N)	C - A dB(A) [D]	D ≥ 1dB(A)	New Road Contribution dB(A) [E]	New Road Contribution ≥ 1dB(A) E ≥ 1dB(A)	New Road > Criteria B > Criteria	
						PD	DD	LD	EX	TR										
ID	Floor	Floor Level (mPD)				dB (A)														
A2-5-2	24	107.3	A2-5	0	0	0	66.5	52.6	0	0	66.7	66.7	70	N	-	-	66.7	Y	N	N
A2-5-2	25	110.5	A2-5	0	0	0	66.4	52.7	0	0	66.6	66.6	70	N	-	-	66.6	Y	N	N
A2-5-2	26	113.7	A2-5	0	0	0	66.3	52.8	0	0	66.5	66.5	70	N	-	-	66.5	Y	N	N
A4 (KTN NDA Area 21)																				
A2-7-1	1	35.7	A2-7	0	0	0	70.3	55.3	0	0	70.4	70.4	70	N	-	-	70.4	Y	N	N
A2-7-1	2	38.5	A2-7	0	0	0	70.7	55.3	0	0	70.8	70.8	70	Y	-	-	70.8	Y	Y	Y
A2-7-1	3	41.3	A2-7	0	0	0	70.5	55.3	0	0	70.7	70.7	70	Y	-	-	70.7	Y	Y	Y
A2-7-1	4	44.1	A2-7	0	0	0	70.3	55.3	0	0	70.5	70.5	70	Y	-	-	70.5	Y	Y	Y
A2-7-1	5	46.9	A2-7	0	0	0	70.1	55.3	0	0	70.3	70.3	70	N	-	-	70.3	Y	N	N
A2-7-1	6	49.7	A2-7	0	0	0	69.9	55.3	0	0	70.1	70.1	70	N	-	-	70.1	Y	N	N
A2-7-1	7	52.5	A2-7	0	0	0	69.7	55.3	0	0	69.9	69.9	70	N	-	-	69.9	Y	N	N
A2-7-1	8	55.3	A2-7	0	0	0	69.5	55.3	0	0	69.7	69.7	70	N	-	-	69.7	Y	N	N
A2-7-1	9	58.1	A2-7	0	0	0	69.3	55.2	0	0	69.5	69.5	70	N	-	-	69.5	Y	N	N
A2-7-1	10	60.9	A2-7	0	0	0	69.1	55.2	0	0	69.3	69.3	70	N	-	-	69.3	Y	N	N
A2-7-1	11	63.7	A2-7	0	0	0	69	55.1	0	0	69.1	69.1	70	N	-	-	69.1	Y	N	N
A2-7-1	12	66.5	A2-7	0	0	0	68.8	55.2	0	0	68.9	68.9	70	N	-	-	68.9	Y	N	N
A2-7-1	13	69.3	A2-7	0	0	0	68.6	55.2	0	0	68.8	68.8	70	N	-	-	68.8	Y	N	N
A2-7-1	14	72.1	A2-7	0	0	0	68.4	55.1	0	0	68.6	68.6	70	N	-	-	68.6	Y	N	N
A2-7-1	15	74.9	A2-7	0	0	0	68.2	55.2	0	0	68.5	68.5	70	N	-	-	68.5	Y	N	N
A2-7-1	16	77.7	A2-7	0	0	0	68.1	55.1	0	0	68.3	68.3	70	N	-	-	68.3	Y	N	N
A2-7-1	17	80.5	A2-7	0	0	0	67.9	55.1	0	0	68.2	68.2	70	N	-	-	68.2	Y	N	N
A2-7-1	18	83.3	A2-7	0	0	0	67.8	55.1	0	0	68.1	68.1	70	N	-	-	68.1	Y	N	N
A2-7-1	19	86.1	A2-7	0	0	0	67.7	55.3	0	0	67.9	67.9	70	N	-	-	67.9	Y	N	N
A2-7-1	20	88.9	A2-7	0	0	0	67.5	55.4	0	0	67.8	67.8	70	N	-	-	67.8	Y	N	N
A2-7-1	21	91.7	A2-7	0	0	0	67.4	55.4	0	0	67.6	67.6	70	N	-	-	67.6	Y	N	N
A2-7-1	22	94.5	A2-7	0	0	0	67.3	55.4	0	0	67.5	67.5	70	N	-	-	67.5	Y	N	N
A2-7-1	23	97.3	A2-7	0	0	0	67.1	55.4	0	0	67.4	67.4	70	N	-	-	67.4	Y	N	N
A2-7-1	24	100.1	A2-7	0	0	0	67	55.3	0	0	67.3	67.3	70	N	-	-	67.3	Y	N	N
A2-7-1	25	102.9	A2-7	0	0	0	66.9	55.4	0	0	67.2	67.2	70	N	-	-	67.2	Y	N	N
A2-7-1	26	105.7	A2-7	0	0	0	66.7	55.3	0	0	67.1	67.1	70	N	-	-	67.1	Y	N	N
A2-7-1	27	108.5	A2-7	0	0	0	66.6	55.3	0	0	67	67	70	N	-	-	67.0	Y	N	N
A2-7-1	28	111.3	A2-7	0	0	0	66.5	55.2	0	0	66.9	66.9	70	N	-	-	66.9	Y	N	N
A2-7-1	29	114.1	A2-7	0	0	0	66.4	55.1	0	0	66.8	66.8	70	N	-	-	66.8	Y	N	N
A2-7-1	30	116.9	A2-7	0	0	0	66.3	55.1	0	0	66.7	66.7	70	N	-	-	66.7	Y	N	N
A2-7-1	31	119.7	A2-7	0	0	0	66.2	55.1	0	0	66.6	66.6	70	N	-	-	66.6	Y	N	N
A2-7-1	32	122.5	A2-7	0	0	0	66.1	55	0	0	66.4	66.4	70	N	-	-	66.4	Y	N	N
A2-7-1	33	125.3	A2-7	0	0	0	66	55	0	0	66.3	66.3	70	N	-	-	66.3	Y	N	N
A2-7-1	34	128.1	A2-7	0	0	0	65.9	54.9	0	0	66.2	66.2	70	N	-	-	66.2	Y	N	N
A2-7-1	35	130.9	A2-7	0	0	0	65.8	54.9	0	0	66.1	66.1	70	N	-	-	66.1	Y	N	N
A2-7-1	36	133.7	A2-7	0	0	0	65.7	54.8	0	0	66	66	70	N	-	-	66.0	Y	N	N
A2-7-1	37	136.5	A2-7	0	0	0	65.6	54.8	0	0	66	66	70	N	-	-	66.0	Y	N	N
A2-7-2	1	35.7	A2-7	0	0	17.3	44.3	45.8	0	0	48.1	48.1	70	N	-	-	48.1	Y	N	N
A2-7-2	2	38.5	A2-7	0	0	17.3	46.2	46.7	0	0	49.5	49.5	70	N	-	-	49.5	Y	N	N
A2-7-2	3	41.3	A2-7	0	0	17.3	48.4	47.5	0	0	51	51	70	N	-	-	51.0	Y	N	N
A2-7-2	4	44.1	A2-7	0	0	17.3	50.2	48.4	0	0	52.4	52.4	70	N	-	-	52.4	Y	N	N
A2-7-2	5	46.9	A2-7	0	0	17.3	52	49.4	0	0	53.9	53.9	70	N	-	-	53.9	Y	N	N
A2-7-2	6	49.7	A2-7	0	0	17.3	53.9	50.6	0	0	55.6	55.6	70	N	-	-	55.6	Y	N	N
A2-7-2	7	52.5	A2-7	0	0	17.3	55.4	52.3	0	0	57.1	57.1	70	N	-	-	57.1	Y	N	N
A2-7-2	8	55.3	A2-7	0	0	17.4	56.4	54.3	0	0	58.5	58.5	70	N	-	-	58.5	Y	N	N
A2-7-2	9	58.1	A2-7	0	0	17.3	57.3	55.3	0	0	59.4	59.4	70	N	-	-	59.4	Y	N	N
A2-7-2	10	60.9	A2-7	0	0	17.4	58	55.6	0	0	60	60	70	N	-	-	60.0	Y	N	N
A2-7-2	11	63.7	A2-7	0	0	17.4	58.6	55.8	0	0	60.4	60.4	70	N	-	-	60.4	Y	N	N
A2-7-2	12	66.5	A2-7	0	0	17.4	59	55.8	0	0	60.7	60.7	70	N	-	-	60.7	Y	N	N
A2-7-2	13	69.3	A2-7	0	0	17.4	59.5	55.8	0	0	61.1	61.1	70	N	-	-	61.1	Y	N	N
A2-7-2	14	72.1	A2-7	0	0	17.5	60	55.9	0	0	61.4	61.4	70	N	-	-	61.4	Y	N	N
A2-7-2	15	74.9	A2-7	0	0	17.5	60.5	55.8	0	0	61.8	61.8	70	N	-	-	61.8	Y	N	N
A2-7-2	16	77.7	A2-7	0	0	17.5	61	55.7	0	0	62.1	62.1	70	N	-	-	62.1	Y	N	N
A2-7-2	17	80.5	A2-7	0	0	17.5	61.3	55.7	0	0	62.3	62.3	70	N	-	-	62.3	Y	N	N
A2-7-2	18	83.3	A2-7	0	0	17.5	61.5	55.7	0	0	62.5	62.5	70	N	-	-	62.5	Y	N	N
A2-7-2	19	86.1	A2-7	0	0	17.5	61.7	55.7	0	0	62.7	62.7	70	N	-	-	62.7	Y	N	N
A2-7-2	20	88.9	A2-7	0	0	17.5	61.9	55.7	0	0	62.8	62.8	70	N	-	-	62.8	Y	N	N
A2-7-2	21	91.7	A2-7	0	0	17.5	62	55.7	0	0	62.9	62.9	70	N	-	-	62.9	Y	N	N
A2-7-2	22	94.5	A2-7	0	0	17.5	62.1	55.7	0	0	63	63	70	N	-	-	63.0	Y	N	N
A2-7-2	23	97.3	A2-7	0	0	17.5	62.2	55.7	0	0	63	63	70	N	-	-	63.0	Y	N	N
A2-7-2	24	100.1	A2-7	0	0	17.5	62.2	55.6	0	0	63	63	70	N	-	-	63.0	Y	N	N
A2-7-2	25	102.9	A2-7	0	0	17.5	62.2	55.6	0	0	63	63	70	N	-	-	63.0	Y	N	N
A2-7-2	26	105.7	A2-7	0	0	17.5	62.2	55.5	0	0	63.1	63.1	70	N	-	-	63.1	Y	N	N
A2-7-2	27	108.5	A2-7	0	0	17.5	62.2	55.5	0	0	63	63	70	N	-	-	63.0	Y	N	N
A2-7-2	28	111.3	A2-7	0	0	17.5	62.1	55.4	0	0	63	63	70	N	-	-	63.0	Y	N	N
A2-7-2	29	114.1	A2-7	0	0	17.5	62.1	55.4	0	0	63	63	70	N	-	-	63.0	Y	N	N
A2-7-2	30	116.9	A2-7	0	0	17.5	62.1	55.4	0	0	63	63	70	N	-	-	63.0	Y	N	N
A2-7-2	31	119.7	A2-7	0	0	17.4	62.1	55.3	0	0	62.9	62.9	70	N	-	-	62.9	Y	N	N
A2-7-2	32	122.5	A2-7	0	0	18.1	62.1	55.3	0	0	62.9	62.9	70	N	-	-	62.9	Y	N	N
A2-7-2	33	125.3	A2-7	0	0	19.1	62	55.3	0	0	62.9	62.9	70	N	-	-	62.9	Y	N	N
A2-7-2	34	128.1	A2-7	0	0	20.3	62	55.3	0	0	62.9	62.9	70	N	-	-	62.9	Y	N	N
A2-7-2	35	130.9	A2-7	0	0	21.7	62	55.3	0	0	62.9	62.9	70	N	-	-	62.9	Y	N	N
A2-7-2	36	133.7	A2-7	0	0	23.1	62	55.2	0	0	62.8	62.8	70	N	-	-	62.8	Y	N	N
A2-7-2	37	136.5	A2-7	0	0	24.6	62	55.2	0	0	62.8	62.8	70	N	-	-	62.8	Y	N	N
A2-7-3	1	35.7	A2-7	8.8	0	18.6	55.8	53.7	0	0	57.9	57.9	70	N	-	-	49.1	Y	N	N

Title: Detailed Calculation of Road Traffic Noise with Direct Mitigation Measures in place
Scenario: Existing and Planned Residential and Educational Uses in KTN NDA (Mitigated Case on Proposed Roads)

Assessment Point			Location	WITH PROJECT													
				Existing Road in 2046 dB(A)	Other Roads in 2046 dB(A)[1]	New Roads[2]					Overall Noise Level in 2046 dB(A) [C]	Noise Criteria dB(A)	Exceedance C > Criteria (Y/N)	Check Project Impact Significance		Check Direct Mitigation			At Receiver-end Mitigation Measures Required [4,5] (Y/N)
						PD	DD	LD	EX	TR	New Roads in 2046 dB(A) [3] [B]			C - A dB(A) [D]	D ≥ 1dB(A)	New Road Contribution dB(A) [E]	New Road Contribution ≥ 1dB(A) E ≥ 1dB(A)	New Road > Criteria B > Criteria	
ID	Floor	Floor Level (mPD)		dB (A)															
A2-7-3	2	38.5	A2-7	8.8	0	18.6	56	54.1	0	0	58.1	58.1	70	N	-	-	49.3	Y	N	N
A2-7-3	3	41.3	A2-7	8.9	0	18.6	56.1	54.1	0	0	58.2	58.2	70	N	-	-	49.3	Y	N	N
A2-7-3	4	44.1	A2-7	9	0	18.6	56.5	54.3	0	0	58.5	58.5	70	N	-	-	49.5	Y	N	N
A2-7-3	5	46.9	A2-7	9	0	18.5	57	54.7	0	0	59	59	70	N	-	-	50.0	Y	N	N
A2-7-3	6	49.7	A2-7	9	0	18.6	57.7	54.9	0	0	59.5	59.5	70	N	-	-	50.5	Y	N	N
A2-7-3	7	52.5	A2-7	9	0	18.5	58.7	54.9	0	0	60.2	60.2	70	N	-	-	51.2	Y	N	N
A2-7-3	8	55.3	A2-7	9	0	18.7	59.2	55.1	0	0	60.6	60.6	70	N	-	-	51.6	Y	N	N
A2-7-3	9	58.1	A2-7	9	0	18.7	59.4	55.2	0	0	60.8	60.8	70	N	-	-	51.8	Y	N	N
A2-7-3	10	60.9	A2-7	9	0	19.1	59.6	55.3	0	0	61	61	70	N	-	-	52.0	Y	N	N
A2-7-3	11	63.7	A2-7	9	0	19.7	59.8	55.5	0	0	61.2	61.2	70	N	-	-	52.2	Y	N	N
A2-7-3	12	66.5	A2-7	9	0	20.3	59.9	55.7	0	0	61.3	61.3	70	N	-	-	52.3	Y	N	N
A2-7-3	13	69.3	A2-7	9	0	21	60	55.9	0	0	61.5	61.5	70	N	-	-	52.5	Y	N	N
A2-7-3	14	72.1	A2-7	9.1	0	21.6	60.2	56	0	0	61.6	61.6	70	N	-	-	52.5	Y	N	N
A2-7-3	15	74.9	A2-7	9.1	0	22.4	60.4	56	0	0	61.8	61.8	70	N	-	-	52.7	Y	N	N
A2-7-3	16	77.7	A2-7	9.1	0	23.2	60.7	56	0	0	61.9	61.9	70	N	-	-	52.8	Y	N	N
A2-7-3	17	80.5	A2-7	9.1	0	23.9	60.9	55.9	0	0	62.1	62.1	70	N	-	-	53.0	Y	N	N
A2-7-3	18	83.3	A2-7	9.1	0	24.9	61	55.9	0	0	62.2	62.2	70	N	-	-	53.1	Y	N	N
A2-7-3	19	86.1	A2-7	9.1	0	25.8	61.1	55.8	0	0	62.2	62.2	70	N	-	-	53.1	Y	N	N
A2-7-3	20	88.9	A2-7	9.1	0	26.8	61.2	55.7	0	0	62.3	62.3	70	N	-	-	53.2	Y	N	N
A2-7-3	21	91.7	A2-7	9.1	0	27.9	61.3	55.6	0	0	62.3	62.3	70	N	-	-	53.2	Y	N	N
A2-7-3	22	94.5	A2-7	9.1	0	29.3	61.3	55.5	0	0	62.3	62.3	70	N	-	-	53.2	Y	N	N
A2-7-3	23	97.3	A2-7	9.1	0	30.8	61.4	55.4	0	0	62.3	62.3	70	N	-	-	53.2	Y	N	N
A2-7-3	24	100.1	A2-7	9.1	0	32.6	61.4	55.3	0	0	62.4	62.4	70	N	-	-	53.3	Y	N	N
A2-7-3	25	102.9	A2-7	9.1	0	35.4	61.5	55.2	0	0	62.4	62.4	70	N	-	-	53.3	Y	N	N
A2-7-3	26	105.7	A2-7	9.1	0	37.9	61.5	55.1	0	0	62.4	62.4	70	N	-	-	53.3	Y	N	N
A2-7-3	27	108.5	A2-7	9.1	0	39.8	61.5	55.1	0	0	62.4	62.4	70	N	-	-	53.3	Y	N	N
A2-7-3	28	111.3	A2-7	8.9	0	40.5	61.6	55	0	0	62.5	62.5	70	N	-	-	53.6	Y	N	N
A2-7-3	29	114.1	A2-7	9.1	0	40.7	61.6	54.9	0	0	62.5	62.5	70	N	-	-	53.4	Y	N	N
A2-7-3	30	116.9	A2-7	9.6	0	41	61.7	54.8	0	0	62.5	62.5	70	N	-	-	52.9	Y	N	N
A2-7-3	31	119.7	A2-7	10	0	41	61.7	54.7	0	0	62.5	62.5	70	N	-	-	52.5	Y	N	N
A2-7-3	32	122.5	A2-7	10.6	0	41.1	61.8	54.7	0	0	62.6	62.6	70	N	-	-	52.0	Y	N	N
A2-7-3	33	125.3	A2-7	11.1	0	41.2	61.8	54.6	0	0	62.6	62.6	70	N	-	-	51.5	Y	N	N
A2-7-3	34	128.1	A2-7	11.6	0	41.3	61.8	54.5	0	0	62.6	62.6	70	N	-	-	51.0	Y	N	N
A2-7-3	35	130.9	A2-7	12.1	0	41.4	61.8	54.4	0	0	62.5	62.5	70	N	-	-	50.4	Y	N	N
A2-7-3	36	133.7	A2-7	12.6	0	41.7	61.7	54.4	0	0	62.5	62.5	70	N	-	-	49.9	Y	N	N
A2-7-3	37	136.5	A2-7	13.2	0	42.1	61.7	54.3	0	0	62.5	62.5	70	N	-	-	49.3	Y	N	N
A2-7-4	1	35.7	A2-7	11.6	0	43.9	50.2	51.1	0	0	54.1	54.1	70	N	-	-	42.5	Y	N	N
A2-7-4	2	38.5	A2-7	11.7	0	44	56.2	53.1	0	0	58.1	58.1	70	N	-	-	46.4	Y	N	N
A2-7-4	3	41.3	A2-7	11.8	0	44	57.6	54.3	0	0	59.4	59.4	70	N	-	-	47.6	Y	N	N
A2-7-4	4	44.1	A2-7	12	0	44	57.8	54.8	0	0	59.7	59.7	70	N	-	-	47.7	Y	N	N
A2-7-4	5	46.9	A2-7	12.3	0	44	57.8	55.3	0	0	59.8	59.8	70	N	-	-	47.5	Y	N	N
A2-7-4	6	49.7	A2-7	12.6	0	44	57.9	55.6	0	0	60	60	70	N	-	-	47.4	Y	N	N
A2-7-4	7	52.5	A2-7	12.9	0	43.9	58	55.8	0	0	60.1	60.1	70	N	-	-	47.2	Y	N	N
A2-7-4	8	55.3	A2-7	13.3	0	43.9	58.1	56	0	0	60.3	60.3	70	N	-	-	47.0	Y	N	N
A2-7-4	9	58.1	A2-7	13.6	0	43.9	58.3	56.1	0	0	60.5	60.5	70	N	-	-	46.9	Y	N	N
A2-7-4	10	60.9	A2-7	14.1	0	43.9	58.5	56.1	0	0	60.6	60.6	70	N	-	-	46.5	Y	N	N
A2-7-4	11	63.7	A2-7	14.6	0	43.9	58.7	56.1	0	0	60.7	60.7	70	N	-	-	46.1	Y	N	N
A2-7-4	12	66.5	A2-7	15.2	0	43.9	58.8	56	0	0	60.7	60.7	70	N	-	-	45.5	Y	N	N
A2-7-4	13	69.3	A2-7	15.9	0	43.9	58.9	55.9	0	0	60.8	60.8	70	N	-	-	44.9	Y	N	N
A2-7-4	14	72.1	A2-7	16.7	0	43.9	59	55.9	0	0	60.8	60.8	70	N	-	-	44.1	Y	N	N
A2-7-4	15	74.9	A2-7	17.5	0	43.9	59.1	55.8	0	0	60.9	60.9	70	N	-	-	43.4	Y	N	N
A2-7-4	16	77.7	A2-7	18.4	0	43.9	59.2	55.7	0	0	60.9	60.9	70	N	-	-	42.5	Y	N	N
A2-7-4	17	80.5	A2-7	19.3	0	43.9	59.3	55.6	0	0	60.9	60.9	70	N	-	-	41.6	Y	N	N
A2-7-4	18	83.3	A2-7	20.4	0	44	59.3	55.5	0	0	60.9	60.9	70	N	-	-	40.5	Y	N	N
A2-7-4	19	86.1	A2-7	21.7	0	44.1	59.4	55.5	0	0	60.9	60.9	70	N	-	-	39.2	Y	N	N
A2-7-4	20	88.9	A2-7	23.1	0	44.1	59.4	55.4	0	0	60.9	60.9	70	N	-	-	37.8	Y	N	N
A2-7-4	21	91.7	A2-7	24.7	0	44.3	59.4	55.3	0	0	60.9	60.9	70	N	-	-	36.2	Y	N	N
A2-7-4	22	94.5	A2-7	26.8	0	44.6	59.5	55.2	0	0	61	61	70	N	-	-	34.2	Y	N	N
A2-7-4	23	97.3	A2-7	29.2	0	45.2	59.5	55.1	0	0	61	61	70	N	-	-	31.8	Y	N	N
A2-7-4	24	100.1	A2-7	31.4	0	46.6	59.5	55.1	0	0	61	61	70	N	-	-	29.6	Y	N	N
A2-7-4	25	102.9	A2-7	32.8	0	47.8	59.6	55	0	0	61.1	61.1	70	N	-	-	28.3	Y	N	N
A2-7-4	26	105.7	A2-7	33.5	0	48.3	59.6	54.9	0	0	61.1	61.1	70	N	-	-	27.6	Y	N	N
A2-7-4	27	108.5	A2-7	34.1	0	48.4	59.6	54.8	0	0	61.1	61.1	70	N	-	-	27.0	Y	N	N
A2-7-4	28	111.3	A2-7	34.4	0	48.5	59.6	54.8	0	0	61.1	61.1	70	N	-	-	26.7	Y	N	N
A2-7-4	29	114.1	A2-7	34.8	0	48.5	59.6	54.7	0	0	61.1	61.1	70	N	-	-	26.3	Y	N	N
A2-7-4	30	116.9	A2-7	35	0	48.5	59.6	54.7	0	0	61.1	61.1	70	N	-	-	26.1	Y	N	N
A2-7-4	31	119.7	A2-7	35.2	0	48.5	59.7	54.6	0	0	61.1	61.1	70	N	-	-	25.9	Y	N	N
A2-7-4	32	122.5	A2-7	35.3	0	48.5	59.6	54.5	0	0	61.1	61.1	70	N	-	-	25.8	Y	N	N
A2-7-4	33	125.3	A2-7	35.2	0	48.5	59.7	54.5	0	0	61.1	61.1	70	N	-	-	25.9	Y	N	N
A2-7-4	34	128.1	A2-7	35.3	0	48.5	59.7	54.4	0	0	61.1	61.1	70	N	-	-	25.8	Y	N	N
A2-7-4	35	130.9	A2-7	35.3	0	48.5	59.7	54.4	0	0	61.1	61.1	70	N	-	-	25.8	Y	N	N
A2-7-4	36	133.7	A2-7	35.3	0	48.6	59.7	54.4	0	0	61.1	61.1	70	N	-	-	25.8	Y	N	N
A2-7-4	37	136.5	A2-7	35.3	0	48.7	59.7	54.3	0	0	61.1	61.1	70	N	-	-	25.8	Y	N	N
B4 (KTN NDA Area 22)																				
A2-9a-1	1	18.2	A2-9a	3.4	0	0	55.9	57.3	0	0	59.7	59.7	70	N	-	-	56.3	Y	N	N
A2-9a-1	2	21.4	A2-9a	3.4	0	0	55.9	57.1	0	0	59.6	59.6	70	N	-	-	56.2	Y	N	N
A2-9a-1	3	24.6	A2-9a	3.4	0	0	55.9	56.9	0	0	59.5	59.5	70	N	-	-	56.1	Y	N	N
A2-9a-1	4	27.8	A2-9a	3.4	0	0	55.9	56.7	0	0	59.4	59.4	70	N	-	-	56.0	Y	N	N
A2-9a-1	5	31	A2-9a	3.4	0	0	55.9	56.5	0	0	59.2	59.2	70	N	-	-	55.8	Y	N	N

Title: Detailed Calculation of Road Traffic Noise with Direct Mitigation Measures in place
Scenario: Existing and Planned Residential and Educational Uses in KTN NDA (Mitigated Case on Proposed Roads)

Assessment Point			Location	WITH PROJECT														
				Existing Road in 2046 dB(A)	Other Roads in 2046 dB(A)[1]	New Roads[2]						Overall Noise Level in 2046 dB(A) [C]	Noise Criteria dB(A)	Exceedance C > Criteria (Y/N)	Check Project Impact Significance		Check Direct Mitigation			At Receiver-end Mitigation Measures Required [4,5] (Y/N)
						PD	DD	LD	EX	TR	New Roads in 2046 dB(A) [3] [B]				C - A dB(A) [D]	D ≥ 1dB(A)	New Road Contribution dB(A) [E]	New Road Contribution ≥ 1dB(A) E ≥ 1dB(A)	New Road > Criteria B > Criteria	
ID	Floor	Floor Level (mPD)		dB (A)																
A2-9a-1	6	34.2	A2-9a	3.4	0	0	55.9	56.3	0	0	59.1	59.1	70	N	-	-	55.7	Y	N	N
A2-9a-1	7	37.4	A2-9a	3.5	0	0	55.9	56.1	0	0	59	59	70	N	-	-	55.5	Y	N	N
A2-9a-1	8	40.6	A2-9a	4.4	0	0	55.9	55.9	0	0	58.9	58.9	70	N	-	-	54.5	Y	N	N
A2-9a-1	9	43.8	A2-9a	5.2	0	0	55.9	55.7	0	0	58.8	58.8	70	N	-	-	53.6	Y	N	N
A2-9a-1	10	47	A2-9a	5.8	0	0	56	55.5	0	0	58.7	58.7	70	N	-	-	52.9	Y	N	N
A2-9a-1	11	50.2	A2-9a	6.5	0	0	56.1	55.3	0	0	58.7	58.7	70	N	-	-	52.2	Y	N	N
A2-9a-1	12	53.4	A2-9a	7.3	0	0	56.3	55.1	0	0	58.8	58.8	70	N	-	-	51.5	Y	N	N
A2-9a-1	13	56.6	A2-9a	8	0	0	56.7	55	0	0	58.9	58.9	70	N	-	-	50.9	Y	N	N
A2-9a-1	14	59.8	A2-9a	8.8	0	0	57	54.8	0	0	59	59	70	N	-	-	50.2	Y	N	N
A2-9a-1	15	63	A2-9a	9.7	0	0	57.3	54.6	0	0	59.2	59.2	70	N	-	-	49.5	Y	N	N
A2-9a-1	16	66.2	A2-9a	10.5	0	0	57.5	54.5	0	0	59.3	59.3	70	N	-	-	48.8	Y	N	N
A2-9a-1	17	69.4	A2-9a	11.4	0	0	57.7	54.3	0	0	59.3	59.3	70	N	-	-	47.9	Y	N	N
A2-9a-1	18	72.6	A2-9a	12.3	0	0	57.8	54.2	0	0	59.4	59.4	70	N	-	-	47.1	Y	N	N
A2-9a-1	19	75.8	A2-9a	13.2	0	0	58.1	54	0	0	59.5	59.5	70	N	-	-	46.3	Y	N	N
A2-9a-1	20	79	A2-9a	14.1	0	0	58.3	53.9	0	0	59.6	59.6	70	N	-	-	45.5	Y	N	N
A2-9a-2	1	18.2	A2-9a	10.9	0	39.7	55.8	60.7	0	0	62	62	70	N	-	-	51.1	Y	N	N
A2-9a-2	2	21.4	A2-9a	10.9	0	39.8	55.8	60.6	0	0	61.9	61.9	70	N	-	-	51.0	Y	N	N
A2-9a-2	3	24.6	A2-9a	10.9	0	40	55.9	60.3	0	0	61.7	61.7	70	N	-	-	50.8	Y	N	N
A2-9a-2	4	27.8	A2-9a	10.9	0	40.1	55.9	60.2	0	0	61.6	61.6	70	N	-	-	50.7	Y	N	N
A2-9a-2	5	31	A2-9a	11	0	40.3	55.9	59.9	0	0	61.4	61.4	70	N	-	-	50.4	Y	N	N
A2-9a-2	6	34.2	A2-9a	11	0	40.4	56	59.7	0	0	61.2	61.2	70	N	-	-	50.2	Y	N	N
A2-9a-2	7	37.4	A2-9a	11	0	40.6	56.1	59.4	0	0	61.1	61.1	70	N	-	-	50.1	Y	N	N
A2-9a-2	8	40.6	A2-9a	11	0	40.9	56.2	59.1	0	0	61	61	70	N	-	-	50.0	Y	N	N
A2-9a-2	9	43.8	A2-9a	11.1	0	41.2	56.3	58.9	0	0	60.9	60.9	70	N	-	-	49.8	Y	N	N
A2-9a-2	10	47	A2-9a	11.1	0	41.5	56.6	58.7	0	0	60.8	60.8	70	N	-	-	49.7	Y	N	N
A2-9a-2	11	50.2	A2-9a	11.1	0	42	57.2	58.5	0	0	61	61	70	N	-	-	49.9	Y	N	N
A2-9a-2	12	53.4	A2-9a	11.1	0	42.5	58.2	58.3	0	0	61.3	61.3	70	N	-	-	50.2	Y	N	N
A2-9a-2	13	56.6	A2-9a	11.1	0	43.2	58.9	58.2	0	0	61.7	61.7	70	N	-	-	50.6	Y	N	N
A2-9a-2	14	59.8	A2-9a	11.1	0	44.2	59.5	58.1	0	0	61.9	61.9	70	N	-	-	50.8	Y	N	N
A2-9a-2	15	63	A2-9a	11.1	0	45.2	59.9	57.9	0	0	62.1	62.1	70	N	-	-	51.0	Y	N	N
A2-9a-2	16	66.2	A2-9a	11.1	0	46.5	60.3	57.8	0	0	62.3	62.3	70	N	-	-	51.2	Y	N	N
A2-9a-2	17	69.4	A2-9a	11.1	0	47.2	60.5	57.7	0	0	62.5	62.5	70	N	-	-	51.4	Y	N	N
A2-9a-2	18	72.6	A2-9a	11.1	0	47.6	60.7	57.5	0	0	62.6	62.6	70	N	-	-	51.5	Y	N	N
A2-9a-2	19	75.8	A2-9a	11.1	0	47.9	61	57.4	0	0	62.7	62.7	70	N	-	-	51.6	Y	N	N
A2-9a-2	20	79	A2-9a	11.1	0	48.1	61.1	57.2	0	0	62.8	62.8	70	N	-	-	51.7	Y	N	N
A2-9a-3	1	18.2	A2-9a	11.6	0	38	49.7	59.6	0	0	60.1	60.1	70	N	-	-	48.5	Y	N	N
A2-9a-3	2	21.4	A2-9a	11.6	0	38.3	49.8	59.5	0	0	60	60	70	N	-	-	48.4	Y	N	N
A2-9a-3	3	24.6	A2-9a	11.6	0	38.7	50	59.3	0	0	59.9	59.9	70	N	-	-	48.3	Y	N	N
A2-9a-3	4	27.8	A2-9a	11.7	0	39.1	50.2	59.2	0	0	59.7	59.7	70	N	-	-	48.0	Y	N	N
A2-9a-3	5	31	A2-9a	11.7	0	39.4	50.4	58.9	0	0	59.5	59.5	70	N	-	-	47.8	Y	N	N
A2-9a-3	6	34.2	A2-9a	11.7	0	39.8	50.8	58.6	0	0	59.4	59.4	70	N	-	-	47.7	Y	N	N
A2-9a-3	7	37.4	A2-9a	11.7	0	40.3	51.2	58.4	0	0	59.2	59.2	70	N	-	-	47.5	Y	N	N
A2-9a-3	8	40.6	A2-9a	11.7	0	40.7	51.7	58.2	0	0	59.1	59.1	70	N	-	-	47.4	Y	N	N
A2-9a-3	9	43.8	A2-9a	11.7	0	41.3	52.5	58.2	0	0	59.3	59.3	70	N	-	-	47.6	Y	N	N
A2-9a-3	10	47	A2-9a	11.7	0	42	53.7	58.3	0	0	59.7	59.7	70	N	-	-	48.0	Y	N	N
A2-9a-3	11	50.2	A2-9a	11.7	0	43	55.5	58.4	0	0	60.3	60.3	70	N	-	-	48.6	Y	N	N
A2-9a-3	12	53.4	A2-9a	11.7	0	44.5	57.3	58.4	0	0	61	61	70	N	-	-	49.3	Y	N	N
A2-9a-3	13	56.6	A2-9a	11.7	0	45.9	58.6	58.3	0	0	61.6	61.6	70	N	-	-	49.9	Y	N	N
A2-9a-3	14	59.8	A2-9a	11.7	0	47.6	59.5	58.3	0	0	62.1	62.1	70	N	-	-	50.4	Y	N	N
A2-9a-3	15	63	A2-9a	11.7	0	48.5	60	58.1	0	0	62.4	62.4	70	N	-	-	50.7	Y	N	N
A2-9a-3	16	66.2	A2-9a	11.8	0	48.9	60.3	58.1	0	0	62.5	62.5	70	N	-	-	50.7	Y	N	N
A2-9a-3	17	69.4	A2-9a	11.8	0	49.2	60.5	58	0	0	62.6	62.6	70	N	-	-	50.8	Y	N	N
A2-9a-3	18	72.6	A2-9a	11.8	0	49.3	60.6	57.9	0	0	62.7	62.7	70	N	-	-	50.9	Y	N	N
A2-9a-3	19	75.8	A2-9a	11.8	0	49.4	60.8	57.8	0	0	62.7	62.7	70	N	-	-	50.9	Y	N	N
A2-9a-3	20	79	A2-9a	11.8	0	49.4	60.9	57.7	0	0	62.8	62.8	70	N	-	-	51.0	Y	N	N
A2-9b-1	1	18.2	A2-9b	12.4	0	55.6	43.1	60.5	0	0	61.8	61.8	70	N	-	-	49.4	Y	N	N
A2-9b-1	2	21.4	A2-9b	12.5	0	55.6	43.7	60.3	0	0	61.6	61.6	70	N	-	-	49.1	Y	N	N
A2-9b-1	3	24.6	A2-9b	12.5	0	55.6	44.4	60.1	0	0	61.5	61.5	70	N	-	-	49.0	Y	N	N
A2-9b-1	4	27.8	A2-9b	12.5	0	55.6	45.2	59.9	0	0	61.4	61.4	70	N	-	-	48.9	Y	N	N
A2-9b-1	5	31	A2-9b	12.5	0	55.6	46.2	59.6	0	0	61.2	61.2	70	N	-	-	48.7	Y	N	N
A2-9b-1	6	34.2	A2-9b	12.5	0	55.6	47.4	59.4	0	0	61.1	61.1	70	N	-	-	48.6	Y	N	N
A2-9b-1	7	37.4	A2-9b	12.5	0	55.6	48.9	59.1	0	0	61	61	70	N	-	-	48.5	Y	N	N
A2-9b-1	8	40.6	A2-9b	12.5	0	55.6	51.1	58.9	0	0	61.1	61.1	70	N	-	-	48.6	Y	N	N
A2-9b-1	9	43.8	A2-9b	12.5	0	55.6	54.1	58.8	0	0	61.4	61.4	70	N	-	-	48.9	Y	N	N
A2-9b-1	10	47	A2-9b	12.5	0	55.7	56.8	58.8	0	0	62.1	62.1	70	N	-	-	49.6	Y	N	N
A2-9b-1	11	50.2	A2-9b	12.6	0	55.8	58.5	58.7	0	0	62.6	62.6	70	N	-	-	50.0	Y	N	N
A2-9b-1	12	53.4	A2-9b	12.6	0	55.9	59.3	58.5	0	0	62.9	62.9	70	N	-	-	50.3	Y	N	N
A2-9b-1	13	56.6	A2-9b	12.6	0	55.9	59.7	58.4	0	0	63	63	70	N	-	-	50.4	Y	N	N
A2-9b-1	14	59.8	A2-9b	12.6	0	55.9	60	58.2	0	0	63.1	63.1	70	N	-	-	50.5	Y	N	N
A2-9b-1	15	63	A2-9b	12.6	0	55.9	60.3	58.1	0	0	63.2	63.2	70	N	-	-	50.6	Y	N	N
A2-9b-1	16	66.2	A2-9b	12.6	0	55.9	60.5	58	0	0	63.3	63.3	70	N	-	-	50.7	Y	N	N
A2-9b-1	17	69.4	A2-9b	12.6	0	55.9	60.7	57.9	0	0	63.4	63.4	70	N	-	-	50.8	Y	N	N
A2-9b-1	18	72.6	A2-9b	12.6	0	56	60.9	57.9	0	0	63.5	63.5	70	N	-	-	50.9	Y	N	N
A2-9b-1	19	75.8	A2-9b	12.6	0	56	61	57.8	0	0	63.5	63.5	70	N	-	-	50.9	Y	N	N
A2-9b-1	20	79	A2-9b	12.6	0	56	61.1	57.7	0	0	63.6	63.6	70	N	-	-	51.0	Y	N	N
A2-9b-2	1	18.2	A2-9b	16.4	0	63.6	59.2	56.9	0	0	65.6	65.6	70	N	-	-	49.2	Y	N	N
A2-9b-2	2	21.4	A2-9b	16.6	0	63.6	59.3	56.7	0	0	65.6	65.6	70	N	-	-	49.0	Y	N	N
A2-9b-2	3	24.6	A2-9b	16.7	0	63.6	59.4	56.6	0	0	65.6	65.6	70	N	-	-	48.9	Y	N	N
A2-9b-2	4	27.8	A2-9b	16.9	0	63.6	59.6	56.4	0	0	65.6	65.6	70	N	-	-	48.7	Y	N	N

Title: Detailed Calculation of Road Traffic Noise with Direct Mitigation Measures in place
Scenario: Existing and Planned Residential and Educational Uses in KTN NDA (Mitigated Case on Proposed Roads)

Assessment Point			Location	WITH PROJECT														
				Existing Road in 2046 dB(A)	Other Roads in 2046 dB(A)[1]	New Roads[2]						Overall Noise Level in 2046 dB(A) [C]	Noise Criteria dB(A)	Exceedance C > Criteria (Y/N)	Check Project Impact Significance		Check Direct Mitigation			At Receiver-end Mitigation Measures Required [4,5] (Y/N)
						PD	DD	LD	EX	TR	New Roads in 2046 dB(A) [3] [B]				C - A dB(A) [D]	D ≥ 1dB(A)	New Road Contribution dB(A) [E]	New Road Contribution ≥ 1dB(A) E ≥ 1dB(A)	New Road > Criteria B > Criteria	
ID	Floor	Floor Level (mPD)		dB (A)																
A2-9b-2	5	31	A2-9b	17.2	0	63.6	59.6	56.3	0	0	65.6	65.6	70	N	-	-	48.4	Y	N	N
A2-9b-2	6	34.2	A2-9b	17.4	0	63.5	59.7	56.3	0	0	65.5	65.5	70	N	-	-	48.1	Y	N	N
A2-9b-2	7	37.4	A2-9b	17.7	0	63.5	59.7	56.3	0	0	65.6	65.6	70	N	-	-	47.9	Y	N	N
A2-9b-2	8	40.6	A2-9b	18	0	63.5	59.7	56.3	0	0	65.5	65.5	70	N	-	-	47.5	Y	N	N
A2-9b-2	9	43.8	A2-9b	18.3	0	63.4	59.8	56.3	0	0	65.5	65.5	70	N	-	-	47.2	Y	N	N
A2-9b-2	10	47	A2-9b	18.5	0	63.4	59.8	56.3	0	0	65.5	65.5	70	N	-	-	47.0	Y	N	N
A2-9b-2	11	50.2	A2-9b	18.9	0	63.4	59.9	56.3	0	0	65.5	65.5	70	N	-	-	46.6	Y	N	N
A2-9b-2	12	53.4	A2-9b	19.3	0	63.4	60.1	56.3	0	0	65.6	65.6	70	N	-	-	46.3	Y	N	N
A2-9b-2	13	56.6	A2-9b	19.6	0	63.4	60.3	56.4	0	0	65.7	65.7	70	N	-	-	46.1	Y	N	N
A2-9b-2	14	59.8	A2-9b	20.1	0	63.4	60.6	56.4	0	0	65.8	65.8	70	N	-	-	45.7	Y	N	N
A2-9b-2	15	63	A2-9b	20.5	0	63.5	60.9	56.3	0	0	65.9	65.9	70	N	-	-	45.4	Y	N	N
A2-9b-2	16	66.2	A2-9b	21	0	63.6	61.1	56.2	0	0	66	66	70	N	-	-	45.0	Y	N	N
A2-9b-2	17	69.4	A2-9b	21.5	0	63.7	61.3	56.2	0	0	66.1	66.1	70	N	-	-	44.6	Y	N	N
A2-9b-2	18	72.6	A2-9b	22.1	0	63.9	61.4	56.1	0	0	66.3	66.3	70	N	-	-	44.2	Y	N	N
A2-9b-2	19	75.8	A2-9b	22.7	0	64.1	61.5	56	0	0	66.4	66.4	70	N	-	-	43.7	Y	N	N
A2-9b-2	20	79	A2-9b	23.4	0	64.2	61.6	55.9	0	0	66.5	66.5	70	N	-	-	43.1	Y	N	N
A2-9b-3	1	18.2	A2-9b	29.8	0	69.2	58.3	51.6	0	0	69.6	69.6	0	Y	-	-	39.8	Y	Y	Y
A2-9b-3	2	21.4	A2-9b	30.4	0	69.2	58.3	51.7	0	0	69.6	69.6	0	Y	-	-	39.2	Y	Y	Y
A2-9b-3	3	24.6	A2-9b	31.1	0	69.1	58.5	51.8	0	0	69.6	69.6	0	Y	-	-	38.5	Y	Y	Y
A2-9b-3	4	27.8	A2-9b	31.8	0	69.1	58.8	52.1	0	0	69.6	69.6	0	Y	-	-	37.8	Y	Y	Y
A2-9b-3	5	31	A2-9b	32.5	0	69	58.9	52.5	0	0	69.5	69.5	0	Y	-	-	37.0	Y	Y	Y
A2-9b-3	6	34.2	A2-9b	33.4	0	69	59.1	52.9	0	0	69.5	69.5	0	Y	-	-	36.1	Y	Y	Y
A2-9b-3	7	37.4	A2-9b	34.4	0	69	59.2	53.2	0	0	69.5	69.5	0	Y	-	-	35.1	Y	Y	Y
A2-9b-3	8	40.6	A2-9b	35.3	0	68.9	59.2	53.6	0	0	69.5	69.5	0	Y	-	-	34.2	Y	Y	Y
A2-9b-3	9	43.8	A2-9b	36	0	68.9	59.3	53.9	0	0	69.4	69.4	0	Y	-	-	33.4	Y	Y	Y
A2-9b-3	10	47	A2-9b	37.1	0	68.8	59.4	54.1	0	0	69.4	69.4	0	Y	-	-	32.3	Y	Y	Y
A2-9b-3	11	50.2	A2-9b	37.9	0	68.7	59.4	54.2	0	0	69.4	69.4	0	Y	-	-	31.5	Y	Y	Y
A2-9b-3	12	53.4	A2-9b	38.5	0	68.7	59.5	54.3	0	0	69.3	69.3	0	Y	-	-	30.8	Y	Y	Y
A2-9b-3	13	56.6	A2-9b	39	0	68.7	59.5	54.4	0	0	69.3	69.3	0	Y	-	-	30.3	Y	Y	Y
A2-9b-3	14	59.8	A2-9b	39.4	0	68.6	59.6	54.4	0	0	69.3	69.3	0	Y	-	-	29.9	Y	Y	Y
A2-9b-3	15	63	A2-9b	39.7	0	68.6	59.7	54.4	0	0	69.3	69.3	0	Y	-	-	29.6	Y	Y	Y
A2-9b-3	16	66.2	A2-9b	39.9	0	68.6	59.7	54.4	0	0	69.3	69.3	0	Y	-	-	29.4	Y	Y	Y
A2-9b-3	17	69.4	A2-9b	40.1	0	68.6	59.8	54.4	0	0	69.3	69.3	0	Y	-	-	29.2	Y	Y	Y
A2-9b-3	18	72.6	A2-9b	40.3	0	68.6	59.8	54.4	0	0	69.2	69.3	0	Y	-	-	29.0	Y	Y	Y
A2-9b-3	19	75.8	A2-9b	40.6	0	68.5	59.9	54.4	0	0	69.2	69.2	0	Y	-	-	28.6	Y	Y	Y
A2-9b-3	20	79	A2-9b	40.8	0	68.5	59.9	54.4	0	0	69.2	69.2	0	Y	-	-	28.4	Y	Y	Y
A2-9b-4	1	18.7	A2-9b	37.2	0	70.1	56.5	50.7	0	0	70.4	70.4	70	N	-	-	33.2	Y	N	N
A2-9b-4	2	21.9	A2-9b	37.5	0	70.1	56.5	50.9	0	0	70.3	70.3	70	N	-	-	32.8	Y	N	N
A2-9b-4	3	25.1	A2-9b	37.8	0	70	56.7	51.2	0	0	70.3	70.3	70	N	-	-	32.5	Y	N	N
A2-9b-4	4	28.3	A2-9b	38.1	0	70	56.8	51.4	0	0	70.3	70.3	70	N	-	-	32.2	Y	N	N
A2-9b-4	5	31.5	A2-9b	38.7	0	70	57	51.8	0	0	70.2	70.2	70	N	-	-	31.5	Y	N	N
A2-9b-4	6	34.7	A2-9b	39.1	0	69.9	57.2	52.2	0	0	70.2	70.2	70	N	-	-	31.1	Y	N	N
A2-9b-4	7	37.9	A2-9b	39.8	0	69.8	57.4	52.5	0	0	70.2	70.2	70	N	-	-	30.4	Y	N	N
A2-9b-4	8	41.1	A2-9b	40.5	0	69.8	57.6	52.8	0	0	70.1	70.1	70	N	-	-	29.6	Y	N	N
A2-9b-4	9	44.3	A2-9b	41.3	0	69.7	57.7	53	0	0	70	70.1	70	N	-	-	28.8	Y	N	N
A2-9b-4	10	47.5	A2-9b	41.8	0	69.6	57.7	53.1	0	0	70	70	70	N	-	-	28.2	Y	N	N
A2-9b-4	11	50.7	A2-9b	42.2	0	69.6	57.8	53.3	0	0	69.9	70	70	N	-	-	27.8	Y	N	N
A2-9b-4	12	53.9	A2-9b	42.6	0	69.5	57.9	53.4	0	0	69.9	69.9	70	N	-	-	27.3	Y	N	N
A2-9b-4	13	57.1	A2-9b	42.8	0	69.4	58	53.4	0	0	69.8	69.8	70	N	-	-	27.0	Y	N	N
A2-9b-4	14	60.3	A2-9b	42.9	0	69.4	58	53.5	0	0	69.8	69.8	70	N	-	-	26.9	Y	N	N
A2-9b-4	15	63.5	A2-9b	43.1	0	69.3	58	53.5	0	0	69.7	69.7	70	N	-	-	26.6	Y	N	N
A2-9b-4	16	66.7	A2-9b	43.2	0	69.2	58.1	53.5	0	0	69.7	69.7	70	N	-	-	26.5	Y	N	N
A2-9b-4	17	69.9	A2-9b	43.3	0	69.1	58.1	53.5	0	0	69.6	69.6	70	N	-	-	26.3	Y	N	N
A2-9b-4	18	73.1	A2-9b	43.4	0	69.1	58.2	53.5	0	0	69.5	69.5	70	N	-	-	26.1	Y	N	N
A2-9b-4	19	76.3	A2-9b	43.5	0	69	58.2	53.5	0	0	69.5	69.5	70	N	-	-	26.0	Y	N	N
A2-9b-4	20	79.5	A2-9b	43.7	0	68.9	58.3	53.5	0	0	69.4	69.4	70	N	-	-	25.7	Y	N	N
A2-9b-5	1	18.2	A2-9b	30.5	0	70.7	55.6	50.8	0	0	70.8	70.8	70	Y	-	-	40.3	Y	Y	Y
A2-9b-5	2	21.4	A2-9b	31.1	0	70.6	55.6	51	0	0	70.8	70.8	70	Y	-	-	39.7	Y	Y	Y
A2-9b-5	3	24.6	A2-9b	31.7	0	70.6	55.6	51.3	0	0	70.8	70.8	70	Y	-	-	39.1	Y	Y	Y
A2-9b-5	4	27.8	A2-9b	32.3	0	70.6	55.7	51.9	0	0	70.8	70.8	70	Y	-	-	38.5	Y	Y	Y
A2-9b-5	5	31	A2-9b	33	0	70.5	55.8	52.4	0	0	70.7	70.7	70	Y	-	-	37.7	Y	Y	Y
A2-9b-5	6	34.2	A2-9b	33.7	0	70.5	55.9	52.6	0	0	70.7	70.7	70	Y	-	-	37.0	Y	Y	Y
A2-9b-5	7	37.4	A2-9b	34.6	0	70.4	56	52.7	0	0	70.6	70.6	70	Y	-	-	36.0	Y	Y	Y
A2-9b-5	8	40.6	A2-9b	35.6	0	70.3	56.1	52.8	0	0	70.5	70.5	70	Y	-	-	34.9	Y	Y	Y
A2-9b-5	9	43.8	A2-9b	36.5	0	70.2	56.3	52.8	0	0	70.5	70.5	70	Y	-	-	34.0	Y	Y	Y
A2-9b-5	10	47	A2-9b	37.5	0	70.2	56.3	52.8	0	0	70.5	70.5	70	Y	-	-	33.0	Y	Y	Y
A2-9b-5	11	50.2	A2-9b	38.5	0	70.2	56.4	52.8	0	0	70.4	70.4	70	N	-	-	31.9	Y	N	N
A2-9b-5	12	53.4	A2-9b	39.3	0	70.2	56.4	52.7	0	0	70.4	70.4	70	N	-	-	31.1	Y	N	N
A2-9b-5	13	56.6	A2-9b	40.3	0	70.1	56.4	52.7	0	0	70.3	70.4	70	N	-	-	30.1	Y	N	N
A2-9b-5	14	59.8	A2-9b	41.2	0	70	56.4	52.7	0	0	70.3	70.3	70	N	-	-	29.1	Y	N	N
A2-9b-5	15	63	A2-9b	42	0	69.9	56.5	52.7	0	0	70.2	70.2	70	N	-	-	28.2	Y	N	N
A2-9b-5	16	66.2	A2-9b	43	0	69.8	56.5	52.7	0	0	70.1	70.1	70	N	-	-	27.1	Y	N	N
A2-9b-5	17	69.4	A2-9b	43.6	0	69.7	56.5	52.6	0	0	70	70	70	N	-	-	26.4	Y	N	N
A2-9b-5	18	72.6	A2-9b	44.4	0	69.7	56.5	52.6	0	0	70	70	70	N	-	-	25.6	Y	N	N
A2-9b-5	19	75.8	A2-9b	45	0	69.6	56.5	52.6	0	0	69.9	69.9	70	N	-	-	24.9	Y	N	N
A2-9b-5	20	79	A2-9b	45.6	0	69.5	56.5	52.5	0	0	69.8	69.8	70	N	-	-	24.2	Y	N	N
A2-9b-6	1	18.2	A2-9b	27	0	70.2	57.7	53.2	0	0	70.6	70.6	70	Y	-	-	43.6	Y	Y	Y
A2-9b-6	2	21.4	A2-9b	27.6	0	70.2	57.7	53.3	0	0	70.6	70.6	70	Y	-	-	43.0	Y	Y	Y
A2-9b-6	3	24.6	A2-9b	28.2	0	70.2	57.7	53.8	0	0	70.6	70.6	70	Y	-	-	42.4	Y	Y	Y

Title: Detailed Calculation of Road Traffic Noise with Direct Mitigation Measures in place
Scenario: Existing and Planned Residential and Educational Uses in KTN NDA (Mitigated Case on Proposed Roads)

Assessment Point			Location	WITH PROJECT													
				Existing Road in 2046 dB(A)	Other Roads in 2046 dB(A)[1]	New Roads[2]					Overall Noise Level in 2046 dB(A) [C]	Noise Criteria dB(A)	Exceedance C > Criteria (Y/N)	Check Project Impact Significance		Check Direct Mitigation			At Receiver-end Mitigation Measures Required [4,5] (Y/N)
						PD	DD	LD	EX	TR	New Roads in 2046 dB(A) [3] [B]								
ID	Floor	Floor Level (mPD)		dB (A)										C - A dB(A) [D]	D ≥ 1dB(A)	New Road Contribution dB(A) [E]	New Road Contribution ≥ 1dB(A) E ≥ 1dB(A)	New Road > Criteria B > Criteria	
A2-9b-6	4	27.8	A2-9b	28.8	0	70.2	57.7	54.2	0	0	70.6	70.6	70	Y	-	-	41.8	Y	Y	Y
A2-9b-6	5	31	A2-9b	29.6	0	70.2	57.7	54.3	0	0	70.5	70.5	70	Y	-	-	40.9	Y	Y	Y
A2-9b-6	6	34.2	A2-9b	30.3	0	70.1	57.8	54.3	0	0	70.5	70.5	70	Y	-	-	40.2	Y	Y	Y
A2-9b-6	7	37.4	A2-9b	31.1	0	70.1	57.8	54.3	0	0	70.5	70.5	70	Y	-	-	39.4	Y	Y	Y
A2-9b-6	8	40.6	A2-9b	31.9	0	70.1	57.8	54.3	0	0	70.5	70.5	70	Y	-	-	38.6	Y	Y	Y
A2-9b-6	9	43.8	A2-9b	32.8	0	70.1	57.9	54.2	0	0	70.5	70.5	70	Y	-	-	37.7	Y	Y	Y
A2-9b-6	10	47	A2-9b	33.8	0	70.1	57.9	54.2	0	0	70.5	70.5	70	Y	-	-	36.7	Y	Y	Y
A2-9b-6	11	50.2	A2-9b	35	0	70.2	57.9	54.2	0	0	70.5	70.5	70	Y	-	-	35.5	Y	Y	Y
A2-9b-6	12	53.4	A2-9b	36.2	0	70.2	57.9	54.1	0	0	70.6	70.6	70	Y	-	-	34.4	Y	Y	Y
A2-9b-6	13	56.6	A2-9b	37.5	0	70.2	57.9	54.1	0	0	70.5	70.5	70	Y	-	-	33.0	Y	Y	Y
A2-9b-6	14	59.8	A2-9b	38.8	0	70.1	57.9	54.1	0	0	70.5	70.5	70	Y	-	-	31.7	Y	Y	Y
A2-9b-6	15	63	A2-9b	40.1	0	70.1	57.9	54	0	0	70.4	70.4	70	N	-	-	30.3	Y	N	N
A2-9b-6	16	66.2	A2-9b	41.1	0	70	57.9	54	0	0	70.4	70.4	70	N	-	-	29.3	Y	N	N
A2-9b-6	17	69.4	A2-9b	41.8	0	69.9	57.9	53.9	0	0	70.3	70.3	70	N	-	-	28.5	Y	N	N
A2-9b-6	18	72.6	A2-9b	42.4	0	69.8	57.9	53.9	0	0	70.2	70.2	70	N	-	-	27.8	Y	N	N
A2-9b-6	19	75.8	A2-9b	42.9	0	69.7	57.8	53.9	0	0	70.1	70.1	70	N	-	-	27.2	Y	N	N
A2-9b-6	20	79	A2-9b	43.1	0	69.6	57.8	53.8	0	0	70	70	70	N	-	-	26.9	Y	N	N
A2-9b-7	1	18.2	A2-9b	20.7	0	68.1	57.7	52.7	0	0	68.6	68.6	70	N	-	-	47.9	Y	N	N
A2-9b-7	2	21.4	A2-9b	21.1	0	68.2	57.7	52.8	0	0	68.7	68.7	70	N	-	-	47.6	Y	N	N
A2-9b-7	3	24.6	A2-9b	21.6	0	68.3	57.7	53.1	0	0	68.8	68.8	70	N	-	-	47.2	Y	N	N
A2-9b-7	4	27.8	A2-9b	22.1	0	68.3	57.7	53.6	0	0	68.8	68.8	70	N	-	-	46.7	Y	N	N
A2-9b-7	5	31	A2-9b	22.6	0	68.3	57.6	53.8	0	0	68.8	68.8	70	N	-	-	46.2	Y	N	N
A2-9b-7	6	34.2	A2-9b	23.3	0	68.3	57.6	53.9	0	0	68.8	68.8	70	N	-	-	45.5	Y	N	N
A2-9b-7	7	37.4	A2-9b	24	0	68.2	57.6	53.8	0	0	68.7	68.7	70	N	-	-	44.7	Y	N	N
A2-9b-7	8	40.6	A2-9b	24.7	0	68.2	57.6	53.8	0	0	68.7	68.7	70	N	-	-	44.0	Y	N	N
A2-9b-7	9	43.8	A2-9b	25.5	0	68.2	57.6	53.8	0	0	68.7	68.7	70	N	-	-	43.2	Y	N	N
A2-9b-7	10	47	A2-9b	26.5	0	68.2	57.5	53.7	0	0	68.7	68.7	70	N	-	-	42.2	Y	N	N
A2-9b-7	11	50.2	A2-9b	27.6	0	68.3	57.5	53.7	0	0	68.7	68.7	70	N	-	-	41.1	Y	N	N
A2-9b-7	12	53.4	A2-9b	28.9	0	68.3	57.5	53.6	0	0	68.8	68.8	70	N	-	-	39.9	Y	N	N
A2-9b-7	13	56.6	A2-9b	30.5	0	68.4	57.5	53.6	0	0	68.8	68.8	70	N	-	-	38.3	Y	N	N
A2-9b-7	14	59.8	A2-9b	32.3	0	68.4	57.4	53.6	0	0	68.9	68.9	70	N	-	-	36.6	Y	N	N
A2-9b-7	15	63	A2-9b	33.7	0	68.4	57.4	53.5	0	0	68.9	68.9	70	N	-	-	35.2	Y	N	N
A2-9b-7	16	66.2	A2-9b	35.1	0	68.4	57.4	53.5	0	0	68.9	68.9	70	N	-	-	33.8	Y	N	N
A2-9b-7	17	69.4	A2-9b	36	0	68.4	57.4	53.4	0	0	68.8	68.8	70	N	-	-	32.8	Y	N	N
A2-9b-7	18	72.6	A2-9b	36.5	0	68.3	57.3	53.4	0	0	68.8	68.8	70	N	-	-	32.3	Y	N	N
A2-9b-7	19	75.8	A2-9b	36.7	0	68.2	57.3	53.3	0	0	68.7	68.7	70	N	-	-	32.0	Y	N	N
A2-9b-7	20	79	A2-9b	36.8	0	68.2	57.2	53.3	0	0	68.6	68.6	70	N	-	-	31.8	Y	N	N
B10 (KTN NDA Area 23)																				
D1-7a-1	1	38.2	D1-7a	23.8	0	69.7	63.9	55.1	0	0	70.9	70.9	70	Y	-	-	47.1	Y	Y	Y
D1-7a-1	2	41.4	D1-7a	25.4	0	70	63.9	55.1	0	0	71.1	71.1	70	Y	-	-	45.7	Y	Y	Y
D1-7a-1	3	44.6	D1-7a	26.4	0	70.2	64	55.2	0	0	71.2	71.2	70	Y	-	-	44.8	Y	Y	Y
D1-7a-1	4	47.8	D1-7a	27.5	0	70.5	64	55.1	0	0	71.5	71.5	70	Y	-	-	44.0	Y	Y	Y
D1-7a-1	5	51	D1-7a	28.9	0	70.7	64	55.1	0	0	71.6	71.6	70	Y	-	-	42.7	Y	Y	Y
D1-7a-1	6	54.2	D1-7a	29.7	0	70.7	64.1	55	0	0	71.6	71.6	70	Y	-	-	41.9	Y	Y	Y
D1-7a-1	7	57.4	D1-7a	30.8	0	70.6	64	55	0	0	71.6	71.6	70	Y	-	-	40.8	Y	Y	Y
D1-7a-1	8	60.6	D1-7a	32.1	0	70.5	64.1	54.9	0	0	71.5	71.5	70	Y	-	-	39.4	Y	Y	Y
D1-7a-1	9	63.8	D1-7a	32.9	0	70.4	64.1	54.9	0	0	71.4	71.4	70	Y	-	-	38.5	Y	Y	Y
D1-7a-1	10	67	D1-7a	33.5	0	70.3	64.1	54.8	0	0	71.3	71.3	70	Y	-	-	37.8	Y	Y	Y
D1-7a-1	11	70.2	D1-7a	33.9	0	70.1	64	54.7	0	0	71.2	71.2	70	Y	-	-	37.3	Y	Y	Y
D1-7a-1	12	73.4	D1-7a	34.1	0	70	64	54.7	0	0	71	71	70	Y	-	-	36.9	Y	Y	Y
D1-7a-1	13	76.6	D1-7a	34.3	0	69.8	64	54.6	0	0	70.9	70.9	70	Y	-	-	36.6	Y	Y	Y
D1-7a-1	14	79.8	D1-7a	34.5	0	69.7	64	54.5	0	0	70.8	70.8	70	Y	-	-	36.3	Y	Y	Y
D1-7a-1	15	83	D1-7a	34.4	0	69.5	63.9	54.5	0	0	70.7	70.7	70	Y	-	-	36.3	Y	Y	Y
D1-7a-1	16	86.2	D1-7a	34.5	0	69.4	63.9	54.4	0	0	70.6	70.6	70	Y	-	-	36.1	Y	Y	Y
D1-7a-1	17	89.4	D1-7a	34.6	0	69.3	63.9	54.3	0	0	70.5	70.5	70	Y	-	-	35.9	Y	Y	Y
D1-7a-1	18	92.6	D1-7a	34.6	0	69.1	63.8	54.2	0	0	70.3	70.3	70	N	-	-	35.7	Y	N	N
D1-7a-1	19	95.8	D1-7a	34.6	0	69	63.8	54.2	0	0	70.3	70.3	70	N	-	-	35.7	Y	N	N
D1-7a-1	20	99	D1-7a	34.6	0	68.9	63.8	54.1	0	0	70.1	70.1	70	N	-	-	35.5	Y	N	N
D1-7a-1	21	102.2	D1-7a	34.6	0	68.7	63.7	54	0	0	70	70	70	N	-	-	35.4	Y	N	N
D1-7a-1	22	105.4	D1-7a	34.6	0	68.6	63.7	53.9	0	0	69.9	69.9	70	N	-	-	35.3	Y	N	N
D1-7a-1	23	108.6	D1-7a	34.5	0	68.5	63.7	53.8	0	0	69.8	69.8	70	N	-	-	35.3	Y	N	N
D1-7a-1	24	111.8	D1-7a	34.5	0	68.4	63.6	53.8	0	0	69.7	69.7	70	N	-	-	35.2	Y	N	N
D1-7a-2	1	38.2	D1-7a	0	0	67.9	67.6	59.8	0	0	71.1	71.1	70	Y	-	-	71.1	Y	Y	Y
D1-7a-2	2	41.4	D1-7a	0	0	68.2	67.7	59.7	0	0	71.3	71.3	70	Y	-	-	71.3	Y	Y	Y
D1-7a-2	3	44.6	D1-7a	0	0	68.4	67.7	59.7	0	0	71.4	71.4	70	Y	-	-	71.4	Y	Y	Y
D1-7a-2	4	47.8	D1-7a	0	0	68.7	67.6	60.1	0	0	71.5	71.5	70	Y	-	-	71.5	Y	Y	Y
D1-7a-2	5	51	D1-7a	0	0	68.9	67.6	60.8	0	0	71.7	71.7	70	Y	-	-	71.7	Y	Y	Y
D1-7a-2	6	54.2	D1-7a	0	0	69.2	67.5	61.2	0	0	71.8	71.8	70	Y	-	-	71.8	Y	Y	Y
D1-7a-2	7	57.4	D1-7a	0	0	69.3	67.4	61.2	0	0	71.9	71.9	70	Y	-	-	71.9	Y	Y	Y
D1-7a-2	8	60.6	D1-7a	0	0	69.3	67.4	61.1	0	0	71.8	71.8	70	Y	-	-	71.8	Y	Y	Y
D1-7a-2	9	63.8	D1-7a	0	0	69.3	67.3	61	0	0	71.8	71.8	70	Y	-	-	71.8	Y	Y	Y
D1-7a-2	10	67	D1-7a	0	0	69.2	67.2	60.9	0	0	71.7	71.7	70	Y	-	-	71.7	Y	Y	Y
D1-7a-2	11	70.2	D1-7a	0	0	69.1	67.1	60.7	0	0	71.6	71.6	70	Y	-	-	71.6	Y	Y	Y
D1-7a-2	12	73.4	D1-7a	0	0	69	67	60.6	0	0	71.5	71.5	70	Y	-	-	71.5	Y	Y	Y
D1-7a-2	13	76.6	D1-7a	0	0	68.9	66.9	60.4	0	0	71.4	71.4	70	Y	-	-	71.4	Y	Y	Y
D1-7a-2	14	79.8	D1-7a	0	0	68.8	66.8	60.3	0	0	71.3	71.3	70	Y	-	-	71.3	Y	Y	Y
D1-7a-2	15	83	D1-7a	0	0	68.6	66.7	60.1	0	0	71.2	71.2	70	Y	-	-	71.2	Y	Y	Y
D1-7a-2	16	86.2	D1-7a	0	0	68.5	66.6	60	0	0	71	71	70	Y	-	-	71.0	Y	Y	Y
D1-7a-2	17	89.4	D1-7a	0	0	68.4	66.5	59.9	0	0	70.9	70.9	70	Y	-	-	70.9	Y	Y	Y

Title: Detailed Calculation of Road Traffic Noise with Direct Mitigation Measures in place
Scenario: Existing and Planned Residential and Educational Uses in KTN NDA (Mitigated Case on Proposed Roads)

Assessment Point			Location	WITH PROJECT														
				Existing Road in 2046 dB(A)	Other Roads in 2046 dB(A)[1]	New Roads[2]						Overall Noise Level in 2046 dB(A) [C]	Noise Criteria dB(A)	Exceedance C > Criteria (Y/N)	Check Project Impact Significance		Check Direct Mitigation			At Receiver-end Mitigation Measures Required [4,5] (Y/N)
						PD	DD	LD	EX	TR	New Roads in 2046 dB(A) [3] [B]				C - A dB(A) [D]	D ≥ 1dB(A)	New Road Contribution dB(A) [E]	New Road Contribution ≥ 1dB(A) E ≥ 1dB(A)	New Road > Criteria B > Criteria	
ID	Floor	Floor Level (mPD)		dB (A)																
D1-7a-2	18	92.6	D1-7a	0	0	68.3	66.4	59.8	0	0	70.8	70.8	70	Y	-	-	70.8	Y	Y	Y
D1-7a-2	19	95.8	D1-7a	0	0	68.1	66.3	59.7	0	0	70.7	70.7	70	Y	-	-	70.7	Y	Y	Y
D1-7a-2	20	99	D1-7a	0	0	68	66.2	59.6	0	0	70.6	70.6	70	Y	-	-	70.6	Y	Y	Y
D1-7a-2	21	102.2	D1-7a	0	0	67.9	66.2	59.4	0	0	70.5	70.5	70	Y	-	-	70.5	Y	Y	Y
D1-7a-2	22	105.4	D1-7a	0	0	67.8	66.1	59.3	0	0	70.4	70.4	70	N	-	-	70.4	Y	N	N
D1-7a-2	23	108.6	D1-7a	0	0	67.6	66	59.2	0	0	70.2	70.2	70	N	-	-	70.2	Y	N	N
D1-7a-2	24	111.8	D1-7a	0	0	67.5	65.9	59.1	0	0	70.1	70.1	70	N	-	-	70.1	Y	N	N
D1-7a-3	1	38.2	D1-7a	37.5	0	58.1	68.1	68.4	0	0	71.5	71.5	70	Y	-	-	34.0	Y	Y	Y
D1-7a-3	2	41.4	D1-7a	37.8	0	59.6	68	68.1	0	0	71.4	71.4	70	Y	-	-	33.6	Y	Y	Y
D1-7a-3	3	44.6	D1-7a	38.1	0	61.3	67.9	67.9	0	0	71.4	71.4	70	Y	-	-	33.3	Y	Y	Y
D1-7a-3	4	47.8	D1-7a	38.4	0	61.8	67.8	67.6	0	0	71.3	71.3	70	Y	-	-	32.9	Y	Y	Y
D1-7a-3	5	51	D1-7a	38.9	0	61.9	67.8	67.4	0	0	71.1	71.1	70	Y	-	-	32.2	Y	Y	Y
D1-7a-3	6	54.2	D1-7a	39.7	0	62.1	67.7	67.1	0	0	71	71	70	Y	-	-	31.3	Y	Y	Y
D1-7a-3	7	57.4	D1-7a	40.7	0	62.2	67.5	66.9	0	0	70.9	70.9	70	Y	-	-	30.2	Y	Y	Y
D1-7a-3	8	60.6	D1-7a	41.6	0	62.4	67.4	66.7	0	0	70.8	70.8	70	Y	-	-	29.2	Y	Y	Y
D1-7a-3	9	63.8	D1-7a	42.4	0	62.5	67.3	66.5	0	0	70.7	70.7	70	Y	-	-	28.3	Y	Y	Y
D1-7a-3	10	67	D1-7a	43.2	0	62.7	67.2	66.3	0	0	70.6	70.6	70	Y	-	-	27.4	Y	Y	Y
D1-7a-3	11	70.2	D1-7a	43.9	0	63	67.1	66.1	0	0	70.5	70.5	70	Y	-	-	26.6	Y	Y	Y
D1-7a-3	12	73.4	D1-7a	44.5	0	63.1	67	65.9	0	0	70.4	70.4	70	N	-	-	25.9	Y	N	N
D1-7a-3	13	76.6	D1-7a	45.1	0	63.2	66.9	65.7	0	0	70.3	70.3	70	N	-	-	25.2	Y	N	N
D1-7a-3	14	79.8	D1-7a	45.6	0	63.2	66.8	65.5	0	0	70.2	70.2	70	N	-	-	24.6	Y	N	N
D1-7a-3	15	83	D1-7a	46	0	63.2	66.7	65.3	0	0	70.1	70.1	70	N	-	-	24.1	Y	N	N
D1-7a-3	16	86.2	D1-7a	46.4	0	63.2	66.6	65.2	0	0	70	70	70	N	-	-	23.6	Y	N	N
D1-7a-3	17	89.4	D1-7a	46.6	0	63.1	66.5	65	0	0	69.8	69.9	70	N	-	-	23.3	Y	N	N
D1-7a-3	18	92.6	D1-7a	46.7	0	63.1	66.4	64.8	0	0	69.7	69.8	70	N	-	-	23.1	Y	N	N
D1-7a-3	19	95.8	D1-7a	46.9	0	63	66.3	64.7	0	0	69.6	69.7	70	N	-	-	22.8	Y	N	N
D1-7a-3	20	99	D1-7a	46.9	0	62.9	66.2	64.5	0	0	69.5	69.5	70	N	-	-	22.6	Y	N	N
D1-7a-3	21	102.2	D1-7a	46.9	0	62.8	66.1	64.4	0	0	69.4	69.4	70	N	-	-	22.5	Y	N	N
D1-7a-3	22	105.4	D1-7a	47	0	62.7	66	64.3	0	0	69.3	69.3	70	N	-	-	22.3	Y	N	N
D1-7a-3	23	108.6	D1-7a	46.9	0	62.6	66	64.1	0	0	69.2	69.2	70	N	-	-	22.3	Y	N	N
D1-7a-3	24	111.8	D1-7a	46.9	0	62.5	65.8	64	0	0	69.1	69.1	70	N	-	-	22.2	Y	N	N
D1-7a-4	1	38.2	D1-7a	40.4	0	29.9	56.1	62.2	0	0	63.2	63.2	70	N	-	-	22.8	Y	N	N
D1-7a-4	2	41.4	D1-7a	41.2	0	29.9	60.1	67.9	0	0	68.5	68.6	70	N	-	-	27.4	Y	N	N
D1-7a-4	3	44.6	D1-7a	42.1	0	29.8	60.6	67.9	0	0	68.7	68.7	70	N	-	-	26.6	Y	N	N
D1-7a-4	4	47.8	D1-7a	43.2	0	29.8	60.8	67.7	0	0	68.5	68.5	70	N	-	-	25.3	Y	N	N
D1-7a-4	5	51	D1-7a	43.8	0	29.8	60.9	67.4	0	0	68.3	68.3	70	N	-	-	24.5	Y	N	N
D1-7a-4	6	54.2	D1-7a	44.5	0	29.8	60.9	67.1	0	0	68.1	68.1	70	N	-	-	23.6	Y	N	N
D1-7a-4	7	57.4	D1-7a	45.1	0	29.7	60.9	66.9	0	0	67.8	67.9	70	N	-	-	22.8	Y	N	N
D1-7a-4	8	60.6	D1-7a	46	0	29.7	60.9	66.6	0	0	67.6	67.7	70	N	-	-	21.7	Y	N	N
D1-7a-4	9	63.8	D1-7a	46.8	0	29.6	60.9	66.4	0	0	67.5	67.5	70	N	-	-	20.7	Y	N	N
D1-7a-4	10	67	D1-7a	47.4	0	29.6	60.8	66.1	0	0	67.3	67.3	70	N	-	-	19.9	Y	N	N
D1-7a-4	11	70.2	D1-7a	47.8	0	29.6	60.8	65.9	0	0	67.1	67.1	70	N	-	-	19.3	Y	N	N
D1-7a-4	12	73.4	D1-7a	48.3	0	29.5	60.8	65.7	0	0	67	67	70	N	-	-	18.7	Y	N	N
D1-7a-4	13	76.6	D1-7a	48.7	0	29.5	60.7	65.6	0	0	66.8	66.9	70	N	-	-	18.2	Y	N	N
D1-7a-4	14	79.8	D1-7a	49.1	0	29.4	60.7	65.4	0	0	66.6	66.7	70	N	-	-	17.6	Y	N	N
D1-7a-4	15	83	D1-7a	49.4	0	29.4	60.6	65.2	0	0	66.5	66.6	70	N	-	-	17.2	Y	N	N
D1-7a-4	16	86.2	D1-7a	49.7	0	29.3	60.6	65	0	0	66.4	66.5	70	N	-	-	16.8	Y	N	N
D1-7a-4	17	89.4	D1-7a	50	0	29.3	60.6	64.8	0	0	66.2	66.3	70	N	-	-	16.3	Y	N	N
D1-7a-4	18	92.6	D1-7a	50.2	0	29.2	60.5	64.6	0	0	66.1	66.2	70	N	-	-	16.0	Y	N	N
D1-7a-4	19	95.8	D1-7a	50.5	0	29.2	60.5	64.5	0	0	66	66.1	70	N	-	-	15.6	Y	N	N
D1-7a-4	20	99	D1-7a	50.7	0	29.1	60.5	64.3	0	0	65.8	66	70	N	-	-	15.3	Y	N	N
D1-7a-4	21	102.2	D1-7a	50.8	0	29.1	60.4	64.2	0	0	65.7	65.9	70	N	-	-	15.1	Y	N	N
D1-7a-4	22	105.4	D1-7a	50.9	0	29	60.4	64.1	0	0	65.6	65.7	70	N	-	-	14.8	Y	N	N
D1-7a-4	23	108.6	D1-7a	50.9	0	29	60.4	64	0	0	65.5	65.7	70	N	-	-	14.8	Y	N	N
D1-7a-4	24	111.8	D1-7a	50.9	0	28.9	60.3	63.8	0	0	65.4	65.5	70	N	-	-	14.6	Y	N	N
D1-7a-5	1	38.2	D1-7a	43	0	26.1	22.4	51.9	0	0	52	52.5	70	N	-	-	9.5	Y	N	N
D1-7a-5	2	41.4	D1-7a	46.2	0	26.1	22.4	56.2	0	0	56.2	56.6	70	N	-	-	10.4	Y	N	N
D1-7a-5	3	44.6	D1-7a	47.4	0	26	22.4	59.4	0	0	59.4	59.7	70	N	-	-	12.3	Y	N	N
D1-7a-5	4	47.8	D1-7a	48.2	0	26	22.3	61.4	0	0	61.4	61.6	70	N	-	-	13.4	Y	N	N
D1-7a-5	5	51	D1-7a	49	0	26	22.3	62.1	0	0	62.1	62.3	70	N	-	-	13.3	Y	N	N
D1-7a-5	6	54.2	D1-7a	49.6	0	26	22.3	62.4	0	0	62.4	62.7	70	N	-	-	13.1	Y	N	N
D1-7a-5	7	57.4	D1-7a	50.3	0	26	22.3	62.5	0	0	62.5	62.8	70	N	-	-	12.5	Y	N	N
D1-7a-5	8	60.6	D1-7a	50.9	0	26	22.2	62.5	0	0	62.5	62.7	70	N	-	-	11.8	Y	N	N
D1-7a-5	9	63.8	D1-7a	51.4	0	26	22.3	62.3	0	0	62.4	62.7	70	N	-	-	11.3	Y	N	N
D1-7a-5	10	67	D1-7a	51.8	0	25.9	22.4	62.2	0	0	62.2	62.6	70	N	-	-	10.8	Y	N	N
D1-7a-5	11	70.2	D1-7a	52.3	0	25.9	22.5	62	0	0	62	62.5	70	N	-	-	10.2	Y	N	N
D1-7a-5	12	73.4	D1-7a	52.8	0	25.9	22.6	61.9	0	0	61.9	62.4	70	N	-	-	9.6	Y	N	N
D1-7a-5	13	76.6	D1-7a	53.3	0	25.9	22.6	61.7	0	0	61.7	62.3	70	N	-	-	9.0	Y	N	N
D1-7a-5	14	79.8	D1-7a	53.7	0	25.9	22.6	61.6	0	0	61.6	62.2	70	N	-	-	8.5	Y	N	N
D1-7a-5	15	83	D1-7a	54	0	25.9	22.6	61.4	0	0	61.5	62.2	70	N	-	-	8.2	Y	N	N
D1-7a-5	16	86.2	D1-7a	54.2	0	26.2	22.7	61.3	0	0	61.3	62.1	70	N	-	-	7.9	Y	N	N
D1-7a-5	17	89.4	D1-7a	54.4	0	26.9	22.7	61.2	0	0	61.2	62	70	N	-	-	7.6	Y	N	N
D1-7a-5	18	92.6	D1-7a	54.5	0	27.7	22.8	61	0	0	61	61.9	70	N	-	-	7.4	Y	N	N
D1-7a-5	19	95.8	D1-7a	54.5	0	28.6	22.8	60.9	0	0	60.9	61.8	70	N	-	-	7.3	Y	N	N
D1-7a-5	20	99	D1-7a	54.6	0	29.4	22.8	60.8	0	0	60.8	61.7	70	N	-	-	7.1	Y	N	N
D1-7a-5	21	102.2	D1-7a	54.6	0	30.2	23.1	60.7	0	0	60.7	61.6	70	N	-	-	7.0	Y	N	N
D1-7a-5	22	105.4	D1-7a	54.6	0	31	23.7	60.6	0	0	60.6	61.5	70	N	-	-	6.9	Y	N	N
D1-7a-5	23	108.6	D1-7a	54.6	0	31.8	24.4	60.4	0	0	60.4	61.4	70	N	-	-	6.8	Y	N	N
D1-7a-5	24	111.8	D1-7a	54.5	0	32.6	25.6	60.3	0	0	60.3	61.3	70	N	-	-	6.8	Y	N	N

Title: Detailed Calculation of Road Traffic Noise with Direct Mitigation Measures in place
Scenario: Existing and Planned Residential and Educational Uses in KTN NDA (Mitigated Case on Proposed Roads)

Assessment Point			Location	WITH PROJECT										Check Project Impact Significance		Check Direct Mitigation			At Receiver-end Mitigation Measures Required [4,5] (Y/N)
				Existing Road in 2046 dB(A)	Other Roads in 2046 dB(A)[1]	New Roads[2]					New Roads in 2046 dB(A) [3] [B]	Overall Noise Level in 2046 dB(A) [C]	Noise Criteria dB(A)	Exceedance C > Criteria (Y/N)	C - A dB(A) [D]	D ≥ 1dB(A)	New Road Contribution dB(A) [E]	New Road Contribution ≥ 1dB(A) E ≥ 1dB(A)	New Road > Criteria B > Criteria	
						PD	DD	LD	EX	TR										
ID	Floor	Floor Level (mPD)		dB (A)																
D1-7b-1	1	21.2	D1-7b	0	0	72.1	57.3	52.2	0	0	72.3	72.3	70	Y	-	-	72.3	Y	Y	Y
D1-7b-1	2	24.4	D1-7b	0	0	72.2	58.4	52.2	0	0	72.4	72.4	70	Y	-	-	72.4	Y	Y	Y
D1-7b-1	3	27.6	D1-7b	0	0	72.4	59.1	52.2	0	0	72.6	72.6	70	Y	-	-	72.6	Y	Y	Y
D1-7b-1	4	30.8	D1-7b	0	0	72.4	59.4	52.2	0	0	72.6	72.6	70	Y	-	-	72.6	Y	Y	Y
D1-7b-1	5	34	D1-7b	0	0	72.3	59.7	52.2	0	0	72.6	72.6	70	Y	-	-	72.6	Y	Y	Y
D1-7b-1	6	37.2	D1-7b	0	0	72.2	59.9	52.1	0	0	72.5	72.5	70	Y	-	-	72.5	Y	Y	Y
D1-7b-1	7	40.4	D1-7b	0	0	72.1	60	52.1	0	0	72.4	72.4	70	Y	-	-	72.4	Y	Y	Y
D1-7b-1	8	43.6	D1-7b	0	0	72	60.1	52	0	0	72.4	72.4	70	Y	-	-	72.4	Y	Y	Y
D1-7b-1	9	46.8	D1-7b	0	0	71.9	60.2	52	0	0	72.2	72.2	70	Y	-	-	72.2	Y	Y	Y
D1-7b-1	10	50	D1-7b	0	0	71.7	60.3	51.9	0	0	72.1	72.1	70	Y	-	-	72.1	Y	Y	Y
D1-7b-1	11	53.2	D1-7b	0	0	71.5	60.4	51.9	0	0	71.9	71.9	70	Y	-	-	71.9	Y	Y	Y
D1-7b-1	12	56.4	D1-7b	0	0	71.3	60.5	51.9	0	0	71.7	71.7	70	Y	-	-	71.7	Y	Y	Y
D1-7b-1	13	59.6	D1-7b	0	0	71.2	60.5	51.8	0	0	71.6	71.6	70	Y	-	-	71.6	Y	Y	Y
D1-7b-1	14	62.8	D1-7b	0	0	71	60.6	51.8	0	0	71.4	71.4	70	Y	-	-	71.4	Y	Y	Y
D1-7b-1	15	66	D1-7b	0	0	70.9	60.6	51.8	0	0	71.3	71.3	70	Y	-	-	71.3	Y	Y	Y
D1-7b-1	16	69.2	D1-7b	0	0	70.7	60.7	51.7	0	0	71.1	71.1	70	Y	-	-	71.1	Y	Y	Y
D1-7b-1	17	72.4	D1-7b	0	0	70.5	60.7	51.6	0	0	71	71	70	Y	-	-	71.0	Y	Y	Y
D1-7b-1	18	75.6	D1-7b	0	0	70.4	60.7	51.6	0	0	70.9	70.9	70	Y	-	-	70.9	Y	Y	Y
D1-7b-1	19	78.8	D1-7b	0	0	70.2	60.8	51.6	0	0	70.7	70.7	70	Y	-	-	70.7	Y	Y	Y
D1-7b-1	20	82	D1-7b	0	0	70.1	60.8	51.5	0	0	70.6	70.6	70	Y	-	-	70.6	Y	Y	Y
D1-7b-1	21	85.2	D1-7b	0	0	69.9	60.8	51.5	0	0	70.5	70.5	70	Y	-	-	70.5	Y	Y	Y
D1-7b-1	22	88.4	D1-7b	0	0	69.8	60.8	51.4	0	0	70.3	70.3	70	N	-	-	70.3	Y	N	N
D1-7b-1	23	91.6	D1-7b	0	0	69.6	60.9	51.3	0	0	70.2	70.2	70	N	-	-	70.2	Y	N	N
D1-7b-1	24	94.8	D1-7b	0	0	69.5	60.9	51.3	0	0	70.1	70.1	70	N	-	-	70.1	Y	N	N
D1-7b-1	25	98	D1-7b	0	0	69.3	60.9	51.3	0	0	70	70	70	N	-	-	70.0	Y	N	N
D1-7b-1	26	101.2	D1-7b	0	0	69.2	60.9	51.2	0	0	69.9	69.9	70	N	-	-	69.9	Y	N	N
D1-7b-2	1	21.2	D1-7b	0	0	73.2	55.9	54.5	0	0	73.4	73.4	70	Y	-	-	73.4	Y	Y	Y
D1-7b-2	2	24.4	D1-7b	0	0	73.1	56.9	54.5	0	0	73.3	73.3	70	Y	-	-	73.3	Y	Y	Y
D1-7b-2	3	27.6	D1-7b	0	0	73	57.6	54.4	0	0	73.2	73.2	70	Y	-	-	73.2	Y	Y	Y
D1-7b-2	4	30.8	D1-7b	0	0	72.8	58	54.4	0	0	73	73	70	Y	-	-	73.0	Y	Y	Y
D1-7b-2	5	34	D1-7b	0	0	72.7	58.3	54.3	0	0	72.9	72.9	70	Y	-	-	72.9	Y	Y	Y
D1-7b-2	6	37.2	D1-7b	0	0	72.5	58.5	54.3	0	0	72.7	72.7	70	Y	-	-	72.7	Y	Y	Y
D1-7b-2	7	40.4	D1-7b	0	0	72.3	58.7	54.3	0	0	72.6	72.6	70	Y	-	-	72.6	Y	Y	Y
D1-7b-2	8	43.6	D1-7b	0	0	72.2	58.8	54.2	0	0	72.4	72.4	70	Y	-	-	72.4	Y	Y	Y
D1-7b-2	9	46.8	D1-7b	0	0	72	58.9	54.2	0	0	72.3	72.3	70	Y	-	-	72.3	Y	Y	Y
D1-7b-2	10	50	D1-7b	0	0	71.8	59	54.2	0	0	72.1	72.1	70	Y	-	-	72.1	Y	Y	Y
D1-7b-2	11	53.2	D1-7b	0	0	71.6	59	54.1	0	0	71.9	71.9	70	Y	-	-	71.9	Y	Y	Y
D1-7b-2	12	56.4	D1-7b	0	0	71.4	59.1	54.1	0	0	71.7	71.7	70	Y	-	-	71.7	Y	Y	Y
D1-7b-2	13	59.6	D1-7b	0	0	71.3	59.1	54	0	0	71.6	71.6	70	Y	-	-	71.6	Y	Y	Y
D1-7b-2	14	62.8	D1-7b	0	0	71.1	59.2	54	0	0	71.4	71.4	70	Y	-	-	71.4	Y	Y	Y
D1-7b-2	15	66	D1-7b	0	0	70.9	59.3	54	0	0	71.3	71.3	70	Y	-	-	71.3	Y	Y	Y
D1-7b-2	16	69.2	D1-7b	0	0	70.8	59.3	54	0	0	71.2	71.2	70	Y	-	-	71.2	Y	Y	Y
D1-7b-2	17	72.4	D1-7b	0	0	70.6	59.4	53.9	0	0	71	71	70	Y	-	-	71.0	Y	Y	Y
D1-7b-2	18	75.6	D1-7b	0	0	70.5	59.4	53.9	0	0	70.9	70.9	70	Y	-	-	70.9	Y	Y	Y
D1-7b-2	19	78.8	D1-7b	0	0	70.3	59.5	53.8	0	0	70.7	70.7	70	Y	-	-	70.7	Y	Y	Y
D1-7b-2	20	82	D1-7b	0	0	70.2	59.5	53.7	0	0	70.6	70.6	70	Y	-	-	70.6	Y	Y	Y
D1-7b-2	21	85.2	D1-7b	0	0	70	59.5	53.7	0	0	70.5	70.5	70	Y	-	-	70.5	Y	Y	Y
D1-7b-2	22	88.4	D1-7b	0	0	69.9	59.6	53.7	0	0	70.4	70.4	70	N	-	-	70.4	Y	N	N
D1-7b-2	23	91.6	D1-7b	0	0	69.8	59.6	53.6	0	0	70.3	70.3	70	N	-	-	70.3	Y	N	N
D1-7b-2	24	94.8	D1-7b	0	0	69.6	59.7	53.5	0	0	70.1	70.1	70	N	-	-	70.1	Y	N	N
D1-7b-2	25	98	D1-7b	0	0	69.5	59.7	53.5	0	0	70	70	70	N	-	-	70.0	Y	N	N
D1-7b-2	26	101.2	D1-7b	0	0	69.4	59.7	53.4	0	0	69.9	69.9	70	N	-	-	69.9	Y	N	N
D1-7b-3	1	21.2	D1-7b	40.2	0	0	22.1	62.1	0	0	62.1	62.1	70	N	-	-	21.9	Y	N	N
D1-7b-3	2	24.4	D1-7b	41.9	0	0	22.1	62.4	0	0	62.4	62.4	70	N	-	-	20.5	Y	N	N
D1-7b-3	3	27.6	D1-7b	43.9	0	0	22	62.5	0	0	62.5	62.6	70	N	-	-	18.7	Y	N	N
D1-7b-3	4	30.8	D1-7b	46.3	0	0	22	62.4	0	0	62.4	62.5	70	N	-	-	16.2	Y	N	N
D1-7b-3	5	34	D1-7b	47.9	0	0	22	62.3	0	0	62.3	62.4	70	N	-	-	14.5	Y	N	N
D1-7b-3	6	37.2	D1-7b	49	0	0	22	62.1	0	0	62.1	62.3	70	N	-	-	13.3	Y	N	N
D1-7b-3	7	40.4	D1-7b	49.9	0	0	22	62	0	0	62	62.2	70	N	-	-	12.3	Y	N	N
D1-7b-3	8	43.6	D1-7b	50.5	0	0	22	61.8	0	0	61.8	62.2	70	N	-	-	11.7	Y	N	N
D1-7b-3	9	46.8	D1-7b	51.1	0	0	22	61.7	0	0	61.7	62.1	70	N	-	-	11.0	Y	N	N
D1-7b-3	10	50	D1-7b	51.7	0	0	22	61.6	0	0	61.6	62	70	N	-	-	10.3	Y	N	N
D1-7b-3	11	53.2	D1-7b	52	0	0	22	61.4	0	0	61.4	61.9	70	N	-	-	9.9	Y	N	N
D1-7b-3	12	56.4	D1-7b	52.3	0	0	22.1	61.3	0	0	61.3	61.8	70	N	-	-	9.5	Y	N	N
D1-7b-3	13	59.6	D1-7b	52.7	0	0	22.1	61.1	0	0	61.1	61.7	70	N	-	-	9.0	Y	N	N
D1-7b-3	14	62.8	D1-7b	53	0	0	22.1	61	0	0	61	61.6	70	N	-	-	8.6	Y	N	N
D1-7b-3	15	66	D1-7b	53.3	0	0	21.9	60.8	0	0	60.8	61.5	70	N	-	-	8.2	Y	N	N
D1-7b-3	16	69.2	D1-7b	53.6	0	0	22	60.6	0	0	60.6	61.4	70	N	-	-	7.8	Y	N	N
D1-7b-3	17	72.4	D1-7b	53.9	0	0	21.9	60.5	0	0	60.5	61.4	70	N	-	-	7.5	Y	N	N
D1-7b-3	18	75.6	D1-7b	54.1	0	0	21.9	60.3	0	0	60.3	61.3	70	N	-	-	7.2	Y	N	N
D1-7b-3	19	78.8	D1-7b	54.2	0	0	21.9	60.2	0	0	60.2	61.2	70	N	-	-	7.0	Y	N	N
D1-7b-3	20	82	D1-7b	54.3	0	0	21.9	60.1	0	0	60.1	61.1	70	N	-	-	6.8	Y	N	N
D1-7b-3	21	85.2	D1-7b	54.4	0	0	21.9	60	0	0	60	61.1	70	N	-	-	6.7	Y	N	N
D1-7b-3	22	88.4	D1-7b	54.5	0	0	21.9	59.9	0	0	59.9	61	70	N	-	-	6.5	Y	N	N
D1-7b-3	23	91.6	D1-7b	54.5	0	0	21.8	59.8	0	0	59.8	60.9	70	N	-	-	6.4	Y	N	N
D1-7b-3	24	94.8	D1-7b	54.5	0	0	22	59.7	0	0	59.7	60.8	70	N	-	-	6.3	Y	N	N
D1-7b-3	25	98	D1-7b	54.5	0	0	22.5	59.6	0	0	59.6	60.7	70	N	-	-	6.2	Y	N	N
D1-7b-3	26	101.2	D1-7b	54.5	0	0	22.9	59.5	0	0	59.5	60.7	70	N	-	-	6.2	Y	N	N
D1-7b-4	1	21.2	D1-7b	42.3	0	34.5	34	64.3	0	0	64.3	64.3	70	N	-	-	22.0	Y	N	N

Title: Detailed Calculation of Road Traffic Noise with Direct Mitigation Measures in place
Scenario: Existing and Planned Residential and Educational Uses in KTN NDA (Mitigated Case on Proposed Roads)

Assessment Point			Location	WITH PROJECT														
				Existing Road in 2046 dB(A)	Other Roads in 2046 dB(A)[1]	New Roads[2]						Overall Noise Level in 2046 dB(A) [C]	Noise Criteria dB(A)	Exceedance C > Criteria (Y/N)	Check Project Impact Significance		Check Direct Mitigation			At Receiver-end Mitigation Measures Required [4,5] (Y/N)
						PD	DD	LD	EX	TR	New Roads in 2046 dB(A) [3] [B]				C - A dB(A) [D]	D ≥ 1dB(A)	New Road Contribution dB(A) [E]	New Road Contribution ≥ 1dB(A) E ≥ 1dB(A)	New Road > Criteria B > Criteria	
ID	Floor	Floor Level (mPD)		dB (A)																
D1-7b-4	2	24.4	D1-7b	45	0	34.8	35.2	64.3	0	0	64.3	64.4	70	N	-	-	19.4	Y	N	N
D1-7b-4	3	27.6	D1-7b	47.6	0	35.1	36.7	64.2	0	0	64.2	64.3	70	N	-	-	16.7	Y	N	N
D1-7b-4	4	30.8	D1-7b	49.8	0	35.4	38.9	64.1	0	0	64.1	64.3	70	N	-	-	14.5	Y	N	N
D1-7b-4	5	34	D1-7b	51.1	0	35.7	40	64	0	0	64	64.2	70	N	-	-	13.1	Y	N	N
D1-7b-4	6	37.2	D1-7b	51.9	0	36	41.7	63.8	0	0	63.9	64.1	70	N	-	-	12.2	Y	N	N
D1-7b-4	7	40.4	D1-7b	52.5	0	36.4	42.6	63.7	0	0	63.7	64	70	N	-	-	11.5	Y	N	N
D1-7b-4	8	43.6	D1-7b	52.9	0	36.8	43.2	63.4	0	0	63.4	63.8	70	N	-	-	10.9	Y	N	N
D1-7b-4	9	46.8	D1-7b	53.2	0	37.2	43.5	63.1	0	0	63.2	63.6	70	N	-	-	10.4	Y	N	N
D1-7b-4	10	50	D1-7b	53.4	0	37.6	43.7	62.9	0	0	63	63.4	70	N	-	-	10.0	Y	N	N
D1-7b-4	11	53.2	D1-7b	53.6	0	38.1	43.8	62.7	0	0	62.8	63.3	70	N	-	-	9.7	Y	N	N
D1-7b-4	12	56.4	D1-7b	53.8	0	38.6	43.8	62.5	0	0	62.5	63.1	70	N	-	-	9.3	Y	N	N
D1-7b-4	13	59.6	D1-7b	54.1	0	39.2	43.8	62.3	0	0	62.4	63	70	N	-	-	8.9	Y	N	N
D1-7b-4	14	62.8	D1-7b	54.4	0	39.7	43.8	62.1	0	0	62.2	62.9	70	N	-	-	8.5	Y	N	N
D1-7b-4	15	66	D1-7b	54.6	0	40.4	43.8	61.9	0	0	62	62.7	70	N	-	-	8.1	Y	N	N
D1-7b-4	16	69.2	D1-7b	54.7	0	41	43.8	61.8	0	0	61.9	62.6	70	N	-	-	7.9	Y	N	N
D1-7b-4	17	72.4	D1-7b	54.9	0	42	43.8	61.6	0	0	61.7	62.5	70	N	-	-	7.6	Y	N	N
D1-7b-4	18	75.6	D1-7b	55	0	43.3	43.8	61.5	0	0	61.6	62.4	70	N	-	-	7.4	Y	N	N
D1-7b-4	19	78.8	D1-7b	55	0	43.5	43.8	61.3	0	0	61.5	62.3	70	N	-	-	7.3	Y	N	N
D1-7b-4	20	82	D1-7b	55.1	0	44.3	43.8	61.2	0	0	61.3	62.3	70	N	-	-	7.2	Y	N	N
D1-7b-4	21	85.2	D1-7b	55.1	0	45.3	43.8	61	0	0	61.2	62.2	70	N	-	-	7.1	Y	N	N
D1-7b-4	22	88.4	D1-7b	55.1	0	45.9	43.7	60.9	0	0	61.1	62.1	70	N	-	-	7.0	Y	N	N
D1-7b-4	23	91.6	D1-7b	55.1	0	46.4	43.7	60.8	0	0	61	62	70	N	-	-	6.9	Y	N	N
D1-7b-4	24	94.8	D1-7b	55.1	0	46.8	43.7	60.7	0	0	61	62	70	N	-	-	6.9	Y	N	N
D1-7b-4	25	98	D1-7b	55.1	0	47.1	43.7	60.6	0	0	60.9	61.9	70	N	-	-	6.8	Y	N	N
D1-7b-4	26	101.2	D1-7b	55.1	0	47.3	43.7	60.5	0	0	60.8	61.8	70	N	-	-	6.7	Y	N	N
B11 (KTN NDA Area 23)																				
D1-7c-1	1	17.7	D1-7c	49.3	0	60.2	30.4	70.3	0	0	70.7	70.7	70	Y	-	-	21.4	Y	Y	Y
D1-7c-1	2	20.9	D1-7c	49.6	0	60.2	31	69.9	0	0	70.3	70.3	70	N	-	-	20.7	Y	N	N
D1-7c-1	3	24.1	D1-7c	49.7	0	60.1	31.7	69.4	0	0	69.9	69.9	70	N	-	-	20.2	Y	N	N
D1-7c-1	4	27.3	D1-7c	49.9	0	60.1	32.5	69	0	0	69.6	69.6	70	N	-	-	19.7	Y	N	N
D1-7c-1	5	30.5	D1-7c	50.3	0	60	33.3	68.6	0	0	69.2	69.2	70	N	-	-	18.9	Y	N	N
D1-7c-1	6	33.7	D1-7c	50.8	0	60	34.3	68.2	0	0	68.8	68.9	70	N	-	-	18.1	Y	N	N
D1-7c-1	7	36.9	D1-7c	51.4	0	59.9	35.6	67.9	0	0	68.5	68.6	70	N	-	-	17.2	Y	N	N
D1-7c-1	8	40.1	D1-7c	52.4	0	59.8	36.3	67.6	0	0	68.2	68.3	70	N	-	-	15.9	Y	N	N
D1-7c-1	9	43.3	D1-7c	53.2	0	59.8	37.8	67.2	0	0	67.9	68.1	70	N	-	-	14.9	Y	N	N
D1-7c-1	10	46.5	D1-7c	53.6	0	59.7	38.4	66.9	0	0	67.7	67.8	70	N	-	-	14.2	Y	N	N
D1-7c-1	11	49.7	D1-7c	53.8	0	59.6	39.4	66.6	0	0	67.4	67.6	70	N	-	-	13.8	Y	N	N
D1-7c-1	12	52.9	D1-7c	54	0	59.6	40.2	66.3	0	0	67.2	67.4	70	N	-	-	13.4	Y	N	N
D1-7c-1	13	56.1	D1-7c	54	0	59.5	40.7	66.1	0	0	66.9	67.2	70	N	-	-	13.2	Y	N	N
D1-7c-1	14	59.3	D1-7c	54	0	59.4	41	65.8	0	0	66.7	67	70	N	-	-	13.0	Y	N	N
D1-7c-1	15	62.5	D1-7c	54	0	59.4	41.4	65.6	0	0	66.6	66.8	70	N	-	-	12.8	Y	N	N
D1-7c-1	16	65.7	D1-7c	54	0	59.3	41.6	65.4	0	0	66.3	66.6	70	N	-	-	12.6	Y	N	N
D1-7c-1	17	68.9	D1-7c	53.9	0	59.2	41.8	65.2	0	0	66.2	66.4	70	N	-	-	12.5	Y	N	N
D1-7c-1	18	72.1	D1-7c	53.9	0	59.1	41.9	65	0	0	66	66.3	70	N	-	-	12.4	Y	N	N
D1-7c-1	19	75.3	D1-7c	53.8	0	59	42	64.8	0	0	65.8	66.1	70	N	-	-	12.3	Y	N	N
D1-7c-1	20	78.5	D1-7c	53.8	0	58.9	42	64.6	0	0	65.7	65.9	70	N	-	-	12.1	Y	N	N
D1-7c-2	1	17.7	D1-7c	50.2	0	33.1	13.4	70.8	0	0	70.8	70.8	70	Y	-	-	20.6	Y	Y	Y
D1-7c-2	2	20.9	D1-7c	50.7	0	33.1	13.4	70.1	0	0	70.1	70.2	70	N	-	-	19.5	Y	N	N
D1-7c-2	3	24.1	D1-7c	50.8	0	33.1	13.3	69.6	0	0	69.6	69.6	70	N	-	-	18.8	Y	N	N
D1-7c-2	4	27.3	D1-7c	51.3	0	33.1	13.3	69.1	0	0	69.1	69.2	70	N	-	-	17.9	Y	N	N
D1-7c-2	5	30.5	D1-7c	51.9	0	33.1	13.3	68.6	0	0	68.6	68.7	70	N	-	-	16.8	Y	N	N
D1-7c-2	6	33.7	D1-7c	52.4	0	33	13.3	68.2	0	0	68.2	68.3	70	N	-	-	15.9	Y	N	N
D1-7c-2	7	36.9	D1-7c	53	0	33	13.3	67.8	0	0	67.8	67.9	70	N	-	-	14.9	Y	N	N
D1-7c-2	8	40.1	D1-7c	53.2	0	33	13.3	67.4	0	0	67.4	67.6	70	N	-	-	14.4	Y	N	N
D1-7c-2	9	43.3	D1-7c	53.3	0	32.9	13.3	67.1	0	0	67.1	67.3	70	N	-	-	14.0	Y	N	N
D1-7c-2	10	46.5	D1-7c	53.2	0	32.9	13.3	66.8	0	0	66.8	67	70	N	-	-	13.8	Y	N	N
D1-7c-2	11	49.7	D1-7c	53.2	0	32.8	13.3	66.5	0	0	66.5	66.7	70	N	-	-	13.5	Y	N	N
D1-7c-2	12	52.9	D1-7c	53.1	0	32.7	13.2	66.2	0	0	66.2	66.4	70	N	-	-	13.3	Y	N	N
D1-7c-2	13	56.1	D1-7c	53	0	32.7	13.2	65.9	0	0	65.9	66.2	70	N	-	-	13.2	Y	N	N
D1-7c-2	14	59.3	D1-7c	52.9	0	32.6	13.2	65.7	0	0	65.7	66	70	N	-	-	13.1	Y	N	N
D1-7c-2	15	62.5	D1-7c	52.8	0	32.6	13.6	65.5	0	0	65.5	65.7	70	N	-	-	12.9	Y	N	N
D1-7c-2	16	65.7	D1-7c	52.7	0	32.4	14.2	65.3	0	0	65.3	65.5	70	N	-	-	12.8	Y	N	N
D1-7c-2	17	68.9	D1-7c	52.6	0	33.2	14.9	65.1	0	0	65.1	65.3	70	N	-	-	12.7	Y	N	N
D1-7c-2	18	72.1	D1-7c	52.5	0	34.6	15.8	64.9	0	0	64.9	65.1	70	N	-	-	12.6	Y	N	N
D1-7c-2	19	75.3	D1-7c	52.4	0	36.4	16.7	64.7	0	0	64.7	64.9	70	N	-	-	12.5	Y	N	N
D1-7c-2	20	78.5	D1-7c	52.3	0	38.4	17.8	64.5	0	0	64.5	64.8	70	N	-	-	12.5	Y	N	N
D1-7c-3	1	17.7	D1-7c	52.9	0	51.5	12.4	70.5	0	0	70.6	70.7	70	Y	-	-	17.8	Y	Y	Y
D1-7c-3	2	20.9	D1-7c	53.7	0	51.4	12.4	70.1	0	0	70.1	70.2	70	N	-	-	16.5	Y	N	N
D1-7c-3	3	24.1	D1-7c	53.9	0	51.4	12.4	69.6	0	0	69.7	69.8	70	N	-	-	15.9	Y	N	N
D1-7c-3	4	27.3	D1-7c	54	0	51.4	12.3	69.2	0	0	69.3	69.4	70	N	-	-	15.4	Y	N	N
D1-7c-3	5	30.5	D1-7c	53.8	0	51.3	12.3	68.8	0	0	68.9	69	70	N	-	-	15.2	Y	N	N
D1-7c-3	6	33.7	D1-7c	53.6	0	51.3	12.3	68.5	0	0	68.5	68.7	70	N	-	-	15.1	Y	N	N
D1-7c-3	7	36.9	D1-7c	53.5	0	51.2	12.3	68.1	0	0	68.2	68.4	70	N	-	-	14.9	Y	N	N
D1-7c-3	8	40.1	D1-7c	53.4	0	51.2	12.3	67.8	0	0	67.9	68	70	N	-	-	14.6	Y	N	N
D1-7c-3	9	43.3	D1-7c	53.2	0	51.2	12.3	67.5	0	0	67.6	67.8	70	N	-	-	14.6	Y	N	N
D1-7c-3	10	46.5	D1-7c	53	0	51.1	12.3	67.2	0	0	67.3	67.5	70	N	-	-	14.5	Y	N	N
D1-7c-3	11	49.7	D1-7c	52.8	0	51	12.3	66.9	0	0	67.1	67.2	70	N	-	-	14.4	Y	N	N
D1-7c-3	12	52.9	D1-7c	52.7	0	51	12.3	66.7	0	0	66.9	67	70	N	-	-	14.3	Y	N	N
D1-7c-3	13	56.1	D1-7c	52.5	0	50.9	12.3	66.5	0	0	66.6	66.8	70	N	-	-	14.3	Y	N	N

Title: Detailed Calculation of Road Traffic Noise with Direct Mitigation Measures in place
Scenario: Existing and Planned Residential and Educational Uses in KTN NDA (Mitigated Case on Proposed Roads)

Assessment Point			Location	WITH PROJECT									Check Project Impact Significance		Check Direct Mitigation			At Receiver-end Mitigation Measures Required [4,5] (Y/N)
				Existing Road in 2046 dB(A)	Other Roads in 2046 dB(A)[1]	New Roads[2]					New Roads in 2046 dB(A) [3] [B]	Overall Noise Level in 2046 dB(A) [C]	Noise Criteria dB(A)	Exceedance C > Criteria (Y/N)	C - A dB(A) [D]	D ≥ 1dB(A)	New Road Contribution dB(A) [E]	New Road Contribution ≥ 1dB(A) E ≥ 1dB(A)	New Road > Criteria B > Criteria	
						PD	DD	LD	EX	TR										
ID	Floor	Floor Level (mPD)		dB (A)																
D1-7c-3	14	59.3	D1-7c	52.4	0	50.8	12.3	66.3	0	0	66.4	66.6	70	N	-	-	14.2	Y	N	N
D1-7c-3	15	62.5	D1-7c	52.2	0	50.8	12.3	66.1	0	0	66.2	66.4	70	N	-	-	14.2	Y	N	N
D1-7c-3	16	65.7	D1-7c	52.1	0	50.7	12.3	65.8	0	0	66	66.1	70	N	-	-	14.0	Y	N	N
D1-7c-3	17	68.9	D1-7c	51.9	0	50.6	12.2	65.7	0	0	65.8	66	70	N	-	-	14.1	Y	N	N
D1-7c-3	18	72.1	D1-7c	51.8	0	50.6	12.2	65.5	0	0	65.6	65.8	70	N	-	-	14.0	Y	N	N
D1-7c-3	19	75.3	D1-7c	51.7	0	50.5	12.2	65.3	0	0	65.4	65.6	70	N	-	-	13.9	Y	N	N
D1-7c-3	20	78.5	D1-7c	51.6	0	50.5	12.2	65.1	0	0	65.3	65.5	70	N	-	-	13.9	Y	N	N
D1-7c-4	1	17.7	D1-7c	9	0	72.9	61.3	53.5	0	0	73.2	73.2	70	Y	-	-	64.2	Y	Y	Y
D1-7c-4	2	20.9	D1-7c	9	0	72.8	61.2	53.6	0	0	73.2	73.2	70	Y	-	-	64.2	Y	Y	Y
D1-7c-4	3	24.1	D1-7c	9	0	72.8	61.2	53.7	0	0	73.1	73.1	70	Y	-	-	64.1	Y	Y	Y
D1-7c-4	4	27.3	D1-7c	9.1	0	72.7	61.2	53.7	0	0	73	73	70	Y	-	-	63.9	Y	Y	Y
D1-7c-4	5	30.5	D1-7c	9.1	0	72.6	61.2	53.6	0	0	73	73	70	Y	-	-	63.9	Y	Y	Y
D1-7c-4	6	33.7	D1-7c	9.1	0	72.7	61.1	53.6	0	0	73	73	70	Y	-	-	63.9	Y	Y	Y
D1-7c-4	7	36.9	D1-7c	9.1	0	72.9	61.1	53.6	0	0	73.2	73.2	70	Y	-	-	64.1	Y	Y	Y
D1-7c-4	8	40.1	D1-7c	9.2	0	72.9	61	53.5	0	0	73.2	73.2	70	Y	-	-	64.0	Y	Y	Y
D1-7c-4	9	43.3	D1-7c	10	0	72.9	61	53.5	0	0	73.2	73.2	70	Y	-	-	63.2	Y	Y	Y
D1-7c-4	10	46.5	D1-7c	10.7	0	72.8	61	53.5	0	0	73.1	73.1	70	Y	-	-	62.4	Y	Y	Y
D1-7c-4	11	49.7	D1-7c	11.6	0	72.7	60.9	53.4	0	0	73	73	70	Y	-	-	61.4	Y	Y	Y
D1-7c-4	12	52.9	D1-7c	12.5	0	72.6	60.8	53.4	0	0	72.9	72.9	70	Y	-	-	60.4	Y	Y	Y
D1-7c-4	13	56.1	D1-7c	13.4	0	72.5	60.8	53.3	0	0	72.8	72.8	70	Y	-	-	59.4	Y	Y	Y
D1-7c-4	14	59.3	D1-7c	14.3	0	72.4	60.7	53.3	0	0	72.8	72.8	70	Y	-	-	58.5	Y	Y	Y
D1-7c-4	15	62.5	D1-7c	15.3	0	72.3	60.7	53.3	0	0	72.7	72.7	70	Y	-	-	57.4	Y	Y	Y
D1-7c-4	16	65.7	D1-7c	16.3	0	72.2	60.6	53.2	0	0	72.6	72.6	70	Y	-	-	56.3	Y	Y	Y
D1-7c-4	17	68.9	D1-7c	17.3	0	72.2	60.6	53.1	0	0	72.5	72.5	70	Y	-	-	55.2	Y	Y	Y
D1-7c-4	18	72.1	D1-7c	18.3	0	72.1	60.5	53.1	0	0	72.5	72.5	70	Y	-	-	54.2	Y	Y	Y
D1-7c-4	19	75.3	D1-7c	19.5	0	72	60.4	53.1	0	0	72.4	72.4	70	Y	-	-	52.9	Y	Y	Y
D1-7c-4	20	78.5	D1-7c	20.6	0	71.9	60.3	53	0	0	72.3	72.3	70	Y	-	-	51.7	Y	Y	Y
D1-7c-5	1	17.7	D1-7c	0	0	71	53.3	32.3	0	0	71.1	71.1	70	Y	-	-	71.1	Y	Y	Y
D1-7c-5	2	20.9	D1-7c	0	0	70.9	54.3	32.3	0	0	71	71	70	Y	-	-	71.0	Y	Y	Y
D1-7c-5	3	24.1	D1-7c	0	0	70.9	56	32.2	0	0	71	71	70	Y	-	-	71.0	Y	Y	Y
D1-7c-5	4	27.3	D1-7c	0	0	70.8	57	32.2	0	0	71	71	70	Y	-	-	71.0	Y	Y	Y
D1-7c-5	5	30.5	D1-7c	0	0	70.8	57.4	32.2	0	0	71	71	70	Y	-	-	71.0	Y	Y	Y
D1-7c-5	6	33.7	D1-7c	0	0	70.8	57.6	32.2	0	0	71	71	70	Y	-	-	71.0	Y	Y	Y
D1-7c-5	7	36.9	D1-7c	0	0	70.8	57.7	32.2	0	0	71	71	70	Y	-	-	71.0	Y	Y	Y
D1-7c-5	8	40.1	D1-7c	0	0	71	57.7	32.2	0	0	71.2	71.2	70	Y	-	-	71.2	Y	Y	Y
D1-7c-5	9	43.3	D1-7c	0	0	71	57.7	32.2	0	0	71.2	71.2	70	Y	-	-	71.2	Y	Y	Y
D1-7c-5	10	46.5	D1-7c	0	0	71	57.7	32.2	0	0	71.2	71.2	70	Y	-	-	71.2	Y	Y	Y
D1-7c-5	11	49.7	D1-7c	0	0	71	57.7	32.2	0	0	71.2	71.2	70	Y	-	-	71.2	Y	Y	Y
D1-7c-5	12	52.9	D1-7c	0	0	70.9	57.7	32.2	0	0	71.1	71.1	70	Y	-	-	71.1	Y	Y	Y
D1-7c-5	13	56.1	D1-7c	0	0	70.8	57.7	32.1	0	0	71	71	70	Y	-	-	71.0	Y	Y	Y
D1-7c-5	14	59.3	D1-7c	0	0	70.7	57.7	32.2	0	0	70.9	70.9	70	Y	-	-	70.9	Y	Y	Y
D1-7c-5	15	62.5	D1-7c	0	0	70.6	57.7	32.2	0	0	70.8	70.8	70	Y	-	-	70.8	Y	Y	Y
D1-7c-5	16	65.7	D1-7c	0	0	70.5	57.7	32.2	0	0	70.7	70.7	70	Y	-	-	70.7	Y	Y	Y
D1-7c-5	17	68.9	D1-7c	0	0	70.5	57.7	32.3	0	0	70.7	70.7	70	Y	-	-	70.7	Y	Y	Y
D1-7c-5	18	72.1	D1-7c	0	0	70.4	57.7	32.3	0	0	70.6	70.6	70	Y	-	-	70.6	Y	Y	Y
D1-7c-5	19	75.3	D1-7c	0	0	70.3	57.7	32.5	0	0	70.5	70.5	70	Y	-	-	70.5	Y	Y	Y
D1-7c-5	20	78.5	D1-7c	0	0	70.2	57.6	32.6	0	0	70.4	70.4	70	N	-	-	70.4	Y	N	N
D1-7c-6	1	17.7	D1-7c	13.2	0	71.3	60.9	60.6	0	0	72	72	70	Y	-	-	58.8	Y	Y	Y
D1-7c-6	2	20.9	D1-7c	13.2	0	71.2	60.8	60.6	0	0	71.9	71.9	70	Y	-	-	58.7	Y	Y	Y
D1-7c-6	3	24.1	D1-7c	13.2	0	71.1	60.8	60.5	0	0	71.9	71.9	70	Y	-	-	58.7	Y	Y	Y
D1-7c-6	4	27.3	D1-7c	13.2	0	71.1	60.7	60.5	0	0	71.8	71.8	70	Y	-	-	58.6	Y	Y	Y
D1-7c-6	5	30.5	D1-7c	13.2	0	71	60.7	60.5	0	0	71.7	71.7	70	Y	-	-	58.5	Y	Y	Y
D1-7c-6	6	33.7	D1-7c	13.2	0	70.9	60.6	60.5	0	0	71.6	71.6	70	Y	-	-	58.4	Y	Y	Y
D1-7c-6	7	36.9	D1-7c	13.2	0	70.8	60.5	60.4	0	0	71.5	71.5	70	Y	-	-	58.3	Y	Y	Y
D1-7c-6	8	40.1	D1-7c	13.2	0	70.7	60.4	60.4	0	0	71.5	71.5	70	Y	-	-	58.3	Y	Y	Y
D1-7c-6	9	43.3	D1-7c	13.7	0	70.6	60.4	60.3	0	0	71.4	71.4	70	Y	-	-	57.7	Y	Y	Y
D1-7c-6	10	46.5	D1-7c	14.6	0	70.5	60.3	60.2	0	0	71.3	71.3	70	Y	-	-	56.7	Y	Y	Y
D1-7c-6	11	49.7	D1-7c	15.5	0	70.4	60.2	60.2	0	0	71.2	71.2	70	Y	-	-	55.7	Y	Y	Y
D1-7c-6	12	52.9	D1-7c	16.6	0	70.4	60.1	60.1	0	0	71.1	71.1	70	Y	-	-	54.5	Y	Y	Y
D1-7c-6	13	56.1	D1-7c	17.5	0	70.3	60	60.1	0	0	71	71	70	Y	-	-	53.5	Y	Y	Y
D1-7c-6	14	59.3	D1-7c	18.5	0	70.2	59.9	60	0	0	70.9	70.9	70	Y	-	-	52.4	Y	Y	Y
D1-7c-6	15	62.5	D1-7c	19.6	0	70.1	59.8	59.9	0	0	70.9	70.9	70	Y	-	-	51.3	Y	Y	Y
D1-7c-6	16	65.7	D1-7c	20.7	0	70	59.7	59.9	0	0	70.8	70.8	70	Y	-	-	50.1	Y	Y	Y
D1-7c-6	17	68.9	D1-7c	21.9	0	70	59.7	59.8	0	0	70.7	70.7	70	Y	-	-	48.8	Y	Y	Y
D1-7c-6	18	72.1	D1-7c	23.1	0	69.8	59.6	59.7	0	0	70.6	70.6	70	Y	-	-	47.5	Y	Y	Y
D1-7c-6	19	75.3	D1-7c	24.4	0	69.7	59.5	59.6	0	0	70.5	70.5	70	Y	-	-	46.1	Y	Y	Y
D1-7c-6	20	78.5	D1-7c	25.7	0	69.7	59.4	59.6	0	0	70.4	70.4	70	N	-	-	44.7	Y	N	N
D1-7c-7	1	17.7	D1-7c	0	0	69.6	56	25.1	0	0	69.7	69.7	70	N	-	-	69.7	Y	N	N
D1-7c-7	2	20.9	D1-7c	0	0	69.5	56.8	25.1	0	0	69.8	69.8	70	N	-	-	69.8	Y	N	N
D1-7c-7	3	24.1	D1-7c	0	0	69.5	58.1	25.1	0	0	69.8	69.8	70	N	-	-	69.8	Y	N	N
D1-7c-7	4	27.3	D1-7c	0	0	69.5	58.6	25.1	0	0	69.8	69.8	70	N	-	-	69.8	Y	N	N
D1-7c-7	5	30.5	D1-7c	0	0	69.4	58.7	25.1	0	0	69.8	69.8	70	N	-	-	69.8	Y	N	N
D1-7c-7	6	33.7	D1-7c	0	0	69.4	58.7	25	0	0	69.8	69.8	70	N	-	-	69.8	Y	N	N
D1-7c-7	7	36.9	D1-7c	0	0	69.6	58.7	25.1	0	0	69.9	69.9	70	N	-	-	69.9	Y	N	N
D1-7c-7	8	40.1	D1-7c	0	0	69.8	58.7	25.1	0	0	70.1	70.1	70	N	-	-	70.1	Y	N	N
D1-7c-7	9	43.3	D1-7c	0	0	70.1	58.7	25.1	0	0	70.4	70.4	70	N	-	-	70.4	Y	N	N
D1-7c-7	10	46.5	D1-7c	0	0	70.3	58.6	25.1	0	0	70.6	70.6	70	Y	-	-	70.6	Y	Y	Y
D1-7c-7	11	49.7	D1-7c	0	0	70.3	58.6	25.1	0	0	70.6	70.6	70	Y	-	-	70.6	Y	Y	Y
D1-7c-7	12	52.9	D1-7c	0	0	70.3	58.6	25.1	0	0	70.6	70.6	70	Y	-	-	70.6	Y	Y	Y

Title: Detailed Calculation of Road Traffic Noise with Direct Mitigation Measures in place
Scenario: Existing and Planned Residential and Educational Uses in KTN NDA (Mitigated Case on Proposed Roads)

Assessment Point			Location	WITH PROJECT														
				Existing Road in 2046 dB(A)	Other Roads in 2046 dB(A)[1]	New Roads[2]						Overall Noise Level in 2046 dB(A) [C]	Noise Criteria dB(A)	Exceedance C > Criteria (Y/N)	Check Project Impact Significance		Check Direct Mitigation			At Receiver-end Mitigation Measures Required [4,5] (Y/N)
						PD	DD	LD	EX	TR	New Roads in 2046 dB(A) [3] [B]				C - A dB(A) [D]	D ≥ 1dB(A)	New Road Contribution dB(A) [E]	New Road Contribution ≥ 1dB(A) E ≥ 1dB(A)	New Road > Criteria B > Criteria	
ID	Floor	Floor Level (mPD)		dB (A)																
D1-7c-7	13	56.1	D1-7c	0	0	70.2	58.6	25.1	0	0	70.5	70.5	70	Y	-	-	70.5	Y	Y	Y
D1-7c-7	14	59.3	D1-7c	0	0	70.2	58.6	25.3	0	0	70.5	70.5	70	Y	-	-	70.5	Y	Y	Y
D1-7c-7	15	62.5	D1-7c	0	0	70.1	58.5	25.5	0	0	70.4	70.4	70	N	-	-	70.4	Y	N	N
D1-7c-7	16	65.7	D1-7c	0	0	70	58.5	25.9	0	0	70.3	70.3	70	N	-	-	70.3	Y	N	N
D1-7c-7	17	68.9	D1-7c	0	0	69.9	58.5	26.6	0	0	70.2	70.2	70	N	-	-	70.2	Y	N	N
D1-7c-7	18	72.1	D1-7c	0	0	69.9	58.5	27.3	0	0	70.2	70.2	70	N	-	-	70.2	Y	N	N
D1-7c-7	19	75.3	D1-7c	0	0	69.9	58.4	28.1	0	0	70.2	70.2	70	N	-	-	70.2	Y	N	N
D1-7c-7	20	78.5	D1-7c	0	0	69.8	58.4	28.9	0	0	70.1	70.1	70	N	-	-	70.1	Y	N	N
B12 (KTN NDA Area 23)																				
D1-7d-1	1	15.2	D1-7d	48.9	0	0	0	70.2	0	0	70.2	70.2	70	N	-	-	21.3	Y	N	N
D1-7d-1	2	18.4	D1-7d	49.7	0	0	0	70	0	0	70	70	70	N	-	-	20.3	Y	N	N
D1-7d-1	3	21.6	D1-7d	50.1	0	0	0	69.8	0	0	69.8	69.8	70	N	-	-	19.7	Y	N	N
D1-7d-1	4	24.8	D1-7d	50.6	0	0	0	69.5	0	0	69.5	69.5	70	N	-	-	18.9	Y	N	N
D1-7d-1	5	28	D1-7d	51	0	0	0	69.2	0	0	69.2	69.3	70	N	-	-	18.3	Y	N	N
D1-7d-1	6	31.2	D1-7d	51.3	0	0	0	68.9	0	0	68.9	69	70	N	-	-	17.7	Y	N	N
D1-7d-1	7	34.4	D1-7d	51.7	0	0	0	68.6	0	0	68.6	68.7	70	N	-	-	17.0	Y	N	N
D1-7d-1	8	37.6	D1-7d	51.9	0	0	0	68.4	0	0	68.4	68.5	70	N	-	-	16.6	Y	N	N
D1-7d-1	9	40.8	D1-7d	52	0	0	0	68.1	0	0	68.1	68.2	70	N	-	-	16.2	Y	N	N
D1-7d-1	10	44	D1-7d	52.1	0	0	0	67.8	0	0	67.8	68	70	N	-	-	15.9	Y	N	N
D1-7d-1	11	47.2	D1-7d	52.2	0	0	0	67.6	0	0	67.6	67.7	70	N	-	-	15.5	Y	N	N
D1-7d-1	12	50.4	D1-7d	52.3	0	0	0	67.3	0	0	67.3	67.5	70	N	-	-	15.2	Y	N	N
D1-7d-1	13	53.6	D1-7d	52.3	0	0	0	67.1	0	0	67.1	67.2	70	N	-	-	14.9	Y	N	N
D1-7d-1	14	56.8	D1-7d	52.3	0	0	0	66.9	0	0	66.9	67	70	N	-	-	14.7	Y	N	N
D1-7d-1	15	60	D1-7d	52.3	0	0	0	66.7	0	0	66.7	66.8	70	N	-	-	14.5	Y	N	N
D1-7d-1	16	63.2	D1-7d	52.3	0	0	0	66.4	0	0	66.4	66.6	70	N	-	-	14.3	Y	N	N
D1-7d-1	17	66.4	D1-7d	52.3	0	0	0	66.3	0	0	66.3	66.4	70	N	-	-	14.1	Y	N	N
D1-7d-1	18	69.6	D1-7d	52.3	0	0	0	66.1	0	0	66.1	66.3	70	N	-	-	14.0	Y	N	N
D1-7d-1	19	72.8	D1-7d	52.2	0	0	0	65.9	0	0	65.9	66.1	70	N	-	-	13.9	Y	N	N
D1-7d-1	20	76	D1-7d	52.2	0	0	0	65.7	0	0	65.7	65.9	70	N	-	-	13.7	Y	N	N
D1-7d-1	21	79.2	D1-7d	52.2	0	0	0	65.5	0	0	65.5	65.7	70	N	-	-	13.5	Y	N	N
D1-7d-1	22	82.4	D1-7d	52.1	0	0	0	65.4	0	0	65.4	65.6	70	N	-	-	13.5	Y	N	N
D1-7d-1	23	85.6	D1-7d	52.1	0	0	0	65.2	0	0	65.2	65.4	70	N	-	-	13.3	Y	N	N
D1-7d-1	24	88.8	D1-7d	52	0	0	0	65.1	0	0	65.1	65.3	70	N	-	-	13.3	Y	N	N
D1-7d-2	1	15.2	D1-7d	36.2	0	56.5	44.5	70.5	0	0	70.7	70.7	70	Y	-	-	34.5	Y	Y	Y
D1-7d-2	2	18.4	D1-7d	36.2	0	56.5	44.5	70.2	0	0	70.4	70.4	70	N	-	-	34.2	Y	N	N
D1-7d-2	3	21.6	D1-7d	36.2	0	56.6	44.5	69.9	0	0	70.1	70.1	70	N	-	-	33.9	Y	N	N
D1-7d-2	4	24.8	D1-7d	36.2	0	56.7	44.5	69.5	0	0	69.8	69.8	70	N	-	-	33.6	Y	N	N
D1-7d-2	5	28	D1-7d	36.2	0	56.9	44.5	69.2	0	0	69.4	69.4	70	N	-	-	33.2	Y	N	N
D1-7d-2	6	31.2	D1-7d	36.2	0	57.1	44.5	68.8	0	0	69.1	69.1	70	N	-	-	32.9	Y	N	N
D1-7d-2	7	34.4	D1-7d	36.1	0	57.3	44.5	68.5	0	0	68.8	68.8	70	N	-	-	32.7	Y	N	N
D1-7d-2	8	37.6	D1-7d	36.1	0	57.5	44.5	68.1	0	0	68.5	68.5	70	N	-	-	32.4	Y	N	N
D1-7d-2	9	40.8	D1-7d	36.1	0	57.6	44.5	67.8	0	0	68.2	68.3	70	N	-	-	32.2	Y	N	N
D1-7d-2	10	44	D1-7d	36.1	0	57.8	44.5	67.5	0	0	68	68	70	N	-	-	31.9	Y	N	N
D1-7d-2	11	47.2	D1-7d	36	0	57.9	44.5	67.2	0	0	67.7	67.7	70	N	-	-	31.7	Y	N	N
D1-7d-2	12	50.4	D1-7d	36	0	58	44.5	67	0	0	67.5	67.5	70	N	-	-	31.5	Y	N	N
D1-7d-2	13	53.6	D1-7d	36	0	58.1	44.4	66.7	0	0	67.3	67.3	70	N	-	-	31.3	Y	N	N
D1-7d-2	14	56.8	D1-7d	35.9	0	58.2	44.4	66.5	0	0	67.1	67.1	70	N	-	-	31.2	Y	N	N
D1-7d-2	15	60	D1-7d	35.9	0	58.3	44.4	66.2	0	0	66.9	66.9	70	N	-	-	31.0	Y	N	N
D1-7d-2	16	63.2	D1-7d	35.8	0	58.4	44.4	66	0	0	66.7	66.8	70	N	-	-	31.0	Y	N	N
D1-7d-2	17	66.4	D1-7d	35.8	0	58.5	44.4	65.8	0	0	66.6	66.6	70	N	-	-	30.8	Y	N	N
D1-7d-2	18	69.6	D1-7d	35.7	0	58.6	44.3	65.6	0	0	66.4	66.4	70	N	-	-	30.7	Y	N	N
D1-7d-2	19	72.8	D1-7d	35.7	0	58.7	44.3	65.4	0	0	66.3	66.3	70	N	-	-	30.6	Y	N	N
D1-7d-2	20	76	D1-7d	35.6	0	58.8	44.3	65.2	0	0	66.2	66.2	70	N	-	-	30.6	Y	N	N
D1-7d-2	21	79.2	D1-7d	35.6	0	58.9	44.3	65.1	0	0	66	66	70	N	-	-	30.4	Y	N	N
D1-7d-2	22	82.4	D1-7d	35.5	0	58.9	44.3	64.9	0	0	65.9	65.9	70	N	-	-	30.4	Y	N	N
D1-7d-2	23	85.6	D1-7d	35.5	0	59.1	44.3	64.7	0	0	65.8	65.8	70	N	-	-	30.3	Y	N	N
D1-7d-2	24	88.8	D1-7d	35.4	0	59.2	44.4	64.5	0	0	65.7	65.7	70	N	-	-	30.3	Y	N	N
D1-7d-3	1	15.2	D1-7d	37.4	0	65.3	56.7	69.4	0	0	71	71	70	Y	-	-	33.6	Y	Y	Y
D1-7d-3	2	18.4	D1-7d	37.4	0	65.3	56.7	69.2	0	0	70.9	70.9	70	Y	-	-	33.5	Y	Y	Y
D1-7d-3	3	21.6	D1-7d	37.4	0	65.3	56.7	69.1	0	0	70.8	70.8	70	Y	-	-	33.4	Y	Y	Y
D1-7d-3	4	24.8	D1-7d	37.4	0	65.3	56.7	68.9	0	0	70.6	70.6	70	Y	-	-	33.2	Y	Y	Y
D1-7d-3	5	28	D1-7d	37.4	0	65.3	56.8	68.6	0	0	70.5	70.5	70	Y	-	-	33.1	Y	Y	Y
D1-7d-3	6	31.2	D1-7d	37.4	0	65.2	56.8	68.4	0	0	70.3	70.3	70	N	-	-	32.9	Y	N	N
D1-7d-3	7	34.4	D1-7d	37.4	0	65.2	56.8	68.2	0	0	70.1	70.2	70	N	-	-	32.8	Y	N	N
D1-7d-3	8	37.6	D1-7d	37.3	0	65.2	56.8	67.9	0	0	70	70	70	N	-	-	32.7	Y	N	N
D1-7d-3	9	40.8	D1-7d	37.3	0	65.2	56.7	67.7	0	0	69.8	69.8	70	N	-	-	32.5	Y	N	N
D1-7d-3	10	44	D1-7d	37.3	0	65.1	56.7	67.4	0	0	69.7	69.7	70	N	-	-	32.4	Y	N	N
D1-7d-3	11	47.2	D1-7d	37.3	0	65.1	56.6	67.2	0	0	69.5	69.5	70	N	-	-	32.2	Y	N	N
D1-7d-3	12	50.4	D1-7d	37.3	0	65	56.5	67	0	0	69.3	69.3	70	N	-	-	32.0	Y	N	N
D1-7d-3	13	53.6	D1-7d	37.2	0	65	56.4	66.7	0	0	69.2	69.2	70	N	-	-	32.0	Y	N	N
D1-7d-3	14	56.8	D1-7d	37.2	0	65	56.3	66.5	0	0	69.1	69.1	70	N	-	-	31.9	Y	N	N
D1-7d-3	15	60	D1-7d	37.2	0	64.9	56.2	66.3	0	0	68.9	68.9	70	N	-	-	31.7	Y	N	N
D1-7d-3	16	63.2	D1-7d	37.2	0	64.9	56.1	66.1	0	0	68.8	68.8	70	N	-	-	31.6	Y	N	N
D1-7d-3	17	66.4	D1-7d	37.2	0	64.8	56	65.9	0	0	68.7	68.7	70	N	-	-	31.5	Y	N	N
D1-7d-3	18	69.6	D1-7d	37.3	0	64.8	55.9	65.7	0	0	68.5	68.6	70	N	-	-	31.3	Y	N	N
D1-7d-3	19	72.8	D1-7d	37.5	0	64.8	55.8	65.6	0	0	68.4	68.4	70	N	-	-	30.9	Y	N	N
D1-7d-3	20	76	D1-7d	38.1	0	64.7	55.7	65.4	0	0	68.3	68.3	70	N	-	-	30.2	Y	N	N
D1-7d-3	21	79.2	D1-7d	40.2	0	64.7	55.6	65.2	0	0	68.2	68.2	70	N	-	-	28.0	Y	N	N
D1-7d-3	22	82.4	D1-7d	40.8	0	64.7	55.5	65.1	0	0	68.1	68.1	70	N	-	-	27.3	Y	N	N

Title: Detailed Calculation of Road Traffic Noise with Direct Mitigation Measures in place
Scenario: Existing and Planned Residential and Educational Uses in KTN NDA (Mitigated Case on Proposed Roads)

Assessment Point			Location	WITH PROJECT									Noise Criteria dB(A)	Exceedance C > Criteria (Y/N)	Check Project Impact Significance		Check Direct Mitigation			At Receiver-end Mitigation Measures Required [4,5] (Y/N)
				Existing Road in 2046 dB(A)	Other Roads in 2046 dB(A)[1]	New Roads[2]					New Roads in 2046 dB(A) [3] [B]	Overall Noise Level in 2046 dB(A) [C]			C - A dB(A) [D]	D ≥ 1dB(A)	New Road Contribution dB(A) [E]	New Road Contribution ≥ 1dB(A) E ≥ 1dB(A)	New Road > Criteria B > Criteria	
						PD	DD	LD	EX	TR										
ID	Floor	Floor Level (mPD)		dB (A)																
D1-7d-3	23	85.6	D1-7d	40.8	0	64.6	55.4	64.9	0	0	68	68	70	N	-	-	27.2	Y	N	N
D1-7d-3	24	88.8	D1-7d	40.8	0	64.6	55.3	64.7	0	0	67.9	67.9	70	N	-	-	27.1	Y	N	N
D1-7d-4	1	15.2	D1-7d	37.1	0	68.3	57.6	66.3	0	0	70.6	70.6	70	Y	-	-	33.5	Y	Y	Y
D1-7d-4	2	18.4	D1-7d	37.1	0	68.2	57.5	66.2	0	0	70.6	70.6	70	Y	-	-	33.5	Y	Y	Y
D1-7d-4	3	21.6	D1-7d	37.1	0	68.2	57.4	66.1	0	0	70.5	70.5	70	Y	-	-	33.4	Y	Y	Y
D1-7d-4	4	24.8	D1-7d	37.1	0	68.1	57.4	66	0	0	70.4	70.4	70	N	-	-	33.3	Y	N	N
D1-7d-4	5	28	D1-7d	37.1	0	68.1	57.2	65.9	0	0	70.4	70.4	70	N	-	-	33.3	Y	N	N
D1-7d-4	6	31.2	D1-7d	37.1	0	68	57.1	65.7	0	0	70.2	70.2	70	N	-	-	33.1	Y	N	N
D1-7d-4	7	34.4	D1-7d	37.1	0	68	57	65.6	0	0	70.2	70.2	70	N	-	-	33.1	Y	N	N
D1-7d-4	8	37.6	D1-7d	37	0	67.9	56.9	65.4	0	0	70.1	70.1	70	N	-	-	33.1	Y	N	N
D1-7d-4	9	40.8	D1-7d	37	0	67.8	56.8	65.3	0	0	69.9	69.9	70	N	-	-	32.9	Y	N	N
D1-7d-4	10	44	D1-7d	37	0	67.7	56.7	65.1	0	0	69.8	69.8	70	N	-	-	32.8	Y	N	N
D1-7d-4	11	47.2	D1-7d	37	0	67.7	56.6	64.9	0	0	69.7	69.8	70	N	-	-	32.8	Y	N	N
D1-7d-4	12	50.4	D1-7d	37	0	67.6	56.5	64.7	0	0	69.6	69.6	70	N	-	-	32.6	Y	N	N
D1-7d-4	13	53.6	D1-7d	37	0	67.5	56.4	64.6	0	0	69.5	69.5	70	N	-	-	32.5	Y	N	N
D1-7d-4	14	56.8	D1-7d	37	0	67.5	56.3	64.4	0	0	69.4	69.4	70	N	-	-	32.4	Y	N	N
D1-7d-4	15	60	D1-7d	37	0	67.4	56.2	64.2	0	0	69.3	69.3	70	N	-	-	32.3	Y	N	N
D1-7d-4	16	63.2	D1-7d	36.9	0	67.3	56.1	64.1	0	0	69.2	69.2	70	N	-	-	32.3	Y	N	N
D1-7d-4	17	66.4	D1-7d	36.9	0	67.3	56	63.9	0	0	69.1	69.1	70	N	-	-	32.2	Y	N	N
D1-7d-4	18	69.6	D1-7d	36.9	0	67.2	55.9	63.7	0	0	69	69	70	N	-	-	32.1	Y	N	N
D1-7d-4	19	72.8	D1-7d	36.9	0	67.1	55.8	63.6	0	0	68.9	68.9	70	N	-	-	32.0	Y	N	N
D1-7d-4	20	76	D1-7d	36.9	0	67.1	55.7	63.4	0	0	68.9	68.9	70	N	-	-	32.0	Y	N	N
D1-7d-4	21	79.2	D1-7d	37	0	67	55.6	63.3	0	0	68.8	68.8	70	N	-	-	31.8	Y	N	N
D1-7d-4	22	82.4	D1-7d	37.1	0	67	55.5	63.1	0	0	68.7	68.7	70	N	-	-	31.6	Y	N	N
D1-7d-4	23	85.6	D1-7d	37.2	0	66.9	55.4	63	0	0	68.6	68.6	70	N	-	-	31.4	Y	N	N
D1-7d-4	24	88.8	D1-7d	37.5	0	66.9	55.3	62.8	0	0	68.6	68.6	70	N	-	-	31.1	Y	N	N
B2 (KTN NDA Area 25)																				
A1-6-1	1	36.2	A1-6	19.7	0	23.4	57.6	67.9	45.1	0	68.3	68.3	70	N	-	-	48.6	Y	N	N
A1-6-1	2	39.4	A1-6	20.2	0	24	60	69.6	45.6	0	70	70	70	N	-	-	49.8	Y	N	N
A1-6-1	3	42.6	A1-6	20.7	0	24.4	59.8	69.3	46.2	0	69.8	69.8	70	N	-	-	49.1	Y	N	N
A1-6-1	4	45.8	A1-6	21.4	0	25	59.7	69.1	46.8	0	69.6	69.6	70	N	-	-	48.2	Y	N	N
A1-6-1	5	49	A1-6	22.2	0	25.5	59.5	68.9	47.5	0	69.4	69.4	70	N	-	-	47.2	Y	N	N
A1-6-1	6	52.2	A1-6	23	0	26.1	59.4	68.6	48.1	0	69.2	69.2	70	N	-	-	46.2	Y	N	N
A1-6-1	7	55.4	A1-6	23.9	0	26.9	59.3	68.4	48.8	0	69	69	70	N	-	-	45.1	Y	N	N
A1-6-1	8	58.6	A1-6	25.1	0	27.5	59.2	68.2	49.5	0	68.7	68.7	70	N	-	-	43.6	Y	N	N
A1-6-1	9	61.8	A1-6	26.3	0	28.4	59.1	67.9	50.3	0	68.5	68.5	70	N	-	-	42.2	Y	N	N
A1-6-1	10	65	A1-6	27.7	0	29.2	59.1	67.7	51.1	0	68.4	68.4	70	N	-	-	40.7	Y	N	N
A1-6-1	11	68.2	A1-6	29.5	0	30	59.1	67.5	52	0	68.2	68.2	70	N	-	-	38.7	Y	N	N
A1-6-1	12	71.4	A1-6	31.7	0	30.9	59	67.3	53	0	68.1	68.1	70	N	-	-	36.4	Y	N	N
A1-6-1	13	74.6	A1-6	34.2	0	31.7	59	67.1	54.1	0	67.9	67.9	70	N	-	-	33.7	Y	N	N
A1-6-1	14	77.8	A1-6	36.9	0	32.9	58.9	67	55.2	0	67.8	67.8	70	N	-	-	30.9	Y	N	N
A1-6-1	15	81	A1-6	38.3	0	34	58.9	66.8	56.3	0	67.7	67.7	70	N	-	-	29.4	Y	N	N
A1-6-1	16	84.2	A1-6	38.9	0	35.7	58.9	66.6	57.2	0	67.7	67.7	70	N	-	-	28.8	Y	N	N
A1-6-1	17	87.4	A1-6	39.1	0	36.8	58.8	66.5	57.9	0	67.6	67.6	70	N	-	-	28.5	Y	N	N
A1-6-1	18	90.6	A1-6	39.2	0	38.2	58.8	66.3	58.6	0	67.6	67.6	70	N	-	-	28.4	Y	N	N
A1-6-1	19	93.8	A1-6	39.2	0	39	58.8	66.2	59.2	0	67.6	67.6	70	N	-	-	28.4	Y	N	N
A1-6-1	20	97	A1-6	39.2	0	39.5	58.8	66	59.6	0	67.5	67.5	70	N	-	-	28.3	Y	N	N
A1-6-1	21	100.2	A1-6	39.2	0	39.8	58.8	65.8	60.1	0	67.5	67.5	70	N	-	-	28.3	Y	N	N
A1-6-1	22	103.4	A1-6	39.2	0	40.2	58.8	65.7	60.6	0	67.5	67.5	70	N	-	-	28.3	Y	N	N
A1-6-1	23	106.6	A1-6	39.2	0	40.3	58.9	65.6	61	0	67.5	67.5	70	N	-	-	28.3	Y	N	N
A1-6-1	24	109.8	A1-6	39.1	0	40.5	58.9	65.4	61.5	0	67.5	67.5	70	N	-	-	28.4	Y	N	N
A1-6-1	25	113	A1-6	39.1	0	40.6	58.9	65.3	62	0	67.6	67.6	70	N	-	-	28.5	Y	N	N
A1-6-1	26	116.2	A1-6	39.1	0	40.7	59	65.2	62.4	0	67.6	67.7	70	N	-	-	28.6	Y	N	N
A1-6-2	1	36.2	A1-6	10.5	0	24.6	67.3	68.3	52.7	0	70.9	70.9	70	Y	-	-	60.4	Y	Y	Y
A1-6-2	2	39.4	A1-6	12	0	25.4	68	68.8	53	0	71.5	71.5	70	Y	-	-	59.5	Y	Y	Y
A1-6-2	3	42.6	A1-6	13.5	0	26.2	67.9	68.6	53.5	0	71.4	71.4	70	Y	-	-	57.9	Y	Y	Y
A1-6-2	4	45.8	A1-6	15	0	27.1	67.7	68.3	53.9	0	71.1	71.1	70	Y	-	-	56.1	Y	Y	Y
A1-6-2	5	49	A1-6	16.5	0	27.9	67.4	68.1	54.4	0	70.9	70.9	70	Y	-	-	54.4	Y	Y	Y
A1-6-2	6	52.2	A1-6	18.2	0	28.8	67.2	67.8	54.9	0	70.6	70.6	70	Y	-	-	52.4	Y	Y	Y
A1-6-2	7	55.4	A1-6	20.2	0	29.8	66.9	67.6	55.4	0	70.4	70.4	70	N	-	-	50.2	Y	N	N
A1-6-2	8	58.6	A1-6	22.6	0	30.8	66.7	67.4	56	0	70.3	70.3	70	N	-	-	47.7	Y	N	N
A1-6-2	9	61.8	A1-6	25.2	0	31.9	66.5	67.2	56.6	0	70.1	70.1	70	N	-	-	44.9	Y	N	N
A1-6-2	10	65	A1-6	29.1	0	33	66.3	67	57.2	0	69.9	69.9	70	N	-	-	40.8	Y	N	N
A1-6-2	11	68.2	A1-6	32.7	0	34.3	66.1	66.8	57.9	0	69.8	69.8	70	N	-	-	37.1	Y	N	N
A1-6-2	12	71.4	A1-6	34.4	0	35.8	65.9	66.6	58.6	0	69.6	69.7	70	N	-	-	35.3	Y	N	N
A1-6-2	13	74.6	A1-6	35	0	37.6	65.8	66.4	59.1	0	69.5	69.5	70	N	-	-	34.5	Y	N	N
A1-6-2	14	77.8	A1-6	35.2	0	39.3	65.6	66.2	59.7	0	69.4	69.4	70	N	-	-	34.2	Y	N	N
A1-6-2	15	81	A1-6	35.2	0	40.5	65.5	66	60.3	0	69.4	69.4	70	N	-	-	34.2	Y	N	N
A1-6-2	16	84.2	A1-6	35.2	0	41.4	65.3	65.8	60.8	0	69.3	69.3	70	N	-	-	34.1	Y	N	N
A1-6-2	17	87.4	A1-6	35.1	0	42.1	65.2	65.7	61.5	0	69.3	69.3	70	N	-	-	34.2	Y	N	N
A1-6-2	18	90.6	A1-6	35.1	0	42.7	65.1	65.5	62	0	69.3	69.3	70	N	-	-	34.2	Y	N	N
A1-6-2	19	93.8	A1-6	35.1	0	43.3	65	65.3	62.6	0	69.2	69.2	70	N	-	-	34.1	Y	N	N
A1-6-2	20	97	A1-6	35	0	43.5	64.9	65.2	63.2	0	69.3	69.3	70	N	-	-	34.3	Y	N	N
A1-6-2	21	100.2	A1-6	35	0	43.8	64.7	65	63.6	0	69.3	69.3	70	N	-	-	34.3	Y	N	N
A1-6-2	22	103.4	A1-6	35	0	43.9	64.6	64.9	64.1	0	69.3	69.3	70	N	-	-	34.3	Y	N	N
A1-6-2	23	106.6	A1-6	35	0	44	64.5	64.8	64.5	0	69.4	69.4	70	N	-	-	34.4	Y	N	N
A1-6-2	24	109.8	A1-6	34.9	0	44.1	64.4	64.6	65	0	69.5	69.5	70	N	-	-	34.6	Y	N	N
A1-6-2	25	113	A1-6	34.9	0	44.2	64.4	64.5	65.3	0	69.5	69.5	70	N	-	-	34.6	Y	N	N
A1-6-2	26	116.2	A1-6	34.9	0	44.3	64.3	64.4	65.6	0	69.6	69.6	70	N	-	-	34.7	Y	N	N

Title: Detailed Calculation of Road Traffic Noise with Direct Mitigation Measures in place
Scenario: Existing and Planned Residential and Educational Uses in KTN NDA (Mitigated Case on Proposed Roads)

Assessment Point			Location	WITH PROJECT														
				Existing Road in 2046 dB(A)	Other Roads in 2046 dB(A)[1]	New Roads[2]						Overall Noise Level in 2046 dB(A) [C]	Noise Criteria dB(A)	Exceedance C > Criteria (Y/N)	Check Project Impact Significance		Check Direct Mitigation			At Receiver-end Mitigation Measures Required [4,5] (Y/N)
						PD	DD	LD	EX	TR	New Roads in 2046 dB(A) [3] [B]				C - A dB(A) [D]	D ≥ 1dB(A)	New Road Contribution dB(A) [E]	New Road Contribution ≥ 1dB(A) E ≥ 1dB(A)	New Road > Criteria B > Criteria	
ID	Floor	Floor Level (mPD)				dB (A)														
A5 (KTN NDA Area 26)																				
A1-8-1	1	36.7	A1-8	10.9	0	28.4	55.9	48.4	50	0	57.4	57.4	70	N	-	-	46.5	Y	N	N
A1-8-1	2	39.5	A1-8	12.3	0	29.4	61.8	54	50.6	0	62.7	62.7	70	N	-	-	50.4	Y	N	N
A1-8-1	3	42.3	A1-8	13.8	0	30.5	65.7	59.3	51.3	0	66.7	66.7	70	N	-	-	52.9	Y	N	N
A1-8-1	4	45.1	A1-8	15.3	0	31.7	69	61.6	52	0	69.8	69.8	70	N	-	-	54.5	Y	N	N
A1-8-1	5	47.9	A1-8	17	0	33	69.7	61.8	52.7	0	70.4	70.4	70	N	-	-	53.4	Y	N	N
A1-8-1	6	50.7	A1-8	18.7	0	34.4	69.7	61.7	53.5	0	70.4	70.4	70	N	-	-	51.7	Y	N	N
A1-8-1	7	53.5	A1-8	20.6	0	36.3	69.6	61.5	54.2	0	70.3	70.3	70	N	-	-	49.7	Y	N	N
A1-8-1	8	56.3	A1-8	23	0	38.8	69.5	61.3	55.1	0	70.2	70.2	70	N	-	-	47.2	Y	N	N
A1-8-1	9	59.1	A1-8	26.4	0	42	69.3	61.1	55.9	0	70.1	70.1	70	N	-	-	43.7	Y	N	N
A1-8-1	10	61.9	A1-8	30.4	0	44.2	69.1	60.9	56.7	0	70	70	70	N	-	-	39.6	Y	N	N
A1-8-1	11	64.7	A1-8	33.6	0	44.9	69	60.8	57.6	0	69.9	69.9	70	N	-	-	36.3	Y	N	N
A1-8-1	12	67.5	A1-8	34.3	0	45.3	68.8	60.6	58.4	0	69.8	69.8	70	N	-	-	35.5	Y	N	N
A1-8-1	13	70.3	A1-8	34.6	0	45.7	68.7	60.4	59	0	69.7	69.7	70	N	-	-	35.1	Y	N	N
A1-8-1	14	73.1	A1-8	34.6	0	46.1	68.6	60.3	59.7	0	69.7	69.7	70	N	-	-	35.1	Y	N	N
A1-8-1	15	75.9	A1-8	34.6	0	46.3	68.4	60.1	60.2	0	69.6	69.6	70	N	-	-	35.0	Y	N	N
A1-8-1	16	78.7	A1-8	34.5	0	46.6	68.4	60	60.8	0	69.6	69.6	70	N	-	-	35.1	Y	N	N
A1-8-1	17	81.5	A1-8	34.5	0	46.9	68.2	59.8	61.4	0	69.6	69.6	70	N	-	-	35.1	Y	N	N
A1-8-1	18	84.3	A1-8	34.5	0	47.2	68.2	59.7	61.8	0	69.6	69.6	70	N	-	-	35.1	Y	N	N
A1-8-1	19	87.1	A1-8	34.5	0	47.4	68	59.5	62.4	0	69.6	69.6	70	N	-	-	35.1	Y	N	N
A1-8-1	20	89.9	A1-8	34.5	0	47.5	68	59.4	63	0	69.6	69.6	70	N	-	-	35.1	Y	N	N
A1-8-1	21	92.7	A1-8	34.5	0	47.7	67.9	59.3	63.4	0	69.7	69.7	70	N	-	-	35.2	Y	N	N
A1-8-1	22	95.5	A1-8	34.4	0	47.8	67.8	59.2	63.8	0	69.7	69.7	70	N	-	-	35.3	Y	N	N
A1-8-1	23	98.3	A1-8	34.4	0	47.8	67.7	59.1	64.1	0	69.7	69.7	70	N	-	-	35.3	Y	N	N
A1-8-1	24	101.1	A1-8	34.4	0	47.8	67.6	59	64.4	0	69.7	69.7	70	N	-	-	35.3	Y	N	N
A1-8-1	25	103.9	A1-8	34.4	0	47.8	67.5	58.9	64.8	0	69.8	69.8	70	N	-	-	35.4	Y	N	N
A1-8-1	26	106.7	A1-8	34.4	0	47.9	67.5	58.8	65	0	69.8	69.8	70	N	-	-	35.4	Y	N	N
A1-8-1	27	109.5	A1-8	34.3	0	47.9	67.4	58.6	65.4	0	69.9	69.9	70	N	-	-	35.6	Y	N	N
A1-8-1	28	112.3	A1-8	34.3	0	47.9	67.3	58.5	65.8	0	70	70	70	N	-	-	35.7	Y	N	N
A1-8-1	29	115.1	A1-8	34.3	0	47.9	67.2	58.4	66	0	70	70	70	N	-	-	35.7	Y	N	N
A1-8-1	30	117.9	A1-8	34.3	0	47.9	67.2	58.3	66.3	0	70.1	70.1	70	N	-	-	35.8	Y	N	N
A1-8-1	31	120.7	A1-8	34.3	0	48	67.1	58.2	66.5	0	70.1	70.1	70	N	-	-	35.8	Y	N	N
A1-8-1	32	123.5	A1-8	34.2	0	48.1	67	58.1	66.6	0	70.1	70.1	70	N	-	-	35.9	Y	N	N
A1-8-1	33	126.3	A1-8	34.2	0	48.1	67	58	66.9	0	70.2	70.2	70	N	-	-	36.0	Y	N	N
A1-8-1	34	129.1	A1-8	34.2	0	48.1	66.9	57.9	67.1	0	70.3	70.3	70	N	-	-	36.1	Y	N	N
A1-8-2	1	36.7	A1-8	27.1	0	30.4	56.7	43.7	53.8	0	58.7	58.7	70	N	-	-	31.6	Y	N	N
A1-8-2	2	39.5	A1-8	28.4	0	31.5	61.3	49	54.3	0	62.3	62.3	70	N	-	-	33.9	Y	N	N
A1-8-2	3	42.3	A1-8	29.8	0	32.6	65.8	54.8	54.6	0	66.4	66.4	70	N	-	-	36.6	Y	N	N
A1-8-2	4	45.1	A1-8	31	0	33.9	69.1	56.5	55.1	0	69.5	69.5	70	N	-	-	38.5	Y	N	N
A1-8-2	5	47.9	A1-8	31.8	0	35.3	69.8	56.6	55.5	0	70.1	70.1	70	N	-	-	38.3	Y	N	N
A1-8-2	6	50.7	A1-8	32.3	0	37	69.9	56.5	55.9	0	70.3	70.3	70	N	-	-	38.0	Y	N	N
A1-8-2	7	53.5	A1-8	32.4	0	39.2	69.7	56.3	56.4	0	70.1	70.1	70	N	-	-	37.7	Y	N	N
A1-8-2	8	56.3	A1-8	32.6	0	42.2	69.5	56.1	57	0	70	70	70	N	-	-	37.4	Y	N	N
A1-8-2	9	59.1	A1-8	32.7	0	44.6	69.4	55.9	57.6	0	69.8	69.8	70	N	-	-	37.1	Y	N	N
A1-8-2	10	61.9	A1-8	32.8	0	45.8	69.2	55.8	58.4	0	69.7	69.7	70	N	-	-	36.9	Y	N	N
A1-8-2	11	64.7	A1-8	32.9	0	46.6	69.1	55.6	59.1	0	69.7	69.7	70	N	-	-	36.8	Y	N	N
A1-8-2	12	67.5	A1-8	32.9	0	47.1	68.9	55.5	59.9	0	69.6	69.6	70	N	-	-	36.7	Y	N	N
A1-8-2	13	70.3	A1-8	32.9	0	47.6	68.8	55.3	60.5	0	69.6	69.6	70	N	-	-	36.7	Y	N	N
A1-8-2	14	73.1	A1-8	32.8	0	47.9	68.7	55.2	61.2	0	69.6	69.6	70	N	-	-	36.8	Y	N	N
A1-8-2	15	75.9	A1-8	32.8	0	48.1	68.5	55.1	61.8	0	69.6	69.6	70	N	-	-	36.8	Y	N	N
A1-8-2	16	78.7	A1-8	32.8	0	48.3	68.4	55	62.4	0	69.6	69.6	70	N	-	-	36.8	Y	N	N
A1-8-2	17	81.5	A1-8	32.8	0	48.4	68.3	54.9	62.9	0	69.6	69.6	70	N	-	-	36.8	Y	N	N
A1-8-2	18	84.3	A1-8	32.8	0	48.6	68.2	54.8	63.4	0	69.6	69.6	70	N	-	-	36.8	Y	N	N
A1-8-2	19	87.1	A1-8	32.9	0	48.7	68.1	54.7	63.8	0	69.6	69.6	70	N	-	-	36.7	Y	N	N
A1-8-2	20	89.9	A1-8	32.9	0	48.8	68	54.6	64.2	0	69.7	69.7	70	N	-	-	36.8	Y	N	N
A1-8-2	21	92.7	A1-8	32.9	0	49	67.8	54.5	64.5	0	69.7	69.7	70	N	-	-	36.8	Y	N	N
A1-8-2	22	95.5	A1-8	32.9	0	49.2	67.8	54.4	64.7	0	69.7	69.7	70	N	-	-	36.8	Y	N	N
A1-8-2	23	98.3	A1-8	32.8	0	49.2	67.7	54.3	65	0	69.7	69.7	70	N	-	-	36.9	Y	N	N
A1-8-2	24	101.1	A1-8	32.8	0	49.4	67.7	54.2	65.3	0	69.8	69.8	70	N	-	-	37.0	Y	N	N
A1-8-2	25	103.9	A1-8	32.9	0	49.5	67.5	54.2	65.5	0	69.8	69.8	70	N	-	-	36.9	Y	N	N
A1-8-2	26	106.7	A1-8	32.9	0	49.6	67.5	54.1	65.8	0	69.9	69.9	70	N	-	-	37.0	Y	N	N
A1-8-2	27	109.5	A1-8	32.9	0	49.8	67.4	54.2	66.1	0	70	70	70	N	-	-	37.1	Y	N	N
A1-8-2	28	112.3	A1-8	32.9	0	50	67.3	54.1	66.4	0	70.1	70.1	70	N	-	-	37.2	Y	N	N
A1-8-2	29	115.1	A1-8	32.9	0	50	67.3	54.2	66.7	0	70.2	70.2	70	N	-	-	37.3	Y	N	N
A1-8-2	30	117.9	A1-8	32.9	0	50.2	67.2	54.1	66.9	0	70.2	70.2	70	N	-	-	37.3	Y	N	N
A1-8-2	31	120.7	A1-8	32.9	0	50.4	67.1	54.1	67	0	70.2	70.2	70	N	-	-	37.3	Y	N	N
A1-8-2	32	123.5	A1-8	33	0	50.5	67.1	54.1	67.3	0	70.3	70.3	70	N	-	-	37.3	Y	N	N
A1-8-2	33	126.3	A1-8	33	0	50.6	67	54	67.4	0	70.4	70.4	70	N	-	-	37.4	Y	N	N
A1-8-2	34	129.1	A1-8	33	0	50.6	66.9	54	67.7	0	70.5	70.5	70	Y	-	-	37.5	Y	Y	Y
A1-8-3	1	36.7	A1-8	26.2	0	29.7	55.4	42.5	53.8	0	57.8	57.8	70	N	-	-	31.6	Y	N	N
A1-8-3	2	39.5	A1-8	27.7	0	30.7	61.3	45.7	54.3	0	62.2	62.2	70	N	-	-	34.5	Y	N	N
A1-8-3	3	42.3	A1-8	28.6	0	31.7	64.1	45.8	54.6	0	64.6	64.6	70	N	-	-	36.0	Y	N	N
A1-8-3	4	45.1	A1-8	29.9	0	32.8	65.1	45.8	55	0	65.6	65.6	70	N	-	-	35.7	Y	N	N
A1-8-3	5	47.9	A1-8	30.8	0	34	65.3	45.8	55.3	0	65.8	65.8	70	N	-	-	35.0	Y	N	N
A1-8-3	6	50.7	A1-8	31.3	0	35.3	65.4	45.8	55.7	0	65.9	65.9	70	N	-	-	34.6	Y	N	N
A1-8-3	7	53.5	A1-8	31.6	0	37	65.8	45.8	56.1	0	66.3	66.3	70	N	-	-	34.7	Y	N	N
A1-8-3	8	56.3	A1-8	31.7	0	39.3	66.5	45.8	56.6	0	67	67	70	N	-	-	35.3	Y	N	N
A1-8-3	9	59.1	A1-8	31.8	0	41.8	66.9	45.8	57.2	0	67.4	67.4	70	N	-	-	35.6	Y	N	N
A1-8-3	10	61.9	A1-8	31.9	0	43.7	66.9	45.8	57.8	0	67.5	67.5	70	N	-	-	35.6	Y	N	N

Title: Detailed Calculation of Road Traffic Noise with Direct Mitigation Measures in place
Scenario: Existing and Planned Residential and Educational Uses in KTN NDA (Mitigated Case on Proposed Roads)

Assessment Point			Location	WITH PROJECT									Check Project Impact Significance		Check Direct Mitigation			At Receiver-end Mitigation Measures Required [4,5] (Y/N)
				Existing Road in 2046 dB(A)	Other Roads in 2046 dB(A)[1]	New Roads[2]					New Roads in 2046 dB(A) [3] [B]	Overall Noise Level in 2046 dB(A) [C]	Noise Criteria dB(A)	Exceedance C > Criteria (Y/N)	C - A dB(A) [D]	D ≥ 1dB(A)	New Road Contribution dB(A) [E]	New Road Contribution ≥ 1dB(A) E ≥ 1dB(A)	New Road > Criteria B > Criteria	
						PD	DD	LD	EX	TR										
ID	Floor	Floor Level (mPD)		dB (A)																
A1-8-3	11	64.7	A1-8	32.1	0	44.8	66.9	45.9	58.5	0	67.6	67.6	70	N	-	-	35.5	Y	N	N
A1-8-3	12	67.5	A1-8	32.1	0	45.4	66.8	45.9	59.2	0	67.6	67.6	70	N	-	-	35.5	Y	N	N
A1-8-3	13	70.3	A1-8	32.1	0	45.8	66.7	45.9	59.9	0	67.6	67.6	70	N	-	-	35.5	Y	N	N
A1-8-3	14	73.1	A1-8	32.1	0	46	66.6	45.9	60.5	0	67.6	67.6	70	N	-	-	35.5	Y	N	N
A1-8-3	15	75.9	A1-8	32.1	0	46.1	66.5	46	61.2	0	67.6	67.6	70	N	-	-	35.5	Y	N	N
A1-8-3	16	78.7	A1-8	32.1	0	46.4	66.4	46.2	61.8	0	67.7	67.7	70	N	-	-	35.6	Y	N	N
A1-8-3	17	81.5	A1-8	32.1	0	46.5	66.3	46.3	62.3	0	67.8	67.8	70	N	-	-	35.7	Y	N	N
A1-8-3	18	84.3	A1-8	32.1	0	46.7	66.2	46.4	62.7	0	67.9	67.9	70	N	-	-	35.8	Y	N	N
A1-8-3	19	87.1	A1-8	32.2	0	46.9	66	46.5	63.1	0	67.9	67.9	70	N	-	-	35.7	Y	N	N
A1-8-3	20	89.9	A1-8	32.1	0	47.2	65.9	46.6	63.4	0	67.9	67.9	70	N	-	-	35.8	Y	N	N
A1-8-3	21	92.7	A1-8	32.1	0	47.5	65.9	46.7	63.7	0	68	68	70	N	-	-	35.9	Y	N	N
A1-8-3	22	95.5	A1-8	32.1	0	47.8	65.8	46.7	64	0	68.1	68.1	70	N	-	-	36.0	Y	N	N
A1-8-3	23	98.3	A1-8	32.2	0	48.1	65.7	46.8	64.2	0	68.1	68.1	70	N	-	-	35.9	Y	N	N
A1-8-3	24	101.1	A1-8	32.2	0	48.4	65.6	47.1	64.5	0	68.2	68.2	70	N	-	-	36.0	Y	N	N
A1-8-3	25	103.9	A1-8	32.2	0	48.5	65.6	47.4	64.7	0	68.2	68.2	70	N	-	-	36.0	Y	N	N
A1-8-3	26	106.7	A1-8	32.2	0	48.8	65.5	47.7	64.9	0	68.3	68.3	70	N	-	-	36.1	Y	N	N
A1-8-3	27	109.5	A1-8	32.2	0	48.9	65.5	48	65.2	0	68.4	68.4	70	N	-	-	36.2	Y	N	N
A1-8-3	28	112.3	A1-8	32.2	0	49	65.4	48.2	65.5	0	68.5	68.5	70	N	-	-	36.3	Y	N	N
A1-8-3	29	115.1	A1-8	32.2	0	49.2	65.3	48.3	65.7	0	68.6	68.6	70	N	-	-	36.4	Y	N	N
A1-8-3	30	117.9	A1-8	32.2	0	49.3	65.3	48.4	66	0	68.8	68.8	70	N	-	-	36.6	Y	N	N
A1-8-3	31	120.7	A1-8	32.2	0	49.5	65.2	48.5	66.3	0	68.9	68.9	70	N	-	-	36.7	Y	N	N
A1-8-3	32	123.5	A1-8	32.3	0	49.7	65.1	48.6	66.4	0	68.9	68.9	70	N	-	-	36.6	Y	N	N
A1-8-3	33	126.3	A1-8	32.3	0	49.9	65.1	48.7	66.5	0	69	69	70	N	-	-	36.7	Y	N	N
A1-8-3	34	129.1	A1-8	32.2	0	50.1	65	48.7	66.7	0	69	69	70	N	-	-	36.8	Y	N	N
B5 (KTN NDA Area 26)																				
A1-9a-1	1	14.7	A1-9a	15.9	0	12.9	69.6	34.2	52.7	0	69.7	69.7	70	N	-	-	53.8	Y	N	N
A1-9a-1	2	17.9	A1-9a	16.3	0	12.9	69.5	34.2	53	0	69.6	69.6	70	N	-	-	53.3	Y	N	N
A1-9a-1	3	21.1	A1-9a	17.2	0	12.9	69.4	34.2	53.2	0	69.5	69.5	70	N	-	-	52.3	Y	N	N
A1-9a-1	4	24.3	A1-9a	18.1	0	12.9	69.4	34.5	53.4	0	69.5	69.5	70	N	-	-	51.4	Y	N	N
A1-9a-1	5	27.5	A1-9a	19.2	0	12.9	69.2	34.9	53.7	0	69.3	69.3	70	N	-	-	50.1	Y	N	N
A1-9a-1	6	30.7	A1-9a	20.4	0	12.9	69.1	35.7	54	0	69.2	69.2	70	N	-	-	48.8	Y	N	N
A1-9a-1	7	33.9	A1-9a	21.6	0	13	68.9	36.9	54.2	0	69	69	70	N	-	-	47.4	Y	N	N
A1-9a-1	8	37.1	A1-9a	23	0	13	68.8	38.7	54.5	0	69	69	70	N	-	-	46.0	Y	N	N
A1-9a-1	9	40.3	A1-9a	24	0	13	68.6	41.4	54.8	0	68.8	68.8	70	N	-	-	44.8	Y	N	N
A1-9a-1	10	43.5	A1-9a	24.9	0	13	68.4	45.1	55.1	0	68.6	68.6	70	N	-	-	43.7	Y	N	N
A1-9a-1	11	46.7	A1-9a	25.7	0	13	68.2	50	55.4	0	68.5	68.5	70	N	-	-	42.8	Y	N	N
A1-9a-1	12	49.9	A1-9a	26.5	0	13	68.1	52.8	55.6	0	68.4	68.4	70	N	-	-	41.9	Y	N	N
A1-9a-1	13	53.1	A1-9a	27.4	0	13	68	53.1	56	0	68.4	68.4	70	N	-	-	41.0	Y	N	N
A1-9a-1	14	56.3	A1-9a	28.4	0	13	67.8	53.1	56.2	0	68.2	68.2	70	N	-	-	39.8	Y	N	N
A1-9a-1	15	59.5	A1-9a	29.7	0	13	67.6	52.9	56.6	0	68.1	68.1	70	N	-	-	38.4	Y	N	N
A1-9a-1	16	62.7	A1-9a	31.9	0	13	67.5	52.8	56.9	0	68	68	70	N	-	-	36.1	Y	N	N
A1-9a-1	17	65.9	A1-9a	35.2	0	13	67.3	52.6	57.2	0	67.8	67.8	70	N	-	-	32.6	Y	N	N
A1-9a-1	18	69.1	A1-9a	37.3	0	13	67.2	52.4	57.6	0	67.8	67.8	70	N	-	-	30.5	Y	N	N
A1-9a-2	1	14.7	A1-9a	16.6	0	23.6	73.3	55.1	52.7	0	73.4	73.4	70	Y	-	-	56.8	Y	Y	Y
A1-9a-2	2	17.9	A1-9a	16.7	0	24.2	73.1	54.9	53	0	73.2	73.2	70	Y	-	-	56.5	Y	Y	Y
A1-9a-2	3	21.1	A1-9a	17	0	25.1	72.8	54.8	53.3	0	72.9	72.9	70	Y	-	-	55.9	Y	Y	Y
A1-9a-2	4	24.3	A1-9a	17.9	0	26.2	72.5	54.6	53.6	0	72.7	72.7	70	Y	-	-	54.8	Y	Y	Y
A1-9a-2	5	27.5	A1-9a	18.9	0	27.4	72.2	54.4	54	0	72.3	72.3	70	Y	-	-	53.4	Y	Y	Y
A1-9a-2	6	30.7	A1-9a	20.2	0	28.7	71.9	54.3	54.4	0	72.1	72.1	70	Y	-	-	51.9	Y	Y	Y
A1-9a-2	7	33.9	A1-9a	21.7	0	30.1	71.6	54.1	54.8	0	71.8	71.8	70	Y	-	-	50.1	Y	Y	Y
A1-9a-2	8	37.1	A1-9a	23.2	0	31.4	71.3	53.9	55.2	0	71.5	71.5	70	Y	-	-	48.3	Y	Y	Y
A1-9a-2	9	40.3	A1-9a	24.7	0	32.9	71	53.7	55.6	0	71.2	71.2	70	Y	-	-	46.5	Y	Y	Y
A1-9a-2	10	43.5	A1-9a	25.9	0	34.5	70.7	53.6	56.2	0	71	71	70	Y	-	-	45.1	Y	Y	Y
A1-9a-2	11	46.7	A1-9a	26.9	0	36.2	70.5	53.4	56.8	0	70.7	70.7	70	Y	-	-	43.8	Y	Y	Y
A1-9a-2	12	49.9	A1-9a	28	0	38.2	70.2	53.2	57.5	0	70.6	70.6	70	Y	-	-	42.6	Y	Y	Y
A1-9a-2	13	53.1	A1-9a	29.3	0	40.8	70	53.1	58.4	0	70.4	70.4	70	N	-	-	41.1	Y	N	N
A1-9a-2	14	56.3	A1-9a	31.2	0	43.9	69.8	53	59.4	0	70.3	70.3	70	N	-	-	39.1	Y	N	N
A1-9a-2	15	59.5	A1-9a	33.9	0	45.9	69.6	52.9	60.4	0	70.2	70.2	70	N	-	-	36.3	Y	N	N
A1-9a-2	16	62.7	A1-9a	37.6	0	47.2	69.4	52.8	61.4	0	70.1	70.1	70	N	-	-	32.5	Y	N	N
A1-9a-2	17	65.9	A1-9a	39.7	0	47.9	69.2	52.8	62.4	0	70.1	70.1	70	N	-	-	30.4	Y	N	N
A1-9a-2	18	69.1	A1-9a	40.2	0	48.3	69	52.9	63.1	0	70.1	70.2	70	N	-	-	30.0	Y	N	N
A1-9a-3	1	14.7	A1-9a	16.7	0	25	70.8	56.1	48.7	0	71	71	70	Y	-	-	54.3	Y	Y	Y
A1-9a-3	2	17.9	A1-9a	16.8	0	25.5	70.7	56.1	49.1	0	70.9	70.9	70	Y	-	-	54.1	Y	Y	Y
A1-9a-3	3	21.1	A1-9a	16.8	0	26.4	70.5	56	49.6	0	70.7	70.7	70	Y	-	-	53.9	Y	Y	Y
A1-9a-3	4	24.3	A1-9a	17.3	0	27.5	70.3	56.1	50.1	0	70.5	70.5	70	Y	-	-	53.2	Y	Y	Y
A1-9a-3	5	27.5	A1-9a	18.2	0	28.7	70.1	56	50.7	0	70.3	70.3	70	N	-	-	52.1	Y	N	N
A1-9a-3	6	30.7	A1-9a	19.4	0	30.1	69.9	55.9	51.4	0	70.1	70.1	70	N	-	-	50.7	Y	N	N
A1-9a-3	7	33.9	A1-9a	21	0	31.6	69.6	55.9	52.1	0	69.9	69.9	70	N	-	-	48.9	Y	N	N
A1-9a-3	8	37.1	A1-9a	22.7	0	33.1	69.4	55.9	52.9	0	69.6	69.6	70	N	-	-	46.9	Y	N	N
A1-9a-3	9	40.3	A1-9a	24.6	0	34.5	69.1	55.8	53.7	0	69.5	69.5	70	N	-	-	44.9	Y	N	N
A1-9a-3	10	43.5	A1-9a	26.5	0	36.1	68.9	55.8	54.6	0	69.3	69.3	70	N	-	-	42.8	Y	N	N
A1-9a-3	11	46.7	A1-9a	28.3	0	37.7	68.7	55.8	55.6	0	69.1	69.1	70	N	-	-	40.8	Y	N	N
A1-9a-3	12	49.9	A1-9a	30.2	0	39.6	68.5	55.8	56.6	0	69	69	70	N	-	-	38.8	Y	N	N
A1-9a-3	13	53.1	A1-9a	32.6	0	42.1	68.2	56	57.7	0	68.8	68.8	70	N	-	-	36.2	Y	N	N
A1-9a-3	14	56.3	A1-9a	36.9	0	45.2	68.1	56.2	59.1	0	68.8	68.8	70	N	-	-	31.9	Y	N	N
A1-9a-3	15	59.5	A1-9a	39.6	0	47.6	67.9	56.8	60.7	0	68.9	69	70	N	-	-	29.4	Y	N	N
A1-9a-3	16	62.7	A1-9a	40.1	0	48.8	67.8	57.5	62.2	0	69.2	69.2	70	N	-	-	29.1	Y	N	N
A1-9a-3	17	65.9	A1-9a	40.2	0	49.4	67.6	58.1	63	0	69.3	69.3	70	N	-	-	29.1	Y	N	N
A1-9a-3	18	69.1	A1-9a	40.3	0	49.5	67.4	58.4	63.6	0	69.4	69.4	70	N	-	-	29.1	Y	N	N

Title: Detailed Calculation of Road Traffic Noise with Direct Mitigation Measures in place
Scenario: Existing and Planned Residential and Educational Uses in KTN NDA (Mitigated Case on Proposed Roads)

Assessment Point			Location	WITH PROJECT														
				Existing Road in 2046 dB(A)	Other Roads in 2046 dB(A)[1]	New Roads[2]						Overall Noise Level in 2046 dB(A) [C]	Noise Criteria dB(A)	Exceedance C > Criteria (Y/N)	Check Project Impact Significance		Check Direct Mitigation			At Receiver-end Mitigation Measures Required [4,5] (Y/N)
						PD	DD	LD	EX	TR	New Roads in 2046 dB(A) [3] [B]				C - A dB(A) [D]	D ≥ 1dB(A)	New Road Contribution dB(A) [E]	New Road Contribution ≥ 1dB(A) E ≥ 1dB(A)	New Road > Criteria B > Criteria	
ID	Floor	Floor Level (mPD)		dB (A)																
A1-9a-4	1	14.7	A1-9a	14.6	0	41.4	70.9	61.9	47.2	0	71.4	71.4	70	Y	-	-	56.8	Y	Y	Y
A1-9a-4	2	17.9	A1-9a	14.6	0	41.4	70.7	61.9	47.8	0	71.3	71.3	70	Y	-	-	56.7	Y	Y	Y
A1-9a-4	3	21.1	A1-9a	14.8	0	41.5	70.5	61.8	48.3	0	71.1	71.1	70	Y	-	-	56.3	Y	Y	Y
A1-9a-4	4	24.3	A1-9a	15.2	0	41.6	70.4	61.7	49	0	71	71	70	Y	-	-	55.8	Y	Y	Y
A1-9a-4	5	27.5	A1-9a	16.4	0	41.7	70.2	61.6	49.7	0	70.8	70.8	70	Y	-	-	54.4	Y	Y	Y
A1-9a-4	6	30.7	A1-9a	17.7	0	41.8	69.9	61.5	50.5	0	70.6	70.6	70	Y	-	-	52.9	Y	Y	Y
A1-9a-4	7	33.9	A1-9a	19.3	0	41.9	69.7	61.4	51.3	0	70.4	70.4	70	N	-	-	51.1	Y	N	N
A1-9a-4	8	37.1	A1-9a	21.1	0	42	69.5	61.2	52.2	0	70.1	70.1	70	N	-	-	49.0	Y	N	N
A1-9a-4	9	40.3	A1-9a	23.2	0	42.1	69.2	61.1	53.1	0	70	70	70	N	-	-	46.8	Y	N	N
A1-9a-4	10	43.5	A1-9a	25.3	0	42.3	69	61	54.1	0	69.8	69.8	70	N	-	-	44.5	Y	N	N
A1-9a-4	11	46.7	A1-9a	27.4	0	42.7	68.8	60.8	55.2	0	69.6	69.6	70	N	-	-	42.2	Y	N	N
A1-9a-4	12	49.9	A1-9a	29.6	0	43.2	68.6	60.7	56.3	0	69.5	69.5	70	N	-	-	39.9	Y	N	N
A1-9a-4	13	53.1	A1-9a	32.3	0	44.2	68.4	60.6	57.5	0	69.4	69.4	70	N	-	-	37.1	Y	N	N
A1-9a-4	14	56.3	A1-9a	36.8	0	45.8	68.2	60.7	58.8	0	69.4	69.4	70	N	-	-	32.6	Y	N	N
A1-9a-4	15	59.5	A1-9a	39.2	0	46.6	68.1	61.1	60.4	0	69.5	69.5	70	N	-	-	30.3	Y	N	N
A1-9a-4	16	62.7	A1-9a	39.6	0	47.2	67.9	61.5	62.1	0	69.7	69.7	70	N	-	-	30.1	Y	N	N
A1-9a-4	17	65.9	A1-9a	39.8	0	47.7	67.7	61.6	63	0	69.8	69.8	70	N	-	-	30.0	Y	N	N
A1-9a-4	18	69.1	A1-9a	39.8	0	48	67.6	61.7	63.6	0	69.8	69.8	70	N	-	-	30.0	Y	N	N
A1-9a-5	1	14.7	A1-9a	15	0	48.1	67.9	67.3	50.9	0	70.7	70.7	70	Y	-	-	55.7	Y	Y	Y
A1-9a-5	2	17.9	A1-9a	15.2	0	48.1	67.8	67.1	51	0	70.5	70.5	70	Y	-	-	55.3	Y	Y	Y
A1-9a-5	3	21.1	A1-9a	15.6	0	48.1	67.7	66.9	51.1	0	70.4	70.4	70	N	-	-	54.8	Y	N	N
A1-9a-5	4	24.3	A1-9a	16	0	48.1	67.6	66.7	51.1	0	70.3	70.3	70	N	-	-	54.3	Y	N	N
A1-9a-5	5	27.5	A1-9a	17.1	0	48.1	67.4	66.5	51.3	0	70.1	70.1	70	N	-	-	53.0	Y	N	N
A1-9a-5	6	30.7	A1-9a	18.4	0	48.1	67.3	66.2	51.4	0	69.9	69.9	70	N	-	-	51.5	Y	N	N
A1-9a-5	7	33.9	A1-9a	19.9	0	48.1	67.2	66	51.5	0	69.7	69.7	70	N	-	-	49.8	Y	N	N
A1-9a-5	8	37.1	A1-9a	21.4	0	48.1	67	65.8	51.8	0	69.6	69.6	70	N	-	-	48.2	Y	N	N
A1-9a-5	9	40.3	A1-9a	23.3	0	48.2	66.8	65.5	52	0	69.4	69.4	70	N	-	-	46.1	Y	N	N
A1-9a-5	10	43.5	A1-9a	25.1	0	48.2	66.7	65.3	52.3	0	69.2	69.2	70	N	-	-	44.1	Y	N	N
A1-9a-5	11	46.7	A1-9a	27.1	0	48.2	66.5	65	52.5	0	69	69	70	N	-	-	41.9	Y	N	N
A1-9a-5	12	49.9	A1-9a	29.2	0	48.3	66.3	64.8	52.9	0	68.8	68.8	70	N	-	-	39.6	Y	N	N
A1-9a-5	13	53.1	A1-9a	31.9	0	48.3	66.2	64.6	53.4	0	68.7	68.7	70	N	-	-	36.8	Y	N	N
A1-9a-5	14	56.3	A1-9a	35.5	0	48.4	66	64.5	54.2	0	68.5	68.5	70	N	-	-	33.0	Y	N	N
A1-9a-5	15	59.5	A1-9a	38.6	0	48.6	65.9	64.4	55.7	0	68.5	68.5	70	N	-	-	29.9	Y	N	N
A1-9a-5	16	62.7	A1-9a	39.3	0	48.8	65.7	64.3	57	0	68.5	68.5	70	N	-	-	29.2	Y	N	N
A1-9a-5	17	65.9	A1-9a	39.6	0	49	65.6	64.3	58.1	0	68.5	68.5	70	N	-	-	28.9	Y	N	N
A1-9a-5	18	69.1	A1-9a	39.5	0	49.2	65.4	64.2	58.9	0	68.4	68.4	70	N	-	-	28.9	Y	N	N
A1-9a-6	1	14.7	A1-9a	14.2	0	50	58.3	68.5	28.8	0	69	69	70	N	-	-	54.8	Y	N	N
A1-9a-6	2	17.9	A1-9a	14.2	0	50	58.3	68.3	28.9	0	68.8	68.8	70	N	-	-	54.6	Y	N	N
A1-9a-6	3	21.1	A1-9a	14.2	0	50	58.3	68.1	29	0	68.6	68.6	70	N	-	-	54.4	Y	N	N
A1-9a-6	4	24.3	A1-9a	14.3	0	50	58.3	67.9	29.2	0	68.4	68.4	70	N	-	-	54.1	Y	N	N
A1-9a-6	5	27.5	A1-9a	14.3	0	50	58.3	67.7	29.3	0	68.2	68.2	70	N	-	-	53.9	Y	N	N
A1-9a-6	6	30.7	A1-9a	14.3	0	50	58.2	67.4	29.4	0	68	68	70	N	-	-	53.7	Y	N	N
A1-9a-6	7	33.9	A1-9a	14.3	0	50	58.2	67.2	29.5	0	67.8	67.8	70	N	-	-	53.5	Y	N	N
A1-9a-6	8	37.1	A1-9a	14.3	0	50	58.2	66.9	29.6	0	67.6	67.6	70	N	-	-	53.3	Y	N	N
A1-9a-6	9	40.3	A1-9a	14.3	0	49.9	58.2	66.7	29.7	0	67.3	67.3	70	N	-	-	53.0	Y	N	N
A1-9a-6	10	43.5	A1-9a	14.2	0	49.9	58.2	66.5	30.4	0	67.2	67.2	70	N	-	-	53.0	Y	N	N
A1-9a-6	11	46.7	A1-9a	14.3	0	49.9	58.1	66.2	31.1	0	66.9	66.9	70	N	-	-	52.6	Y	N	N
A1-9a-6	12	49.9	A1-9a	15.2	0	49.9	58.1	66	31.8	0	66.7	66.7	70	N	-	-	51.5	Y	N	N
A1-9a-6	13	53.1	A1-9a	16.4	0	50	58.1	65.8	32.7	0	66.6	66.6	70	N	-	-	50.2	Y	N	N
A1-9a-6	14	56.3	A1-9a	17.9	0	50	58.1	65.6	33.4	0	66.4	66.4	70	N	-	-	48.5	Y	N	N
A1-9a-6	15	59.5	A1-9a	19.6	0	50	58	65.4	34.2	0	66.2	66.2	70	N	-	-	46.6	Y	N	N
A1-9a-6	16	62.7	A1-9a	21.5	0	50.1	58	65.2	35.1	0	66.1	66.1	70	N	-	-	44.6	Y	N	N
A1-9a-6	17	65.9	A1-9a	23.4	0	50.1	57.9	65	35.9	0	65.9	65.9	70	N	-	-	42.5	Y	N	N
A1-9a-6	18	69.1	A1-9a	25.5	0	50.2	57.9	64.8	36.6	0	65.7	65.7	70	N	-	-	40.2	Y	N	N
A1-9a-7	1	14.7	A1-9a	13.6	0	41.3	54.3	64.1	0	0	64.6	64.6	70	N	-	-	51.0	Y	N	N
A1-9a-7	2	17.9	A1-9a	13.6	0	41.3	54.3	63.9	0	0	64.4	64.4	70	N	-	-	50.8	Y	N	N
A1-9a-7	3	21.1	A1-9a	13.6	0	41.3	54.3	63.6	0	0	64.1	64.1	70	N	-	-	50.5	Y	N	N
A1-9a-7	4	24.3	A1-9a	13.7	0	41.3	54.3	63.4	0	0	63.9	63.9	70	N	-	-	50.2	Y	N	N
A1-9a-7	5	27.5	A1-9a	13.7	0	41.3	54.3	63.2	0	0	63.7	63.7	70	N	-	-	50.0	Y	N	N
A1-9a-7	6	30.7	A1-9a	13.7	0	41.3	54.3	62.9	0	0	63.5	63.5	70	N	-	-	49.8	Y	N	N
A1-9a-7	7	33.9	A1-9a	13.7	0	41.2	54.2	62.7	0	0	63.3	63.3	70	N	-	-	49.6	Y	N	N
A1-9a-7	8	37.1	A1-9a	13.7	0	41.2	54.2	62.5	0	0	63.1	63.1	70	N	-	-	49.4	Y	N	N
A1-9a-7	9	40.3	A1-9a	13.7	0	41.3	54.2	62.3	0	0	62.9	62.9	70	N	-	-	49.2	Y	N	N
A1-9a-7	10	43.5	A1-9a	13.7	0	41.3	54.2	62.1	0	0	62.8	62.8	70	N	-	-	49.1	Y	N	N
A1-9a-7	11	46.7	A1-9a	13.6	0	41.4	54.2	61.9	0	0	62.6	62.6	70	N	-	-	49.0	Y	N	N
A1-9a-7	12	49.9	A1-9a	14.6	0	41.5	54.2	61.7	0	0	62.5	62.5	70	N	-	-	47.9	Y	N	N
A1-9a-7	13	53.1	A1-9a	15.8	0	41.6	54.2	61.5	0	0	62.3	62.3	70	N	-	-	46.5	Y	N	N
A1-9a-7	14	56.3	A1-9a	17.3	0	41.7	54.2	61.3	0	0	62.1	62.1	70	N	-	-	44.8	Y	N	N
A1-9a-7	15	59.5	A1-9a	19	0	41.9	54.2	61.2	0	0	62	62	70	N	-	-	43.0	Y	N	N
A1-9a-7	16	62.7	A1-9a	20.7	0	42.1	54.1	61	0	0	61.9	61.9	70	N	-	-	41.2	Y	N	N
A1-9a-7	17	65.9	A1-9a	22	0	42.3	54.1	60.8	0	0	61.7	61.7	70	N	-	-	39.7	Y	N	N
A1-9a-7	18	69.1	A1-9a	23.3	0	42.6	54.1	60.6	0	0	61.6	61.6	70	N	-	-	38.3	Y	N	N
B6 (KTN NDA Area 26)																				
A1-9b-1	1	15.2	A1-9b	13.6	0	43.6	67.3	68.1	59.9	0	71.1	71.1	70	Y	-	-	57.5	Y	Y	Y
A1-9b-1	2	18.4	A1-9b	14	0	43.6	67.3	67.9	60	0	71	71	70	Y	-	-	57.0	Y	Y	Y
A1-9b-1	3	21.6	A1-9b	14.5	0	43.6	67.2	67.6	60	0	70.8	70.8	70	Y	-	-	56.3	Y	Y	Y
A1-9b-1	4	24.8	A1-9b	14.9	0	43.6	67.1	67.3	60	0	70.6	70.6	70	Y	-	-	55.7	Y	Y	Y
A1-9b-1	5	28	A1-9b	16	0	43.6	66.9	67	60	0	70.4	70.4	70	N	-	-	54.4	Y	N	N
A1-9b-1	6	31.2	A1-9b	17.4	0	43.6	66.8	66.7	60	0	70.2	70.2	70	N	-	-	52.8	Y	N	N

Title: Detailed Calculation of Road Traffic Noise with Direct Mitigation Measures in place
Scenario: Existing and Planned Residential and Educational Uses in KTN NDA (Mitigated Case on Proposed Roads)

Assessment Point			Location	WITH PROJECT										Check Project Impact Significance		Check Direct Mitigation			At Receiver-end Mitigation Measures Required [4,5] (Y/N)
				Existing Road in 2046 dB(A)	Other Roads in 2046 dB(A)[1]	New Roads[2]					New Roads in 2046 dB(A) [3] [B]	Overall Noise Level in 2046 dB(A) [C]	Noise Criteria dB(A)	Exceedance C > Criteria (Y/N)	C - A dB(A) [D]	D ≥ 1dB(A)	New Road Contribution dB(A) [E]	New Road Contribution ≥ 1dB(A) E ≥ 1dB(A)	New Road > Criteria B > Criteria	
						PD	DD	LD	EX	TR										
ID	Floor	Floor Level (mPD)		dB (A)																
A1-9b-1	7	34.4	A1-9b	19	0	43.6	66.7	66.4	60	0	70	70	70	N	-	-	51.0	Y	N	N
A1-9b-1	8	37.6	A1-9b	20.8	0	43.6	66.6	66.1	60	0	69.8	69.8	70	N	-	-	49.0	Y	N	N
A1-9b-1	9	40.8	A1-9b	22.5	0	43.6	66.4	65.9	60.1	0	69.7	69.7	70	N	-	-	47.2	Y	N	N
A1-9b-1	10	44	A1-9b	24.5	0	43.6	66.2	65.6	60.1	0	69.5	69.5	70	N	-	-	45.0	Y	N	N
A1-9b-1	11	47.2	A1-9b	26.5	0	43.6	66.1	65.4	60.1	0	69.3	69.3	70	N	-	-	42.8	Y	N	N
A1-9b-1	12	50.4	A1-9b	28.6	0	43.5	66	65.2	60.1	0	69.2	69.2	70	N	-	-	40.6	Y	N	N
A1-9b-1	13	53.6	A1-9b	30.8	0	43.5	65.8	65	60.1	0	69	69	70	N	-	-	38.2	Y	N	N
A1-9b-1	14	56.8	A1-9b	33.7	0	43.5	65.6	64.9	60.1	0	68.9	68.9	70	N	-	-	35.2	Y	N	N
A1-9b-1	15	60	A1-9b	36.5	0	43.5	65.5	64.7	60.2	0	68.8	68.8	70	N	-	-	32.3	Y	N	N
A1-9b-1	16	63.2	A1-9b	38.1	0	43.5	65.3	64.6	60.2	0	68.7	68.7	70	N	-	-	30.6	Y	N	N
A1-9b-1	17	66.4	A1-9b	38.5	0	43.5	65.2	64.5	60.2	0	68.5	68.5	70	N	-	-	30.0	Y	N	N
A1-9b-1	18	69.6	A1-9b	38.7	0	43.5	65	64.3	60.3	0	68.4	68.4	70	N	-	-	29.7	Y	N	N
A1-9b-2	1	15.2	A1-9b	18.7	0	55.3	71.9	64.9	60.4	0	73	73	70	Y	-	-	54.3	Y	Y	Y
A1-9b-2	2	18.4	A1-9b	19.5	0	55.3	71.8	64.9	60.4	0	72.9	72.9	70	Y	-	-	53.4	Y	Y	Y
A1-9b-2	3	21.6	A1-9b	20.4	0	55.3	71.6	64.7	60.4	0	72.8	72.8	70	Y	-	-	52.4	Y	Y	Y
A1-9b-2	4	24.8	A1-9b	21.5	0	55.3	71.4	64.6	60.4	0	72.6	72.6	70	Y	-	-	51.1	Y	Y	Y
A1-9b-2	5	28	A1-9b	22.6	0	55.3	71.2	64.5	60.4	0	72.4	72.4	70	Y	-	-	49.8	Y	Y	Y
A1-9b-2	6	31.2	A1-9b	23.8	0	55.3	71	64.3	60.5	0	72.2	72.2	70	Y	-	-	48.4	Y	Y	Y
A1-9b-2	7	34.4	A1-9b	25.3	0	55.3	70.8	64.1	60.5	0	72	72	70	Y	-	-	46.7	Y	Y	Y
A1-9b-2	8	37.6	A1-9b	26.9	0	55.4	70.5	64	60.5	0	71.8	71.8	70	Y	-	-	44.9	Y	Y	Y
A1-9b-2	9	40.8	A1-9b	28.7	0	55.4	70.3	63.8	60.5	0	71.6	71.6	70	Y	-	-	42.9	Y	Y	Y
A1-9b-2	10	44	A1-9b	30.8	0	55.4	70.1	63.6	60.5	0	71.5	71.5	70	Y	-	-	40.7	Y	Y	Y
A1-9b-2	11	47.2	A1-9b	33.9	0	55.5	69.9	63.5	60.5	0	71.3	71.3	70	Y	-	-	37.4	Y	Y	Y
A1-9b-2	12	50.4	A1-9b	36.4	0	55.6	69.7	63.4	60.5	0	71.1	71.1	70	Y	-	-	34.7	Y	Y	Y
A1-9b-2	13	53.6	A1-9b	38.5	0	55.7	69.5	63.3	60.6	0	71	71	70	Y	-	-	32.5	Y	Y	Y
A1-9b-2	14	56.8	A1-9b	40.3	0	55.8	69.3	63.2	60.6	0	70.8	70.8	70	Y	-	-	30.5	Y	Y	Y
A1-9b-2	15	60	A1-9b	42	0	55.9	69.1	63.1	60.6	0	70.7	70.7	70	Y	-	-	28.7	Y	Y	Y
A1-9b-2	16	63.2	A1-9b	42.6	0	55.9	68.9	63.1	60.6	0	70.5	70.5	70	Y	-	-	27.9	Y	Y	Y
A1-9b-2	17	66.4	A1-9b	42.8	0	56	68.7	62.9	60.7	0	70.4	70.4	70	N	-	-	27.6	Y	N	N
A1-9b-2	18	69.6	A1-9b	42.9	0	56.1	68.5	62.8	60.7	0	70.3	70.3	70	N	-	-	27.4	Y	N	N
A1-9b-3	1	15.2	A1-9b	31.4	0	60.5	72.7	61	34.8	0	73.3	73.3	70	Y	-	-	41.9	Y	Y	Y
A1-9b-3	2	18.4	A1-9b	31.5	0	60.5	72.6	61	35	0	73.1	73.1	70	Y	-	-	41.6	Y	Y	Y
A1-9b-3	3	21.6	A1-9b	31.6	0	60.5	72.4	61	35.3	0	72.9	72.9	70	Y	-	-	41.3	Y	Y	Y
A1-9b-3	4	24.8	A1-9b	31.7	0	60.5	72.2	61.1	35.7	0	72.7	72.7	70	Y	-	-	41.0	Y	Y	Y
A1-9b-3	5	28	A1-9b	31.9	0	60.5	71.9	61	36	0	72.5	72.5	70	Y	-	-	40.6	Y	Y	Y
A1-9b-3	6	31.2	A1-9b	32.2	0	60.5	71.6	61	36.4	0	72.3	72.3	70	Y	-	-	40.1	Y	Y	Y
A1-9b-3	7	34.4	A1-9b	32.5	0	60.5	71.4	61	36.8	0	72.1	72.1	70	Y	-	-	39.6	Y	Y	Y
A1-9b-3	8	37.6	A1-9b	32.9	0	60.6	71.1	61	37.2	0	71.9	71.9	70	Y	-	-	39.0	Y	Y	Y
A1-9b-3	9	40.8	A1-9b	33.6	0	60.7	70.9	60.9	37.6	0	71.6	71.6	70	Y	-	-	38.0	Y	Y	Y
A1-9b-3	10	44	A1-9b	34.5	0	60.7	70.6	60.9	38	0	71.5	71.5	70	Y	-	-	37.0	Y	Y	Y
A1-9b-3	11	47.2	A1-9b	36.5	0	60.8	70.4	60.9	38.5	0	71.2	71.2	70	Y	-	-	34.7	Y	Y	Y
A1-9b-3	12	50.4	A1-9b	38.2	0	60.9	70.1	60.8	39.2	0	71.1	71.1	70	Y	-	-	32.9	Y	Y	Y
A1-9b-3	13	53.6	A1-9b	39.4	0	60.9	69.9	60.8	39.8	0	70.9	70.9	70	Y	-	-	31.5	Y	Y	Y
A1-9b-3	14	56.8	A1-9b	40	0	61	69.7	60.8	40.5	0	70.7	70.7	70	Y	-	-	30.7	Y	Y	Y
A1-9b-3	15	60	A1-9b	40.3	0	61	69.5	60.7	41.1	0	70.5	70.6	70	Y	-	-	30.3	Y	Y	Y
A1-9b-3	16	63.2	A1-9b	40.4	0	61	69.3	60.7	41.7	0	70.4	70.4	70	N	-	-	30.0	Y	N	N
A1-9b-3	17	66.4	A1-9b	40.4	0	61.1	69.1	60.6	42.3	0	70.2	70.2	70	N	-	-	29.8	Y	N	N
A1-9b-3	18	69.6	A1-9b	40.5	0	61.1	68.9	60.5	42.8	0	70.1	70.1	70	N	-	-	29.6	Y	N	N
A1-9b-4	1	15.2	A1-9b	17.8	0	63.1	71.1	56.4	0	0	71.9	71.9	70	Y	-	-	54.1	Y	Y	Y
A1-9b-4	2	18.4	A1-9b	18.9	0	63.1	71	56.4	0	0	71.7	71.7	70	Y	-	-	52.8	Y	Y	Y
A1-9b-4	3	21.6	A1-9b	20	0	63	70.8	56.5	0	0	71.6	71.6	70	Y	-	-	51.6	Y	Y	Y
A1-9b-4	4	24.8	A1-9b	21.1	0	63	70.6	56.6	0	0	71.5	71.5	70	Y	-	-	50.4	Y	Y	Y
A1-9b-4	5	28	A1-9b	22.4	0	63	70.4	56.6	0	0	71.3	71.3	70	Y	-	-	48.9	Y	Y	Y
A1-9b-4	6	31.2	A1-9b	23.7	0	63	70.2	56.7	0	0	71.1	71.1	70	Y	-	-	47.4	Y	Y	Y
A1-9b-4	7	34.4	A1-9b	25.1	0	63	70	56.7	0	0	70.9	70.9	70	Y	-	-	45.8	Y	Y	Y
A1-9b-4	8	37.6	A1-9b	26.7	0	63	69.8	56.7	0	0	70.8	70.8	70	Y	-	-	44.1	Y	Y	Y
A1-9b-4	9	40.8	A1-9b	28.5	0	62.9	69.6	56.7	0	0	70.6	70.6	70	Y	-	-	42.1	Y	Y	Y
A1-9b-4	10	44	A1-9b	30.6	0	62.9	69.3	56.8	0	0	70.4	70.4	70	N	-	-	39.8	Y	N	N
A1-9b-4	11	47.2	A1-9b	33.3	0	62.9	69.1	56.8	0	0	70.3	70.3	70	N	-	-	37.0	Y	N	N
A1-9b-4	12	50.4	A1-9b	36.1	0	62.9	68.9	56.8	0	0	70.1	70.1	70	N	-	-	34.0	Y	N	N
A1-9b-4	13	53.6	A1-9b	38.1	0	62.9	68.7	56.8	0	0	69.9	69.9	70	N	-	-	31.8	Y	N	N
A1-9b-4	14	56.8	A1-9b	39	0	62.9	68.5	56.8	0	0	69.8	69.8	70	N	-	-	30.8	Y	N	N
A1-9b-4	15	60	A1-9b	39.4	0	62.9	68.3	56.8	0	0	69.6	69.6	70	N	-	-	30.2	Y	N	N
A1-9b-4	16	63.2	A1-9b	39.4	0	63	68.1	56.8	0	0	69.5	69.5	70	N	-	-	30.1	Y	N	N
A1-9b-4	17	66.4	A1-9b	39.4	0	62.9	67.9	56.8	0	0	69.3	69.4	70	N	-	-	30.0	Y	N	N
A1-9b-4	18	69.6	A1-9b	39.5	0	63	67.7	56.8	0	0	69.2	69.2	70	N	-	-	29.7	Y	N	N
A1-9b-5	1	15.2	A1-9b	6.2	0	65.9	67.8	54.8	0	0	70.1	70.1	70	N	-	-	63.9	Y	N	N
A1-9b-5	2	18.4	A1-9b	6.2	0	65.9	67.7	54.8	0	0	70.1	70.1	70	N	-	-	63.9	Y	N	N
A1-9b-5	3	21.6	A1-9b	6.2	0	65.8	67.7	54.8	0	0	70	70	70	N	-	-	63.8	Y	N	N
A1-9b-5	4	24.8	A1-9b	6.2	0	65.7	67.6	54.8	0	0	69.9	69.9	70	N	-	-	63.7	Y	N	N
A1-9b-5	5	28	A1-9b	6.2	0	65.7	67.6	54.8	0	0	69.9	69.9	70	N	-	-	63.7	Y	N	N
A1-9b-5	6	31.2	A1-9b	6.2	0	65.6	67.5	54.8	0	0	69.8	69.8	70	N	-	-	63.6	Y	N	N
A1-9b-5	7	34.4	A1-9b	6.2	0	65.5	67.4	54.8	0	0	69.7	69.7	70	N	-	-	63.5	Y	N	N
A1-9b-5	8	37.6	A1-9b	6.1	0	65.4	67.3	54.7	0	0	69.6	69.6	70	N	-	-	63.5	Y	N	N
A1-9b-5	9	40.8	A1-9b	6.3	0	65.4	67.2	54.7	0	0	69.5	69.5	70	N	-	-	63.2	Y	N	N
A1-9b-5	10	44	A1-9b	6.7	0	65.3	67.1	54.7	0	0	69.4	69.4	70	N	-	-	62.7	Y	N	N
A1-9b-5	11	47.2	A1-9b	7.3	0	65.3	67	54.7	0	0	69.4	69.4	70	N	-	-	62.1	Y	N	N
A1-9b-5	12	50.4	A1-9b	7.8	0	65.2	66.8	54.7	0	0	69.2	69.2	70	N	-	-	61.4	Y	N	N
A1-9b-5	13	53.6	A1-9b	8.4	0	65.1	66.7	54.7	0	0	69.2	69.2	70	N	-	-	60.8	Y	N	N

Title: Detailed Calculation of Road Traffic Noise with Direct Mitigation Measures in place
Scenario: Existing and Planned Residential and Educational Uses in KTN NDA (Mitigated Case on Proposed Roads)

Assessment Point			Location	WITH PROJECT													
				Existing Road in 2046 dB(A)	Other Roads in 2046 dB(A)[1]	New Roads[2]						Overall Noise Level in 2046 dB(A) [C]	Noise Criteria dB(A)	Exceedance C > Criteria (Y/N)	Check Project Impact Significance		Check Direct Mitigation			At Receiver-end Mitigation Measures Required [4,5] (Y/N)
						PD	DD	LD	EX	TR	New Roads in 2046 dB(A) [3] [B]				C - A dB(A) [D]	D ≥ 1dB(A)	New Road Contribution dB(A) [E]	New Road Contribution ≥ 1dB(A) E ≥ 1dB(A)	New Road > Criteria B > Criteria	
ID	Floor	Floor Level (mPD)		dB (A)																
A1-9b-5	14	56.8	A1-9b	9.3	0	65.1	66.6	54.7	0	0	69.1	69.1	70	N	-	-	59.8	Y	N	N
A1-9b-5	15	60	A1-9b	10.4	0	65	66.5	54.6	0	0	69	69	70	N	-	-	58.6	Y	N	N
A1-9b-5	16	63.2	A1-9b	11.6	0	65	66.3	54.6	0	0	68.9	68.9	70	N	-	-	57.3	Y	N	N
A1-9b-5	17	66.4	A1-9b	12.8	0	64.9	66.2	54.5	0	0	68.8	68.8	70	N	-	-	56.0	Y	N	N
A1-9b-5	18	69.6	A1-9b	14.1	0	64.9	66.1	54.5	0	0	68.7	68.7	70	N	-	-	54.6	Y	N	N
A1-9b-6	1	15.2	A1-9b	26.8	0	69.7	69.2	56.3	0	0	72.6	72.6	70	Y	-	-	45.8	Y	Y	Y
A1-9b-6	2	18.4	A1-9b	27.8	0	69.7	69.2	56.3	0	0	72.5	72.5	70	Y	-	-	44.7	Y	Y	Y
A1-9b-6	3	21.6	A1-9b	29	0	69.6	69.1	56.2	0	0	72.5	72.5	70	Y	-	-	43.5	Y	Y	Y
A1-9b-6	4	24.8	A1-9b	30.3	0	69.6	69	56.1	0	0	72.4	72.4	70	Y	-	-	42.1	Y	Y	Y
A1-9b-6	5	28	A1-9b	32.1	0	69.5	68.9	56.1	0	0	72.3	72.3	70	Y	-	-	40.2	Y	Y	Y
A1-9b-6	6	31.2	A1-9b	34.2	0	69.5	68.8	56	0	0	72.3	72.3	70	Y	-	-	38.1	Y	Y	Y
A1-9b-6	7	34.4	A1-9b	35.2	0	69.4	68.6	56	0	0	72.1	72.1	70	Y	-	-	36.9	Y	Y	Y
A1-9b-6	8	37.6	A1-9b	35.9	0	69.3	68.5	55.9	0	0	72	72	70	Y	-	-	36.1	Y	Y	Y
A1-9b-6	9	40.8	A1-9b	36.2	0	69.3	68.3	55.9	0	0	71.9	71.9	70	Y	-	-	35.7	Y	Y	Y
A1-9b-6	10	44	A1-9b	36.7	0	69.2	68.2	55.8	0	0	71.8	71.8	70	Y	-	-	35.1	Y	Y	Y
A1-9b-6	11	47.2	A1-9b	36.9	0	69.1	68.1	55.7	0	0	71.7	71.7	70	Y	-	-	34.8	Y	Y	Y
A1-9b-6	12	50.4	A1-9b	37.3	0	69	67.9	55.7	0	0	71.6	71.6	70	Y	-	-	34.3	Y	Y	Y
A1-9b-6	13	53.6	A1-9b	37.6	0	69	67.8	55.6	0	0	71.5	71.5	70	Y	-	-	33.9	Y	Y	Y
A1-9b-6	14	56.8	A1-9b	37.9	0	68.9	67.6	55.6	0	0	71.4	71.4	70	Y	-	-	33.5	Y	Y	Y
A1-9b-6	15	60	A1-9b	38.2	0	68.8	67.4	55.6	0	0	71.3	71.3	70	Y	-	-	33.1	Y	Y	Y
A1-9b-6	16	63.2	A1-9b	38.3	0	68.8	67.3	55.5	0	0	71.2	71.2	70	Y	-	-	32.9	Y	Y	Y
A1-9b-6	17	66.4	A1-9b	38.5	0	68.7	67.1	55.5	0	0	71.1	71.1	70	Y	-	-	32.6	Y	Y	Y
A1-9b-6	18	69.6	A1-9b	38.6	0	68.6	67	55.4	0	0	71	71	70	Y	-	-	32.4	Y	Y	Y
A1-9b-7	1	15.2	A1-9b	26.4	0	71.4	67	54	33	0	72.8	72.8	65	Y	-	-	46.4	Y	Y	Y
A1-9b-7	2	18.4	A1-9b	27.5	0	71.4	66.9	54	34.1	0	72.8	72.8	65	Y	-	-	45.3	Y	Y	Y
A1-9b-7	3	21.6	A1-9b	28.9	0	71.4	66.9	54	34.7	0	72.7	72.7	65	Y	-	-	43.8	Y	Y	Y
A1-9b-7	4	24.8	A1-9b	31.2	0	71.3	66.8	54.1	35.1	0	72.7	72.7	65	Y	-	-	41.5	Y	Y	Y
A1-9b-7	5	28	A1-9b	33.2	0	71.3	66.7	54.1	35.5	0	72.7	72.7	65	Y	-	-	39.5	Y	Y	Y
A1-9b-7	6	31.2	A1-9b	34.5	0	71.3	66.6	54.1	35.9	0	72.6	72.6	65	Y	-	-	38.1	Y	Y	Y
A1-9b-7	7	34.4	A1-9b	35.2	0	71.3	66.5	54	36.2	0	72.6	72.6	65	Y	-	-	37.4	Y	Y	Y
A1-9b-7	8	37.6	A1-9b	35.7	0	71.2	66.4	54	36.7	0	72.5	72.5	65	Y	-	-	36.8	Y	Y	Y
A1-9b-7	9	40.8	A1-9b	36.1	0	71.2	66.2	53.9	37.2	0	72.4	72.4	65	Y	-	-	36.3	Y	Y	Y
A1-9b-7	10	44	A1-9b	36.7	0	71.1	66.1	53.8	37.6	0	72.3	72.3	65	Y	-	-	35.6	Y	Y	Y
A1-9b-7	11	47.2	A1-9b	37.2	0	71	66	53.8	38.1	0	72.3	72.3	65	Y	-	-	35.1	Y	Y	Y
A1-9b-7	12	50.4	A1-9b	37.6	0	71	65.8	53.7	38.8	0	72.2	72.2	65	Y	-	-	34.6	Y	Y	Y
A1-9b-7	13	53.6	A1-9b	38.1	0	70.9	65.7	53.6	39.5	0	72.1	72.1	65	Y	-	-	34.0	Y	Y	Y
A1-9b-7	14	56.8	A1-9b	38.3	0	70.8	65.5	53.6	39.9	0	72	72	65	Y	-	-	33.7	Y	Y	Y
A1-9b-7	15	60	A1-9b	38.5	0	70.8	65.4	53.5	40.6	0	71.9	71.9	65	Y	-	-	33.4	Y	Y	Y
A1-9b-7	16	63.2	A1-9b	38.7	0	70.7	65.3	53.5	41.1	0	71.9	71.9	65	Y	-	-	33.2	Y	Y	Y
A1-9b-7	17	66.4	A1-9b	38.7	0	70.6	65.1	53.4	41.8	0	71.8	71.8	65	Y	-	-	33.1	Y	Y	Y
A1-9b-7	18	69.6	A1-9b	38.8	0	70.6	65	53.3	42.3	0	71.7	71.7	65	Y	-	-	32.9	Y	Y	Y
A1-9b-8	1	15.2	A1-9b	13.4	0	0	59.6	70.1	0	0	70.4	70.4	65	Y	-	-	57.0	Y	Y	Y
A1-9b-8	2	18.4	A1-9b	13.8	0	0	59.6	69.8	0	0	70.2	70.2	65	Y	-	-	56.4	Y	Y	Y
A1-9b-8	3	21.6	A1-9b	14.8	0	0	59.5	69.4	0	0	69.9	69.9	65	Y	-	-	55.1	Y	Y	Y
A1-9b-8	4	24.8	A1-9b	15.8	0	0	59.5	69.1	0	0	69.5	69.5	65	Y	-	-	53.7	Y	Y	Y
A1-9b-8	5	28	A1-9b	17.1	0	0	59.5	68.7	0	0	69.2	69.2	65	Y	-	-	52.1	Y	Y	Y
A1-9b-8	6	31.2	A1-9b	18.3	0	0	59.5	68.4	0	0	68.9	68.9	65	Y	-	-	50.6	Y	Y	Y
A1-9b-8	7	34.4	A1-9b	19.5	0	0	59.4	68	0	0	68.6	68.6	65	Y	-	-	49.1	Y	Y	Y
A1-9b-8	8	37.6	A1-9b	20.8	0	0	59.4	67.7	0	0	68.3	68.3	65	Y	-	-	47.5	Y	Y	Y
A1-9b-8	9	40.8	A1-9b	22.2	0	0	59.4	67.4	0	0	68	68	65	Y	-	-	45.8	Y	Y	Y
A1-9b-8	10	44	A1-9b	23.5	0	0	59.3	67.1	0	0	67.8	67.8	65	Y	-	-	44.3	Y	Y	Y
A1-9b-8	11	47.2	A1-9b	24.9	0	0	59.3	66.8	0	0	67.5	67.5	65	Y	-	-	42.6	Y	Y	Y
A1-9b-8	12	50.4	A1-9b	26.2	0	0	59.2	66.6	0	0	67.3	67.3	65	Y	-	-	41.1	Y	Y	Y
A1-9b-8	13	53.6	A1-9b	27.6	0	0	59.2	66.3	0	0	67.1	67.1	65	Y	-	-	39.5	Y	Y	Y
A1-9b-8	14	56.8	A1-9b	29.2	0	0	59.1	66.1	0	0	66.9	66.9	65	Y	-	-	37.7	Y	Y	Y
A1-9b-8	15	60	A1-9b	31.1	0	0	59.1	65.9	0	0	66.7	66.7	65	Y	-	-	35.6	Y	Y	Y
A1-9b-8	16	63.2	A1-9b	33.8	0	0	59	65.7	0	0	66.5	66.5	65	Y	-	-	32.7	Y	Y	Y
A1-9b-8	17	66.4	A1-9b	36	0	0	59	65.5	0	0	66.4	66.4	65	Y	-	-	30.4	Y	Y	Y
A1-9b-8	18	69.6	A1-9b	36.9	0	0	58.9	65.3	0	0	66.2	66.2	65	Y	-	-	29.3	Y	Y	Y
A1-9b-9	1	15.2	A1-9b	11.9	0	31.3	53.3	67.1	0	0	67.3	67.3	65	Y	-	-	55.4	Y	Y	Y
A1-9b-9	2	18.4	A1-9b	11.9	0	31.3	53.2	66.8	0	0	67	67	65	Y	-	-	55.1	Y	Y	Y
A1-9b-9	3	21.6	A1-9b	11.9	0	31.3	53.2	66.5	0	0	66.7	66.7	65	Y	-	-	54.8	Y	Y	Y
A1-9b-9	4	24.8	A1-9b	12	0	31.3	53.2	66.2	0	0	66.4	66.4	65	Y	-	-	54.4	Y	Y	Y
A1-9b-9	5	28	A1-9b	12	0	31.3	53.2	65.9	0	0	66.1	66.1	65	Y	-	-	54.1	Y	Y	Y
A1-9b-9	6	31.2	A1-9b	12	0	31.3	53.2	65.6	0	0	65.8	65.8	65	Y	-	-	53.8	Y	Y	Y
A1-9b-9	7	34.4	A1-9b	12	0	31.3	53.2	65.3	0	0	65.5	65.5	65	Y	-	-	53.5	Y	Y	Y
A1-9b-9	8	37.6	A1-9b	12	0	31.3	53.2	65	0	0	65.3	65.3	65	N	-	-	53.3	Y	N	N
A1-9b-9	9	40.8	A1-9b	12.1	0	31.2	53.2	64.7	0	0	65	65	65	N	-	-	52.9	Y	N	N
A1-9b-9	10	44	A1-9b	12.3	0	31.4	53.2	64.4	0	0	64.7	64.7	65	N	-	-	52.4	Y	N	N
A1-9b-9	11	47.2	A1-9b	13.4	0	31.7	53.1	64.2	0	0	64.5	64.5	65	N	-	-	51.1	Y	N	N
A1-9b-9	12	50.4	A1-9b	14.5	0	32.1	53.1	63.9	0	0	64.3	64.3	65	N	-	-	49.8	Y	N	N
A1-9b-9	13	53.6	A1-9b	15.9	0	32.6	53.1	63.7	0	0	64	64	65	N	-	-	48.1	Y	N	N
A1-9b-9	14	56.8	A1-9b	17.3	0	33.1	53.1	63.4	0	0	63.8	63.8	65	N	-	-	46.5	Y	N	N
A1-9b-9	15	60	A1-9b	18.7	0	33.7	53	63.2	0	0	63.6	63.6	65	N	-	-	44.9	Y	N	N
A1-9b-9	16	63.2	A1-9b	20.2	0	34.4	53	63	0	0	63.4	63.4	65	N	-	-	43.2	Y	N	N
A1-9b-9	17	66.4	A1-9b	21.7	0	35	53	62.8	0	0	63.3	63.3	65	N	-	-	41.6	Y	N	N
A1-9b-9	18	69.6	A1-9b	23.3	0	35.7	53	62.6	0	0	63.1	63.1	65	N	-	-	39.8	Y	N	N
KTN NDA Area 9																				
E1-3-1	1	46.7	E1-3	0	12.3	0	62.4	0	0	0	62.4	62.4	70	N	-	-	50.1	Y	N	N

Title: Detailed Calculation of Road Traffic Noise with Direct Mitigation Measures in place
Scenario: Existing and Planned Residential and Educational Uses in KTN NDA (Mitigated Case on Proposed Roads)

Assessment Point			Location	WITH PROJECT										Check Project Impact Significance		Check Direct Mitigation			At Receiver-end Mitigation Measures Required [4,5] (Y/N)
				Existing Road in 2046 dB(A)	Other Roads in 2046 dB(A)[1]	New Roads[2]					New Roads in 2046 dB(A) [3] [B]	Overall Noise Level in 2046 dB(A) [C]	Noise Criteria dB(A)	Exceedance C > Criteria (Y/N)	C - A dB(A) [D]	D ≥ 1dB(A)	New Road Contribution dB(A) [E]	New Road Contribution ≥ 1dB(A) E ≥ 1dB(A)	New Road > Criteria B > Criteria	
						PD	DD	LD	EX	TR										
ID	Floor	Floor Level (mPD)				dB (A)														
E1-3-1	2	49.7	E1-3	0	12.3	0	62.9	0	0	0	62.9	62.9	70	N	-	-	50.6	Y	N	N
E1-3-1	3	52.7	E1-3	0	12.2	0	63.3	0	0	0	63.3	63.3	70	N	-	-	51.1	Y	N	N
E1-3-1	4	55.7	E1-3	0	12.1	0	63.7	0	0	0	63.7	63.7	70	N	-	-	51.6	Y	N	N
E1-3-1	5	58.7	E1-3	0	13	0	63.7	0	0	0	63.7	63.7	70	N	-	-	50.7	Y	N	N
E1-3-1	6	61.7	E1-3	0	13.8	0	63.7	0	0	0	63.7	63.7	70	N	-	-	49.9	Y	N	N
E1-3-1	7	64.7	E1-3	0	15	0	63.7	0	0	0	63.7	63.7	70	N	-	-	48.7	Y	N	N
E1-3-1	8	67.7	E1-3	0	16.3	0	63.6	0	0	0	63.6	63.6	70	N	-	-	47.3	Y	N	N
E1-3-1	9	70.7	E1-3	0	18	0	63.5	0	0	0	63.5	63.5	70	N	-	-	45.5	Y	N	N
E1-3-1	10	73.7	E1-3	0	19.6	0	63.4	0	0	0	63.4	63.4	70	N	-	-	43.8	Y	N	N
E1-3-1	11	76.7	E1-3	0	21.5	0	63.3	0	0	0	63.3	63.3	70	N	-	-	41.8	Y	N	N
E1-3-1	12	79.7	E1-3	0	23.8	0	63.2	0	0	0	63.2	63.2	70	N	-	-	39.4	Y	N	N
E1-3-1	13	82.7	E1-3	0	26.6	0	63.1	0	0	0	63.1	63.1	70	N	-	-	36.5	Y	N	N
E1-3-1	14	85.7	E1-3	0	30.3	0	63.1	0	0	0	63.1	63.1	70	N	-	-	32.8	Y	N	N
E1-3-1	15	88.7	E1-3	0	35.7	0	63	0	0	0	63	63	70	N	-	-	27.3	Y	N	N
E1-3-1	16	91.7	E1-3	0	37.7	0	62.9	0	0	0	62.9	62.9	70	N	-	-	25.2	Y	N	N
E1-3-1	17	94.7	E1-3	0	38.2	0	62.9	0	0	0	62.9	62.9	70	N	-	-	24.7	Y	N	N
E1-3-1	18	97.7	E1-3	0	38.3	0	62.8	0	0	0	62.8	62.8	70	N	-	-	24.5	Y	N	N
E1-3-1	19	100.7	E1-3	0	38.2	0	62.7	0	0	0	62.7	62.7	70	N	-	-	24.5	Y	N	N
E1-3-1	20	103.7	E1-3	0	38.2	0	62.7	0	0	0	62.7	62.7	70	N	-	-	24.5	Y	N	N
E1-3-1	21	106.7	E1-3	0	38.2	0	62.7	0	0	0	62.7	62.7	70	N	-	-	24.5	Y	N	N
E1-3-1	22	109.7	E1-3	0	38.2	0	62.6	0	0	0	62.6	62.6	70	N	-	-	24.4	Y	N	N
E1-3-1	23	112.7	E1-3	0	38.1	0	62.7	0	0	0	62.7	62.7	70	N	-	-	24.6	Y	N	N
E1-3-1	24	115.7	E1-3	0	38.1	0	62.7	0	0	0	62.7	62.7	70	N	-	-	24.6	Y	N	N
E1-3-1	25	118.7	E1-3	0	38.1	0	62.8	0	0	0	62.8	62.8	70	N	-	-	24.7	Y	N	N
E1-3-1	26	121.7	E1-3	0	38.1	0	62.8	0	0	0	62.8	62.9	70	N	-	-	24.8	Y	N	N
E1-3-1	27	124.7	E1-3	0	38	0	62.9	0	0	0	62.9	62.9	70	N	-	-	24.9	Y	N	N
E1-3-1	28	127.7	E1-3	0	38	0	62.9	0	0	0	62.9	62.9	70	N	-	-	24.9	Y	N	N
E1-3-2	1	46.7	E1-3	0	12	0	66.6	0	0	0	66.6	66.6	70	N	-	-	54.6	Y	N	N
E1-3-2	2	49.7	E1-3	0	12	0	66.5	0	0	0	66.5	66.5	70	N	-	-	54.5	Y	N	N
E1-3-2	3	52.7	E1-3	0	11.9	0	66.5	0	0	0	66.5	66.5	70	N	-	-	54.6	Y	N	N
E1-3-2	4	55.7	E1-3	0	12.1	0	66.5	0	0	0	66.5	66.5	70	N	-	-	54.4	Y	N	N
E1-3-2	5	58.7	E1-3	0	13	0	66.3	0	0	0	66.3	66.3	70	N	-	-	53.3	Y	N	N
E1-3-2	6	61.7	E1-3	0	14	0	66.2	0	0	0	66.2	66.2	70	N	-	-	52.2	Y	N	N
E1-3-2	7	64.7	E1-3	0	15	0	66	0	0	0	66	66	70	N	-	-	51.0	Y	N	N
E1-3-2	8	67.7	E1-3	0	16.3	0	65.9	0	0	0	65.9	65.9	70	N	-	-	49.6	Y	N	N
E1-3-2	9	70.7	E1-3	0	17.6	0	65.7	0	0	0	65.7	65.7	70	N	-	-	48.1	Y	N	N
E1-3-2	10	73.7	E1-3	0	18.9	0	65.6	0	0	0	65.6	65.6	70	N	-	-	46.7	Y	N	N
E1-3-2	11	76.7	E1-3	0	20.5	0	65.4	0	0	0	65.4	65.4	70	N	-	-	44.9	Y	N	N
E1-3-2	12	79.7	E1-3	0	22.3	0	65.2	0	0	0	65.2	65.2	70	N	-	-	42.9	Y	N	N
E1-3-2	13	82.7	E1-3	0	24.4	0	65.1	0	0	0	65.1	65.1	70	N	-	-	40.7	Y	N	N
E1-3-2	14	85.7	E1-3	0	27	0	64.9	0	0	0	64.9	64.9	70	N	-	-	37.9	Y	N	N
E1-3-2	15	88.7	E1-3	0	30.6	0	64.8	0	0	0	64.8	64.8	70	N	-	-	34.2	Y	N	N
E1-3-2	16	91.7	E1-3	0	34.8	0	64.6	0	0	0	64.6	64.6	70	N	-	-	29.8	Y	N	N
E1-3-2	17	94.7	E1-3	0	37.3	0	64.5	0	0	0	64.5	64.5	70	N	-	-	27.2	Y	N	N
E1-3-2	18	97.7	E1-3	0	38	0	64.4	0	0	0	64.4	64.4	70	N	-	-	26.4	Y	N	N
E1-3-2	19	100.7	E1-3	0	38.1	0	64.3	0	0	0	64.3	64.3	70	N	-	-	26.2	Y	N	N
E1-3-2	20	103.7	E1-3	0	38.1	0	64.1	0	0	0	64.1	64.1	70	N	-	-	26.0	Y	N	N
E1-3-2	21	106.7	E1-3	0	38.1	0	64	0	0	0	64	64	70	N	-	-	25.9	Y	N	N
E1-3-2	22	109.7	E1-3	0	38.1	0	63.9	0	0	0	63.9	63.9	70	N	-	-	25.8	Y	N	N
E1-3-2	23	112.7	E1-3	0	38	0	63.8	0	0	0	63.8	63.8	70	N	-	-	25.8	Y	N	N
E1-3-2	24	115.7	E1-3	0	38	0	63.7	0	0	0	63.7	63.7	70	N	-	-	25.7	Y	N	N
E1-3-2	25	118.7	E1-3	0	38	0	63.6	0	0	0	63.6	63.7	70	N	-	-	25.7	Y	N	N
E1-3-2	26	121.7	E1-3	0	38	0	63.6	0	0	0	63.6	63.6	70	N	-	-	25.6	Y	N	N
E1-3-2	27	124.7	E1-3	0	37.9	0	63.5	0	0	0	63.5	63.5	70	N	-	-	25.6	Y	N	N
E1-3-2	28	127.7	E1-3	0	37.9	0	63.5	0	0	0	63.5	63.5	70	N	-	-	25.6	Y	N	N
E1-3-3	1	46.7	E1-3	0	0	59.2	66.9	0	0	0	67.6	67.6	70	N	-	-	67.6	Y	N	N
E1-3-3	2	49.7	E1-3	0	0	59	66.8	0	0	0	67.4	67.4	70	N	-	-	67.4	Y	N	N
E1-3-3	3	52.7	E1-3	0	0	58.9	66.6	0	0	0	67.3	67.3	70	N	-	-	67.3	Y	N	N
E1-3-3	4	55.7	E1-3	0	0	58.7	66.5	0	0	0	67.1	67.1	70	N	-	-	67.1	Y	N	N
E1-3-3	5	58.7	E1-3	0	0	58.5	66.3	0	0	0	67	67	70	N	-	-	67.0	Y	N	N
E1-3-3	6	61.7	E1-3	0	0	58.4	66.1	0	0	0	66.8	66.8	70	N	-	-	66.8	Y	N	N
E1-3-3	7	64.7	E1-3	0	0	58.2	66	0	0	0	66.7	66.7	70	N	-	-	66.7	Y	N	N
E1-3-3	8	67.7	E1-3	0	0	58.1	65.8	0	0	0	66.5	66.5	70	N	-	-	66.5	Y	N	N
E1-3-3	9	70.7	E1-3	0	0	57.9	65.7	0	0	0	66.3	66.3	70	N	-	-	66.3	Y	N	N
E1-3-3	10	73.7	E1-3	0	0	57.8	65.5	0	0	0	66.2	66.2	70	N	-	-	66.2	Y	N	N
E1-3-3	11	76.7	E1-3	0	0	57.7	65.3	0	0	0	66	66	70	N	-	-	66.0	Y	N	N
E1-3-3	12	79.7	E1-3	0	0	57.5	65.2	0	0	0	65.8	65.8	70	N	-	-	65.8	Y	N	N
E1-3-3	13	82.7	E1-3	0	0	57.4	65	0	0	0	65.7	65.7	70	N	-	-	65.7	Y	N	N
E1-3-3	14	85.7	E1-3	0	0	57.3	64.8	0	0	0	65.6	65.6	70	N	-	-	65.6	Y	N	N
E1-3-3	15	88.7	E1-3	0	0	57.2	64.7	0	0	0	65.4	65.4	70	N	-	-	65.4	Y	N	N
E1-3-3	16	91.7	E1-3	0	0	57.1	64.6	0	0	0	65.3	65.3	70	N	-	-	65.3	Y	N	N
E1-3-3	17	94.7	E1-3	0	0	57	64.4	0	0	0	65.1	65.1	70	N	-	-	65.1	Y	N	N
E1-3-3	18	97.7	E1-3	0	0	56.9	64.3	0	0	0	65	65	70	N	-	-	65.0	Y	N	N
E1-3-3	19	100.7	E1-3	0	0	56.8	64.1	0	0	0	64.9	64.9	70	N	-	-	64.9	Y	N	N
E1-3-3	20	103.7	E1-3	0	0	56.7	64	0	0	0	64.8	64.8	70	N	-	-	64.8	Y	N	N
E1-3-3	21	106.7	E1-3	0	0	56.7	63.9	0	0	0	64.6	64.6	70	N	-	-	64.6	Y	N	N
E1-3-3	22	109.7	E1-3	0	0	56.6	63.8	0	0	0	64.6	64.6	70	N	-	-	64.6	Y	N	N
E1-3-3	23	112.7	E1-3	0	0	56.5	63.6	0	0	0	64.4	64.4	70	N	-	-	64.4	Y	N	N
E1-3-3	24	115.7	E1-3	0	0	56.5	63.6	0	0	0	64.3	64.3	70	N	-	-	64.3	Y	N	N

Title: Detailed Calculation of Road Traffic Noise with Direct Mitigation Measures in place
Scenario: Existing and Planned Residential and Educational Uses in KTN NDA (Mitigated Case on Proposed Roads)

Assessment Point			Location	WITH PROJECT														
				Existing Road in 2046 dB(A)	Other Roads in 2046 dB(A)[1]	New Roads[2]						Overall Noise Level in 2046 dB(A) [C]	Noise Criteria dB(A)	Exceedance C > Criteria (Y/N)	Check Project Impact Significance		Check Direct Mitigation			At Receiver-end Mitigation Measures Required [4,5] (Y/N)
						PD	DD	LD	EX	TR	New Roads in 2046 dB(A) [3] [B]				C - A dB(A) [D]	D ≥ 1dB(A)	New Road Contribution dB(A) [E]	New Road Contribution ≥ 1dB(A) E ≥ 1dB(A)	New Road > Criteria B > Criteria	
ID	Floor	Floor Level (mPD)		dB (A)																
E1-3-3	25	118.7	E1-3	0	0	56.4	63.5	0	0	0	64.3	64.3	70	N	-	-	64.3	Y	N	N
E1-3-3	26	121.7	E1-3	0	0	56.4	63.3	0	0	0	64.1	64.1	70	N	-	-	64.1	Y	N	N
E1-3-3	27	124.7	E1-3	0	0	56.4	63.3	0	0	0	64.1	64.1	70	N	-	-	64.1	Y	N	N
E1-3-3	28	127.7	E1-3	0	0	56.3	63.2	0	0	0	64	64	70	N	-	-	64.0	Y	N	N
E1-3-4	1	46.7	E1-3	0	11.4	60.5	67.7	0	0	0	68.4	68.4	70	N	-	-	57.0	Y	N	N
E1-3-4	2	49.7	E1-3	0	11.3	60.2	67.5	0	0	0	68.3	68.3	70	N	-	-	57.0	Y	N	N
E1-3-4	3	52.7	E1-3	0	11.2	59.9	67.4	0	0	0	68.1	68.1	70	N	-	-	56.9	Y	N	N
E1-3-4	4	55.7	E1-3	0	11.3	59.6	67.2	0	0	0	67.9	67.9	70	N	-	-	56.6	Y	N	N
E1-3-4	5	58.7	E1-3	0	11.3	59.3	67	0	0	0	67.7	67.7	70	N	-	-	56.4	Y	N	N
E1-3-4	6	61.7	E1-3	0	11.3	59	66.9	0	0	0	67.5	67.5	70	N	-	-	56.2	Y	N	N
E1-3-4	7	64.7	E1-3	0	11.3	58.7	66.7	0	0	0	67.3	67.3	70	N	-	-	56.0	Y	N	N
E1-3-4	8	67.7	E1-3	0	11.3	58.4	66.5	0	0	0	67.1	67.1	70	N	-	-	55.8	Y	N	N
E1-3-4	9	70.7	E1-3	0	11.3	58.2	66.3	0	0	0	66.9	66.9	70	N	-	-	55.6	Y	N	N
E1-3-4	10	73.7	E1-3	0	11.2	58	66.1	0	0	0	66.7	66.7	70	N	-	-	55.5	Y	N	N
E1-3-4	11	76.7	E1-3	0	11.2	57.7	65.9	0	0	0	66.5	66.5	70	N	-	-	55.3	Y	N	N
E1-3-4	12	79.7	E1-3	0	11.2	57.5	65.7	0	0	0	66.4	66.4	70	N	-	-	55.2	Y	N	N
E1-3-4	13	82.7	E1-3	0	11.2	57.3	65.6	0	0	0	66.2	66.2	70	N	-	-	55.0	Y	N	N
E1-3-4	14	85.7	E1-3	0	11.2	57.1	65.4	0	0	0	66	66	70	N	-	-	54.8	Y	N	N
E1-3-4	15	88.7	E1-3	0	11.2	56.9	65.2	0	0	0	65.8	65.8	70	N	-	-	54.6	Y	N	N
E1-3-4	16	91.7	E1-3	0	11.2	56.7	65	0	0	0	65.6	65.6	70	N	-	-	54.4	Y	N	N
E1-3-4	17	94.7	E1-3	0	11.1	56.5	64.9	0	0	0	65.5	65.5	70	N	-	-	54.4	Y	N	N
E1-3-4	18	97.7	E1-3	0	11.1	56.4	64.7	0	0	0	65.3	65.3	70	N	-	-	54.2	Y	N	N
E1-3-4	19	100.7	E1-3	0	11.1	56.3	64.6	0	0	0	65.2	65.2	70	N	-	-	54.1	Y	N	N
E1-3-4	20	103.7	E1-3	0	11.1	56.1	64.5	0	0	0	65	65	70	N	-	-	53.9	Y	N	N
E1-3-4	21	106.7	E1-3	0	11.1	55.9	64.3	0	0	0	64.9	64.9	70	N	-	-	53.8	Y	N	N
E1-3-4	22	109.7	E1-3	0	11	55.8	64.2	0	0	0	64.8	64.8	70	N	-	-	53.8	Y	N	N
E1-3-4	23	112.7	E1-3	0	11.4	55.6	64	0	0	0	64.6	64.6	70	N	-	-	53.2	Y	N	N
E1-3-4	24	115.7	E1-3	0	12.5	55.5	63.9	0	0	0	64.5	64.5	70	N	-	-	52.0	Y	N	N
E1-3-4	25	118.7	E1-3	0	13.9	55.4	63.8	0	0	0	64.4	64.4	70	N	-	-	50.5	Y	N	N
E1-3-4	26	121.7	E1-3	0	15.5	55.2	63.6	0	0	0	64.2	64.2	70	N	-	-	48.7	Y	N	N
E1-3-4	27	124.7	E1-3	0	17.3	55.1	63.5	0	0	0	64.1	64.1	70	N	-	-	46.8	Y	N	N
E1-3-4	28	127.7	E1-3	0	19.5	55	63.4	0	0	0	64	64	70	N	-	-	44.5	Y	N	N
E1-3-5	1	46.7	E1-3	0	0	64.2	66.9	0	0	0	68.8	68.8	70	N	-	-	68.8	Y	N	N
E1-3-5	2	49.7	E1-3	0	0	64	66.9	0	0	0	68.7	68.7	70	N	-	-	68.7	Y	N	N
E1-3-5	3	52.7	E1-3	0	0	63.9	66.9	0	0	0	68.6	68.6	70	N	-	-	68.6	Y	N	N
E1-3-5	4	55.7	E1-3	0	0	63.7	66.9	0	0	0	68.6	68.6	70	N	-	-	68.6	Y	N	N
E1-3-5	5	58.7	E1-3	0	0	63.5	66.8	0	0	0	68.5	68.5	70	N	-	-	68.5	Y	N	N
E1-3-5	6	61.7	E1-3	0	0	63.3	66.8	0	0	0	68.4	68.4	70	N	-	-	68.4	Y	N	N
E1-3-5	7	64.7	E1-3	0	0	63.1	66.7	0	0	0	68.3	68.3	70	N	-	-	68.3	Y	N	N
E1-3-5	8	67.7	E1-3	0	0	62.9	66.6	0	0	0	68.2	68.2	70	N	-	-	68.2	Y	N	N
E1-3-5	9	70.7	E1-3	0	0	62.7	66.6	0	0	0	68.1	68.1	70	N	-	-	68.1	Y	N	N
E1-3-5	10	73.7	E1-3	0	0	62.6	66.5	0	0	0	68	68	70	N	-	-	68.0	Y	N	N
E1-3-5	11	76.7	E1-3	0	0	62.4	66.4	0	0	0	67.9	67.9	70	N	-	-	67.9	Y	N	N
E1-3-5	12	79.7	E1-3	0	0	62.2	66.4	0	0	0	67.8	67.8	70	N	-	-	67.8	Y	N	N
E1-3-5	13	82.7	E1-3	0	0	62.1	66.2	0	0	0	67.6	67.6	70	N	-	-	67.6	Y	N	N
E1-3-5	14	85.7	E1-3	0	0	61.9	66.2	0	0	0	67.5	67.5	70	N	-	-	67.5	Y	N	N
E1-3-5	15	88.7	E1-3	0	0	61.8	66.1	0	0	0	67.4	67.4	70	N	-	-	67.4	Y	N	N
E1-3-5	16	91.7	E1-3	0	0	61.7	66	0	0	0	67.3	67.3	70	N	-	-	67.3	Y	N	N
E1-3-5	17	94.7	E1-3	0	0	61.6	65.9	0	0	0	67.2	67.2	70	N	-	-	67.2	Y	N	N
E1-3-5	18	97.7	E1-3	0	0	61.5	65.7	0	0	0	67.1	67.1	70	N	-	-	67.1	Y	N	N
E1-3-5	19	100.7	E1-3	0	0	61.4	65.7	0	0	0	67	67	70	N	-	-	67.0	Y	N	N
E1-3-5	20	103.7	E1-3	0	0	61.3	65.5	0	0	0	66.9	66.9	70	N	-	-	66.9	Y	N	N
E1-3-5	21	106.7	E1-3	0	0	61.2	65.4	0	0	0	66.8	66.8	70	N	-	-	66.8	Y	N	N
E1-3-5	22	109.7	E1-3	0	0	61.1	65.3	0	0	0	66.7	66.7	70	N	-	-	66.7	Y	N	N
E1-3-5	23	112.7	E1-3	0	0	61	65.2	0	0	0	66.6	66.6	70	N	-	-	66.6	Y	N	N
E1-3-5	24	115.7	E1-3	0	0	61	65.1	0	0	0	66.5	66.5	70	N	-	-	66.5	Y	N	N
E1-3-5	25	118.7	E1-3	0	0	60.9	65	0	0	0	66.4	66.4	70	N	-	-	66.4	Y	N	N
E1-3-5	26	121.7	E1-3	0	0	60.8	64.9	0	0	0	66.4	66.4	70	N	-	-	66.4	Y	N	N
E1-3-5	27	124.7	E1-3	0	0	60.8	64.8	0	0	0	66.3	66.3	70	N	-	-	66.3	Y	N	N
E1-3-5	28	127.7	E1-3	0	0	60.7	64.7	0	0	0	66.2	66.2	70	N	-	-	66.2	Y	N	N
E1-3-6	1	46.7	E1-3	0	0	61.2	59.9	36.3	0	0	63.6	63.6	70	N	-	-	63.6	Y	N	N
E1-3-6	2	49.7	E1-3	0	0	61.1	60	37.1	0	0	63.6	63.6	70	N	-	-	63.6	Y	N	N
E1-3-6	3	52.7	E1-3	0	0	61	60.2	37.8	0	0	63.6	63.6	70	N	-	-	63.6	Y	N	N
E1-3-6	4	55.7	E1-3	0	0	60.9	60.5	38.4	0	0	63.7	63.7	70	N	-	-	63.7	Y	N	N
E1-3-6	5	58.7	E1-3	0	0	60.8	60.9	39.2	0	0	63.9	63.9	70	N	-	-	63.9	Y	N	N
E1-3-6	6	61.7	E1-3	0	0	60.7	61.6	39.9	0	0	64.2	64.2	70	N	-	-	64.2	Y	N	N
E1-3-6	7	64.7	E1-3	0	0	60.5	62.1	40.7	0	0	64.4	64.4	70	N	-	-	64.4	Y	N	N
E1-3-6	8	67.7	E1-3	0	0	60.4	62.4	41.7	0	0	64.5	64.5	70	N	-	-	64.5	Y	N	N
E1-3-6	9	70.7	E1-3	0	0	60.3	62.5	42.8	0	0	64.6	64.6	70	N	-	-	64.6	Y	N	N
E1-3-6	10	73.7	E1-3	0	0	60.2	62.7	44.3	0	0	64.7	64.7	70	N	-	-	64.7	Y	N	N
E1-3-6	11	76.7	E1-3	0	0	60.1	63	45.8	0	0	64.9	64.9	70	N	-	-	64.9	Y	N	N
E1-3-6	12	79.7	E1-3	0	0	60	63.2	47.3	0	0	65	65	70	N	-	-	65.0	Y	N	N
E1-3-6	13	82.7	E1-3	0	0	59.9	63.3	48.1	0	0	65	65	70	N	-	-	65.0	Y	N	N
E1-3-6	14	85.7	E1-3	0	0	59.7	63.4	48.7	0	0	65.1	65.1	70	N	-	-	65.1	Y	N	N
E1-3-6	15	88.7	E1-3	0	0	59.6	63.4	49.2	0	0	65.1	65.1	70	N	-	-	65.1	Y	N	N
E1-3-6	16	91.7	E1-3	0	0	59.5	63.5	49.8	0	0	65.1	65.1	70	N	-	-	65.1	Y	N	N
E1-3-6	17	94.7	E1-3	0	0	59.4	63.5	50.4	0	0	65.1	65.1	70	N	-	-	65.1	Y	N	N
E1-3-6	18	97.7	E1-3	0	0	59.4	63.5	50.8	0	0	65.1	65.1	70	N	-	-	65.1	Y	N	N
E1-3-6	19	100.7	E1-3	0	0	59.3	63.5	51.2	0	0	65.1	65.1	70	N	-	-	65.1	Y	N	N

Title: Detailed Calculation of Road Traffic Noise with Direct Mitigation Measures in place
Scenario: Existing and Planned Residential and Educational Uses in KTN NDA (Mitigated Case on Proposed Roads)

Assessment Point			Location	WITH PROJECT														
				Existing Road in 2046 dB(A)	Other Roads in 2046 dB(A)[1]	New Roads[2]						Overall Noise Level in 2046 dB(A) [C]	Noise Criteria dB(A)	Exceedance C > Criteria (Y/N)	Check Project Impact Significance		Check Direct Mitigation			At Receiver-end Mitigation Measures Required [4,5] (Y/N)
						PD	DD	LD	EX	TR	New Roads in 2046 dB(A) [3] [B]				C - A dB(A) [D]	D ≥ 1dB(A)	New Road Contribution dB(A) [E]	New Road Contribution ≥ 1dB(A) E ≥ 1dB(A)	New Road > Criteria B > Criteria	
ID	Floor	Floor Level (mPD)		dB (A)																
E1-3-6	20	103.7	E1-3	0	0	59.3	63.6	51.7	0	0	65.1	65.1	70	N	-	-	65.1	Y	N	N
E1-3-6	21	106.7	E1-3	0	0	59.3	63.6	51.9	0	0	65.2	65.2	70	N	-	-	65.2	Y	N	N
E1-3-6	22	109.7	E1-3	0	0	59.3	63.5	52.4	0	0	65.2	65.2	70	N	-	-	65.2	Y	N	N
E1-3-6	23	112.7	E1-3	0	0	59.3	63.5	52.7	0	0	65.2	65.2	70	N	-	-	65.2	Y	N	N
E1-3-6	24	115.7	E1-3	0	0	59.3	63.5	52.9	0	0	65.2	65.2	70	N	-	-	65.2	Y	N	N
E1-3-6	25	118.7	E1-3	0	0	59.3	63.5	53.1	0	0	65.2	65.2	70	N	-	-	65.2	Y	N	N
E1-3-6	26	121.7	E1-3	0	0	59.2	63.5	53.3	0	0	65.1	65.1	70	N	-	-	65.1	Y	N	N
E1-3-6	27	124.7	E1-3	0	0	59.2	63.4	53.4	0	0	65.1	65.1	70	N	-	-	65.1	Y	N	N
E1-3-6	28	127.7	E1-3	0	0	59.1	63.4	53.5	0	0	65.1	65.1	70	N	-	-	65.1	Y	N	N
E1-3-7	1	46.7	E1-3	0	10.6	57.3	57.7	49.3	0	0	60.8	60.8	70	N	-	-	50.2	Y	N	N
E1-3-7	2	49.7	E1-3	0	10.6	57.3	58.1	49.3	0	0	61	61	70	N	-	-	50.4	Y	N	N
E1-3-7	3	52.7	E1-3	0	10.6	57.3	58.3	49.4	0	0	61.1	61.1	70	N	-	-	50.5	Y	N	N
E1-3-7	4	55.7	E1-3	0	10.6	57.3	58.4	49.5	0	0	61.2	61.2	70	N	-	-	50.6	Y	N	N
E1-3-7	5	58.7	E1-3	0	10.6	57.2	58.6	49.6	0	0	61.3	61.3	70	N	-	-	50.7	Y	N	N
E1-3-7	6	61.7	E1-3	0	10.6	57.2	58.8	49.8	0	0	61.4	61.4	70	N	-	-	50.8	Y	N	N
E1-3-7	7	64.7	E1-3	0	10.6	57.1	59.1	50	0	0	61.5	61.5	70	N	-	-	50.9	Y	N	N
E1-3-7	8	67.7	E1-3	0	10.6	57.1	59.4	50.5	0	0	61.8	61.8	70	N	-	-	51.2	Y	N	N
E1-3-7	9	70.7	E1-3	0	10.6	57	59.9	51.1	0	0	62.1	62.1	70	N	-	-	51.5	Y	N	N
E1-3-7	10	73.7	E1-3	0	10.6	57	60.2	52	0	0	62.3	62.3	70	N	-	-	51.7	Y	N	N
E1-3-7	11	76.7	E1-3	0	10.6	56.9	60.4	52.8	0	0	62.5	62.5	70	N	-	-	51.9	Y	N	N
E1-3-7	12	79.7	E1-3	0	10.5	56.9	60.6	53.6	0	0	62.7	62.7	70	N	-	-	52.2	Y	N	N
E1-3-7	13	82.7	E1-3	0	10.5	56.8	60.8	54.2	0	0	62.9	62.9	70	N	-	-	52.4	Y	N	N
E1-3-7	14	85.7	E1-3	0	10.5	56.8	60.8	54.7	0	0	63	63	70	N	-	-	52.5	Y	N	N
E1-3-7	15	88.7	E1-3	0	10.5	56.7	60.9	55.1	0	0	63.1	63.1	70	N	-	-	52.6	Y	N	N
E1-3-7	16	91.7	E1-3	0	10.5	56.7	60.9	55.3	0	0	63.1	63.1	70	N	-	-	52.6	Y	N	N
E1-3-7	17	94.7	E1-3	0	10.5	56.7	60.9	55.7	0	0	63.1	63.1	70	N	-	-	52.6	Y	N	N
E1-3-7	18	97.7	E1-3	0	10.4	56.6	60.9	55.8	0	0	63.2	63.2	70	N	-	-	52.8	Y	N	N
E1-3-7	19	100.7	E1-3	0	10.4	56.6	61	55.9	0	0	63.2	63.2	70	N	-	-	52.8	Y	N	N
E1-3-7	20	103.7	E1-3	0	10.4	56.6	61	55.9	0	0	63.2	63.2	70	N	-	-	52.8	Y	N	N
E1-3-7	21	106.7	E1-3	0	10.4	56.6	61	56	0	0	63.2	63.2	70	N	-	-	52.8	Y	N	N
E1-3-7	22	109.7	E1-3	0	10.4	56.6	61	56	0	0	63.2	63.2	70	N	-	-	52.8	Y	N	N
E1-3-7	23	112.7	E1-3	0	10.8	56.7	61	56	0	0	63.3	63.3	70	N	-	-	52.5	Y	N	N
E1-3-7	24	115.7	E1-3	0	12.1	56.7	61	55.9	0	0	63.3	63.3	70	N	-	-	51.2	Y	N	N
E1-3-7	25	118.7	E1-3	0	13.9	56.7	61	56	0	0	63.3	63.3	70	N	-	-	49.4	Y	N	N
E1-3-7	26	121.7	E1-3	0	16	56.7	61.1	56	0	0	63.3	63.3	70	N	-	-	47.3	Y	N	N
E1-3-7	27	124.7	E1-3	0	18.8	56.7	61.1	56	0	0	63.3	63.3	70	N	-	-	44.5	Y	N	N
E1-3-7	28	127.7	E1-3	0	22.3	56.7	61.1	56	0	0	63.3	63.3	70	N	-	-	41.0	Y	N	N
KTN NDA Area 32																				
B3-5a-1	1	14.7	B3-5a	35.4	0	47.2	66.2	67.5	63.8	0	70.9	70.9	70	Y	-	-	35.5	Y	Y	Y
B3-5a-1	2	17.9	B3-5a	37.4	0	47.5	66.2	67.5	63.9	0	70.9	70.9	70	Y	-	-	33.5	Y	Y	Y
B3-5a-1	3	21.1	B3-5a	39.1	0	47.7	66.1	67.5	64	0	70.9	70.9	70	Y	-	-	31.8	Y	Y	Y
B3-5a-1	4	24.3	B3-5a	41	0	48	66	67.5	64	0	70.9	70.9	70	Y	-	-	29.9	Y	Y	Y
B3-5a-1	5	27.5	B3-5a	42.1	0	48.3	65.9	67.4	64.1	0	70.8	70.8	70	Y	-	-	28.7	Y	Y	Y
B3-5a-1	6	30.7	B3-5a	42.8	0	48.6	65.8	67.3	64.2	0	70.8	70.8	70	Y	-	-	28.0	Y	Y	Y
B3-5a-1	7	33.9	B3-5a	43.2	0	48.9	65.7	67.2	64.4	0	70.7	70.7	70	Y	-	-	27.5	Y	Y	Y
B3-5a-1	8	37.1	B3-5a	43.5	0	49.3	65.6	67.1	64.5	0	70.7	70.7	70	Y	-	-	27.2	Y	Y	Y
B3-5a-1	9	40.3	B3-5a	43.8	0	49.7	65.5	67	64.6	0	70.6	70.7	70	Y	-	-	26.9	Y	Y	Y
B3-5a-1	10	43.5	B3-5a	43.8	0	50.1	65.4	66.9	64.8	0	70.6	70.6	70	Y	-	-	26.8	Y	Y	Y
B3-5a-1	11	46.7	B3-5a	43.9	0	50.5	65.3	66.8	64.9	0	70.5	70.5	70	Y	-	-	26.6	Y	Y	Y
B3-5a-1	12	49.9	B3-5a	44	0	50.8	65.1	66.7	65	0	70.5	70.5	70	Y	-	-	26.5	Y	Y	Y
B3-5a-1	13	53.1	B3-5a	44.1	0	51.1	65	66.6	65.2	0	70.5	70.5	70	Y	-	-	26.4	Y	Y	Y
B3-5a-1	14	56.3	B3-5a	44.2	0	51.3	64.9	66.4	65.3	0	70.4	70.4	70	N	-	-	26.2	Y	N	N
B3-5a-1	15	59.5	B3-5a	44.2	0	51.6	64.8	66.3	65.5	0	70.4	70.4	70	N	-	-	26.2	Y	N	N
B3-5a-1	16	62.7	B3-5a	44.2	0	51.7	64.8	66.2	65.6	0	70.4	70.4	70	N	-	-	26.2	Y	N	N
B3-5a-1	17	65.9	B3-5a	44.3	0	51.8	64.7	66	65.8	0	70.4	70.4	70	N	-	-	26.1	Y	N	N
B3-5a-1	18	69.1	B3-5a	44.3	0	51.9	64.6	65.9	66	0	70.4	70.4	70	N	-	-	26.1	Y	N	N
B3-5a-1	19	72.3	B3-5a	44.3	0	52	64.4	65.8	66.3	0	70.4	70.4	70	N	-	-	26.1	Y	N	N
B3-5a-2	1	14.7	B3-5a	14.1	0	60.5	70.1	62.5	42.9	0	71.2	71.2	70	Y	-	-	57.1	Y	Y	Y
B3-5a-2	2	17.9	B3-5a	14.3	0	60.5	70	62.4	43.5	0	71.1	71.1	70	Y	-	-	56.8	Y	Y	Y
B3-5a-2	3	21.1	B3-5a	14.6	0	60.6	69.9	62.4	44.2	0	71	71	70	Y	-	-	56.4	Y	Y	Y
B3-5a-2	4	24.3	B3-5a	14.9	0	60.5	69.8	62.3	44.8	0	70.9	70.9	70	Y	-	-	56.0	Y	Y	Y
B3-5a-2	5	27.5	B3-5a	15.2	0	60.5	69.6	62.3	45.4	0	70.8	70.8	70	Y	-	-	55.6	Y	Y	Y
B3-5a-2	6	30.7	B3-5a	15.6	0	60.5	69.5	62.2	46.1	0	70.7	70.7	70	Y	-	-	55.1	Y	Y	Y
B3-5a-2	7	33.9	B3-5a	15.9	0	60.6	69.3	62.1	46.8	0	70.6	70.6	70	Y	-	-	54.7	Y	Y	Y
B3-5a-2	8	37.1	B3-5a	16.4	0	60.6	69.1	62	47.5	0	70.4	70.4	70	N	-	-	54.0	Y	N	N
B3-5a-2	9	40.3	B3-5a	16.8	0	60.6	69	61.9	48.1	0	70.3	70.3	70	N	-	-	53.5	Y	N	N
B3-5a-2	10	43.5	B3-5a	17.3	0	60.6	68.8	61.8	48.9	0	70.1	70.1	70	N	-	-	52.8	Y	N	N
B3-5a-2	11	46.7	B3-5a	17.8	0	60.6	68.6	61.7	49.6	0	70	70	70	N	-	-	52.2	Y	N	N
B3-5a-2	12	49.9	B3-5a	18.4	0	60.6	68.4	61.6	50.2	0	69.9	69.9	70	N	-	-	51.5	Y	N	N
B3-5a-2	13	53.1	B3-5a	19	0	60.6	68.3	61.5	50.7	0	69.7	69.7	70	N	-	-	50.7	Y	N	N
B3-5a-2	14	56.3	B3-5a	19.6	0	60.6	68.1	61.4	51.3	0	69.6	69.6	70	N	-	-	50.0	Y	N	N
B3-5a-2	15	59.5	B3-5a	20.3	0	60.6	67.9	61.3	51.8	0	69.4	69.4	70	N	-	-	49.1	Y	N	N
B3-5a-2	16	62.7	B3-5a	21.4	0	60.6	67.7	61.2	52.4	0	69.3	69.3	70	N	-	-	47.9	Y	N	N
B3-5a-2	17	65.9	B3-5a	22.2	0	60.6	67.6	61	53	0	69.2	69.2	70	N	-	-	47.0	Y	N	N
B3-5a-2	18	69.1	B3-5a	22.8	0	60.6	67.4	60.9	53.5	0	69.1	69.1	70	N	-	-	46.3	Y	N	N
B3-5a-2	19	72.3	B3-5a	23.9	0	60.6	67.3	60.8	54	0	69	69	70	N	-	-	45.1	Y	N	N
B3-5a-3	1	14.7	B3-5a	10.3	0	60.6	69.8	57.3	33.2	0	70.5	70.5	70	Y	-	-	60.2	Y	Y	Y
B3-5a-3	2	17.9	B3-5a	10.3	0	60.6	69.7	57.3	33.8	0	70.4	70.4	70	N	-	-	60.1	Y	N	N
B3-5a-3	3	21.1	B3-5a	10.3	0	60.6	69.6	57.3	34.3	0	70.4	70.4	70	N	-	-	60.1	Y	N	N
B3-5a-3	4	24.3	B3-5a	10.3	0	60.6	69.5	57.3	34.8	0	70.3	70.3	70	N	-	-	60.0	Y	N	N

Title: Detailed Calculation of Road Traffic Noise with Direct Mitigation Measures in place
Scenario: Existing and Planned Residential and Educational Uses in KTN NDA (Mitigated Case on Proposed Roads)

Assessment Point			Location	WITH PROJECT														
				Existing Road in 2046 dB(A)	Other Roads in 2046 dB(A)[1]	New Roads[2]						Overall Noise Level in 2046 dB(A) [C]	Noise Criteria dB(A)	Exceedance C > Criteria (Y/N)	Check Project Impact Significance		Check Direct Mitigation			At Receiver-end Mitigation Measures Required [4,5] (Y/N)
						PD	DD	LD	EX	TR	New Roads in 2046 dB(A) [3] [B]				C - A dB(A) [D]	D ≥ 1dB(A)	New Road Contribution dB(A) [E]	New Road Contribution ≥ 1dB(A) E ≥ 1dB(A)	New Road > Criteria B > Criteria	
ID	Floor	Floor Level (mPD)		dB (A)																
B3-5a-3	5	27.5	B3-5a	10.3	0	60.6	69.4	57.2	35.3	0	70.2	70.2	70	N	-	-	59.9	Y	N	N
B3-5a-3	6	30.7	B3-5a	10.3	0	60.6	69.3	57.2	35.8	0	70.1	70.1	70	N	-	-	59.8	Y	N	N
B3-5a-3	7	33.9	B3-5a	10.3	0	60.6	69.1	57.2	36.4	0	69.9	69.9	70	N	-	-	59.6	Y	N	N
B3-5a-3	8	37.1	B3-5a	10.3	0	60.6	69	57.2	36.9	0	69.8	69.8	70	N	-	-	59.5	Y	N	N
B3-5a-3	9	40.3	B3-5a	10.3	0	60.5	68.8	57.1	37.5	0	69.7	69.7	70	N	-	-	59.4	Y	N	N
B3-5a-3	10	43.5	B3-5a	10.2	0	60.5	68.7	57.1	38	0	69.5	69.5	70	N	-	-	59.3	Y	N	N
B3-5a-3	11	46.7	B3-5a	10.2	0	60.5	68.5	57.1	38.6	0	69.4	69.4	70	N	-	-	59.2	Y	N	N
B3-5a-3	12	49.9	B3-5a	10.2	0	60.5	68.3	57	39.1	0	69.3	69.3	70	N	-	-	59.1	Y	N	N
B3-5a-3	13	53.1	B3-5a	10.2	0	60.5	68.2	57	39.7	0	69.1	69.1	70	N	-	-	58.9	Y	N	N
B3-5a-3	14	56.3	B3-5a	10.2	0	60.4	68	56.9	40.2	0	69	69	70	N	-	-	58.8	Y	N	N
B3-5a-3	15	59.5	B3-5a	10.1	0	60.4	67.8	56.9	40.8	0	68.9	68.9	70	N	-	-	58.8	Y	N	N
B3-5a-3	16	62.7	B3-5a	10.3	0	60.4	67.7	56.8	41.3	0	68.7	68.7	70	N	-	-	58.4	Y	N	N
B3-5a-3	17	65.9	B3-5a	10.5	0	60.4	67.5	56.7	41.8	0	68.6	68.6	70	N	-	-	58.1	Y	N	N
B3-5a-3	18	69.1	B3-5a	10.9	0	60.3	67.4	56.7	42.2	0	68.5	68.5	70	N	-	-	57.6	Y	N	N
B3-5a-3	19	72.3	B3-5a	11.3	0	60.3	67.2	56.6	42.5	0	68.4	68.4	70	N	-	-	57.1	Y	N	N
B3-5a-4	1	14.7	B3-5a	14.8	0	53.3	69.3	56.3	37.6	0	69.6	69.6	70	N	-	-	54.8	Y	N	N
B3-5a-4	2	17.9	B3-5a	14.8	0	53.3	69.2	56.3	37.8	0	69.5	69.5	70	N	-	-	54.7	Y	N	N
B3-5a-4	3	21.1	B3-5a	14.8	0	53.3	69.1	56.3	38	0	69.4	69.4	70	N	-	-	54.6	Y	N	N
B3-5a-4	4	24.3	B3-5a	14.8	0	53.3	68.9	56.3	38.3	0	69.3	69.3	70	N	-	-	54.5	Y	N	N
B3-5a-4	5	27.5	B3-5a	14.8	0	53.3	68.8	56.3	38.6	0	69.2	69.2	70	N	-	-	54.4	Y	N	N
B3-5a-4	6	30.7	B3-5a	14.8	0	53.2	68.6	56.3	38.9	0	69	69	70	N	-	-	54.2	Y	N	N
B3-5a-4	7	33.9	B3-5a	14.8	0	53.2	68.4	56.3	39.1	0	68.8	68.8	70	N	-	-	54.0	Y	N	N
B3-5a-4	8	37.1	B3-5a	14.8	0	53.2	68.3	56.3	39.4	0	68.7	68.7	70	N	-	-	53.9	Y	N	N
B3-5a-4	9	40.3	B3-5a	14.8	0	53.1	68.1	56.3	39.7	0	68.5	68.5	70	N	-	-	53.7	Y	N	N
B3-5a-4	10	43.5	B3-5a	14.8	0	53.2	67.9	56.2	40.2	0	68.4	68.4	70	N	-	-	53.6	Y	N	N
B3-5a-4	11	46.7	B3-5a	14.8	0	53.1	67.7	56.2	40.8	0	68.2	68.2	70	N	-	-	53.4	Y	N	N
B3-5a-4	12	49.9	B3-5a	14.8	0	53.1	67.6	56.2	41.5	0	68	68	70	N	-	-	53.2	Y	N	N
B3-5a-4	13	53.1	B3-5a	14.8	0	53.1	67.4	56.2	42.2	0	67.9	67.9	70	N	-	-	53.1	Y	N	N
B3-5a-4	14	56.3	B3-5a	15.5	0	53.1	67.2	56.2	42.9	0	67.7	67.7	70	N	-	-	52.2	Y	N	N
B3-5a-4	15	59.5	B3-5a	17.4	0	53.1	67	56.2	43.7	0	67.6	67.6	70	N	-	-	50.2	Y	N	N
B3-5a-4	16	62.7	B3-5a	19.6	0	53.1	66.9	56.1	44.4	0	67.5	67.5	70	N	-	-	47.9	Y	N	N
B3-5a-4	17	65.9	B3-5a	22.1	0	53.1	66.8	56.1	45.3	0	67.3	67.3	70	N	-	-	45.2	Y	N	N
B3-5a-4	18	69.1	B3-5a	25.2	0	53.2	66.6	56.2	46.1	0	67.2	67.2	70	N	-	-	42.0	Y	N	N
B3-5a-4	19	72.3	B3-5a	28.1	0	53.1	66.5	56.2	47	0	67.1	67.1	70	N	-	-	39.0	Y	N	N
B3-5a-5	1	14.7	B3-5a	12	0	66.3	72.4	54.8	0	0	73.5	73.5	70	Y	-	-	61.5	Y	Y	Y
B3-5a-5	2	17.9	B3-5a	12	0	66.3	72.3	54.9	0	0	73.3	73.3	70	Y	-	-	61.3	Y	Y	Y
B3-5a-5	3	21.1	B3-5a	12.1	0	66.3	72	55.4	0	0	73.1	73.1	70	Y	-	-	61.0	Y	Y	Y
B3-5a-5	4	24.3	B3-5a	12	0	66.3	71.8	56.3	0	0	73	73	70	Y	-	-	61.0	Y	Y	Y
B3-5a-5	5	27.5	B3-5a	12	0	66.5	71.6	57	0	0	72.9	72.9	70	Y	-	-	60.9	Y	Y	Y
B3-5a-5	6	30.7	B3-5a	12	0	66.6	71.3	57.3	0	0	72.7	72.7	70	Y	-	-	60.7	Y	Y	Y
B3-5a-5	7	33.9	B3-5a	12	0	66.8	71	57.4	0	0	72.5	72.5	70	Y	-	-	60.5	Y	Y	Y
B3-5a-5	8	37.1	B3-5a	12	0	66.9	70.8	57.4	0	0	72.4	72.4	70	Y	-	-	60.4	Y	Y	Y
B3-5a-5	9	40.3	B3-5a	12	0	67.1	70.5	57.3	0	0	72.3	72.3	70	Y	-	-	60.3	Y	Y	Y
B3-5a-5	10	43.5	B3-5a	11.9	0	67.2	70.3	57.3	0	0	72.2	72.2	70	Y	-	-	60.3	Y	Y	Y
B3-5a-5	11	46.7	B3-5a	12	0	67.3	70	57.2	0	0	72	72	70	Y	-	-	60.0	Y	Y	Y
B3-5a-5	12	49.9	B3-5a	12.1	0	67.4	69.8	57.2	0	0	71.9	71.9	70	Y	-	-	59.8	Y	Y	Y
B3-5a-5	13	53.1	B3-5a	12.3	0	67.5	69.6	57.1	0	0	71.8	71.8	70	Y	-	-	59.5	Y	Y	Y
B3-5a-5	14	56.3	B3-5a	12.5	0	67.5	69.4	57.1	0	0	71.7	71.7	70	Y	-	-	59.2	Y	Y	Y
B3-5a-5	15	59.5	B3-5a	12.7	0	67.5	69.1	57.1	0	0	71.6	71.6	70	Y	-	-	58.9	Y	Y	Y
B3-5a-5	16	62.7	B3-5a	13.1	0	67.5	69	57	0	0	71.5	71.5	70	Y	-	-	58.4	Y	Y	Y
B3-5a-5	17	65.9	B3-5a	13.7	0	67.5	68.8	57	0	0	71.3	71.3	70	Y	-	-	57.6	Y	Y	Y
B3-5a-5	18	69.1	B3-5a	14.4	0	67.4	68.6	56.9	0	0	71.2	71.2	70	Y	-	-	56.8	Y	Y	Y
B3-5a-5	19	72.3	B3-5a	15.1	0	67.4	68.4	56.9	0	0	71.1	71.1	70	Y	-	-	56.0	Y	Y	Y
B3-5a-6	1	14.7	B3-5a	13.7	0	67	72.2	52.3	0	0	73.3	73.3	70	Y	-	-	59.6	Y	Y	Y
B3-5a-6	2	17.9	B3-5a	13.7	0	67	72	52.8	0	0	73.2	73.2	70	Y	-	-	59.5	Y	Y	Y
B3-5a-6	3	21.1	B3-5a	13.7	0	67	71.8	53.9	0	0	73.1	73.1	70	Y	-	-	59.4	Y	Y	Y
B3-5a-6	4	24.3	B3-5a	13.7	0	67.1	71.6	55.3	0	0	73	73	70	Y	-	-	59.3	Y	Y	Y
B3-5a-6	5	27.5	B3-5a	13.7	0	67.3	71.4	56.3	0	0	72.9	72.9	70	Y	-	-	59.2	Y	Y	Y
B3-5a-6	6	30.7	B3-5a	13.7	0	67.5	71.1	56.6	0	0	72.8	72.8	70	Y	-	-	59.1	Y	Y	Y
B3-5a-6	7	33.9	B3-5a	13.6	0	67.7	70.9	56.6	0	0	72.7	72.7	70	Y	-	-	59.1	Y	Y	Y
B3-5a-6	8	37.1	B3-5a	13.6	0	67.9	70.6	56.6	0	0	72.6	72.6	70	Y	-	-	59.0	Y	Y	Y
B3-5a-6	9	40.3	B3-5a	13.6	0	68	70.4	56.5	0	0	72.5	72.5	70	Y	-	-	58.9	Y	Y	Y
B3-5a-6	10	43.5	B3-5a	13.6	0	68.2	70.2	56.5	0	0	72.4	72.4	70	Y	-	-	58.8	Y	Y	Y
B3-5a-6	11	46.7	B3-5a	13.6	0	68.2	69.9	56.4	0	0	72.3	72.3	70	Y	-	-	58.7	Y	Y	Y
B3-5a-6	12	49.9	B3-5a	13.7	0	68.3	69.7	56.4	0	0	72.2	72.2	70	Y	-	-	58.5	Y	Y	Y
B3-5a-6	13	53.1	B3-5a	13.8	0	68.4	69.5	56.3	0	0	72.1	72.1	70	Y	-	-	58.3	Y	Y	Y
B3-5a-6	14	56.3	B3-5a	13.9	0	68.4	69.3	56.3	0	0	72	72	70	Y	-	-	58.1	Y	Y	Y
B3-5a-6	15	59.5	B3-5a	14.1	0	68.4	69.1	56.2	0	0	71.9	71.9	70	Y	-	-	57.8	Y	Y	Y
B3-5a-6	16	62.7	B3-5a	14.5	0	68.4	68.9	56.2	0	0	71.8	71.8	70	Y	-	-	57.3	Y	Y	Y
B3-5a-6	17	65.9	B3-5a	14.9	0	68.3	68.7	56.1	0	0	71.6	71.6	70	Y	-	-	56.7	Y	Y	Y
B3-5a-6	18	69.1	B3-5a	15.5	0	68.3	68.5	56.1	0	0	71.5	71.5	70	Y	-	-	56.0	Y	Y	Y
B3-5a-6	19	72.3	B3-5a	16.2	0	68.2	68.3	56	0	0	71.4	71.4	70	Y	-	-	55.2	Y	Y	Y
B3-5a-7	1	14.7	B3-5a	13.7	0	61	68.1	45.1	0	0	68.9	68.9	70	N	-	-	55.2	Y	N	N
B3-5a-7	2	17.9	B3-5a	13.7	0	62.2	68.1	48.5	0	0	69.1	69.1	70	N	-	-	55.4	Y	N	N
B3-5a-7	3	21.1	B3-5a	13.7	0	64.9	68	53.5	0	0	69.9	69.9	70	N	-	-	56.2	Y	N	N
B3-5a-7	4	24.3	B3-5a	13.7	0	67	68	56.4	0	0	70.7	70.7	70	Y	-	-	57.0	Y	Y	Y
B3-5a-7	5	27.5	B3-5a	13.7	0	68.1	67.9	57.1	0	0	71.2	71.2	70	Y	-	-	57.5	Y	Y	Y
B3-5a-7	6	30.7	B3-5a	13.7	0	68.7	67.9	57.2	0	0	71.5	71.5	70	Y	-	-	57.8	Y	Y	Y
B3-5a-7	7	33.9	B3-5a	13.7	0	69.1	67.9	57.2	0	0	71.7	71.7	70	Y	-	-	58.0	Y	Y	Y

Title: Detailed Calculation of Road Traffic Noise with Direct Mitigation Measures in place
Scenario: Existing and Planned Residential and Educational Uses in KTN NDA (Mitigated Case on Proposed Roads)

Assessment Point			Location	WITH PROJECT														
				Existing Road in 2046 dB(A)	Other Roads in 2046 dB(A)[1]	New Roads[2]						Overall Noise Level in 2046 dB(A) [C]	Noise Criteria dB(A)	Exceedance C > Criteria (Y/N)	Check Project Impact Significance		Check Direct Mitigation			At Receiver-end Mitigation Measures Required [4,5] (Y/N)
						PD	DD	LD	EX	TR	New Roads in 2046 dB(A) [3] [B]				C - A dB(A) [D]	D ≥ 1dB(A)	New Road Contribution dB(A) [E]	New Road Contribution ≥ 1dB(A) E ≥ 1dB(A)	New Road > Criteria B > Criteria	
ID	Floor	Floor Level (mPD)		dB (A)																
B3-5a-7	8	37.1	B3-5a	13.6	0	69.4	67.8	57.1	0	0	71.8	71.8	70	Y	-	-	58.2	Y	Y	Y
B3-5a-7	9	40.3	B3-5a	13.6	0	69.7	67.7	57	0	0	72	72	70	Y	-	-	58.4	Y	Y	Y
B3-5a-7	10	43.5	B3-5a	13.6	0	69.9	67.6	57	0	0	72.1	72.1	70	Y	-	-	58.5	Y	Y	Y
B3-5a-7	11	46.7	B3-5a	13.6	0	70	67.6	56.9	0	0	72.1	72.1	70	Y	-	-	58.5	Y	Y	Y
B3-5a-7	12	49.9	B3-5a	13.5	0	70.1	67.5	56.8	0	0	72.1	72.1	70	Y	-	-	58.6	Y	Y	Y
B3-5a-7	13	53.1	B3-5a	13.5	0	70	67.5	56.8	0	0	72.1	72.1	70	Y	-	-	58.6	Y	Y	Y
B3-5a-7	14	56.3	B3-5a	13.5	0	69.9	67.4	56.7	0	0	72	72	70	Y	-	-	58.5	Y	Y	Y
B3-5a-7	15	59.5	B3-5a	13.5	0	69.9	67.3	56.6	0	0	71.9	71.9	70	Y	-	-	58.4	Y	Y	Y
B3-5a-7	16	62.7	B3-5a	13.4	0	69.8	67.1	56.5	0	0	71.8	71.8	70	Y	-	-	58.4	Y	Y	Y
B3-5a-7	17	65.9	B3-5a	13.4	0	69.7	67	56.5	0	0	71.7	71.7	70	Y	-	-	58.3	Y	Y	Y
B3-5a-7	18	69.1	B3-5a	13.4	0	69.6	66.9	56.4	0	0	71.6	71.6	70	Y	-	-	58.2	Y	Y	Y
B3-5a-7	19	72.3	B3-5a	13.5	0	69.5	66.8	56.3	0	0	71.5	71.5	70	Y	-	-	58.0	Y	Y	Y
B3-5a-8	1	14.7	B3-5a	13.9	0	64.7	67.7	46.3	0	0	69.5	69.5	70	N	-	-	55.6	Y	N	N
B3-5a-8	2	17.9	B3-5a	13.9	0	65.6	67.7	49.6	0	0	69.8	69.8	70	N	-	-	55.9	Y	N	N
B3-5a-8	3	21.1	B3-5a	13.9	0	67.6	67.6	54.8	0	0	70.7	70.7	70	Y	-	-	56.8	Y	Y	Y
B3-5a-8	4	24.3	B3-5a	13.9	0	69.1	67.5	57.3	0	0	71.6	71.6	70	Y	-	-	57.7	Y	Y	Y
B3-5a-8	5	27.5	B3-5a	13.9	0	69.9	67.5	57.7	0	0	72	72	70	Y	-	-	58.1	Y	Y	Y
B3-5a-8	6	30.7	B3-5a	13.8	0	70.3	67.6	57.8	0	0	72.3	72.3	70	Y	-	-	58.5	Y	Y	Y
B3-5a-8	7	33.9	B3-5a	13.8	0	70.8	67.6	57.7	0	0	72.6	72.6	70	Y	-	-	58.8	Y	Y	Y
B3-5a-8	8	37.1	B3-5a	13.8	0	71.1	67.6	57.7	0	0	72.8	72.8	70	Y	-	-	59.0	Y	Y	Y
B3-5a-8	9	40.3	B3-5a	13.8	0	71.3	67.6	57.6	0	0	73	73	70	Y	-	-	59.2	Y	Y	Y
B3-5a-8	10	43.5	B3-5a	13.8	0	71.4	67.6	57.5	0	0	73	73	70	Y	-	-	59.2	Y	Y	Y
B3-5a-8	11	46.7	B3-5a	13.7	0	71.4	67.6	57.4	0	0	73	73	70	Y	-	-	59.3	Y	Y	Y
B3-5a-8	12	49.9	B3-5a	13.7	0	71.3	67.5	57.3	0	0	72.9	72.9	70	Y	-	-	59.2	Y	Y	Y
B3-5a-8	13	53.1	B3-5a	13.7	0	71.2	67.5	57.3	0	0	72.9	72.9	70	Y	-	-	59.2	Y	Y	Y
B3-5a-8	14	56.3	B3-5a	13.7	0	71.1	67.4	57.2	0	0	72.8	72.8	70	Y	-	-	59.1	Y	Y	Y
B3-5a-8	15	59.5	B3-5a	13.6	0	71	67.3	57.1	0	0	72.7	72.7	70	Y	-	-	59.1	Y	Y	Y
B3-5a-8	16	62.7	B3-5a	13.6	0	70.9	67.2	57	0	0	72.5	72.5	70	Y	-	-	58.9	Y	Y	Y
B3-5a-8	17	65.9	B3-5a	13.5	0	70.8	67.1	56.9	0	0	72.4	72.4	70	Y	-	-	58.9	Y	Y	Y
B3-5a-8	18	69.1	B3-5a	13.6	0	70.6	67	56.9	0	0	72.3	72.3	70	Y	-	-	58.7	Y	Y	Y
B3-5a-8	19	72.3	B3-5a	13.7	0	70.5	66.9	56.8	0	0	72.2	72.2	70	Y	-	-	58.5	Y	Y	Y
B3-5a-9	1	14.7	B3-5a	35.9	0	71.3	62	55.4	0	0	71.8	71.8	70	Y	-	-	35.9	Y	Y	Y
B3-5a-9	2	17.9	B3-5a	37.6	0	71.4	62	55.6	0	0	72	72	70	Y	-	-	34.4	Y	Y	Y
B3-5a-9	3	21.1	B3-5a	39.3	0	71.8	62	56.4	0	0	72.4	72.4	70	Y	-	-	33.1	Y	Y	Y
B3-5a-9	4	24.3	B3-5a	40.1	0	72.3	62	57.4	0	0	72.8	72.8	70	Y	-	-	32.7	Y	Y	Y
B3-5a-9	5	27.5	B3-5a	41.1	0	72.7	62	57.8	0	0	73.2	73.2	70	Y	-	-	32.1	Y	Y	Y
B3-5a-9	6	30.7	B3-5a	41.9	0	72.9	62.1	57.8	0	0	73.4	73.4	70	Y	-	-	31.5	Y	Y	Y
B3-5a-9	7	33.9	B3-5a	42.5	0	73	62.4	57.8	0	0	73.4	73.5	70	Y	-	-	31.0	Y	Y	Y
B3-5a-9	8	37.1	B3-5a	42.9	0	73.1	62.6	57.7	0	0	73.6	73.6	70	Y	-	-	30.7	Y	Y	Y
B3-5a-9	9	40.3	B3-5a	43.2	0	73.1	62.8	57.7	0	0	73.6	73.6	70	Y	-	-	30.4	Y	Y	Y
B3-5a-9	10	43.5	B3-5a	43.3	0	73.2	62.9	57.6	0	0	73.7	73.7	70	Y	-	-	30.4	Y	Y	Y
B3-5a-9	11	46.7	B3-5a	43.4	0	73.2	63.1	57.6	0	0	73.8	73.8	70	Y	-	-	30.4	Y	Y	Y
B3-5a-9	12	49.9	B3-5a	43.4	0	73.3	63.2	57.5	0	0	73.8	73.8	70	Y	-	-	30.4	Y	Y	Y
B3-5a-9	13	53.1	B3-5a	43.4	0	73.3	63.3	57.4	0	0	73.8	73.8	70	Y	-	-	30.4	Y	Y	Y
B3-5a-9	14	56.3	B3-5a	43.5	0	73.2	63.3	57.3	0	0	73.7	73.7	70	Y	-	-	30.2	Y	Y	Y
B3-5a-9	15	59.5	B3-5a	43.4	0	73.1	63.3	57.3	0	0	73.6	73.6	70	Y	-	-	30.2	Y	Y	Y
B3-5a-9	16	62.7	B3-5a	43.4	0	73	63.3	57.2	0	0	73.5	73.5	70	Y	-	-	30.1	Y	Y	Y
B3-5a-9	17	65.9	B3-5a	43.4	0	72.8	63.3	57.1	0	0	73.4	73.4	70	Y	-	-	30.0	Y	Y	Y
B3-5a-9	18	69.1	B3-5a	43.4	0	72.7	63.3	57	0	0	73.3	73.3	70	Y	-	-	29.9	Y	Y	Y
B3-5a-9	19	72.3	B3-5a	43.3	0	72.6	63.2	57	0	0	73.2	73.2	70	Y	-	-	29.9	Y	Y	Y
B3-5a-10	1	14.7	B3-5a	43.5	0	72.1	52.7	52.7	0	0	72.2	72.2	70	Y	-	-	28.7	Y	Y	Y
B3-5a-10	2	17.9	B3-5a	43.8	0	72.1	52.7	52.7	0	0	72.2	72.2	70	Y	-	-	28.4	Y	Y	Y
B3-5a-10	3	21.1	B3-5a	44.3	0	72.2	52.7	53	0	0	72.3	72.3	70	Y	-	-	28.0	Y	Y	Y
B3-5a-10	4	24.3	B3-5a	44.6	0	72.4	52.8	53.5	0	0	72.5	72.5	70	Y	-	-	27.9	Y	Y	Y
B3-5a-10	5	27.5	B3-5a	44.9	0	72.5	52.7	54.2	0	0	72.6	72.6	70	Y	-	-	27.7	Y	Y	Y
B3-5a-10	6	30.7	B3-5a	45.4	0	72.5	52.8	54.8	0	0	72.7	72.7	70	Y	-	-	27.3	Y	Y	Y
B3-5a-10	7	33.9	B3-5a	45.6	0	72.6	52.9	55	0	0	72.7	72.7	70	Y	-	-	27.1	Y	Y	Y
B3-5a-10	8	37.1	B3-5a	45.8	0	72.5	53	55.1	0	0	72.6	72.7	70	Y	-	-	26.9	Y	Y	Y
B3-5a-10	9	40.3	B3-5a	45.9	0	72.5	53.1	55.2	0	0	72.6	72.6	70	Y	-	-	26.7	Y	Y	Y
B3-5a-10	10	43.5	B3-5a	46	0	72.5	53.5	55.1	0	0	72.6	72.6	70	Y	-	-	26.6	Y	Y	Y
B3-5a-10	11	46.7	B3-5a	46.1	0	72.5	53.7	55.1	0	0	72.6	72.6	70	Y	-	-	26.5	Y	Y	Y
B3-5a-10	12	49.9	B3-5a	46.2	0	72.5	54.1	55.1	0	0	72.7	72.7	70	Y	-	-	26.5	Y	Y	Y
B3-5a-10	13	53.1	B3-5a	46.2	0	72.6	54.4	55	0	0	72.8	72.8	70	Y	-	-	26.6	Y	Y	Y
B3-5a-10	14	56.3	B3-5a	46.3	0	72.7	54.6	55	0	0	72.8	72.9	70	Y	-	-	26.6	Y	Y	Y
B3-5a-10	15	59.5	B3-5a	46.3	0	72.7	54.8	55	0	0	72.8	72.9	70	Y	-	-	26.6	Y	Y	Y
B3-5a-10	16	62.7	B3-5a	46.3	0	72.7	55	54.9	0	0	72.8	72.8	70	Y	-	-	26.5	Y	Y	Y
B3-5a-10	17	65.9	B3-5a	46.4	0	72.6	55.2	54.9	0	0	72.7	72.8	70	Y	-	-	26.4	Y	Y	Y
B3-5a-10	18	69.1	B3-5a	46.5	0	72.5	55.3	54.8	0	0	72.7	72.7	70	Y	-	-	26.2	Y	Y	Y
B3-5a-10	19	72.3	B3-5a	46.6	0	72.4	55.5	54.8	0	0	72.6	72.6	70	Y	-	-	26.0	Y	Y	Y
B3-5a-11	1	14.7	B3-5a	43.7	0	70.5	41.8	41.1	0	0	70.5	70.5	70	Y	-	-	26.8	Y	Y	Y
B3-5a-11	2	17.9	B3-5a	43.7	0	70.6	41.9	42.2	0	0	70.6	70.6	70	Y	-	-	26.9	Y	Y	Y
B3-5a-11	3	21.1	B3-5a	43.8	0	70.7	41.9	44	0	0	70.7	70.7	70	Y	-	-	26.9	Y	Y	Y
B3-5a-11	4	24.3	B3-5a	43.8	0	70.8	42	46.1	0	0	70.8	70.8	70	Y	-	-	27.0	Y	Y	Y
B3-5a-11	5	27.5	B3-5a	43.9	0	70.9	42.1	48.3	0	0	70.9	70.9	70	Y	-	-	27.0	Y	Y	Y
B3-5a-11	6	30.7	B3-5a	44.2	0	70.9	42.2	50.1	0	0	70.9	70.9	70	Y	-	-	26.7	Y	Y	Y
B3-5a-11	7	33.9	B3-5a	44.4	0	70.8	42.3	51	0	0	70.9	70.9	70	Y	-	-	26.5	Y	Y	Y
B3-5a-11	8	37.1	B3-5a	44.4	0	70.8	42.5	51.4	0	0	70.9	70.9	70	Y	-	-	26.5	Y	Y	Y
B3-5a-11	9	40.3	B3-5a	44.4	0	70.8	42.6	51.5	0	0	70.9	70.9	70	Y	-	-	26.5	Y	Y	Y
B3-5a-11	10	43.5	B3-5a	44.4	0	70.8	42.9	51.6	0	0	70.8	70.8	70	Y	-	-	26.4	Y	Y	Y

Title: Detailed Calculation of Road Traffic Noise with Direct Mitigation Measures in place
Scenario: Existing and Planned Residential and Educational Uses in KTN NDA (Mitigated Case on Proposed Roads)

Assessment Point			Location	WITH PROJECT														
				Existing Road in 2046 dB(A)	Other Roads in 2046 dB(A)[1]	New Roads[2]						Overall Noise Level in 2046 dB(A) [C]	Noise Criteria dB(A)	Exceedance C > Criteria (Y/N)	Check Project Impact Significance		Check Direct Mitigation			At Receiver-end Mitigation Measures Required [4,5] (Y/N)
						PD	DD	LD	EX	TR	New Roads in 2046 dB(A) [3] [B]				C - A dB(A) [D]	D ≥ 1dB(A)	New Road Contribution dB(A) [E]	New Road Contribution ≥ 1dB(A) E ≥ 1dB(A)	New Road > Criteria B > Criteria	
ID	Floor	Floor Level (mPD)		dB (A)																
B3-5a-11	11	46.7	B3-5a	44.4	0	70.8	43.2	51.5	0	0	70.8	70.8	70	Y	-	-	26.4	Y	Y	Y
B3-5a-11	12	49.9	B3-5a	44.4	0	70.8	43.4	51.5	0	0	70.8	70.8	70	Y	-	-	26.4	Y	Y	Y
B3-5a-11	13	53.1	B3-5a	44.4	0	70.8	43.5	51.5	0	0	70.9	70.9	70	Y	-	-	26.5	Y	Y	Y
B3-5a-11	14	56.3	B3-5a	44.5	0	70.8	43.7	51.5	0	0	70.9	70.9	70	Y	-	-	26.4	Y	Y	Y
B3-5a-11	15	59.5	B3-5a	44.5	0	70.9	43.7	51.5	0	0	71	71	70	Y	-	-	26.5	Y	Y	Y
B3-5a-11	16	62.7	B3-5a	44.5	0	71	43.8	51.4	0	0	71.1	71.1	70	Y	-	-	26.6	Y	Y	Y
B3-5a-11	17	65.9	B3-5a	44.6	0	71	43.8	51.4	0	0	71	71.1	70	Y	-	-	26.5	Y	Y	Y
B3-5a-11	18	69.1	B3-5a	44.7	0	71	43.9	51.3	0	0	71	71	70	Y	-	-	26.3	Y	Y	Y
B3-5a-11	19	72.3	B3-5a	44.8	0	70.9	44	51.3	0	0	71	71	70	Y	-	-	26.2	Y	Y	Y
B3-5a-12	1	14.7	B3-5a	44.3	0	70	50.8	52.9	45.9	0	70.2	70.2	70	N	-	-	25.9	Y	N	N
B3-5a-12	2	17.9	B3-5a	44.3	0	70.2	50.9	52.9	46.1	0	70.3	70.3	70	N	-	-	26.0	Y	N	N
B3-5a-12	3	21.1	B3-5a	44.4	0	70.2	50.9	52.9	46.3	0	70.4	70.4	70	N	-	-	26.0	Y	N	N
B3-5a-12	4	24.3	B3-5a	44.4	0	70.4	50.9	53	46.6	0	70.5	70.5	70	Y	-	-	26.1	Y	Y	Y
B3-5a-12	5	27.5	B3-5a	44.5	0	70.5	50.9	53	46.8	0	70.6	70.6	70	Y	-	-	26.1	Y	Y	Y
B3-5a-12	6	30.7	B3-5a	44.8	0	70.5	50.9	53	47.1	0	70.6	70.6	70	Y	-	-	25.8	Y	Y	Y
B3-5a-12	7	33.9	B3-5a	45.1	0	70.5	50.9	53	47.5	0	70.7	70.7	70	Y	-	-	25.6	Y	Y	Y
B3-5a-12	8	37.1	B3-5a	45.3	0	70.5	51	53	47.8	0	70.7	70.7	70	Y	-	-	25.4	Y	Y	Y
B3-5a-12	9	40.3	B3-5a	45.8	0	70.5	51	53	48.3	0	70.6	70.6	70	Y	-	-	24.8	Y	Y	Y
B3-5a-12	10	43.5	B3-5a	47.1	0	70.4	51.1	53.1	48.7	0	70.6	70.6	70	Y	-	-	23.5	Y	Y	Y
B3-5a-12	11	46.7	B3-5a	48.2	0	70.4	51.2	53.2	49.3	0	70.6	70.6	70	Y	-	-	22.4	Y	Y	Y
B3-5a-12	12	49.9	B3-5a	48.8	0	70.4	51.3	53.3	49.9	0	70.6	70.6	70	Y	-	-	21.8	Y	Y	Y
B3-5a-12	13	53.1	B3-5a	48.9	0	70.4	51.5	53.5	50.8	0	70.6	70.6	70	Y	-	-	21.7	Y	Y	Y
B3-5a-12	14	56.3	B3-5a	49	0	70.4	51.7	53.6	51.9	0	70.6	70.7	70	Y	-	-	21.7	Y	Y	Y
B3-5a-12	15	59.5	B3-5a	49	0	70.4	52	53.7	53.4	0	70.7	70.7	70	Y	-	-	21.7	Y	Y	Y
B3-5a-12	16	62.7	B3-5a	48.9	0	70.5	52.4	54	55.1	0	70.8	70.8	70	Y	-	-	21.9	Y	Y	Y
B3-5a-12	17	65.9	B3-5a	49	0	70.5	52.8	54.2	56.2	0	70.8	70.8	70	Y	-	-	21.8	Y	Y	Y
B3-5a-12	18	69.1	B3-5a	49	0	70.4	53.1	54.5	56.7	0	70.8	70.8	70	Y	-	-	21.8	Y	Y	Y
B3-5a-12	19	72.3	B3-5a	49	0	70.4	53.5	54.9	56.9	0	70.8	70.8	70	Y	-	-	21.8	Y	Y	Y
B3-5a-13	1	14.7	B3-5a	44.5	0	66.9	51.4	58.9	57.4	0	68.1	68.1	70	N	-	-	23.6	Y	N	N
B3-5a-13	2	17.9	B3-5a	45.1	0	67	51.4	59	57.4	0	68.1	68.2	70	N	-	-	23.1	Y	N	N
B3-5a-13	3	21.1	B3-5a	46	0	67.1	51.4	59	57.5	0	68.2	68.2	70	N	-	-	22.2	Y	N	N
B3-5a-13	4	24.3	B3-5a	46.8	0	67.1	51.4	59	57.5	0	68.2	68.3	70	N	-	-	21.5	Y	N	N
B3-5a-13	5	27.5	B3-5a	47.3	0	67.3	51.5	58.9	57.6	0	68.3	68.4	70	N	-	-	21.1	Y	N	N
B3-5a-13	6	30.7	B3-5a	47.6	0	67.3	51.5	58.8	57.7	0	68.4	68.4	70	N	-	-	20.8	Y	N	N
B3-5a-13	7	33.9	B3-5a	47.8	0	67.4	51.6	58.7	57.8	0	68.5	68.5	70	N	-	-	20.7	Y	N	N
B3-5a-13	8	37.1	B3-5a	48	0	67.5	51.6	58.6	57.9	0	68.5	68.6	70	N	-	-	20.6	Y	N	N
B3-5a-13	9	40.3	B3-5a	48.1	0	67.6	51.7	58.5	58	0	68.6	68.6	70	N	-	-	20.5	Y	N	N
B3-5a-13	10	43.5	B3-5a	48.2	0	67.6	51.8	58.4	58	0	68.6	68.6	70	N	-	-	20.4	Y	N	N
B3-5a-13	11	46.7	B3-5a	48.2	0	67.7	51.9	58.3	58.3	0	68.6	68.7	70	N	-	-	20.5	Y	N	N
B3-5a-13	12	49.9	B3-5a	48.3	0	67.7	52.2	58.2	58.7	0	68.7	68.7	70	N	-	-	20.4	Y	N	N
B3-5a-13	13	53.1	B3-5a	48.3	0	67.7	52.7	58.1	59.4	0	68.8	68.8	70	N	-	-	20.5	Y	N	N
B3-5a-13	14	56.3	B3-5a	48.3	0	67.7	53.4	58	60.1	0	68.9	69	70	N	-	-	20.7	Y	N	N
B3-5a-13	15	59.5	B3-5a	48.4	0	67.8	54.1	58	61	0	69.1	69.1	70	N	-	-	20.7	Y	N	N
B3-5a-13	16	62.7	B3-5a	48.4	0	67.7	54.7	58	61.5	0	69.2	69.2	70	N	-	-	20.8	Y	N	N
B3-5a-13	17	65.9	B3-5a	48.4	0	67.8	55.2	57.9	61.7	0	69.2	69.3	70	N	-	-	20.9	Y	N	N
B3-5a-13	18	69.1	B3-5a	48.5	0	67.8	55.6	58	61.8	0	69.3	69.3	70	N	-	-	20.8	Y	N	N
B3-5a-13	19	72.3	B3-5a	48.5	0	67.8	55.8	58.2	61.8	0	69.3	69.3	70	N	-	-	20.8	Y	N	N
B3-5a-14	1	14.7	B3-5a	40.3	0	63.8	52.6	61.9	63.2	0	68	68	70	N	-	-	27.7	Y	N	N
B3-5a-14	2	17.9	B3-5a	40.8	0	63.9	52.6	62	63.3	0	68	68	70	N	-	-	27.2	Y	N	N
B3-5a-14	3	21.1	B3-5a	41.8	0	64	52.6	62.1	63.3	0	68.1	68.1	70	N	-	-	26.3	Y	N	N
B3-5a-14	4	24.3	B3-5a	42.3	0	64	52.6	62.1	63.4	0	68.1	68.1	70	N	-	-	25.8	Y	N	N
B3-5a-14	5	27.5	B3-5a	42.6	0	64	52.7	62.2	63.4	0	68.2	68.2	70	N	-	-	25.6	Y	N	N
B3-5a-14	6	30.7	B3-5a	42.8	0	64	52.7	62.2	63.4	0	68.2	68.2	70	N	-	-	25.4	Y	N	N
B3-5a-14	7	33.9	B3-5a	42.9	0	64.1	52.7	62.2	63.5	0	68.3	68.3	70	N	-	-	25.4	Y	N	N
B3-5a-14	8	37.1	B3-5a	42.9	0	64.2	52.7	62.2	63.6	0	68.3	68.3	70	N	-	-	25.4	Y	N	N
B3-5a-14	9	40.3	B3-5a	43	0	64.3	52.8	62.2	63.7	0	68.4	68.4	70	N	-	-	25.4	Y	N	N
B3-5a-14	10	43.5	B3-5a	43	0	64.4	52.9	62.2	63.8	0	68.4	68.4	70	N	-	-	25.4	Y	N	N
B3-5a-14	11	46.7	B3-5a	42.9	0	64.5	53.1	62.2	63.9	0	68.5	68.5	70	N	-	-	25.6	Y	N	N
B3-5a-14	12	49.9	B3-5a	42.9	0	64.5	53.5	62.1	64	0	68.6	68.6	70	N	-	-	25.7	Y	N	N
B3-5a-14	13	53.1	B3-5a	43	0	64.5	54.1	62.1	64.1	0	68.6	68.6	70	N	-	-	25.6	Y	N	N
B3-5a-14	14	56.3	B3-5a	43	0	64.6	55	62.1	64.2	0	68.7	68.7	70	N	-	-	25.7	Y	N	N
B3-5a-14	15	59.5	B3-5a	43	0	64.7	55.8	62.1	64.3	0	68.8	68.8	70	N	-	-	25.8	Y	N	N
B3-5a-14	16	62.7	B3-5a	43	0	64.8	56.2	62.1	64.5	0	69	69	70	N	-	-	26.0	Y	N	N
B3-5a-14	17	65.9	B3-5a	43	0	64.8	56.6	62.1	64.6	0	69	69.1	70	N	-	-	26.1	Y	N	N
B3-5a-14	18	69.1	B3-5a	43.1	0	64.9	56.9	62.1	64.8	0	69.1	69.2	70	N	-	-	26.1	Y	N	N
B3-5a-14	19	72.3	B3-5a	43.1	0	65	57	62.2	65.1	0	69.3	69.3	70	N	-	-	26.2	Y	N	N
B3-5a-15	1	14.7	B3-5a	36.2	0	62	57	65.7	64.4	0	69.3	69.3	70	N	-	-	33.1	Y	N	N
B3-5a-15	2	17.9	B3-5a	38.3	0	62.1	57	65.8	64.5	0	69.4	69.4	70	N	-	-	31.1	Y	N	N
B3-5a-15	3	21.1	B3-5a	40.3	0	62.1	57	65.8	64.6	0	69.4	69.5	70	N	-	-	29.2	Y	N	N
B3-5a-15	4	24.3	B3-5a	42.1	0	62.1	57	65.8	64.6	0	69.5	69.5	70	N	-	-	27.4	Y	N	N
B3-5a-15	5	27.5	B3-5a	43	0	62.2	57	65.8	64.7	0	69.5	69.5	70	N	-	-	26.5	Y	N	N
B3-5a-15	6	30.7	B3-5a	43.7	0	62.2	57	65.8	64.8	0	69.5	69.6	70	N	-	-	25.9	Y	N	N
B3-5a-15	7	33.9	B3-5a	44	0	62.3	57	65.8	64.9	0	69.6	69.6	70	N	-	-	25.6	Y	N	N

Title: Detailed Calculation of Road Traffic Noise with Direct Mitigation Measures in place
Scenario: Existing and Planned Residential and Educational Uses in KTN NDA (Mitigated Case on Proposed Roads)

Assessment Point			Location	WITH PROJECT													
				Existing Road in 2046 dB(A)	Other Roads in 2046 dB(A)[1]	New Roads[2]						Overall Noise Level in 2046 dB(A) [C]	Noise Criteria dB(A)	Exceedance C > Criteria (Y/N)	Check Project Impact Significance		Check Direct Mitigation			At Receiver-end Mitigation Measures Required [4,5] (Y/N)
						PD	DD	LD	EX	TR	New Roads in 2046 dB(A) [3] [B]				C - A dB(A) [D]	D ≥ 1dB(A)	New Road Contribution dB(A) [E]	New Road Contribution ≥ 1dB(A) E ≥ 1dB(A)	New Road > Criteria B > Criteria	
ID	Floor	Floor Level (mPD)		dB (A)																
B3-5a-15	8	37.1	B3-5a	44.3	0	62.4	57	65.7	65.1	0	69.6	69.6	70	N	-	-	25.3	Y	N	N
B3-5a-15	9	40.3	B3-5a	44.5	0	62.5	57.1	65.7	65.2	0	69.7	69.7	70	N	-	-	25.2	Y	N	N
B3-5a-15	10	43.5	B3-5a	44.6	0	62.5	57.1	65.6	65.3	0	69.7	69.7	70	N	-	-	25.1	Y	N	N
B3-5a-15	11	46.7	B3-5a	44.6	0	62.6	57.1	65.6	65.4	0	69.7	69.7	70	N	-	-	25.1	Y	N	N
B3-5a-15	12	49.9	B3-5a	44.7	0	62.7	57.3	65.5	65.5	0	69.8	69.8	70	N	-	-	25.1	Y	N	N
B3-5a-15	13	53.1	B3-5a	44.8	0	62.8	57.4	65.4	65.7	0	69.8	69.9	70	N	-	-	25.1	Y	N	N
B3-5a-15	14	56.3	B3-5a	44.9	0	62.9	57.6	65.3	65.9	0	69.9	69.9	70	N	-	-	25.0	Y	N	N
B3-5a-15	15	59.5	B3-5a	45	0	63	57.7	65.3	66	0	70	70	70	N	-	-	25.0	Y	N	N
B3-5a-15	16	62.7	B3-5a	45.1	0	63.1	57.7	65.1	66.1	0	70	70	70	N	-	-	24.9	Y	N	N
B3-5a-15	17	65.9	B3-5a	45.2	0	63.3	57.8	65.1	66.4	0	70.1	70.1	70	N	-	-	24.9	Y	N	N
B3-5a-15	18	69.1	B3-5a	45.3	0	63.4	57.8	65	66.6	0	70.2	70.2	70	N	-	-	24.9	Y	N	N
B3-5a-15	19	72.3	B3-5a	45.4	0	63.5	57.8	64.9	66.8	0	70.3	70.3	70	N	-	-	24.9	Y	N	N
KTN NDA Area 32																				
B3-8-1	1	14.7	B3-8	46.6	0	60.7	17.5	34.3	35.3	0	60.8	60.9	70	N	-	-	14.3	Y	N	N
B3-8-1	2	17.9	B3-8	46.6	0	61.6	17.5	35.8	35.8	0	61.6	61.7	70	N	-	-	15.1	Y	N	N
B3-8-1	3	21.1	B3-8	46.6	0	62.9	17.5	38.3	36.2	0	62.9	63	70	N	-	-	16.4	Y	N	N
B3-8-1	4	24.3	B3-8	46.6	0	63.8	17.5	42.1	36.6	0	63.8	63.9	70	N	-	-	17.3	Y	N	N
B3-8-1	5	27.5	B3-8	46.6	0	64.4	17.5	43.9	37.1	0	64.4	64.5	70	N	-	-	17.9	Y	N	N
B3-8-1	6	30.7	B3-8	46.6	0	64.9	17.4	44.3	37.6	0	64.9	65	70	N	-	-	18.4	Y	N	N
B3-8-1	7	33.9	B3-8	46.6	0	65.5	17.4	44.5	38.1	0	65.5	65.6	70	N	-	-	19.0	Y	N	N
B3-8-1	8	37.1	B3-8	46.7	0	65.8	17.3	44.7	38.6	0	65.9	65.9	70	N	-	-	19.2	Y	N	N
B3-8-1	9	40.3	B3-8	46.7	0	66.1	17.3	44.9	39.2	0	66.1	66.2	70	N	-	-	19.5	Y	N	N
B3-8-1	10	43.5	B3-8	47	0	66.2	17.3	45.2	39.9	0	66.3	66.3	70	N	-	-	19.3	Y	N	N
B3-8-1	11	46.7	B3-8	47.4	0	66.4	17.2	45.6	40.6	0	66.4	66.5	70	N	-	-	19.1	Y	N	N
B3-8-1	12	49.9	B3-8	48.2	0	66.6	17.2	46.2	41.2	0	66.7	66.8	70	N	-	-	18.6	Y	N	N
B3-8-1	13	53.1	B3-8	48.7	0	67	17.2	47.6	42	0	67	67.1	70	N	-	-	18.4	Y	N	N
B3-8-1	14	56.3	B3-8	49	0	67.5	17	49.2	42.7	0	67.5	67.6	70	N	-	-	18.6	Y	N	N
B3-8-1	15	59.5	B3-8	49	0	67.9	17.1	50.2	43.3	0	68	68	70	N	-	-	19.0	Y	N	N
B3-8-1	16	62.7	B3-8	49.1	0	68.3	17.6	50.7	43.9	0	68.4	68.4	70	N	-	-	19.3	Y	N	N
B3-8-2	1	14.7	B3-8	38.5	0	68	42.9	50	0	0	68.1	68.1	70	N	-	-	29.6	Y	N	N
B3-8-2	2	17.9	B3-8	38.5	0	68.3	45.2	50	0	0	68.4	68.4	70	N	-	-	29.9	Y	N	N
B3-8-2	3	21.1	B3-8	38.5	0	68.6	48.4	50.1	0	0	68.7	68.7	70	N	-	-	30.2	Y	N	N
B3-8-2	4	24.3	B3-8	38.6	0	68.8	52.6	50.6	0	0	69	69	70	N	-	-	30.4	Y	N	N
B3-8-2	5	27.5	B3-8	38.7	0	68.9	55.1	50.9	0	0	69.2	69.2	70	N	-	-	30.5	Y	N	N
B3-8-2	6	30.7	B3-8	38.8	0	69.1	56.2	51	0	0	69.4	69.4	70	N	-	-	30.6	Y	N	N
B3-8-2	7	33.9	B3-8	38.9	0	69.3	56.6	51.1	0	0	69.6	69.6	70	N	-	-	30.7	Y	N	N
B3-8-2	8	37.1	B3-8	39.1	0	69.4	56.8	51	0	0	69.7	69.7	70	N	-	-	30.6	Y	N	N
B3-8-2	9	40.3	B3-8	39.4	0	69.7	56.8	51.1	0	0	69.9	70	70	N	-	-	30.6	Y	N	N
B3-8-2	10	43.5	B3-8	40	0	70.1	56.8	51.1	0	0	70.3	70.4	70	N	-	-	30.4	Y	N	N
B3-8-2	11	46.7	B3-8	41	0	70.7	56.8	51.2	0	0	70.9	70.9	70	Y	-	-	29.9	Y	Y	Y
B3-8-2	12	49.9	B3-8	42.5	0	71.1	56.8	51.4	0	0	71.3	71.4	70	Y	-	-	28.9	Y	Y	Y
B3-8-2	13	53.1	B3-8	44	0	71.4	56.8	51.6	0	0	71.6	71.6	70	Y	-	-	27.6	Y	Y	Y
B3-8-2	14	56.3	B3-8	44.6	0	71.5	56.8	52.1	0	0	71.7	71.7	70	Y	-	-	27.1	Y	Y	Y
B3-8-2	15	59.5	B3-8	44.9	0	71.6	56.8	52.8	0	0	71.7	71.8	70	Y	-	-	26.9	Y	Y	Y
B3-8-2	16	62.7	B3-8	45.1	0	71.6	56.8	53.1	0	0	71.8	71.8	70	Y	-	-	26.7	Y	Y	Y
B3-8-3	1	14.7	B3-8	35.7	0	72.2	60.3	59	0	0	72.6	72.6	70	Y	-	-	36.9	Y	Y	Y
B3-8-3	2	17.9	B3-8	35.7	0	72.2	60.3	59	0	0	72.6	72.6	70	Y	-	-	36.9	Y	Y	Y
B3-8-3	3	21.1	B3-8	35.8	0	72.2	60.8	59	0	0	72.7	72.7	70	Y	-	-	36.9	Y	Y	Y
B3-8-3	4	24.3	B3-8	35.8	0	72.1	61.3	58.9	0	0	72.7	72.7	70	Y	-	-	36.9	Y	Y	Y
B3-8-3	5	27.5	B3-8	35.9	0	72.1	61.5	58.8	0	0	72.6	72.6	70	Y	-	-	36.7	Y	Y	Y
B3-8-3	6	30.7	B3-8	36.1	0	72	61.6	58.8	0	0	72.6	72.6	70	Y	-	-	36.5	Y	Y	Y
B3-8-3	7	33.9	B3-8	36.3	0	72	61.7	58.7	0	0	72.5	72.5	70	Y	-	-	36.2	Y	Y	Y
B3-8-3	8	37.1	B3-8	36.6	0	71.9	61.7	58.6	0	0	72.5	72.5	70	Y	-	-	35.9	Y	Y	Y
B3-8-3	9	40.3	B3-8	37.1	0	72	61.7	58.5	0	0	72.6	72.6	70	Y	-	-	35.5	Y	Y	Y
B3-8-3	10	43.5	B3-8	38.1	0	72.2	61.6	58.4	0	0	72.7	72.7	70	Y	-	-	34.6	Y	Y	Y
B3-8-3	11	46.7	B3-8	39.9	0	72.4	61.5	58.3	0	0	72.9	72.9	70	Y	-	-	33.0	Y	Y	Y
B3-8-3	12	49.9	B3-8	42.1	0	72.5	61.4	58.2	0	0	73	73	70	Y	-	-	30.9	Y	Y	Y
B3-8-3	13	53.1	B3-8	43.3	0	72.5	61.3	58.1	0	0	73	73	70	Y	-	-	29.7	Y	Y	Y
B3-8-3	14	56.3	B3-8	43.7	0	72.5	61.2	58	0	0	72.9	72.9	70	Y	-	-	29.2	Y	Y	Y
B3-8-3	15	59.5	B3-8	43.9	0	72.4	61.1	57.8	0	0	72.9	72.9	70	Y	-	-	29.0	Y	Y	Y
B3-8-3	16	62.7	B3-8	43.9	0	72.3	61	57.7	0	0	72.7	72.7	70	Y	-	-	28.8	Y	Y	Y
B3-8-4	1	14.7	B3-8	40.8	0	72.7	60.4	66	0	0	73.8	73.8	70	Y	-	-	33.0	Y	Y	Y
B3-8-4	2	17.9	B3-8	41.7	0	72.6	60.4	65.9	0	0	73.6	73.6	70	Y	-	-	31.9	Y	Y	Y
B3-8-4	3	21.1	B3-8	42.6	0	72.5	60.6	65.8	0	0	73.5	73.5	70	Y	-	-	30.9	Y	Y	Y
B3-8-4	4	24.3	B3-8	43.2	0	72.3	61	65.7	0	0	73.4	73.4	70	Y	-	-	30.2	Y	Y	Y
B3-8-4	5	27.5	B3-8	43.5	0	72.2	61.4	65.5	0	0	73.3	73.3	70	Y	-	-	29.8	Y	Y	Y
B3-8-4	6	30.7	B3-8	44	0	72	61.5	65.4	0	0	73.2	73.2	70	Y	-	-	29.2	Y	Y	Y
B3-8-4	7	33.9	B3-8	44.3	0	71.9	61.5	65.2	0	0	73	73	70	Y	-	-	28.7	Y	Y	Y
B3-8-4	8	37.1	B3-8	44.5	0	71.7	61.5	65	0	0	72.9	72.9	70	Y	-	-	28.4	Y	Y	Y
B3-8-4	9	40.3	B3-8	44.7	0	71.6	61.4	64.9	0	0	72.8	72.8	70	Y	-	-	28.1	Y	Y	Y
B3-8-4	10	43.5	B3-8	44.9	0	71.5	61.4	64.7	0	0	72.6	72.7	70	Y	-	-	27.8	Y	Y	Y
B3-8-4	11	46.7	B3-8	45	0	71.4	61.3	64.5	0	0	72.5	72.5	70	Y	-	-	27.5	Y	Y	Y
B3-8-4	12	49.9	B3-8	45.1	0	71.3	61.2	64.3	0	0	72.4	72.4	70	Y	-	-	27.3	Y	Y	Y
B3-8-4	13	53.1	B3-8	45.2	0	71.2	61.1	64.1	0	0	72.3	72.3	70	Y	-	-	27.1	Y	Y	Y
B3-8-4	14	56.3	B3-8	45.2	0	71.1	61	64	0	0	72.2	72.3	70	Y	-	-	27.1	Y	Y	Y
B3-8-4	15	59.5	B3-8	45.3	0	71.1	60.9	63.9	0	0	72.2	72.2	70	Y	-	-	26.9	Y	Y	Y
B3-8-4	16	62.7	B3-8	45.3	0	70.9	60.8	63.7	0	0	72	72	70	Y	-	-	26.7	Y	Y	Y
B3-8-5	1	14.7	B3-8	33.2	0	69	57.9	68.6	0	0	72	72	70	Y	-	-	38.8	Y	Y	Y
B3-8-5	2	17.9	B3-8	33.8	0	68.9	57.9	68.4	0	0	71.9	71.9	70	Y	-	-	38.1	Y	Y	Y

Title: Detailed Calculation of Road Traffic Noise with Direct Mitigation Measures in place
Scenario: Existing and Planned Residential and Educational Uses in KTN NDA (Mitigated Case on Proposed Roads)

Assessment Point			Location	WITH PROJECT													
				Existing Road in 2046 dB(A)	Other Roads in 2046 dB(A)[1]	New Roads[2]					Overall Noise Level in 2046 dB(A) [C]	Noise Criteria dB(A)	Exceedance C > Criteria (Y/N)	Check Project Impact Significance		Check Direct Mitigation			At Receiver-end Mitigation Measures Required [4,5] (Y/N)
						PD	DD	LD	EX	TR	New Roads in 2046 dB(A) [3] [B]								
ID	Floor	Floor Level (mPD)				dB (A)								C - A dB(A) [D]	D ≥ 1dB(A)	New Road Contribution dB(A) [E]	New Road Contribution ≥ 1dB(A) E ≥ 1dB(A)	New Road > Criteria B > Criteria	
B3-8-5	3	21.1	B3-8	34.5	0	68.9	58	68.1	0	0	71.7	71.7	70	Y	-	-	37.2	Y	Y	Y
B3-8-5	4	24.3	B3-8	34.3	0	68.9	58.3	67.9	0	0	71.6	71.6	70	Y	-	-	37.3	Y	Y	Y
B3-8-5	5	27.5	B3-8	34.6	0	68.8	58.6	67.6	0	0	71.5	71.5	70	Y	-	-	36.9	Y	Y	Y
B3-8-5	6	30.7	B3-8	34.7	0	68.8	58.9	67.3	0	0	71.3	71.3	70	Y	-	-	36.6	Y	Y	Y
B3-8-5	7	33.9	B3-8	35.2	0	68.7	59	67	0	0	71.2	71.2	70	Y	-	-	36.0	Y	Y	Y
B3-8-5	8	37.1	B3-8	35.7	0	68.6	59.1	66.7	0	0	71.1	71.1	70	Y	-	-	35.4	Y	Y	Y
B3-8-5	9	40.3	B3-8	36.1	0	68.6	59.2	66.4	0	0	70.9	70.9	70	Y	-	-	34.8	Y	Y	Y
B3-8-5	10	43.5	B3-8	36.4	0	68.5	59.2	66.2	0	0	70.8	70.8	70	Y	-	-	34.4	Y	Y	Y
B3-8-5	11	46.7	B3-8	36.7	0	68.4	59.1	65.9	0	0	70.7	70.7	70	Y	-	-	34.0	Y	Y	Y
B3-8-5	12	49.9	B3-8	37	0	68.3	59.1	65.7	0	0	70.5	70.5	70	Y	-	-	33.5	Y	Y	Y
B3-8-5	13	53.1	B3-8	37.2	0	68.3	59	65.4	0	0	70.4	70.4	70	N	-	-	33.2	Y	N	N
B3-8-5	14	56.3	B3-8	37.4	0	68.2	59	65.2	0	0	70.3	70.3	70	N	-	-	32.9	Y	N	N
B3-8-5	15	59.5	B3-8	37.6	0	68.1	58.9	65	0	0	70.2	70.2	70	N	-	-	32.6	Y	N	N
B3-8-5	16	62.7	B3-8	37.7	0	68	58.8	64.8	0	0	70.1	70.1	70	N	-	-	32.4	Y	N	N
B3-8-6	1	14.7	B3-8	41.1	0	34.7	0	65.5	0	0	65.5	65.5	70	N	-	-	24.4	Y	N	N
B3-8-6	2	17.9	B3-8	41.1	0	35	0	65.4	0	0	65.4	65.4	70	N	-	-	24.3	Y	N	N
B3-8-6	3	21.1	B3-8	41.1	0	35.4	0	65.2	0	0	65.2	65.2	70	N	-	-	24.1	Y	N	N
B3-8-6	4	24.3	B3-8	41.1	0	35.9	0	65.1	0	0	65.1	65.1	70	N	-	-	24.0	Y	N	N
B3-8-6	5	27.5	B3-8	41.1	0	36.3	0	64.9	0	0	64.9	64.9	70	N	-	-	23.8	Y	N	N
B3-8-6	6	30.7	B3-8	41	0	36.8	0	64.7	0	0	64.7	64.7	70	N	-	-	23.7	Y	N	N
B3-8-6	7	33.9	B3-8	41	0	37.2	0	64.5	0	0	64.5	64.5	70	N	-	-	23.5	Y	N	N
B3-8-6	8	37.1	B3-8	41	0	37.7	0	64.3	0	0	64.3	64.3	70	N	-	-	23.3	Y	N	N
B3-8-6	9	40.3	B3-8	41	0	38.2	0	64.1	0	0	64.1	64.2	70	N	-	-	23.2	Y	N	N
B3-8-6	10	43.5	B3-8	41	0	38.8	0	64	0	0	64	64	70	N	-	-	23.0	Y	N	N
B3-8-6	11	46.7	B3-8	41	0	39.2	0	63.8	0	0	63.8	63.8	70	N	-	-	22.8	Y	N	N
B3-8-6	12	49.9	B3-8	41	0	39.8	0	63.6	0	0	63.6	63.6	70	N	-	-	22.6	Y	N	N
B3-8-6	13	53.1	B3-8	41	0	40.4	0	63.4	0	0	63.4	63.4	70	N	-	-	22.4	Y	N	N
B3-8-6	14	56.3	B3-8	41	0	41	0	63.2	0	0	63.2	63.2	70	N	-	-	22.2	Y	N	N
B3-8-6	15	59.5	B3-8	40.9	0	41.7	0	63	0	0	63	63.1	70	N	-	-	22.2	Y	N	N
B3-8-6	16	62.7	B3-8	40.9	0	42.5	0	62.8	0	0	62.9	62.9	70	N	-	-	22.0	Y	N	N

Notes:

[1] Other Roads refer to planned road projects carried out by others such as Development of Lok Ma Chau Loop, Liantang / Heung Yuen Wai Boundary Control Point and Associated Works, Widening of Tolo Highway / Fanling Highway etc.

[2] PD - Primary Distributor Road; DD - District Distributor Road; LD - Local Distributor Road; EX - Expressway; TR - Trunk Roads.

[3] New Roads refer to the proposed road networks including planned internal roads within PC/TKL NDA and modification of connecting roads to NDA.

[4] For landuse planned under NDA project, both at source and at receiver-end noise mitigation measures are required to mitigate the noise level to within noise criteria.

[5] For existing and planned NSRs outside and within the non-development area of NDA, Direct Mitigation Measures will be required when "With Project Overall Noise Level exceeds Noise Criteria" AND, either "With Project - Without Project Overall Noise Level ≥ 1 dB(A)" or "New Roads exceeds Noise Criteria" or "New Roads Contribution ≥ 1 dB(A)".

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Appendix 3.2-2
Details of Road Traffic Noise Impacts on NSRs (Kindergartens)
at Year 2046

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NSR ID	No. of floors	First Assessment Level, mPD	Range of Predicted Road Traffic Noise Level, L_{10} (1-hr) dB(A)	Compliance with the Standard of L_{10} (1-hr) 65 dB(A) (Y/N)
A1 (KTN NDA Area 12)				
A3-3a-k1	2	27.7	61.9	N
A3-3a-k2	2	27.7	59.2 - 59.3	N
A3-3a-k3	2	27.7	57.4	N
A3-3a-k4	2	27.7	55.3	N
A3-3a-k5	2	27.7	60.6 - 60.8	N
A3-3a-k6	2	27.7	48.9 - 49	N
A3-3a-k7	2	27.7	60.8	N
A3-3a-k8	2	27.7	62.3	N
A3-3a-k9	2	27.7	56.3 - 56.4	N
A3-3a-k10	2	27.7	59.2 - 59.3	N
A3-3a-k11	2	27.7	49.0	N
A3-3a-k12	2	27.7	43.5 - 43.7	N
A3-3a-k13	2	34.2	49.6	N
A3-3a-k14	2	34.2	65.7 - 65.9	Y
A3-3a-k15	2	34.2	72.8 - 73.4	Y
A3-3a-k16	2	34.2	73.7 - 74.4	Y
A3-3a-k17	2	34.2	74 - 74.7	Y
A3-3a-k18	2	34.2	69.3 - 69.4	Y
A3-3a-k19	2	34.2	65.9 - 66.1	Y
A3-3a-k20	2	34.2	53.7 - 53.8	N
A3-3a-k21	5	21.2	65.8 - 66.5	Y
A3-3a-k22	5	21.2	69.1 - 70.9	Y
A3-3a-k23	5	21.2	69.2 - 71.7	Y
A3-3a-k24	5	21.2	61.6 - 61.7	N
A2 (KTN NDA Area 13)				
A3-3b-k1	5	18.7	68 - 68.9	Y
A3-3b-k2	5	18.7	56.1 - 56.3	N
A3-3b-k3	5	18.7	57.8 - 58	N
A3-3b-k4	5	18.7	67 - 67.8	Y
A3-3b-k5	2	25.2	65.1 - 65.2	N
A3-3b-k6	2	25.2	53.4	N
A3-3b-k7	2	25.2	58.3	N
A3-3b-k8	2	25.2	60.7	N
A3-3b-k9	2	25.2	69.7 - 69.8	Y
A3-3b-k10	2	25.2	72.6 - 73	Y
A3-3b-k11	2	25.2	62.2 - 62.3	N
A3-3b-k12	2	25.2	64.9 - 65	N
A3-3b-k13	2	25.2	62.7 - 62.8	N
A3-3b-k14	2	25.2	73.6 - 74.2	Y
A3-3b-k15	2	25.2	65.1 - 65.2	N
A3-3b-k16	2	25.2	55.4	N
B2 (KTN NDA Area 20)				
A2-5-k1	2	15.2	74.1 - 74.3	Y
A2-5-k2	2	15.2	61.1	N
A2-5-k3	2	15.2	52.5	N
A2-5-k4	2	15.2	46.2 - 46.4	N
A2-5-k5	2	15.2	60.3	N
A2-5-k6	2	15.2	67.1	Y

NSR ID	No. of floors	First Assessment Level, mPD	Range of Predicted Road Traffic Noise Level, L_{10} (1-hr) dB(A)	Compliance with the Standard of L_{10} (1-hr) 65 dB(A) (Y/N)
A4 (KTN NDA Area 21)				
A2-7-k1	5	11.2	72 - 74	Y
A2-7-k2	5	11.2	66.8 - 67.5	Y
A2-7-k3	5	11.2	41 - 41.3	N
A2-7-k4	5	11.2	63.9 - 64.2	N
A2-7-k5	2	17.2	56.8	N
A2-7-k6	2	17.2	52.3 - 53.1	N
A2-7-k7	2	14.7	34.2 - 35.2	N
A2-7-k8	2	17.2	56.3 - 56.4	N
A2-7-k9	2	17.2	33.9 - 35.8	N
A2-7-k10	2	17.2	42.9 - 44	N
A2-7-k11	2	17.2	53.4	N
A2-7-k12	2	17.2	45.4 - 45.7	N
A2-7-k13	2	17.7	54.9	N
A2-7-k14	2	17.7	35.8 - 36.7	N
A2-7-k15	2	17.7	52.8	N
A2-7-k16	2	17.7	40.8 - 40.9	N
A2-7-k17	2	17.7	64.5 - 64.6	N
A2-7-k18	2	17.7	25.6	N
A2-7-k19	2	17.7	60.9 - 61	N
A2-7-k20	2	17.7	72.1 - 72.4	Y
B2 (KTN NDA Area 25)				
A1-6-k1	1	24.2	32.6	N
A1-6-k2	1	24.2	51.4	N
A1-6-k3	1	24.2	42.0	N
A1-6-k4	1	24.2	38.0	N
A1-6-k5	1	24.2	47.5	N
A1-6-k6	1	24.2	49.9	N
A1-6-k7	1	24.2	38.9	N
A1-6-k8	1	24.2	51.5	N
A1-6-k9	1	24.2	57.0	N
A1-6-k10	1	24.2	50.3	N
A1-6-k11	1	24.2	43.3	N
A1-6-k12	1	24.2	43.0	N
A1-6-k13	1	24.2	31.8	N
A1-6-k14	1	24.2	62.2	N
A1-6-k15	1	24.2	72.8	Y
A1-6-k16	1	24.2	61.9	N
A1-6-k17	1	24.2	38.2	N
A1-6-k18	1	24.2	61.8	N
A1-6-k19	1	24.2	71.7	Y
A1-6-k20	1	24.2	64.5	N
A1-6-k21	1	24.2	21.1	N
A5 (KTN NDA Area 26)				
A1-8-k1	2	18.7	60.7	N
A1-8-k2	2	18.7	66.8 - 66.9	Y
A1-8-k3	2	18.7	72.9 - 73.2	Y
A1-8-k4	2	18.7	45 - 45.1	N
A1-8-k5	2	18.7	46.8 - 47	N
A1-8-k6	2	18.7	58.2 - 59.1	N
A1-8-k7	2	18.7	39.6 - 39.7	N
KTN NDA Area 29				
B2-7-k1	1	17.7	69.7	Y
B2-7-k2	1	17.7	64.7	N
B2-7-k3	1	17.7	57.5	N
B2-7-k4	1	17.7	61.7	N

Title: Detailed Calculation of Road Traffic Noise on Direct Mitigation Measures
Scenario: KTN Kindergarten (Mitigated Case on Proposed Roads)

Assessment Point			Location	Existing Road in 2046, dB(A)	Other Roads in 2046, dB(A)[1]	New Roads[2]						Overall Noise Level in 2046, dB(A) [C]	Noise Criteria, dB(A)	Exceedance [C] > Criteria (Y/N) [4]
						PD	DD	LD	EX	TR	New Roads in 2046, dB(A)[3] [B]			
ID	Floor	Assessment Level (mPD)				dB (A)								
A1 (KTN NDA Area 12)														
A3-3a-k1	1	27.7	A3-3a Kindergarten	8	43.1	39.6	58.6	59.1	0	0	61.9	61.9	65	N
A3-3a-k1	2	32.7	A3-3a Kindergarten	8	43.6	39.6	58.6	58.9	0	0	61.8	61.9	65	N
A3-3a-k2	1	27.7	A3-3a Kindergarten	7.9	0	19.3	46.5	59	0	0	59.3	59.3	65	N
A3-3a-k2	2	32.7	A3-3a Kindergarten	7.9	0	19.3	46.5	59	0	0	59.2	59.2	65	N
A3-3a-k3	1	27.7	A3-3a Kindergarten	0	0	13.7	23.3	57.4	0	0	57.4	57.4	65	N
A3-3a-k3	2	32.7	A3-3a Kindergarten	0	0	13.7	23.6	57.4	0	0	57.4	57.4	65	N
A3-3a-k4	1	27.7	A3-3a Kindergarten	0	0	0	33.3	55.3	0	0	55.3	55.3	65	N
A3-3a-k4	2	32.7	A3-3a Kindergarten	0	0	0	33.5	55.2	0	0	55.3	55.3	65	N
A3-3a-k5	1	27.7	A3-3a Kindergarten	0	0	27.1	37.3	60.7	0	0	60.8	60.8	65	N
A3-3a-k5	2	32.7	A3-3a Kindergarten	0	0	28	37.9	60.6	0	0	60.6	60.6	65	N
A3-3a-k6	1	27.7	A3-3a Kindergarten	0	0	24.9	48.8	31.8	0	0	48.9	48.9	65	N
A3-3a-k6	2	32.7	A3-3a Kindergarten	0	0	27.8	48.8	32.6	0	0	49	49	65	N
A3-3a-k7	1	27.7	A3-3a Kindergarten	0	43.3	49.5	60.4	0	0	0	60.8	60.8	65	N
A3-3a-k7	2	32.7	A3-3a Kindergarten	0	43.4	49.5	60.4	0	0	0	60.8	60.8	65	N
A3-3a-k8	1	27.7	A3-3a Kindergarten	0	44.1	45.7	62.2	0	0	0	62.3	62.3	65	N
A3-3a-k8	2	32.7	A3-3a Kindergarten	0	44.2	45.7	62.2	0	0	0	62.3	62.3	65	N
A3-3a-k9	1	27.7	A3-3a Kindergarten	0	6.5	0	26.7	56.4	0	0	56.4	56.4	65	N
A3-3a-k9	2	32.7	A3-3a Kindergarten	0	7.5	0	26.7	56.3	0	0	56.3	56.3	65	N
A3-3a-k10	1	27.7	A3-3a Kindergarten	0	0	0	58.4	52.1	0	0	59.3	59.3	65	N
A3-3a-k10	2	32.7	A3-3a Kindergarten	0	0	0	58.3	52.1	0	0	59.2	59.2	65	N
A3-3a-k11	1	27.7	A3-3a Kindergarten	0	0	15.1	41.2	48.3	0	0	49	49	65	N
A3-3a-k11	2	32.7	A3-3a Kindergarten	0	0	15.1	41.2	48.3	0	0	49	49	65	N
A3-3a-k12	1	27.7	A3-3a Kindergarten	0	3.4	10.7	43.2	32.2	0	0	43.5	43.5	65	N
A3-3a-k12	2	32.7	A3-3a Kindergarten	0	3.4	10.7	43.3	33.2	0	0	43.7	43.7	65	N
A3-3a-k13	1	34.2	A3-3a Kindergarten	0	0	0	24.8	49.6	0	0	49.6	49.6	65	N
A3-3a-k13	2	39.2	A3-3a Kindergarten	0	0	0	24.7	49.6	0	0	49.6	49.6	65	N
A3-3a-k14	1	34.2	A3-3a Kindergarten	0	0	0	65.8	46.5	0	0	65.9	65.9	65	Y
A3-3a-k14	2	39.2	A3-3a Kindergarten	0	0	0	65.6	46.5	0	0	65.7	65.7	65	Y
A3-3a-k15	1	34.2	A3-3a Kindergarten	0	0	19.8	73.4	39.4	0	0	73.4	73.4	65	Y
A3-3a-k15	2	39.2	A3-3a Kindergarten	0	0	19.8	72.8	39.4	0	0	72.8	72.8	65	Y
A3-3a-k16	1	34.2	A3-3a Kindergarten	0	0	20.2	74.4	41.4	0	0	74.4	74.4	65	Y
A3-3a-k16	2	39.2	A3-3a Kindergarten	0	0	20.2	73.7	41.4	0	0	73.7	73.7	65	Y
A3-3a-k17	1	34.2	A3-3a Kindergarten	9	0	52.3	74.6	47.9	0	0	74.7	74.7	65	Y
A3-3a-k17	2	39.2	A3-3a Kindergarten	9	0	52.3	74	47.8	0	0	74	74	65	Y
A3-3a-k18	1	34.2	A3-3a Kindergarten	0	0	46.4	67.7	64.4	0	0	69.4	69.4	65	Y
A3-3a-k18	2	39.2	A3-3a Kindergarten	0	0	48	67.5	64.3	0	0	69.3	69.3	65	Y
A3-3a-k19	1	34.2	A3-3a Kindergarten	0	3.9	0	53.4	65.8	0	0	66.1	66.1	65	Y
A3-3a-k19	2	39.2	A3-3a Kindergarten	0	3.9	0	53.4	65.7	0	0	65.9	65.9	65	Y
A3-3a-k20	1	34.2	A3-3a Kindergarten	0	8.6	0	26.1	53.7	0	0	53.8	53.8	65	N
A3-3a-k20	2	39.2	A3-3a Kindergarten	0	8.7	0	27.8	53.7	0	0	53.7	53.7	65	N
A3-3a-k21	1	21.2	A3-3a Kindergarten	0	0	31.2	51.1	66.3	0	0	66.5	66.5	65	Y
A3-3a-k21	2	26.2	A3-3a Kindergarten	0	0	32.3	51.1	66.3	0	0	66.4	66.4	65	Y
A3-3a-k21	3	31.2	A3-3a Kindergarten	0	0	33.4	51.1	66.1	0	0	66.3	66.3	65	Y
A3-3a-k21	4	36.2	A3-3a Kindergarten	0	0	34.6	51.2	65.9	0	0	66.1	66.1	65	Y
A3-3a-k21	5	41.2	A3-3a Kindergarten	0	0	35.8	51.2	65.7	0	0	65.8	65.8	65	Y
A3-3a-k22	1	21.2	A3-3a Kindergarten	0	7.7	30.2	48.1	70.9	0	0	70.9	70.9	65	Y
A3-3a-k22	2	26.2	A3-3a Kindergarten	0	8	31.4	48.1	70.7	0	0	70.7	70.7	65	Y
A3-3a-k22	3	31.2	A3-3a Kindergarten	0	8	32.6	48.2	70.2	0	0	70.2	70.2	65	Y
A3-3a-k22	4	36.2	A3-3a Kindergarten	0	8.1	33.8	48.3	69.6	0	0	69.6	69.6	65	Y
A3-3a-k22	5	41.2	A3-3a Kindergarten	0	8.1	35	48.6	69	0	0	69.1	69.1	65	Y
A3-3a-k23	1	21.2	A3-3a Kindergarten	0	0	28.6	55.1	71.7	0	0	71.7	71.7	65	Y
A3-3a-k23	2	26.2	A3-3a Kindergarten	0	0	30.1	55.1	71.4	0	0	71.5	71.5	65	Y
A3-3a-k23	3	31.2	A3-3a Kindergarten	0	0	31.7	55.1	70.6	0	0	70.7	70.7	65	Y
A3-3a-k23	4	36.2	A3-3a Kindergarten	0	0	33.2	55.1	69.8	0	0	69.9	69.9	65	Y
A3-3a-k23	5	41.2	A3-3a Kindergarten	0	0	34.7	55.1	69	0	0	69.2	69.2	65	Y
A3-3a-k24	1	21.2	A3-3a Kindergarten	0	39.4	28.2	59.3	57.8	0	0	61.7	61.7	65	N
A3-3a-k24	2	26.2	A3-3a Kindergarten	0	39.5	30	59.3	57.8	0	0	61.7	61.7	65	N

Title: Detailed Calculation of Road Traffic Noise on Direct Mitigation Measures
Scenario: KTN Kindergarten (Mitigated Case on Proposed Roads)

Assessment Point			Location	Existing Road in 2046, dB(A)	Other Roads in 2046, dB(A)[1]	New Roads[2]					Overall Noise Level in 2046, dB(A) [C]	Noise Criteria, dB(A)	Exceedance [C] > Criteria (Y/N) [4]
						PD	DD	LD	EX	TR	New Roads in 2046, dB(A)[3] [B]			
ID	Floor	Assessment Level (mPD)				dB (A)							
A3-3a-k24	3	31.2	A3-3a Kindergarten	0	39.5	32	59.4	57.7	0	0	61.6	61.7	65	N
A3-3a-k24	4	36.2	A3-3a Kindergarten	0	39.6	34.2	59.4	57.6	0	0	61.6	61.6	65	N
A3-3a-k24	5	41.2	A3-3a Kindergarten	0	39.7	36.5	59.5	57.4	0	0	61.6	61.6	65	N
A2 (KTN NDA Area 13)														
A3-3b-k1	1	18.7	A3-3b Kindergarten	0	0	22.4	55.9	68.7	0	0	68.9	68.9	65	Y
A3-3b-k1	2	23.7	A3-3b Kindergarten	0	0	22.4	55.9	68.6	0	0	68.8	68.8	65	Y
A3-3b-k1	3	28.7	A3-3b Kindergarten	0	0	22.4	55.9	68.4	0	0	68.6	68.6	65	Y
A3-3b-k1	4	33.7	A3-3b Kindergarten	0	0	22.4	55.9	68.1	0	0	68.3	68.3	65	Y
A3-3b-k1	5	38.7	A3-3b Kindergarten	0	0	22.4	55.9	67.7	0	0	68	68	65	Y
A3-3b-k2	1	18.7	A3-3b Kindergarten	0	0	17.4	45.5	55.9	0	0	56.3	56.3	65	N
A3-3b-k2	2	23.7	A3-3b Kindergarten	0	0	17.4	45.6	55.9	0	0	56.3	56.3	65	N
A3-3b-k2	3	28.7	A3-3b Kindergarten	0	0	17.4	45.6	55.8	0	0	56.2	56.2	65	N
A3-3b-k2	4	33.7	A3-3b Kindergarten	0	0	17.4	45.7	55.7	0	0	56.2	56.2	65	N
A3-3b-k2	5	38.7	A3-3b Kindergarten	0	0	17.4	45.9	55.7	0	0	56.1	56.1	65	N
A3-3b-k3	1	18.7	A3-3b Kindergarten	0	0	0	55.9	53.9	0	0	58	58	65	N
A3-3b-k3	2	23.7	A3-3b Kindergarten	0	0	0	55.9	53.9	0	0	58	58	65	N
A3-3b-k3	3	28.7	A3-3b Kindergarten	0	0	0	55.9	53.8	0	0	58	58	65	N
A3-3b-k3	4	33.7	A3-3b Kindergarten	0	0	0	55.9	53.6	0	0	57.9	57.9	65	N
A3-3b-k3	5	38.7	A3-3b Kindergarten	0	0	0	55.9	53.4	0	0	57.8	57.8	65	N
A3-3b-k4	1	18.7	A3-3b Kindergarten	0	0	20.6	54.5	67.6	0	0	67.8	67.8	65	Y
A3-3b-k4	2	23.7	A3-3b Kindergarten	0	0	20.6	54.5	67.6	0	0	67.8	67.8	65	Y
A3-3b-k4	3	28.7	A3-3b Kindergarten	0	0	20.6	54.5	67.4	0	0	67.6	67.6	65	Y
A3-3b-k4	4	33.7	A3-3b Kindergarten	0	0	20.6	54.5	67.1	0	0	67.4	67.4	65	Y
A3-3b-k4	5	38.7	A3-3b Kindergarten	0	0	20.6	54.5	66.8	0	0	67	67	65	Y
A3-3b-k5	1	25.2	A3-3b Kindergarten	0	0	23	56.8	64.5	0	0	65.2	65.2	65	N
A3-3b-k5	2	30.2	A3-3b Kindergarten	0	0	23	56.8	64.4	0	0	65.1	65.1	65	N
A3-3b-k6	1	25.2	A3-3b Kindergarten	0	0	16.1	48.2	51.8	0	0	53.4	53.4	65	N
A3-3b-k6	2	30.2	A3-3b Kindergarten	0	0	16.1	48.3	51.8	0	0	53.4	53.4	65	N
A3-3b-k7	1	25.2	A3-3b Kindergarten	0	0	13.6	57.9	47.2	0	0	58.3	58.3	65	N
A3-3b-k7	2	30.2	A3-3b Kindergarten	0	0	13.6	57.9	47.1	0	0	58.3	58.3	65	N
A3-3b-k8	1	25.2	A3-3b Kindergarten	0	0	18.3	29.8	60.7	0	0	60.7	60.7	65	N
A3-3b-k8	2	30.2	A3-3b Kindergarten	0	0	18.3	30.6	60.7	0	0	60.7	60.7	65	N
A3-3b-k9	1	25.2	A3-3b Kindergarten	0	0	25.7	68.2	64.8	0	0	69.8	69.8	65	Y
A3-3b-k9	2	30.2	A3-3b Kindergarten	0	0	25.8	68.1	64.6	0	0	69.7	69.7	65	Y
A3-3b-k10	1	25.2	A3-3b Kindergarten	0	0	11.3	73	43.6	0	0	73	73	65	Y
A3-3b-k10	2	30.2	A3-3b Kindergarten	0	0	11.3	72.6	43.5	0	0	72.6	72.6	65	Y
A3-3b-k11	1	25.2	A3-3b Kindergarten	0	0	16.8	62	50.8	0	0	62.3	62.3	65	N
A3-3b-k11	2	30.2	A3-3b Kindergarten	0	0	16.8	61.9	50.8	0	0	62.2	62.2	65	N
A3-3b-k12	1	25.2	A3-3b Kindergarten	0	0	19.8	47.4	64.9	0	0	65	65	65	N
A3-3b-k12	2	30.2	A3-3b Kindergarten	0	0	19.8	47.3	64.8	0	0	64.9	64.9	65	N
A3-3b-k13	1	25.2	A3-3b Kindergarten	0	0	0	62	54.9	0	0	62.8	62.8	65	N
A3-3b-k13	2	30.2	A3-3b Kindergarten	0	0	0	61.9	54.8	0	0	62.7	62.7	65	N
A3-3b-k14	1	25.2	A3-3b Kindergarten	0	0	17.8	74.2	39.5	0	0	74.2	74.2	65	Y
A3-3b-k14	2	30.2	A3-3b Kindergarten	0	0	17.8	73.6	39.5	0	0	73.6	73.6	65	Y
A3-3b-k15	1	25.2	A3-3b Kindergarten	0	0	17	65.2	37.9	0	0	65.2	65.2	65	N
A3-3b-k15	2	30.2	A3-3b Kindergarten	0	0	17	65.1	37.9	0	0	65.1	65.1	65	N
A3-3b-k16	1	25.2	A3-3b Kindergarten	0	0	0	33.2	55.4	0	0	55.4	55.4	65	N
A3-3b-k16	2	30.2	A3-3b Kindergarten	0	0	0	33.2	55.4	0	0	55.4	55.4	65	N
B2 (KTN NDA Area 20)														
A2-5-k1	1	15.2	A2-5 Kindergarten	0	0	0	74.3	47.6	0	0	74.3	74.3	65	Y
A2-5-k1	2	20.2	A2-5 Kindergarten	0	0	0	74.1	47.6	0	0	74.1	74.1	65	Y
A2-5-k2	1	15.2	A2-5 Kindergarten	0	0	0	61	42.6	0	0	61.1	61.1	65	N
A2-5-k2	2	20.2	A2-5 Kindergarten	0	0	0	61	42.6	0	0	61.1	61.1	65	N
A2-5-k3	1	15.2	A2-5 Kindergarten	0	0	0	52.3	37.1	0	0	52.5	52.5	65	N
A2-5-k3	2	20.2	A2-5 Kindergarten	0	0	0	52.3	37.1	0	0	52.5	52.5	65	N
A2-5-k4	1	15.2	A2-5 Kindergarten	0	0	0	27.8	46.1	0	0	46.2	46.2	65	N
A2-5-k4	2	20.2	A2-5 Kindergarten	0	0	0	27.9	46.3	0	0	46.4	46.4	65	N
A2-5-k5	1	15.2	A2-5 Kindergarten	0	0	0	60.3	14.6	0	0	60.3	60.3	65	N

Title: Detailed Calculation of Road Traffic Noise on Direct Mitigation Measures
Scenario: KTN Kindergarten (Mitigated Case on Proposed Roads)

Assessment Point			Location	Existing Road in 2046, dB(A)	Other Roads in 2046, dB(A)[1]	New Roads[2]						Overall Noise Level in 2046, dB(A) [C]	Noise Criteria, dB(A)	Exceedance [C] > Criteria (Y/N) [4]
						PD	DD	LD	EX	TR	New Roads in 2046, dB(A)[3] [B]			
ID	Floor	Assessment Level (mPD)				dB (A)								
A2-5-k5	2	20.2	A2-5 Kindergarten	0	0	0	60.3	14.9	0	0	60.3	60.3	65	N
A2-5-k6	1	15.2	A2-5 Kindergarten	0	0	18.1	67.1	22.7	0	0	67.1	67.1	65	Y
A2-5-k6	2	20.2	A2-5 Kindergarten	0	0	18.2	67.1	22.8	0	0	67.1	67.1	65	Y
A4 (KTN NDA Area 21)														
A2-7-k1	1	11.2	A2-7 Kindergarten	0	0	0	73.8	62	0	0	74	74	65	Y
A2-7-k1	2	16.2	A2-7 Kindergarten	0	0	0	73.5	61.9	0	0	73.8	73.8	65	Y
A2-7-k1	3	21.2	A2-7 Kindergarten	0	0	0	72.9	61.8	0	0	73.2	73.2	65	Y
A2-7-k1	4	26.2	A2-7 Kindergarten	0	0	0	72.2	61.7	0	0	72.6	72.6	65	Y
A2-7-k1	5	31.2	A2-7 Kindergarten	0	0	0	71.6	61.5	0	0	72	72	65	Y
A2-7-k2	1	11.2	A2-7 Kindergarten	6.2	0	41.5	65.4	63.2	0	0	67.5	67.5	65	Y
A2-7-k2	2	16.2	A2-7 Kindergarten	8.4	0	41.5	65.4	62.9	0	0	67.4	67.4	65	Y
A2-7-k2	3	21.2	A2-7 Kindergarten	10.8	0	41.6	65.4	62.5	0	0	67.2	67.2	65	Y
A2-7-k2	4	26.2	A2-7 Kindergarten	13.6	0	41.6	65.3	61.9	0	0	67	67	65	Y
A2-7-k2	5	31.2	A2-7 Kindergarten	15.5	0	41.7	65.3	61.4	0	0	66.8	66.8	65	Y
A2-7-k3	1	11.2	A2-7 Kindergarten	0	0	17.6	17.5	41.3	0	0	41.3	41.3	65	N
A2-7-k3	2	16.2	A2-7 Kindergarten	0	0	17.6	17.4	41.3	0	0	41.3	41.3	65	N
A2-7-k3	3	21.2	A2-7 Kindergarten	0	0	17.6	16.9	41.2	0	0	41.3	41.3	65	N
A2-7-k3	4	26.2	A2-7 Kindergarten	0	0	17.6	16.8	41.1	0	0	41.2	41.2	65	N
A2-7-k3	5	31.2	A2-7 Kindergarten	0	0	17.6	17.1	41	0	0	41	41	65	N
A2-7-k4	1	11.2	A2-7 Kindergarten	0	0	0	64	50.5	0	0	64.2	64.2	65	N
A2-7-k4	2	16.2	A2-7 Kindergarten	0	0	0	64	50.5	0	0	64.2	64.2	65	N
A2-7-k4	3	21.2	A2-7 Kindergarten	0	0	0	64	50.5	0	0	64.2	64.2	65	N
A2-7-k4	4	26.2	A2-7 Kindergarten	0	0	0	63.9	50.4	0	0	64.1	64.1	65	N
A2-7-k4	5	31.2	A2-7 Kindergarten	0	0	0	63.7	50.4	0	0	63.9	63.9	65	N
A2-7-k5	1	17.2	A2-7 Kindergarten	11.4	0	47.5	50.9	54.8	0	0	56.8	56.8	65	N
A2-7-k5	2	22.2	A2-7 Kindergarten	11.4	0	47.5	50.9	54.7	0	0	56.8	56.8	65	N
A2-7-k6	1	17.2	A2-7 Kindergarten	0	0	50.1	21.6	48.4	0	0	52.3	52.3	65	N
A2-7-k6	2	22.2	A2-7 Kindergarten	0	0	51	21.8	48.9	0	0	53.1	53.1	65	N
A2-7-k7	1	14.7	A2-7 Kindergarten	0	0	0	33.6	25.4	0	0	34.2	34.2	65	N
A2-7-k7	2	19.7	A2-7 Kindergarten	0	0	0	34.4	27.2	0	0	35.2	35.2	65	N
A2-7-k8	1	17.2	A2-7 Kindergarten	8.4	0	0	51.7	54.7	0	0	56.4	56.4	65	N
A2-7-k8	2	22.2	A2-7 Kindergarten	8.6	0	0	51.8	54.5	0	0	56.3	56.3	65	N
A2-7-k9	1	17.2	A2-7 Kindergarten	7.1	0	18	33	26.3	0	0	33.9	33.9	65	N
A2-7-k9	2	22.2	A2-7 Kindergarten	7.6	0	18	35	28	0	0	35.8	35.8	65	N
A2-7-k10	1	17.2	A2-7 Kindergarten	0	0	0	27.6	42.7	0	0	42.9	42.9	65	N
A2-7-k10	2	22.2	A2-7 Kindergarten	0	0	0	27.7	43.9	0	0	44	44	65	N
A2-7-k11	1	17.2	A2-7 Kindergarten	0	0	0	53.4	31.9	0	0	53.4	53.4	65	N
A2-7-k11	2	22.2	A2-7 Kindergarten	0	0	0	53.4	32.3	0	0	53.4	53.4	65	N
A2-7-k12	1	17.2	A2-7 Kindergarten	0	0	0	36.6	44.8	0	0	45.4	45.4	65	N
A2-7-k12	2	22.2	A2-7 Kindergarten	0	0	0	38.1	44.9	0	0	45.7	45.7	65	N
A2-7-k13	1	17.7	A2-7 Kindergarten	0	0	0	53.9	48.2	0	0	54.9	54.9	65	N
A2-7-k13	2	22.7	A2-7 Kindergarten	0	0	0	53.9	48.2	0	0	54.9	54.9	65	N
A2-7-k14	1	17.7	A2-7 Kindergarten	0	0	0	27.5	35.1	0	0	35.8	35.8	65	N
A2-7-k14	2	22.7	A2-7 Kindergarten	0	0	0	27.7	36.2	0	0	36.7	36.7	65	N
A2-7-k15	1	17.7	A2-7 Kindergarten	0	0	0	52.5	40.7	0	0	52.8	52.8	65	N
A2-7-k15	2	22.7	A2-7 Kindergarten	0	0	0	52.6	40.7	0	0	52.8	52.8	65	N
A2-7-k16	1	17.7	A2-7 Kindergarten	0	0	0	37	38.5	0	0	40.8	40.8	65	N
A2-7-k16	2	22.7	A2-7 Kindergarten	0	0	0	37.2	38.5	0	0	40.9	40.9	65	N
A2-7-k17	1	17.7	A2-7 Kindergarten	0	0	10.4	63.9	56	0	0	64.6	64.6	65	N
A2-7-k17	2	22.7	A2-7 Kindergarten	0	0	10.7	63.8	56	0	0	64.5	64.5	65	N
A2-7-k18	1	17.7	A2-7 Kindergarten	0	0	12.9	17	24.6	0	0	25.6	25.6	65	N
A2-7-k18	2	22.7	A2-7 Kindergarten	0	0	12.9	16.9	24.7	0	0	25.6	25.6	65	N
A2-7-k19	1	17.7	A2-7 Kindergarten	0	0	0	61	27.2	0	0	61	61	65	N
A2-7-k19	2	22.7	A2-7 Kindergarten	0	0	0	60.9	27.4	0	0	60.9	60.9	65	N
A2-7-k20	1	17.7	A2-7 Kindergarten	0	0	0	72.3	56	0	0	72.4	72.4	65	Y
A2-7-k20	2	22.7	A2-7 Kindergarten	0	0	0	72	56	0	0	72.1	72.1	65	Y

Title: Detailed Calculation of Road Traffic Noise on Direct Mitigation Measures
Scenario: KTN Kindergarten (Mitigated Case on Proposed Roads)

Assessment Point			Location	Existing Road in 2046, dB(A)	Other Roads in 2046, dB(A)[1]	New Roads[2]					New Roads in 2046, dB(A)[3] [B]	Overall Noise Level in 2046, dB(A) [C]	Noise Criteria, dB(A)	Exceedance [C] > Criteria (Y/N) [4]
						PD	DD	LD	EX	TR				
ID	Floor	Assessment Level (mPD)				dB (A)								
B2 (KTN NDA Area 25)														
A1-6-k1	1	26.2	A1-2 Kindergarten	31.3	0	44.4	55.8	0	39.4	0	56.2	56.2	65	N
A1-6-k2	1	26.2	A1-2 Kindergarten	31.2	0	58	52.9	0	38.9	0	59.2	59.2	65	N
A1-6-k3	1	26.2	A1-2 Kindergarten	31.1	0	58.6	50.4	0	39	0	59.3	59.3	65	N
A1-6-k4	1	26.2	A1-2 Kindergarten	0	0	59.2	29.3	17.8	0	0	59.2	59.2	65	N
A1-6-k5	1	26.2	A1-2 Kindergarten	0	0	58.4	28.4	17.9	0	0	58.4	58.4	65	N
A1-6-k6	1	26.2	A1-2 Kindergarten	0	0	57.8	20.3	18	0	0	57.8	57.8	65	N
A1-6-k7	1	26.2	A1-2 Kindergarten	0	0	57.2	18.6	19.4	0	0	57.2	57.2	65	N
A1-6-k8	1	24.2	A1-6 Kindergarten	0	0	0	31.9	24.1	0	0	32.6	32.6	65	N
A1-6-k9	1	24.2	A1-6 Kindergarten	6.4	0	14.9	51.2	35	30.5	0	51.4	51.4	65	N
A1-6-k10	1	24.2	A1-6 Kindergarten	16.3	0	17.3	36.5	33.5	39.5	0	41.9	42	65	N
A1-6-k11	1	24.2	A1-6 Kindergarten	16.4	0	0	34.6	35	23.5	0	37.9	38	65	N
A1-6-k12	1	24.2	A1-6 Kindergarten	18.8	0	0	34	47.3	21.4	0	47.5	47.5	65	N
A1-6-k13	1	24.2	A1-6 Kindergarten	18.7	0	16.8	33.8	49.7	30.7	0	49.9	49.9	65	N
A1-6-k14	1	24.2	A1-6 Kindergarten	10.7	0	14.3	34.6	35.6	30.9	0	38.9	38.9	65	N
A1-6-k15	1	24.2	A1-6 Kindergarten	16.7	0	6.2	33.4	51.2	37.7	0	51.5	51.5	65	N
A1-6-k16	1	24.2	A1-6 Kindergarten	14.8	0	0	20.4	57	0	0	57	57	65	N
A1-6-k17	1	24.2	A1-6 Kindergarten	0	0	0	50.3	3.3	0	0	50.3	50.3	65	N
A1-6-k18	1	24.2	A1-6 Kindergarten	0	0	0	43.3	0	0	0	43.3	43.3	65	N
A1-6-k19	1	24.2	A1-6 Kindergarten	0	0	0	42.3	34.5	0	0	43	43	65	N
A1-6-k20	1	24.2	A1-6 Kindergarten	0	0	0	31.3	22.4	0	0	31.8	31.8	65	N
A1-6-k21	1	24.2	A1-6 Kindergarten	7.1	0	15.6	62	20.5	48	0	62.2	62.2	65	N
A5 (KTN NDA Area 26)														
A1-8-k1	1	18.7	A1-8 Kindergarten	7.7	0	20.8	60.1	51.9	31.4	0	60.7	60.7	65	N
A1-8-k1	2	23.7	A1-8 Kindergarten	7.9	0	20.9	60	51.9	31.7	0	60.7	60.7	65	N
A1-8-k2	1	18.7	A1-8 Kindergarten	11.6	0	21.7	66.7	46.2	52	0	66.9	66.9	65	Y
A1-8-k2	2	23.7	A1-8 Kindergarten	12.1	0	22.7	66.6	46.2	52.4	0	66.8	66.8	65	Y
A1-8-k3	1	18.7	A1-8 Kindergarten	7.3	0	24	72.9	60.8	47.4	0	73.2	73.2	65	Y
A1-8-k3	2	23.7	A1-8 Kindergarten	7.4	0	25.3	72.6	60.5	48.3	0	72.9	72.9	65	Y
A1-8-k4	1	18.7	A1-8 Kindergarten	0	0	0	42.4	41.6	0	0	45	45	65	N
A1-8-k4	2	23.7	A1-8 Kindergarten	0	0	0	42.4	41.6	0	0	45.1	45.1	65	N
A1-8-k5	1	18.7	A1-8 Kindergarten	6.2	0	18.4	45	38.7	39.5	0	46.8	46.8	65	N
A1-8-k5	2	23.7	A1-8 Kindergarten	6.2	0	18.8	45.1	38.8	39.9	0	47	47	65	N
A1-8-k6	1	18.7	A1-8 Kindergarten	15.1	0	0	58.9	45.3	10.8	0	59.1	59.1	65	N
A1-8-k6	2	23.7	A1-8 Kindergarten	15.2	0	0	58	45.3	10.8	0	58.2	58.2	65	N
A1-8-k7	1	18.7	A1-8 Kindergarten	0	0	0	31.6	38.9	0	0	39.6	39.6	65	N
A1-8-k7	2	23.7	A1-8 Kindergarten	0	0	0	31.9	38.9	0	0	39.7	39.7	65	N
KTN NDA Area 29														
B2-7-k1	1	17.7	B2-7 Kindergarten	0	0	9.3	56.9	69.5	0	0	69.7	69.7	65	Y
B2-7-k2	1	17.7	B2-7 Kindergarten	32.4	0	10.1	58.9	62.9	54	0	64.7	64.7	65	N
B2-7-k3	1	17.7	B2-7 Kindergarten	35.4	0	23.1	55.7	3.9	52.5	0	57.4	57.5	65	N
B2-7-k4	1	17.7	B2-7 Kindergarten	24.7	0	26.5	51.8	61.2	41.5	0	61.7	61.7	65	N

Notes:

[1] Other Roads refer to planned road projects carried out by others such as Development of Lok Ma Chau Loop, Liantang / Heung Yuen Wai Boundary Control Point and Associated Works, Widening of Tolo Highway/Fanling Highway etc.

[2] PD - Primary Distributor Road; DD - District Distributor Road; LD - Local Distributor Road; EX - Expressway; TR - Trunk Roads.

[3] New Roads refer to the proposed road networks including planned internal roads within PC/TKL NDA and modification of connecting roads to NDA.

[4] During the design of the kindergartens, noise sensitive uses should be located to avoid exceedance as far as practicable.

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Appendix 3.2-3
Details of Road Traffic Noise Impacts on NSRs
(Social Welfare Facilities) at Year 2046

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NSR ID	No. of floors	First Assessment Level,	Range of Predicted Road Traffic Noise Level,	Compliance with the Standard of L_{10} (1-hr) 70 dB(A)
		mPD	L_{10} (1-hr) dB(A)	(Y/N)
A1 (KTN NDA AREA 12				
A3-3a-s1	2	27.7	61.9	N
A3-3a-s2	2	27.7	59.3	N
A3-3a-s3	2	27.7	57.4	N
A3-3a-s4	2	27.7	55.3	N
A3-3a-s5	2	27.7	60.7 - 60.8	N
A3-3a-s6	2	27.7	48.9	N
A3-3a-s7	2	27.7	60.8	N
A3-3a-s8	2	27.7	62.3	N
A3-3a-s9	2	27.7	56.3 - 56.4	N
A3-3a-s10	2	27.7	59.2 - 59.3	N
A3-3a-s11	2	27.7	49 - 49.1	N
A3-3a-s12	2	27.7	43.5 - 43.6	N
A3-3a-s13	2	34.2	49.6	N
A3-3a-s14	2	34.2	65.8 - 65.9	N
A3-3a-s15	2	34.2	72.9 - 73.4	Y
A3-3a-s16	2	34.2	73.8 - 74.3	Y
A3-3a-s17	2	34.2	74.2 - 74.7	Y
A3-3a-s18	2	34.2	69.3 - 69.4	N
A3-3a-s19	2	34.2	65.9 - 66.1	N
A3-3a-s20	2	34.2	53.8	N
A3-3a-s21	6	21.2	65.8 - 66.5	N
A3-3a-s22	6	21.2	69.1 - 70.9	Y
A3-3a-s23	6	21.2	69.2 - 71.8	Y
A3-3a-s24	6	21.2	61.6 - 61.7	N
A2 (KTN NDA AREA 13)				
A3-3b-s1	6	18.7	68 - 68.9	N
A3-3b-s2	6	18.7	56.1 - 56.3	N
A3-3b-s3	6	18.7	57.8 - 58	N
A3-3b-s4	6	18.7	67 - 67.8	N
A3-3b-s5	2	25.2	65.1 - 65.2	N
A3-3b-s6	2	25.2	53.4	N
A3-3b-s7	2	25.2	58.3	N
A3-3b-s8	2	25.2	60.7	N
A3-3b-s9	2	25.2	69.7 - 69.8	N
A3-3b-s10	2	25.2	72.7 - 73	Y
A3-3b-s11	2	25.2	62.2 - 62.3	N
A3-3b-s12	2	25.2	64.9 - 65	N
A3-3b-s13	2	25.2	62.7 - 62.8	N
A3-3b-s14	2	25.2	73.7 - 74.2	Y
A3-3b-s15	2	25.2	65.1 - 65.2	N
A3-3b-s16	2	25.2	55.4	N

NSR ID	No. of floors	First Assessment Level,	Range of Predicted Road Traffic Noise Level,	Compliance with the Standard of L_{10} (1-hr) 70 dB(A)
		mPD	L_{10} (1-hr) dB(A)	(Y/N)
A4 (KTN NDA AREA 21)				
A2-7-s1	6	11.2	72 - 74	Y
A2-7-s2	6	11.2	66.8 - 67.5	N
A2-7-s3	6	11.2	40.9 - 41.2	N
A2-7-s4	6	11.2	63.9 - 64.2	N
A2-7-s5	2	17.2	56.8	N
A2-7-s6	2	17.2	52.3 - 53.1	N
A2-7-s7	2	14.7	34.2 - 35	N
A2-7-s8	2	17.2	56.4	N
A2-7-s9	2	17.2	33.9 - 35.5	N
A2-7-s10	2	17.2	42.9 - 44	N
A2-7-s11	2	17.2	53.4	N
A2-7-s12	2	17.2	45.4 - 45.6	N
A2-7-s13	2	17.7	54.9	N
A2-7-s14	2	17.7	35.8 - 36.8	N
A2-7-s15	2	17.7	52.8	N
A2-7-s16	2	17.7	40.8 - 40.9	N
A2-7-s17	2	17.7	64.5 - 64.6	N
A2-7-s18	2	17.7	25.6	N
A2-7-s19	2	17.7	60.9 - 61	N
A2-7-s20	2	17.7	72.2 - 72.4	Y
A5 (KTN NDA AREA 26)				
A1-8-s1	2	18.7	60.7	N
A1-8-s2	2	18.7	66.8 - 66.9	N
A1-8-s3	2	18.7	72.9 - 73.2	Y
A1-8-s4	2	18.7	45 - 45.1	N
A1-8-s5	2	18.7	46.8 - 47	N
A1-8-s6	2	18.7	58.4 - 59.1	N
A1-8-s7	2	18.7	39.6 - 39.7	N

Title: Detailed Calculation of Road Traffic Noise With Direct Mitigation Measures in place
Scenario: Proposed Social Welfare Facilities in KTN NDA (Mitigated Case on Proposed Roads)

Assessment Point			Location	WITH PROJECT										
				Existing Road in 2046, dB(A)	Other Roads in 2046, dB(A)[1]	New Roads[2]					New Roads in 2046, dB(A)[3] [B]	Overall Noise Level in 2046, L_{10} dB(A) [C]	Noise Criteria, dB(A)	Exceedance [4] C > Criteria (Y/N)
						PD	DD	LD	EX	TR				
ID	Floor	Floor Level (mPD)				dB (A)								
A1 (KTN NDA AREA 12														
A3-3a-s1	1	27.7	A3-3a Social Welfare Facilities	8	43.1	39.6	58.6	59.1	0	0	61.9	61.9	70	N
A3-3a-s1	2	31.7	A3-3a Social Welfare Facilities	8	43.5	39.6	58.6	59	0	0	61.8	61.9	70	N
A3-3a-s2	1	27.7	A3-3a Social Welfare Facilities	7.9	0	19.3	46.5	59	0	0	59.3	59.3	70	N
A3-3a-s2	2	31.7	A3-3a Social Welfare Facilities	7.9	0	19.3	46.5	59	0	0	59.3	59.3	70	N
A3-3a-s3	1	27.7	A3-3a Social Welfare Facilities	0	0	13.7	23.3	57.4	0	0	57.4	57.4	70	N
A3-3a-s3	2	31.7	A3-3a Social Welfare Facilities	0	0	13.7	23.5	57.4	0	0	57.4	57.4	70	N
A3-3a-s4	1	27.7	A3-3a Social Welfare Facilities	0	0	0	33.3	55.3	0	0	55.3	55.3	70	N
A3-3a-s4	2	31.7	A3-3a Social Welfare Facilities	0	0	0	33.5	55.2	0	0	55.3	55.3	70	N
A3-3a-s5	1	27.7	A3-3a Social Welfare Facilities	0	0	27.1	37.3	60.7	0	0	60.8	60.8	70	N
A3-3a-s5	2	31.7	A3-3a Social Welfare Facilities	0	0	27.9	37.8	60.7	0	0	60.7	60.7	70	N
A3-3a-s6	1	27.7	A3-3a Social Welfare Facilities	0	0	24.9	48.8	31.8	0	0	48.9	48.9	70	N
A3-3a-s6	2	31.7	A3-3a Social Welfare Facilities	0	0	27.2	48.8	32.4	0	0	48.9	48.9	70	N
A3-3a-s7	1	27.7	A3-3a Social Welfare Facilities	0	43.3	49.5	60.4	0	0	0	60.8	60.8	70	N
A3-3a-s7	2	31.7	A3-3a Social Welfare Facilities	0	43.4	49.5	60.4	0	0	0	60.8	60.8	70	N
A3-3a-s8	1	27.7	A3-3a Social Welfare Facilities	0	44.1	45.7	62.2	0	0	0	62.3	62.3	70	N
A3-3a-s8	2	31.7	A3-3a Social Welfare Facilities	0	44.2	45.7	62.2	0	0	0	62.3	62.3	70	N
A3-3a-s9	1	27.7	A3-3a Social Welfare Facilities	0	6.5	0	26.7	56.4	0	0	56.4	56.4	70	N
A3-3a-s9	2	31.7	A3-3a Social Welfare Facilities	0	7.3	0	26.7	56.3	0	0	56.3	56.3	70	N
A3-3a-s10	1	27.7	A3-3a Social Welfare Facilities	0	0	0	58.4	52.1	0	0	59.3	59.3	70	N
A3-3a-s10	2	31.7	A3-3a Social Welfare Facilities	0	0	0	58.3	52.1	0	0	59.2	59.2	70	N
A3-3a-s11	1	27.7	A3-3a Social Welfare Facilities	0	0	15.1	41.2	48.3	0	0	49.1	49.1	70	N
A3-3a-s11	2	31.7	A3-3a Social Welfare Facilities	0	0	15.1	41.2	48.3	0	0	49	49	70	N
A3-3a-s12	1	27.7	A3-3a Social Welfare Facilities	0	3.4	10.7	43.2	32.2	0	0	43.5	43.5	70	N
A3-3a-s12	2	31.7	A3-3a Social Welfare Facilities	0	3.4	10.7	43.3	33	0	0	43.6	43.6	70	N
A3-3a-s13	1	34.2	A3-3a Social Welfare Facilities	0	0	0	24.8	49.6	0	0	49.6	49.6	70	N
A3-3a-s13	2	38.2	A3-3a Social Welfare Facilities	0	0	0	24.7	49.6	0	0	49.6	49.6	70	N
A3-3a-s14	1	34.2	A3-3a Social Welfare Facilities	0	0	0	65.8	46.5	0	0	65.9	65.9	70	N
A3-3a-s14	2	38.2	A3-3a Social Welfare Facilities	0	0	0	65.7	46.5	0	0	65.8	65.8	70	N
A3-3a-s15	1	34.2	A3-3a Social Welfare Facilities	0	0	19.7	73.4	39.4	0	0	73.4	73.4	70	Y
A3-3a-s15	2	38.2	A3-3a Social Welfare Facilities	0	0	19.7	72.9	39.4	0	0	72.9	72.9	70	Y
A3-3a-s16	1	34.2	A3-3a Social Welfare Facilities	0	0	20.2	74.3	41.4	0	0	74.3	74.3	70	Y
A3-3a-s16	2	38.2	A3-3a Social Welfare Facilities	0	0	20.2	73.8	41.4	0	0	73.8	73.8	70	Y
A3-3a-s17	1	34.2	A3-3a Social Welfare Facilities	9	0	52.2	74.6	47.9	0	0	74.7	74.7	70	Y
A3-3a-s17	2	38.2	A3-3a Social Welfare Facilities	9	0	52.3	74.1	47.9	0	0	74.2	74.2	70	Y
A3-3a-s18	1	34.2	A3-3a Social Welfare Facilities	0	0	46.4	67.7	64.4	0	0	69.4	69.4	70	N
A3-3a-s18	2	38.2	A3-3a Social Welfare Facilities	0	0	47.6	67.6	64.3	0	0	69.3	69.3	70	N
A3-3a-s19	1	34.2	A3-3a Social Welfare Facilities	0	3.9	0	53.4	65.8	0	0	66.1	66.1	70	N
A3-3a-s19	2	38.2	A3-3a Social Welfare Facilities	0	3.9	0	53.4	65.7	0	0	65.9	65.9	70	N
A3-3a-s20	1	34.2	A3-3a Social Welfare Facilities	0	8.6	0	26.1	53.7	0	0	53.8	53.8	70	N
A3-3a-s20	2	38.2	A3-3a Social Welfare Facilities	0	8.7	0	27.5	53.8	0	0	53.8	53.8	70	N
A3-3a-s21	1	21.2	A3-3a Social Welfare Facilities	0	0	31.2	51.1	66.3	0	0	66.5	66.5	70	N
A3-3a-s21	2	25.2	A3-3a Social Welfare Facilities	0	0	32	51.1	66.3	0	0	66.4	66.4	70	N
A3-3a-s21	3	29.2	A3-3a Social Welfare Facilities	0	0	32.9	51.1	66.2	0	0	66.3	66.3	70	N
A3-3a-s21	4	33.2	A3-3a Social Welfare Facilities	0	0	33.9	51.1	66.1	0	0	66.2	66.2	70	N
A3-3a-s21	5	37.2	A3-3a Social Welfare Facilities	0	0	34.8	51.2	65.9	0	0	66	66	70	N
A3-3a-s21	6	41.2	A3-3a Social Welfare Facilities	0	0	35.8	51.2	65.7	0	0	65.8	65.8	70	N
A3-3a-s22	1	21.2	A3-3a Social Welfare Facilities	0	7.7	30.2	48.1	70.9	0	0	70.9	70.9	70	Y
A3-3a-s22	2	25.2	A3-3a Social Welfare Facilities	0	8	31.2	48.1	70.8	0	0	70.8	70.8	70	Y
A3-3a-s22	3	29.2	A3-3a Social Welfare Facilities	0	8	32.1	48.1	70.4	0	0	70.4	70.4	70	N
A3-3a-s22	4	33.2	A3-3a Social Welfare Facilities	0	8.1	33.1	48.2	69.9	0	0	70	70	70	N
A3-3a-s22	5	37.2	A3-3a Social Welfare Facilities	0	8.1	34	48.3	69.5	0	0	69.5	69.5	70	N
A3-3a-s22	6	41.2	A3-3a Social Welfare Facilities	0	8.1	35	48.6	69	0	0	69.1	69.1	70	N
A3-3a-s23	1	21.2	A3-3a Social Welfare Facilities	0	0	28.6	55.1	71.7	0	0	71.8	71.8	70	Y
A3-3a-s23	2	25.2	A3-3a Social Welfare Facilities	0	0	29.8	55.1	71.5	0	0	71.6	71.6	70	Y
A3-3a-s23	3	29.2	A3-3a Social Welfare Facilities	0	0	31.1	55.1	70.9	0	0	71	71	70	Y

Title: Detailed Calculation of Road Traffic Noise With Direct Mitigation Measures in place
Scenario: Proposed Social Welfare Facilities in KTN NDA (Mitigated Case on Proposed Roads)

Assessment Point			Location	WITH PROJECT										
				Existing Road in 2046, dB(A)	Other Roads in 2046, dB(A)[1]	New Roads[2]					New Roads in 2046, dB(A)[3] [B]	Overall Noise Level in 2046, L_{10} dB(A) [C]	Noise Criteria, dB(A)	Exceedance [4] C > Criteria (Y/N)
						PD	DD	LD	EX	TR				
ID	Floor	Floor Level (mPD)				dB (A)								
A3-3a-s23	4	33.2	A3-3a Social Welfare Facilities	0	0	32.3	55.1	70.3	0	0	70.4	70.4	70	N
A3-3a-s23	5	37.2	A3-3a Social Welfare Facilities	0	0	33.5	55.1	69.6	0	0	69.8	69.8	70	N
A3-3a-s23	6	41.2	A3-3a Social Welfare Facilities	0	0	34.7	55.1	69	0	0	69.2	69.2	70	N
A3-3a-s24	1	21.2	A3-3a Social Welfare Facilities	0	39.4	28.2	59.3	57.8	0	0	61.7	61.7	70	N
A3-3a-s24	2	25.2	A3-3a Social Welfare Facilities	0	39.5	29.6	59.3	57.8	0	0	61.7	61.7	70	N
A3-3a-s24	3	29.2	A3-3a Social Welfare Facilities	0	39.5	31.2	59.4	57.8	0	0	61.7	61.7	70	N
A3-3a-s24	4	33.2	A3-3a Social Welfare Facilities	0	39.6	32.9	59.4	57.7	0	0	61.6	61.6	70	N
A3-3a-s24	5	37.2	A3-3a Social Welfare Facilities	0	39.7	34.7	59.4	57.5	0	0	61.6	61.6	70	N
A3-3a-s24	6	41.2	A3-3a Social Welfare Facilities	0	39.7	36.5	59.5	57.4	0	0	61.6	61.6	70	N
A2 (KTN NDA AREA 13)														
A3-3b-s1/1	1	18.7	A3-3b Social Welfare Facilities	0	0	22.4	55.9	68.7	0	0	68.9	68.9	70	N
A3-3b-s1/2	2	22.7	A3-3b Social Welfare Facilities	0	0	22.4	55.9	68.7	0	0	68.9	68.9	70	N
A3-3b-s1/3	3	26.7	A3-3b Social Welfare Facilities	0	0	22.4	55.9	68.5	0	0	68.7	68.7	70	N
A3-3b-s1/4	4	30.7	A3-3b Social Welfare Facilities	0	0	22.4	55.9	68.3	0	0	68.5	68.5	70	N
A3-3b-s1/5	5	34.7	A3-3b Social Welfare Facilities	0	0	22.4	55.9	68	0	0	68.2	68.2	70	N
A3-3b-s1/6	6	38.7	A3-3b Social Welfare Facilities	0	0	22.4	55.9	67.7	0	0	68	68	70	N
A3-3b-s2/1	1	18.7	A3-3b Social Welfare Facilities	0	0	17.4	45.5	55.9	0	0	56.3	56.3	70	N
A3-3b-s2/2	2	22.7	A3-3b Social Welfare Facilities	0	0	17.4	45.5	55.9	0	0	56.3	56.3	70	N
A3-3b-s2/3	3	26.7	A3-3b Social Welfare Facilities	0	0	17.4	45.6	55.9	0	0	56.3	56.3	70	N
A3-3b-s2/4	4	30.7	A3-3b Social Welfare Facilities	0	0	17.4	45.6	55.8	0	0	56.2	56.2	70	N
A3-3b-s2/5	5	34.7	A3-3b Social Welfare Facilities	0	0	17.4	45.7	55.7	0	0	56.2	56.2	70	N
A3-3b-s2/6	6	38.7	A3-3b Social Welfare Facilities	0	0	17.4	45.9	55.7	0	0	56.1	56.1	70	N
A3-3b-s3/1	1	18.7	A3-3b Social Welfare Facilities	0	0	0	55.9	53.9	0	0	58	58	70	N
A3-3b-s3/2	2	22.7	A3-3b Social Welfare Facilities	0	0	0	55.9	53.9	0	0	58	58	70	N
A3-3b-s3/3	3	26.7	A3-3b Social Welfare Facilities	0	0	0	55.9	53.8	0	0	58	58	70	N
A3-3b-s3/4	4	30.7	A3-3b Social Welfare Facilities	0	0	0	55.9	53.7	0	0	57.9	57.9	70	N
A3-3b-s3/5	5	34.7	A3-3b Social Welfare Facilities	0	0	0	55.9	53.6	0	0	57.9	57.9	70	N
A3-3b-s3/6	6	38.7	A3-3b Social Welfare Facilities	0	0	0	55.9	53.4	0	0	57.8	57.8	70	N
A3-3b-s4/1	1	18.7	A3-3b Social Welfare Facilities	0	0	20.6	54.5	67.6	0	0	67.8	67.8	70	N
A3-3b-s4/2	2	22.7	A3-3b Social Welfare Facilities	0	0	20.6	54.5	67.6	0	0	67.8	67.8	70	N
A3-3b-s4/3	3	26.7	A3-3b Social Welfare Facilities	0	0	20.6	54.5	67.5	0	0	67.7	67.7	70	N
A3-3b-s4/4	4	30.7	A3-3b Social Welfare Facilities	0	0	20.6	54.5	67.3	0	0	67.5	67.5	70	N
A3-3b-s4/5	5	34.7	A3-3b Social Welfare Facilities	0	0	20.6	54.5	67	0	0	67.3	67.3	70	N
A3-3b-s4/6	6	38.7	A3-3b Social Welfare Facilities	0	0	20.6	54.5	66.8	0	0	67	67	70	N
A3-3b-s5/1	1	25.2	A3-3b Social Welfare Facilities	0	0	23	56.8	64.5	0	0	65.2	65.2	70	N
A3-3b-s5/2	2	29.2	A3-3b Social Welfare Facilities	0	0	23	56.8	64.4	0	0	65.1	65.1	70	N
A3-3b-s6/1	1	25.2	A3-3b Social Welfare Facilities	0	0	16.1	48.2	51.8	0	0	53.4	53.4	70	N
A3-3b-s6/2	2	29.2	A3-3b Social Welfare Facilities	0	0	16.1	48.3	51.8	0	0	53.4	53.4	70	N
A3-3b-s7/1	1	25.2	A3-3b Social Welfare Facilities	0	0	13.6	57.9	47.2	0	0	58.3	58.3	70	N
A3-3b-s7/2	2	29.2	A3-3b Social Welfare Facilities	0	0	13.6	57.9	47.2	0	0	58.3	58.3	70	N
A3-3b-s8/1	1	25.2	A3-3b Social Welfare Facilities	0	0	18.3	29.8	60.7	0	0	60.7	60.7	70	N
A3-3b-s8/2	2	29.2	A3-3b Social Welfare Facilities	0	0	18.3	30.4	60.7	0	0	60.7	60.7	70	N
A3-3b-s9/1	1	25.2	A3-3b Social Welfare Facilities	0	0	25.7	68.2	64.8	0	0	69.8	69.8	70	N
A3-3b-s9/2	2	29.2	A3-3b Social Welfare Facilities	0	0	25.8	68.1	64.6	0	0	69.7	69.7	70	N
A3-3b-s10/1	1	25.2	A3-3b Social Welfare Facilities	0	0	11.3	73	43.6	0	0	73	73	70	Y
A3-3b-s10/2	2	29.2	A3-3b Social Welfare Facilities	0	0	11.3	72.7	43.6	0	0	72.7	72.7	70	Y
A3-3b-s11/1	1	25.2	A3-3b Social Welfare Facilities	0	0	16.8	62	50.8	0	0	62.3	62.3	70	N
A3-3b-s11/2	2	29.2	A3-3b Social Welfare Facilities	0	0	16.8	61.9	50.8	0	0	62.2	62.2	70	N
A3-3b-s12/1	1	25.2	A3-3b Social Welfare Facilities	0	0	19.8	47.4	64.9	0	0	65	65	70	N
A3-3b-s12/2	2	29.2	A3-3b Social Welfare Facilities	0	0	19.8	47.3	64.8	0	0	64.9	64.9	70	N
A3-3b-s13/1	1	25.2	A3-3b Social Welfare Facilities	0	0	0	62	54.9	0	0	62.8	62.8	70	N
A3-3b-s13/2	2	29.2	A3-3b Social Welfare Facilities	0	0	0	61.9	54.8	0	0	62.7	62.7	70	N
A3-3b-s14/1	1	25.2	A3-3b Social Welfare Facilities	0	0	17.8	74.2	39.5	0	0	74.2	74.2	70	Y
A3-3b-s14/2	2	29.2	A3-3b Social Welfare Facilities	0	0	17.8	73.7	39.5	0	0	73.7	73.7	70	Y
A3-3b-s15/1	1	25.2	A3-3b Social Welfare Facilities	0	0	17	65.2	37.9	0	0	65.2	65.2	70	N
A3-3b-s15/2	2	29.2	A3-3b Social Welfare Facilities	0	0	17	65.1	37.9	0	0	65.1	65.1	70	N

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Assessment Point			Location	WITH PROJECT										
				Existing Road in 2046, dB(A)	Other Roads in 2046, dB(A)[1]	New Roads[2]					New Roads in 2046, dB(A)[3] [B]	Overall Noise Level in 2046, L_{10} dB(A) [C]	Noise Criteria, dB(A)	Exceedance [4] C > Criteria (Y/N)
						PD	DD	LD	EX	TR				
ID	Floor	Floor Level (mPD)				dB (A)								
A3-3b-s16/1	1	25.2	A3-3b Social Welfare Facilities	0	0	0	33.2	55.4	0	0	55.4	55.4	70	N
A3-3b-s16/2	2	29.2	A3-3b Social Welfare Facilities	0	0	0	33.2	55.4	0	0	55.4	55.4	70	N
A4 (KTN NDA AREA 21)														
A2-7-s1	1	11.2	A2-7 Social Welfare Facilities	0	0	0	73.8	62	0	0	74	74	70	Y
A2-7-s1	2	15.2	A2-7 Social Welfare Facilities	0	0	0	73.6	61.9	0	0	73.9	73.9	70	Y
A2-7-s1	3	19.2	A2-7 Social Welfare Facilities	0	0	0	73.2	61.9	0	0	73.5	73.5	70	Y
A2-7-s1	4	23.2	A2-7 Social Welfare Facilities	0	0	0	72.6	61.8	0	0	73	73	70	Y
A2-7-s1	5	27.2	A2-7 Social Welfare Facilities	0	0	0	72.1	61.7	0	0	72.5	72.5	70	Y
A2-7-s1	6	31.2	A2-7 Social Welfare Facilities	0	0	0	71.6	61.5	0	0	72	72	70	Y
A2-7-s2	1	11.2	A2-7 Social Welfare Facilities	6.2	0	41.5	65.4	63.2	0	0	67.5	67.5	70	N
A2-7-s2	2	15.2	A2-7 Social Welfare Facilities	7.9	0	41.5	65.4	63	0	0	67.4	67.4	70	N
A2-7-s2	3	19.2	A2-7 Social Welfare Facilities	9.8	0	41.5	65.4	62.6	0	0	67.3	67.3	70	N
A2-7-s2	4	23.2	A2-7 Social Welfare Facilities	12	0	41.6	65.4	62.2	0	0	67.1	67.1	70	N
A2-7-s2	5	27.2	A2-7 Social Welfare Facilities	14	0	41.6	65.4	61.8	0	0	67	67	70	N
A2-7-s2	6	31.2	A2-7 Social Welfare Facilities	15.5	0	41.7	65.3	61.4	0	0	66.8	66.8	70	N
A2-7-s3	1	11.2	A2-7 Social Welfare Facilities	0	0	17.6	17.5	41.1	0	0	41.2	41.2	70	N
A2-7-s3	2	15.2	A2-7 Social Welfare Facilities	0	0	17.6	17.5	41.1	0	0	41.2	41.2	70	N
A2-7-s3	3	19.2	A2-7 Social Welfare Facilities	0	0	17.6	16.9	41.1	0	0	41.1	41.1	70	N
A2-7-s3	4	23.2	A2-7 Social Welfare Facilities	0	0	17.6	16.7	41	0	0	41.1	41.1	70	N
A2-7-s3	5	27.2	A2-7 Social Welfare Facilities	0	0	17.6	16.9	40.9	0	0	41	41	70	N
A2-7-s3	6	31.2	A2-7 Social Welfare Facilities	0	0	17.6	17.1	40.8	0	0	40.9	40.9	70	N
A2-7-s4	1	11.2	A2-7 Social Welfare Facilities	0	0	0	64	50.5	0	0	64.2	64.2	70	N
A2-7-s4	2	15.2	A2-7 Social Welfare Facilities	0	0	0	64	50.5	0	0	64.2	64.2	70	N
A2-7-s4	3	19.2	A2-7 Social Welfare Facilities	0	0	0	64	50.5	0	0	64.2	64.2	70	N
A2-7-s4	4	23.2	A2-7 Social Welfare Facilities	0	0	0	63.9	50.5	0	0	64.1	64.1	70	N
A2-7-s4	5	27.2	A2-7 Social Welfare Facilities	0	0	0	63.8	50.4	0	0	64	64	70	N
A2-7-s4	6	31.2	A2-7 Social Welfare Facilities	0	0	0	63.7	50.4	0	0	63.9	63.9	70	N
A2-7-s5	1	17.2	A2-7 Social Welfare Facilities	11.4	0	47.5	50.9	54.8	0	0	56.8	56.8	70	N
A2-7-s5	2	21.2	A2-7 Social Welfare Facilities	11.4	0	47.5	50.9	54.7	0	0	56.8	56.8	70	N
A2-7-s6	1	17.2	A2-7 Social Welfare Facilities	0	0	50.1	21.6	48.4	0	0	52.3	52.3	70	N
A2-7-s6	2	21.2	A2-7 Social Welfare Facilities	0	0	51	21.7	48.9	0	0	53.1	53.1	70	N
A2-7-s7	1	14.7	A2-7 Social Welfare Facilities	0	0	0	33.6	25.4	0	0	34.2	34.2	70	N
A2-7-s7	2	18.7	A2-7 Social Welfare Facilities	0	0	0	34.3	26.8	0	0	35	35	70	N
A2-7-s8	1	17.2	A2-7 Social Welfare Facilities	8.4	0	0	51.7	54.7	0	0	56.4	56.4	70	N
A2-7-s8	2	21.2	A2-7 Social Welfare Facilities	8.6	0	0	51.7	54.5	0	0	56.4	56.4	70	N
A2-7-s9	1	17.2	A2-7 Social Welfare Facilities	7.1	0	18	33	26.3	0	0	33.9	33.9	70	N
A2-7-s9	2	21.2	A2-7 Social Welfare Facilities	7.5	0	18	34.6	27.6	0	0	35.5	35.5	70	N
A2-7-s10	1	17.2	A2-7 Social Welfare Facilities	0	0	0	27.6	42.7	0	0	42.9	42.9	70	N
A2-7-s10	2	21.2	A2-7 Social Welfare Facilities	0	0	0	27.7	43.9	0	0	44	44	70	N
A2-7-s11	1	17.2	A2-7 Social Welfare Facilities	0	0	0	53.4	31.9	0	0	53.4	53.4	70	N
A2-7-s11	2	21.2	A2-7 Social Welfare Facilities	0	0	0	53.4	32.2	0	0	53.4	53.4	70	N
A2-7-s12	1	17.2	A2-7 Social Welfare Facilities	0	0	0	36.6	44.8	0	0	45.4	45.4	70	N
A2-7-s12	2	21.2	A2-7 Social Welfare Facilities	0	0	0	37.8	44.9	0	0	45.6	45.6	70	N
A2-7-s13	1	17.7	A2-7 Social Welfare Facilities	0	0	0	53.9	48.2	0	0	54.9	54.9	70	N
A2-7-s13	2	21.7	A2-7 Social Welfare Facilities	0	0	0	53.9	48.2	0	0	54.9	54.9	70	N
A2-7-s14	1	17.7	A2-7 Social Welfare Facilities	0	0	0	27.5	35.1	0	0	35.8	35.8	70	N
A2-7-s14	2	21.7	A2-7 Social Welfare Facilities	0	0	0	27.7	36.2	0	0	36.8	36.8	70	N
A2-7-s15	1	17.7	A2-7 Social Welfare Facilities	0	0	0	52.5	40.7	0	0	52.8	52.8	70	N
A2-7-s15	2	21.7	A2-7 Social Welfare Facilities	0	0	0	52.6	40.7	0	0	52.8	52.8	70	N
A2-7-s16	1	17.7	A2-7 Social Welfare Facilities	0	0	0	37	38.5	0	0	40.8	40.8	70	N
A2-7-s16	2	21.7	A2-7 Social Welfare Facilities	0	0	0	37.2	38.5	0	0	40.9	40.9	70	N
A2-7-s17	1	17.7	A2-7 Social Welfare Facilities	0	0	10.4	63.9	56	0	0	64.6	64.6	70	N
A2-7-s17	2	21.7	A2-7 Social Welfare Facilities	0	0	10.6	63.9	56	0	0	64.5	64.5	70	N
A2-7-s18	1	17.7	A2-7 Social Welfare Facilities	0	0	12.9	17	24.6	0	0	25.6	25.6	70	N
A2-7-s18	2	21.7	A2-7 Social Welfare Facilities	0	0	12.9	17	24.7	0	0	25.6	25.6	70	N
A2-7-s19	1	17.7	A2-7 Social Welfare Facilities	0	0	0	61	27.2	0	0	61	61	70	N

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				Existing Road in 2046, dB(A)	Other Roads in 2046, dB(A)[1]	New Roads[2]					Overall Noise Level in 2046, L_{10} dB(A) [C]	Noise Criteria, dB(A)	Exceedance [4] C > Criteria (Y/N)
						PD	DD	LD	EX	TR			
ID	Floor	Floor Level (mPD)				dB (A)							
A2-7-s19	2	21.7	A2-7 Social Welfare Facilities	0	0	0	60.9	27.4	0	0	60.9	60.9	70	N
A2-7-s20	1	17.7	A2-7 Social Welfare Facilities	0	0	0	72.3	56	0	0	72.4	72.4	70	Y
A2-7-s20	2	21.7	A2-7 Social Welfare Facilities	0	0	0	72.1	56	0	0	72.2	72.2	70	Y
A5 (KTN NDA AREA 26)														
A1-8-s1	1	18.7	A1-8 Social Welfare Facilities	18.7	0	20.8	60.1	51.9	31.4	0	60.7	60.7	70	N
A1-8-s1	2	22.7	A1-8 Social Welfare Facilities	18.9	0	20.9	60.1	51.9	31.6	0	60.7	60.7	70	N
A1-8-s2	1	18.7	A1-8 Social Welfare Facilities	20.1	0	21.7	66.7	46.2	52	0	66.9	66.9	70	N
A1-8-s2	2	22.7	A1-8 Social Welfare Facilities	20.4	0	22.5	66.6	46.2	52.3	0	66.8	66.8	70	N
A1-8-s3	1	18.7	A1-8 Social Welfare Facilities	7.3	0	24	72.9	60.8	47.4	0	73.2	73.2	70	Y
A1-8-s3	2	22.7	A1-8 Social Welfare Facilities	7	0	25	72.7	60.6	48.1	0	72.9	72.9	70	Y
A1-8-s4	1	18.7	A1-8 Social Welfare Facilities	0	0	0	42.4	41.6	0	0	45	45	70	N
A1-8-s4	2	22.7	A1-8 Social Welfare Facilities	0	0	0	42.4	41.6	0	0	45.1	45.1	70	N
A1-8-s5	1	18.7	A1-8 Social Welfare Facilities	6.2	0	18.4	45	38.7	39.5	0	46.8	46.8	70	N
A1-8-s5	2	22.7	A1-8 Social Welfare Facilities	6.2	0	18.7	45.1	38.8	39.9	0	47	47	70	N
A1-8-s6	1	18.7	A1-8 Social Welfare Facilities	15.3	0	0	58.9	45.2	10.8	0	59.1	59.1	70	N
A1-8-s6	2	22.7	A1-8 Social Welfare Facilities	15.3	0	0	58.2	45.2	10.8	0	58.4	58.4	70	N
A1-8-s7	1	18.7	A1-8 Social Welfare Facilities	0	0	0	31.6	38.9	0	0	39.6	39.6	70	N
A1-8-s7	2	22.7	A1-8 Social Welfare Facilities	0	0	0	31.8	38.9	0	0	39.7	39.7	70	N

Notes:

[1] Other Roads refer to planned road projects carried out by others such as Development of Lok Ma Chau Loop, Liantang / Heung Yuen Wai Boundary Control Point and Associated Works, Widening of Tolo Highway/Fanling Highway etc.

[2] PD - Primary Distributor Road; DD - District Distributor Road; LD - Local Distributor Road; EX - Expressway; TR - Trunk Roads.

[3] New Roads refer to the proposed road networks including planned internal roads within PC/TKL NDA and modification of connecting roads to NDA.

[4] During the design of the social welfare facilities, noise sensitive uses should be located to avoid exceedance as far as practicable.

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Appendix F

Visual Impact Assessment

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1 INTRODUCTION

1.1 Background

1.1.1 AECOM Asia Co. Ltd. has been commissioned by Civil Engineering and Development Department (CEDD) to undertake Section 16 Application for relaxation of the plot ratio and/or building height restriction at Public and Private Housing Sites (i.e. Site No. A1 – 5 & B1 - 12) in Kwu Tong North New Development Area.

1.1.2 On the other hand, in view of the latest planning circumstances, including the Northern Metropolis Development Strategy (NMDS) and the 2021 Policy Address, AECOM has been commissioned to provide an Environmental Assessment (EA) including Visual Impact Assessment (VIA) to support the proposed OZP amendments to reflect changes for 5 sites (i.e. Area Nos. 9, 28, 29, 32 & 34).

1.2 Purpose of Visual Impact Assessment

1.2.1 The purpose of this VIA is to assess the potential visual impact of the Proposed Development to the surrounding areas, and present sufficient information in a structured manner to facilitate the Town Planning Board (TPB) to visualize the three-dimensional relationship of the Proposed Development including the proposals covered by the aforesaid s.16 application and OZP amendments with the surrounding context, and to consider the visual effects in accordance with Town Planning Board Guidelines on Submission of Visual Impact Assessment for Planning Applications to the Town Planning Board (TPB PG-No.41).

1.3 Structure of the Report

1.3.1 Following this introductory section, the remainder of this VIA is arranged as follows:

- Section 2 presents the Methodology of the Visual Impact Assessment;
- Section 3 summarizes the Proposed Changes;
- Section 4 describes the Assessment Area and Viewpoints;
- Section 5 presents the visual appraisal; and
- Section 6 evaluates the overall visual impact.

2 METHODOLOGY OF THE VISUAL IMPACT ASSESSMENT

2.1 Introduction

2.1.1 The visual impacts of the Proposed Development are assessed. The assessment adopts a systematic methodology and includes the following:

- Identification and plotting of visual envelope of the Proposed Development within the Assessment Area. Known and planned developments will be taken into account. Visual Envelope may contain areas, which are fully visible, partly visible and non-visible from the proposed development. Identification of the Visual Envelope is achieved by desktop study of topographic maps, street maps, cross sectional drawings, photographs and site visit to determine visibility of the Project from various locations. The assessment area should be up to the visual envelope which is generally the view shed formed by natural/man-made features, such as building blocks.

- Identification of the key groups of sensitive receivers within the visual envelope and their views at both ground level and elevated vantage points. VSRs are considered as person whose views from residences, workplaces, and public areas within the Visual Envelope will be affected by the project during construction and/or operation phases.

- Appraisal of visual changes on the assessment area and description of the visual compatibility of the Development with the surrounding and the planned setting, and its obstruction and interference with the key visual elements, including visual resources and key views of the adjacent areas.

- Evaluation of the overall visual impact of the Proposed Development, including the description of the significance of visual impacts with respect to the sensitivity of receivers and the magnitude of changes, any resultant effect in the visual quality and character of the surrounding area. Any design features or mitigation measures that help moderate the visual impact of the development shall be discussed.

- The overall visual impact of the proposed development is evaluated, taking into account the sensitivity of the key public viewers, visual resources and visual amenities likely to be affected, the magnitude, extent and duration of impact and any resultant improvement or degradation in the visual quality and character of the surroundings area, and planning intention and known planned development of the area. **Table 1** shows the matrix used to assess visual impacts.

- Preparation of computer-generated photomontages illustrate the visual impacts and their significance from representative vantage points.

Table 1 - Relationship between Receptor Sensitivity and Magnitude of Change in Defining Impact Significance

MAGNITUDE OF CHANGE	Low	Medium	High
Large	Slight or Moderate	Moderate or Substantial	Substantial
Intermediate	Slight or Moderate	Moderate	Moderate or Substantial
Small	Insubstantial or Slight	Slight or Moderate	Slight or Moderate
Negligible	Insubstantial	Insubstantial	Insubstantial
None	None	None	None

SENSITIVITY OF PUBLIC VIEWER

Note: *The Magnitude of Change may be Positive or Negative.*

2.1.2 The significance of impacts is assessed as “Significantly Adverse” or “Significantly Positive”, “Moderately Adverse” or “Moderately Positive”, “Slightly Adverse” or “Slightly Positive” and “Negligible”. “Negligible” impacts are deemed to make no significant difference to the character of views, even though the Project Site and development may be physically visible in them.

2.1.3 Finally a single summary assessment of the impact is made based on the following thresholds stated in TPB PG-NO.41 Town Planning Board Guidelines on Submission on Visual Impact Assessment for Planning Applications to the Town Planning Board:

- **Enhanced** - If the proposed development in overall term will improve the visual quality and complement the visual character of its setting from most of the identified key public viewpoint;
- **Partly enhanced/ partly adverse** - if the proposed development will exhibit enhanced visual effects to some of the identified key public viewpoints and at the same time, with or without mitigation measures, exhibit adverse visual effects to some other key public viewpoint;
- **Negligible** - if the proposed development will, with or without mitigation measures, in overall term have insignificant visual effects to most of the identified key public viewpoints, or the visual, and effects would be screened or filtered by other distracting visual elements in the assessment area.
- **Slightly adverse** - if the proposed development will, with or without mitigation measures, result in overall term negative visual effects to most of the identified key public viewpoint;
- **Moderately adverse** - if the proposed development will, with or without mitigation measures, result in overall term negative visual effects to most of the key identified key public viewpoints; and
- **Significantly adverse** - if the proposed development will in overall term cause serious and detrimental visual effects to most of the identified key public viewpoints, even with mitigation measures.

3 SUMMARY OF PROPOSED CHANGES

3.1 Introduction

3.1.1 The Based Case Scenario and Proposed Case Scenario of the Proposed Development are shown in **Figure 1.2** and **2.1** respectively. The layouts are indicative for technical assessments purpose.

3.1.2 Due to increasing in population to be incorporated into the housing sites in KTN NDA, and site review under the latest planning circumstances; the proposed plot ratio and/or building height restriction will be required to change. The proposed changes in maximum total plot ratio, building height restriction are shown in **Table 2** and **Table 3** and illustrated in the **Figure 1.1**.

Table 2 - Summary of Changes in Maximum Total Plot Ratio at the Assessment Sites

Site No.	Changes in Plot Ratio compared to OZP	Increase in Plot Ratio compared to OZP	Changes in Maximum Total Plot Ratio*	Changes in Maximum Total Plot Ratio*
	Compared to OZP		Compared to Approved S16 Application No. A/KTN/54	
Sites under S16 Application				
A1	5.0 - 6.73	+35%	5.8 - 6.73	+16.%
A2	5.0 - 6.5	+30%	5.8 - 6.5	+12%
A3	6.0 - 7.8	+30%	N/A	N/A
A4	5.0 - 6.5	+30%	5.8 - 6.5	+12%
A5	5.0 - 6.5	+30%	5.8 - 6.5	+12%
B1	6.0 - 7.2	+20%	N/A	N/A
B2	6.0 - 7.2	+20%	N/A	N/A
B3	3.5 – 4.2	+20%	N/A	N/A
B4	3.5 – 4.2	+20%	N/A	N/A
B5	3.5 - 4.2	+20%	N/A	N/A
B6	3.5 - 4.2	+20%	N/A	N/A
B7	3.5 - 4.2	+20%	N/A	N/A
B8	3.5 - 4.2	+20%	N/A	N/A
B9	3.5 - 4.2	+20%	N/A	N/A
B10	3.5 - 4.43	+27%	N/A	N/A
B11	3.5 - 4.2	+20%	N/A	N/A
B12	3.5 - 4.2	+20%	N/A	N/A

Site No.	Changes in Plot Ratio compared to OZP	Increase in Plot Ratio compared to OZP	Changes in Maximum Total Plot Ratio*	Changes in Maximum Total Plot Ratio*
	Compared to OZP		Compared to Approved S16 Application No. A/KTN/54	
Sites under OZP Amendment				
Area 9	N/A	N/A	N/A	N/A
Area 28	N/A	N/A	N/A	N/A
Area 29	N/A	N/A	N/A	N/A
Area 32	3 – 4.2	+40%	N/A	N/A
Area 34	3 – 4.2	+40%	N/A	N/A

**** The maximum total plot ratio is rounded to nearest integer.***

Table 3 - Summary of Changes in Building Height Restriction at the Application Sites

Site No.	Changes in Building Height Restriction	Building Layout Changed (Yes/No)	Changes in Building Height Restriction	Building Layout Changed (Yes/No)
	Compared to OZP		Compared to Approved S16 Application No. A/KTN/54	
Sites under S16 Application				
A1	135mPD to 180mPD	Yes	N/A	N/A
A2	135mPD to 160mPD	Yes	N/A	N/A
A3	115mPD to 145mPD	No	N/A	N/A
A4	125mPD to 140mPD	Yes	130mPD to 140mPD	Yes
A5	110mPD to 135mPD	Yes	120mPD to 135mPD	Yes
B1	115mPD to 130mPD	No	N/A	N/A
B2	115mPD to 130mPD	No	N/A	N/A
B3	80mPD to 95mPD	No	N/A	N/A
B4	75mPD to 85mPD	No	N/A	N/A
B5	75mPD to 80mPD	No	N/A	N/A
B6	75mPD to 80mPD	No	N/A	N/A
B7	85/95mPD to 100mPD	No	N/A	N/A
B8	85mPD to 90mPD	No	N/A	N/A
B9	80mPD to 85mPD	No	N/A	N/A
B10	95mPD to 110mPD	Yes	N/A	N/A
B11	No Change (90mPD)	No	N/A	N/A
B12	No Change (90mPD)	No	N/A	N/A
Sites under OZP Amendment				
Area 9	20 storeys to 130mPD	Yes	N/A	N/A
Area 28	10 storeys to 130mPD	No	N/A	N/A
Area 29	8/10 storeys to 130mPD	Yes	N/A	N/A
Area 32	40/55mPD to 75mPD	Yes	N/A	N/A
Area 34	40/55mPD to 70mPD	Yes	N/A	N/A

4 ASSESSMENT AREA & VIEWING POINTS

4.1 Assessment Area

4.1.1 The extent of the assessment area for Visual envelope is according to Methodology of the Visual Impact assessment mentioned in **Para 2.1.1**. The extent of the visual envelope is mapped in **Figure 2.1**.

4.2 Viewing Points

4.2.1 Ten viewpoints (VPs) are representative views that would be experienced by adjacent VSRs. Description of viewpoints are provided below. Their locations are mapped in **Figure 2.1**.

Table 4 - List of Viewpoints and Sensitivity of VSRs

VP ID	Location	Description	Type and Sensitivity of Identified Visually Sensitive Receivers (VSRs)
VK1	Western Range - Lok Ma Chau Footpath	The trail to the ridgeline of Lok Ma Chau is not readily accessible due to overgrown vegetation at lower levels. There are panoramic views in all directions above the existing vegetation. From the high point, views from the north and west are characterized by the green, natural landscape of Hong Kong contrasting with the urban sprawl of Shenzhen and its high rise buildings north of the border. Views from the east and south, in the direction of the proposed KTN NDA, take in the grasslands of the Lok Ma Chau backdrop and other nearby hills in the foreground. These hills partially block view of KTN NDA site. The lowland is visible and generally has a green aspect, with intermittent buildings. The higher density new low-rise development areas of Valais and Europa Gardens are -also visible. To the east, the high rise buildings of Sheung Shui and Fanling urban area are prominent in the background. Given this area is so inaccessible and very few people use the trail, the sensitivity is low.	Recreational VSR - **Low**
VK2	Small Valley at the Eastern Foothill of Western Range	This VSR is located in a small valley at the eastern foothills of the Western Range, just at the north east of Tit Hang and the south west of the Lo Wu and Ma Tso Lung Firing Range. Views are limited to the south east in the direction of the KTN NDA with the Western Range rising behind, blocking views to the north west. In the mid-distance, Tai Shek Mo summit and backdrop frame the view from north east to east. To the east, the view is partially blocked by the knolls of Fung Kong Shan but some of the Kwu Tung Area is visible and in the background the urban sprawl of Fanling/ Sheung Shui is evident. To the south, the existing industrial area near Tung Fong is a visually detracting element in the mid-distance. Generally the existing view is rural in nature, characterized by mixed use cottage areas, interspersed by mature trees and small copses and the wooded foothills of Tai Shek Mo in the foreground. Residents in these settlements have their low level views largely blocked by vegetation (e.g. small copses) and existing built structures.	Low-rise Residential VSR - **High**
VK3	Fanling Highway near Valais & Europa Garden	This VSR represents residents in low rise residential development to the south of Fanling Highway, including Valais and Europa Garden. These viewers have no view to the north due to the tall noise barriers erected along the Highway and landscape planting shielding the view of the barriers themselves. This view is dominated by Fanling Highway in the immediate foreground with the roadside planting of some trees and small copses, that are features of the Dills Corner Garden, are also visible.	Low-rise Residential VSR - **High**
VK4	Ki Lun Shan Footpath	The footpath up to the summit from the south is largely through grassland with the main screen to the view north being the ridgeline itself. Power pylons are also visually distracting elements close to the footpath. The footpaths on the north Ki Lun Shan are restricted by tall vegetation as they reach lower ground. From the summit, the views are open and panoramic and generally of a semi-rural character with evidence of urban developments, particularly the high rise structures of Shenzhen across the border in the middle and far distance. Generally facing north, north east, the rural Kwu Tung District is clearly visible along with the agricultural land of Long Valley in marked contrast to the Sheung Shui/ Fanling urban area which is evident further east partially blocking the green hills beyond. Valais housing and developments around Hang Tau are other man-made elements at the foot of the hill. The alternative views facing south, south west is similarly mixed, with river channelization work scaring the landscape at the foot of the hill, Lok Ma Chau Border Crossing a distinct complex nearby and a large expanse of open, lowland which stretches to the Pearl River Estuary and is generally green with some housing developments.	Recreational VSR - **Medium**
VK5	Road P2	This viewpoint is standing along the proposed Road P2. It provides view to the west, which is looking at the proposed building clusters at Site No. A4. The View is dominated by the busy road traffic and roadside landscape in foreground. The VSRs at VK5 would include those future travelers along the planned main Road P2.	Travelling VSR - **Medium**
VK6	Road P1	This viewpoint is standing along the proposed Road P1, at the the northwest side of Area 28. It provides view directly to the proposed building clusters at Public Housing Development in Area 19 under A/KTN/84. The View is dominated by the busy road traffic and roadside landscape in foreground. Key VSRs at VK6 shall be the future travelers along the planned Road P1.	Travelling VSR - **Medium**
VK7	View from the south of KTN NDA	It is standing at the district open space, near the northwest corner of Site No. B5. The viewpoint shall be fully exposed to the development in Site No. A4. Key VSRs would be the future	Recreational VSR - **High**

		recreational VSRs from the planned district open space in KTN. This VSR represents residents along the center of the KTN. The view is dominated by the Kwun Tung Station of Railway Associated Facilities development along roadside and entrance to railway.	
VK8	Footpath along Sheung Yue River near Long Valley Village	Views north and west from Yin Kong and other houses in the Long Valley area are predominantly of the traditional agricultural fields of the Long Valley with the upland areas of Tai Shek Mo and the Western Range also visible in the background. Electricity pylons are visible in the middle distance to the north and the medium rise Shek Wu Hui Sewage Treatment Works is also visible. To the north east, the high rise buildings of Sheung Shui are visible above the vegetation in the middle distance, with the green hills of Wa Shan and Tsung Shan behind in the far distance.	Low-rise Residential VSR - **High**
VK9	Fanling Highway near Ascot Park Area	This VSR represents residents in low rise developments around Kam Tsin, including Kam Tsin Tsuen, Ascot Park, Royal Oaks and La Regent Park. Views to the north for these viewers are partially blocked due to a number of factors. These include low lying topography; many houses in close proximity shielding each other's views; landscaping including screen planting along the roads; and Fanling Highway to the north. At the elevated levels of the houses, more open views north towards the KTN NDA may be possible, but will still be partially screened by vegetation and have Fanling Highway in the foreground.	Low-rise Residential VSR - **Medium**
VK10	Hiking Trail to Tai Shek Mo	This VSR is located at the northeast side of Site which represent the hikers along the trail to Tai Shek Mo. The existing view captured lush hillside greenery and construction site of Kwu Tung North Fresh Water Service Reservoir in foreground, with overhead, brownfield and storage surrounded by considerable village/ rural vegetation at middle-ground, with mountain backdrop of She Leng and Ki Lun Shan.	Recreational VSR - **Medium**

5 VISUAL APPRAISAL

5.1.1 The sources of impacts would create varying levels of visual impact during construction and operation phases of the Project. The source of visual impacts from the temporary and permanent works during construction phase and permanent during operation phase shown in **Table 5**.

5.1.2 The summary of the proposed changes is listed in **Section 3**. The potential change in visual impacts due to the proposed changes are assessed and described in **Table 5**. Photomontages with and without the proposed changes are prepared and shown in **Figure 3.1** - **3.10** to illustrate the predicted potential visual impact of the viewpoints and the identified VSRs. The changes on these Assessment Sites illustrate the changes compared with the prevailing OZP restrictions and the approved planning application No. A/KTN/54.

Table 5 - Summary of Proposed Changes and the potential visual impacts to identified VSRs

Proposed Changes	Potential Visual Impacts
Proposed changes in building heights (in comparison with restriction under OZP) - Site No. A1 *135mPD to 180mPD* *Change on Plot Ratio: 5.0 to 6.73* - Site No. A2 *135mPD to 160mPD* *Change on Plot Ratio: 5.0 to 6.5* - Site No. A3 *115mPD to 145mPD* *Change on Plot Ratio: 6.0 to 7.8* - Site No. A4 *125mPD to 140mPD* *Change on Plot Ratio: 5.0 to 6.5* - Site No. A5 *110mPD to 135mPD* *Change on Plot Ratio: 5.0 to 6.5* - Site No. B1 *115mPD to 130mPD* *Change on Plot Ratio: 6.0 to 7.2* - Site No. B2 *115mPD to 130mPD* *Change on Plot Ratio: 6.0 to 7.2* - Site No. B3 *80mPD to 95mPD* *Change on Plot Ratio: 3.5 to 4.2*	Site A1, A2, A4, A5 & B10 and Area 9, 29, 32 & 34 involve building block layout change. Potential VSRs to be affected from different direction and types are described below and the photomontages illustrating the potential impact are shown in **Figure 3.1** – **3.10**. <u>Type of VSRs</u> • Recreational VSRs (hikers) from the Western Range - Lok Ma Chau Footpath (VK1); Ki Lun Shan Footpath (VK4); and the south of KTN NDA (VK7) • Low-rise Residential VSRs from Small Valley at the Eastern Foothill of Western Range (VK2); Fanling Highway near Valais & Europa Garden (VK3); Footpath along Sheung Yue River near Long Valley Village (VK8); and Fanling Highway near Ascot Park Area (VK9) • Travelling VSRs from Road P2 (VK5); and Road P1 (VK6)

Proposed Changes	Potential Visual Impacts
- Site No. B4 *75mPD to 85mPD* *Change on Plot Ratio: 3.5 to 4.2* - Site No. B5 *75mPD to 80mPD* *Change on Plot Ratio: 3.5 to 4.2* - Site No. B6 *75mPD to 80mPD* *Change on Plot Ratio: 3.5 to 4.2* - Site No. B7 *85/95mPD to 100mPD* *Change on Plot Ratio: 3.5 to 4.2* - Site No. B8 *85mPD to 90mPD* *Change on Plot Ratio: 3.5 to 4.2* - Site No. B9 *80mPD to 85mPD* *Change on Plot Ratio: 3.5 to 4.2* - Site No. B10 *90mPD to 110mPD* *Change on Plot Ratio: 3.5 to 4.43* - Site No. B11 *No Change (90mPD)* *Change on Plot Ratio: 3.5 to 4.2* - Site No. B12 *No Change (90mPD)* *Change on Plot Ratio: 3.5 to 4.2* - Area 9 *20 storeys to 130mPD* *Plot Ratio: Not Available* - Area 28 *10 storeys to 130mPD* *Plot Ratio: Not Available* - Area 29 *8/10 storeys to 130mPD* *Plot Ratio: Not Available*	

Proposed Changes	Potential Visual Impacts
- Area 32 *40/55mPD to 75mPD* *Plot Ratio: Change from OU(Business and Technology Park) Non-domestic Plot Ratio 3.0 to R(B)1 Domestic Plot Ratio 4.2* - Area 34 *40/55mPD to 70mPD* *Plot Ratio: Change from OU(Business and Technology Park) Non-domestic Plot Ratio 3.0 to R(B)1 Domestic Plot Ratio 4.2*	

5.2 Visual Appraisal

Visual Appraisal of Specific Viewpoints

VK1 - Western Range - Lok Ma Chau Footpath

5.2.1 The sources of impacts would create varying levels of visual impact during construction and operation phases of the Project. The source of visual impacts from the temporary and permanent works during construction phase and permanent during operation phase shown in **Table 5**.

5.2.2 Viewpoint VK1 has an overall distant view from Lok Ma Chau to proposed Site A1, Area 9 & 28. For the Site A1 & Area 9, the proposed relaxation of building height by 45m & to 130mPD respectively; and plot ratio by 35% (Site A1 only) would result in minor obstruction to the existing developments at Sheung Shui / Fanling Urban Area, foothill and village greenery at the background. While relaxing of building height to 130mPD for Area 28 would inevitably disrupt partial sky view and mountain backdrop, as illustrated in the photomontages **Figure 3.1**.

5.2.3 The proposed changes in plot ratio and/or building height in A1 is considered compatible with the existing and planned urban developments in term of scale and height, and the changes is barely perceivable due to long distance. The proposed changes in building height for Area 9 and 28 is presented in form of building cluster, which is perceived in a holistic manner, with hillside greenery at foreground screening the lower portion of building from Area 9 and Area 28 that reduce the overall bulkiness of proposed structures and smoothen the hard edge of building. The perceived change in sense of openness to the sky shall be minimized with careful position of the building blocks to avoid wall effect. Existing visual resources including hillside vegetation at foreground, mountain backdrop and open sky view at background will not be affected.

5.2.4 It is considered that the proposed changes would not result in significant visual impact to the surroundings.

VK2 - Small Valley at the Eastern Foothill of Western Range

5.2.5 Viewpoint VK2 has an overall view from small valley at the eastern foothill of Western Range to proposed Site A1, A2, B3, B8, B9 and Area 9. Relaxation of plot ratio by 35% (Site A1), 30% (Site A2) and 20% (Site B3, B8 & B9), and building height increase by 45m (Site A1), to 130mPD (Area 9), 25m (Site A2), 15m (Site B3) and 5m (Site B8 & 9) are proposed.

5.2.6 The proposed changes in plot ratio and/or building height in Site A1, A2, B3, B8, B9 are considered compatible with the existing and planned urban developments in term of scale and height as illustrated in the photomontages **Figure 3.2**. For Area 9, the proposed building height relaxation would cause obstruction to the sky view, obstructing the spacing between building blocks of Site No. A1 and Area 19 (public housing development under A/KTN/84) at the back. While existing visual resources including hillside vegetation at foreground and mountain backdrop at west side will not be affected, which also act as a screening agent to reduce the bulkiness of proposed building blocks. Though certain portion of sky view will be intruded due to increased building height, but there would be no significant alternation to the visual permeability which overall sense of openness is maintained.

5.2.7 It is considered that the proposed changes would not result in significant visual impact to the surroundings.

VK3 - Fanling Highway near Valais & Europa Garden

5.2.8 Viewpoint VK3 is a direct view from the section of Fanling Highway near the Valais Residential Development at the south to the proposed Site B2 and A5. The proposed relaxation of building height by 15m and 25m, plot ratio by 20% and 30% respectively.

5.2.9 The proposed changes in plot ratio and/or building height in Site B2 and A5 are considered compatible with the existing and planned urban developments in term of scale and height as illustrated in the photomontages **Figure 3.3**. Existing village greenery at front view will not be affected which provide screening effect to the lower portion of building blocks. While small portion of sky will be intruded due to increased building height, but there would be no significant alternation to the visual permeability which overall sense of openness is maintained.

5.2.10 It is considered that the proposed changes would not result in significant visual impact to the surroundings.

VK4 - Ki Lun Shan Footpath

5.2.11 Viewpoint VK4 is a direct overview from Ki Lun Shan to the proposed KTN NDA. For the Site A1 – A5 & B1 – B10, the relaxation of plot ratio by 20% (Site B1 – B10) and 35% (Site A1), 30% (Site A2- A5); and building height by 5m (Site B5, B6, B8 & B9), 10m (Site B4), 15m (Site A4, B1, B2, B3, B7 & B10), 25m (Site A2 & A5), 30m (Site A3) and 45m (Site A1) are proposed. For the Site Area 28, 29, 32 & 34, the relaxation of plot ratio and building height by 40% and by 15-35m for Area 32 & 34; and relaxation of building height to 130mPD for Area 28 and 29. The proposed changes in plot ratio and/or building height of the Sites would not result in noticeable change in the existing visual context and create obstruction to the existing mountainous backdrop and open sky view.

5.2.12 The proposed changes in plot ratio and/or building height in Site A1 – A5, B1 – B10, and Area 28, 29, 32 and 34 are considered compatible with the existing and planned urban developments in term of scale and height. The overall buildings profile at central view is maintained in a large extent, hence, the visual composition is not disturbed. And the proposed changes are regarded as visually compatible which blend with adjoining building clusters, and would not be significant due to long distance.

5.2.13 It is considered that the proposed changes would not result in significant visual impact to the surroundings as illustrated in the photomontage in **Figure 3.4**.

VK5 - Road P2

5.2.14 Viewpoint VK5 has a direct view from Ho Sheung Heung to proposed Site A2, A3, A4, B3 and B4. The proposed relaxation of building height would be by 25m (Site A2), 30m (Site A3), 15m (Site A4 & B3) and 10m (Site B4) respectively, and plot ratio by 30% (Site A2, A3 & A4) and 20% (Site B3 & B4).

5.2.15 Though the changes would result in minor change of the skyline at the background and small portion of sky will be intruded due to increased building height, the overall sense of openness is maintained and no significant alternation to visual permeability is resulted as illustrated in the photomontages in **Figure 3.5**.

5.2.16 The proposed changes in plot ratio and/or building height in Site A2, A3, A4 and B4 are considered compatible with the existing and planned urban developments in term of scale and height, and would not result in significant visual impact to the surroundings.

VK6 - Road P1

5.2.17 Viewpoint VK6 is a direct view from Pak Shek Au to proposed Site A3 – A5, B2 & B4 – B6. The relaxation of plot ratio by 20% (Site B2 & B3 – B5) and 30% (Site A3 – A5); and building height by 5m (Site B5 & B6), 10m (Site B4), 15m (Site A4 & B2), 25m (Site A5) and 30m (Site A3) are proposed.

5.2.18 The proposed changes would result in minor change of the skyline in the background as illustrated in the photomontages in **Figure 3.6**. The perceived change to the skyline is considered moderate due to close distance of this viewpoint.

5.2.19 Although, the visual openness of this view would be slightly affected, the proposed changes in Site A3 – A5, B2 & B4 – B6 are considered compatible with the existing and planned urban developments in term of scale and height, and would result in minor of significant visual impact to the surroundings.

VK7 - View from the south of KTN NDA

5.2.20 Viewpoint VK7 is a direct view from town center to proposed Site A1, A2, A4 and B1. The proposed relaxation of building height would be 45m (Site A1), 25m (Site A2) & 15m (Site A4 & B1); and plot ratio by 35% (Site A1), 30% (Site A2 & A4) and 20% (Site B1).

5.2.21 The proposed increase in building height would result in minor change the visual openness of the view comparing with the Base Case Scenario. However, as illustrated in the photomontages in **Figure 3.7**, visual gaps between the developments would be maintained and the visual permeability would not be significantly affected.

5.2.22 The proposed changes in plot ratio and/or building height in Site A1, A2, A4 and B1 are considered compatible with the existing and planned urban developments in term of scale and height, and would not result in significant visual impact to the surroundings.

VK8 - Footpath along Sheung Yue River near Long Valley Village

5.2.23 Viewpoint VK8 is a distant and glimpse view from Long Village to proposed Site A3, A4, B11, B12 and Area 34. There is no building height change to Site B11 & B12, while plot ratio is increased by 20%. Due to the long distant view, the proposed change for Site A3 and A4 in building height by 30m and 15m respectively, and plot ratio both by 30% of the Sites would only result minor obstruction that is hardly noticeable to the existing visual context as illustrated in photomontages in **Figure 3.8**.

5.2.24 For Area 34, proposed change in building height by 30m and plot ratio both by 40% is relatively obvious that would inevitably disrupt the sky openness. Mitigation measures in relation to watercourse and provision of greenery in the foreground would offer screening effect for the lower portion of building, at the same time serve as a visual relief and visual resources at the front row. The overall visual quality of the view is still considered as high.

5.2.25 As such, the proposed changes of the Sites would cause certain adverse impact, while it could be mitigated with well-implementation of soft landscape and detailed design measures.

VK9 - Fanling Highway near Ascot Park Area

5.2.26 Viewpoint VK9 is a distant and glimpse view from Kam Tsin to proposed Site A5 and B2. The view is dominated by the Fanling Highway and roadside vegetation in the frontage. The proposed relaxation of building height by 25m and 15m, and plot ratio by 30% and 20% respectively would create very minor obstruction to sky at background with no noticeable visual change the existing visual context as illustrated in **Figure 3.9**.

5.2.27 And Area 32, proposed increase in building height 35m and plot ratio by 40% will be screened by existing roadside greenery in a large extent which the potential impact is considered minor.

5.2.28 Therefore, the proposed changes would not result in significant visual impact to the surroundings from this view.

VK10 - Hiking Trail to Tai Shek Mo

5.2.29 Viewpoint VK10 is an overview from Tai Shek Mo to the proposed KTN NDA covering Site A1, A2, A4, A5, B3 – B5, B7 – B10 and Area 9, the relaxation of plot ratio by 20% (Site B3 – B5 & B7 – B10) and 35% (Site A1), 30% (Site A2, A4 & A5); and building height by 5m (Site B5, B8 & B9), 10m (Site B4), 15m (Site B3, B7 & B10), 25m (Site A2 & A5), 30m (Site A4), 45m (Site A1) and to 130mPD (Area 9) are proposed. Compared to base scheme, the proposed changes in plot ratio and/or building height of the Sites would have no impact to open sky view, and result in minor intrusion towards mountain backdrop.

5.2.30 Proposed changes are perceived in a holistic manner and would not be significant due to long distance. It is considered that the proposed changes would not result in significant visual impact to the surroundings as illustrated in the photomontage in **Figure 3.10**.

Cumulative Impact

5.2.31 The assessment would take into account planned developments in the vicinity, including changes for Area 19 (plot ratio of 6.25 and building height restrictions 151mPD (west) and 146mPD (east)) and Area 24 (plot ratio of 5.5 and building height restrictions 135mPD) under recently approved S16 planning applications, No. A/KTN/84 and A/KTN/83 respectively.

5.2.32 Area 19 and 24 would be visible in VK1, VK2, VK4 and VK6. The changes in the Application Sites (S1 in VK1; S1 & S2 in VK2, S3 – S11 in VK4, S3 & S5 - S9 in VK6) are considered compatible with Area 19 and 24, in term of scale and height which would be perceived in a holistic manner. The overall building profile is anticipated to be similar compared with that in Baseline condition.

Overall Visual Appraisal

5.2.33 Due to the proposed changes in development parameter, Site No. A1 – 5 & B1 - 12 and Area No. 9, 28, 29, 32 & 34 would involve changes including building height relaxation as discussed above; and/or plot ration increase ranging from 20% to 35%. According to visual appraisal of the viewpoints VK1 to VK10 mentioned in the paragraphs above, the visual changes of the proposal are considered as minor. Photomontages illustrating the proposed changes are provided in **Figure 3.1** - **3.10**.

5.2.34 Effect on Visual Composition: The Developments with the proposed relaxation of plot ratio and/or building height and/ or land use changes is visually compatible with the existing and planned urban context of the area in term of scale and height. The holistic building profile is still respected at the Development of KTN NDA.

5.2.35 Effect on Visual Obstruction and Visual Permeability: The increase in building height and changes in building layout due the increase in plot ratio are considered slight. Although, the proposal would result in increase of visual intrusion to sky in a small extent for some of the viewpoints. These changes are considered acceptable and no significant alternation to the visual permeability which overall sense of openness is maintained.

5.2.36 Effect on Visual Resources: The mountain backdrop and overall townscape of KTN NDA would remain unchanged; while open sky will be intruded in a small extent. There would be no significant impact upon the visual resources as compared with the proposed development in the Base Case Scenario.

5.2.37 Impact on Visually Sensitive Receivers: No discernible change in magnitude of impact and visual impact significance on all the VSRs due to proposed changes are anticipated.

5.2.38 Impact on Visually Sensitive Receivers: No discernible change in magnitude of impact and visual impact significance on all the VSRs due to proposed changes are anticipated.

6 MITIGATION MEASURE

6.1.1 Bearing in mind that the purpose of this report is to assess the proposed changes against the planned development of the Base Case Scenario, the primary difference between the two scenarios lies in modification of building arrangement, form and height. The change in overall visual impact is considered slight as demonstrate in the assessment above and photomontages provided in **Figure 3.1** - **3.10**. The following mitigations will be adopted to enhance the landscape and visual amenity and minimize any potential adverse visual impact.

6.1.2 Detailed Design (Visual) (MM1)

• The footprint of development components and the works area should also be kept to a practical minimum and the detailed design of development components for construction stage should follow the Sustainable Building Design Guidelines. The form, textures, finishes and colours of the proposed SPS buildings and boundary treatment should aim to be compatible with the existing surroundings.

• To improve visual amenity, designs should be aesthetically pleasing and treatment of structures also improve visual amenity. For example natural building materials such as stone and timber should be considered for architectural features, and light earthy tone colours such as shades of green, shades of grey, shades of brown and off-white should also be considered to reduce the visibility of the development components.

Slope Landscaping (MM2)

• Site formation has been reduced as far as possible to avoid substantial slope cutting. Hydroseeding of modified slopes should be done as soon as grading works are completed to prevent erosion and subsequent loss of landscape resources and character. Woodland tree seedlings and/ or shrubs should be planted where the slope gradient and site conditions allow.

• In addition, landscape planting should be provided for the retaining structures associated with modified slopes, where conditions allow. All slope landscaping works should comply with GEO Publication No. 1/2011-Technical Guidelines on Landscape Treatment for Slopes

Vertical Greening (MM3)

• Planting of climbers to grow up vertical surfaces were appropriate, such as along perimeter fencing/walling and building walls are recommended to break up uniform surfaces and provide visual amenity.

Green Roof (MM4)

• Roof greening where appropriate should be established on proposed buildings to reduce exposure to untreated concrete surfaces and particularly mitigate visual impact to VSRs at higher elevations.

Screen Planting (MM5)

• Tall buffer trees and shrubs should be planted to screen proposed structures such as roads and buildings. This measure may additionally form part of the compensatory planting and will improve compatibility with the surrounding landscape.

Screen Hoarding (MM6)

• Screen hoarding shall be erected along areas of the construction works site boundary where the works site borders publicly accessible routes and/or is close to visually sensitive receivers (VSRs), to screen undesirable views of the works site. It is proposed that the screening be compatible with the surrounding environment and where possible, non-reflective, recessive colours be used.

6.1.3 The proposed changes under the Section 16 application and the OZP amendment would inevitably create minor changes to visual composition, visual obstruction and permeability, visual effect on the adjacent VSRs. However, in general, there would not be any discernible effect on visual resources. As illustrated in the photomontages prepared under this submission, it is predicted that there would be overall insignificant visual effects to key public viewpoints identified.

Drawings

ISO A1 594mm x 841mm

Approved:

Checked:

Designer:

Project Management Initials:

827200 E

A1

Plot Ratio: 5.0 -> 5.8 -> 6.73
(+35%)

BHR: 135mPD -> 180mPD
(+33%)

A2

Plot Ratio: 5.0 -> 5.8 -> 6.5
(+30%)

BHR: 135mPD -> 160mPD
(+19%)

B3

Plot Ratio: 3.5 -> 4.2
(+20%)

BHR: 80mPD -> 95mPD
(+19%)

B7

Plot Ratio: 3.5 -> 4.2
(+20%)

BHR: 85/95mPD -> 100mPD
(+18%/5%)

B8

Plot Ratio: 3.5 -> 4.2
(+20%)

BHR: 85mPD -> 90mPD
(+6%)

B9

Plot Ratio: 3.5 -> 4.2
(+20%)

BHR: 80mPD -> 85mPD
(+6%)

B1

Plot Ratio: 6.0 -> 7.2
(+20%)

BHR: 115mPD -> 130mPD
(+13%)

B10

Plot Ratio: 3.5 -> 4.43
(+27%)

BHR: 95mPD -> 110mPD
(+16%)

A3

Plot Ratio: 6.0 -> 7.8
(+30%)

BHR: 115mPD -> 145mPD
(+26%)

AREA 9

BHR on OZP: 20 storeys

BHR on OZP amendment: 130mPD

B4

Plot Ratio: 3.5 -> 4.2
(+20%)

BHR: 75mPD -> 85mPD
(+13%)

B11

Plot Ratio: 3.5 -> 4.2
(+20%)

BHR: 90mPD -> 90mPD
(+0%)

A4

Plot Ratio: 5.0 -> 5.8 -> 6.5
(+30%)

BHR: 125mPD -> 130mPD -> 140mPD
(+12%)

B12

Plot Ratio: 3.5 -> 4.2
(+20%)

BHR: 90mPD -> 90mPD
(+0%)

A5

Plot Ratio: 5.0 -> 5.8 -> 6.5
(+30%)

BHR: 110mPD -> 120mPD -> 135mPD
(+23%)

B6

Plot Ratio: 3.5 -> 4.2
(+20%)

BHR: 75mPD -> 80mPD
(+7%)

B2

Plot Ratio: 6.0 -> 7.2
(+20%)

BHR: 115mPD -> 130mPD
(+13%)

B5

Plot Ratio: 3.5 -> 4.2
(+20%)

BHR: 75mPD -> 80mPD
(+7%)

VK1

VK2

VK3

VK4

VK5

VK6

VK7

VK8

VK9

VK10

AREA 28

BHR on OZP: 10 storeys

BHR on OZP amendment: 130mPD

AREA 29

BHR on OZP: 8/10 storeys

BHR on OZP amendment: 130mPD

AREA 32

OU(B&TP) on OZP

PR: 3.0

BHR: 40/55mPD

R(B) on OZP amendment

Proposed PR: 4.2

Proposed BHR: 75mPD

AREA 34

OU(BTP)1 on OZP

PR: 3.0

BHR: 40/55mPD

R(B) on OZP amendment

Proposed PR: 4.2

Proposed BHR: 70mPD

LEGEND

PRIVATE HOUSING DEVELOPMENT UNDER S.16 APPLICATION

PUBLIC HOUSING DEVELOPMENT UNDER S.16 APPLICATION

SITE INVOLVED IN OZP AMENDMENT

(+ XX%) PROPOSED INCREASE IN PLOT RATIO/ BUILDING HEIGHT COMPARED TO OZP

X.XX→X.XX→X.XX : PLOT RATIO UNDER OZP → PLOT RATIO AFTER CHANGES MADE IN PREVIOUS S16 APPLICATION (REGISTER.: A/KTN/54) → PROPOSED PLOT RATIO

X.XXmPD→X.XXmPD→X.XXmPD : BUILDING HEIGHT RESTRICTION UNDER OZP → BUILDING HEIGHT RESTRICTION AFTER CHANGES MADE IN PREVIOUS S16 APPLICATION (REGISTER.: A/KTN/54) → PROPOSED BUILDING HEIGHT RESTRICTION

N

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2022/8/8

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PROJECT
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DEVELOPMENT OF KWU TUNG NORTH NEW DEVELOPMENT AREA, REMAINING PHASE - DESIGN & CONSTRUCTION

CLIENT
業主

土木工程拓展署
Civil Engineering and Development Department

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STATUS
階段

SCALE
比例
A1 1 : 8000

DIMENSION UNIT
尺寸單位
METRES

KEY PLAN
索引圖

PROJECT NO.
項目編號
60624717

CONTRACT NO.
合約編號
CE 19/2019 (CE)

SHEET TITLE
圖紙名稱
PROPOSED RELAXATION OF DEVELOPMENT RESTRICTION - PLOT RATIO & BUILDING HEIGHT

SHEET NUMBER
圖紙編號
60624717/G10/FIGURE 1.1

ISO A1 594mm x 841mm

Approved:

Checked:

Designer:

Project Management Initials:

828800 E

828800 E

838400 E

843200 N

841600 N

840000 N

LEGEND:

- VSR
- VSR + VP
- PRIMARY ZONE OF VISUAL INFLUENCE
- PUBLIC HOUSING DEVELOPMENT UNDER S.16 APPLICATION
- PRIVATE HOUSING DEVELOPMENT UNDER S.16 APPLICATION
- SITE INVOLVED IN OZP AEMONMENT
- A1 SITE NO.

N

VK1

VK2

VK3

VK4

VK5

VK6

VK7

VK8

VK9

VK10

A1 A2 A3 B1 A4 B2 A5 B3 B10 B4 B11 B12 B5 B6 B7 B8 B9

SHEUNG SHUI

N

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METRES

KEY PLAN
索引圖

PROJECT NO. 項目編號
60624717

CONTRACT NO. 合約編號
CE 19/2019 (CE)

SHEET TITLE
圖紙名稱
BASE CASE SCENERIO

SHEET NUMBER
圖紙編號
60624717/G10/FIGURE 1.2

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Designer:

Project Management Initials:

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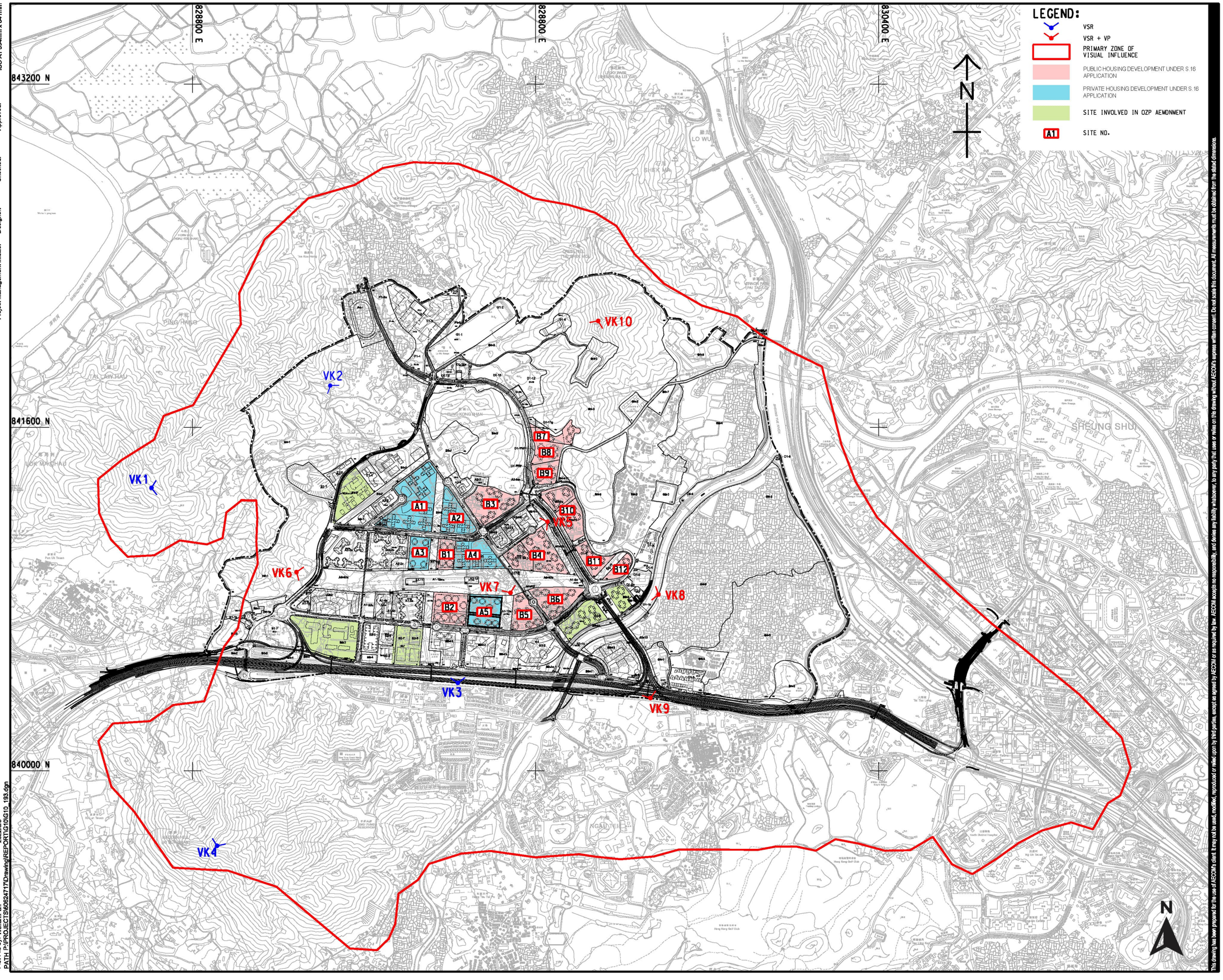
828800 E

838400 E

843200 N

841600 N

840000 N



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DIMENSION UNIT 尺寸單位
METRES

KEY PLAN
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PROJECT NO. 項目編號
60624717

CONTRACT NO. 合約編號
CE 19/2019 (CE)

SHEET TITLE
圖紙名稱

PROPOSED SCHEME FOR VIA

SHEET NUMBER
圖紙編號

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2022/8/8

ISO A1 594mm x 841mm

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Checked:

Designer:

Project Management Initials:

Site A1/ Area 12 (135mPD)
Proposed Public Housing Development

No Change of Building Height

Public Housing Development in Area 19 under A/KTN/84

Building Height increased by 10M

Public Housing Development in Area 24 under A/KTN/83

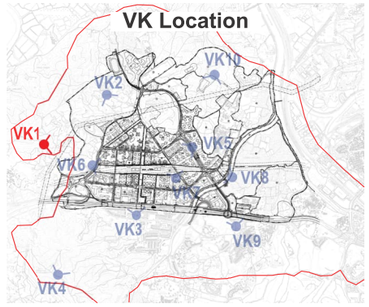
Area 9 (20 storeys)
District police headquarter, police married quarters and a divisional police station

No Change of Building Height

Area 28 (10 storeys)
Proposed Hospital, polyclinic and General Clinic/ Health Centre

No Change of Building Height

VK Location





VK1 - Photomontage before Proposed Changes

Public Housing Development in Area 19 under A/KTN/84

Public Housing Development in Area 24 under A/KTN/83

Area 9 (130mPD)
District police headquarter, police married quarters and a divisional police station

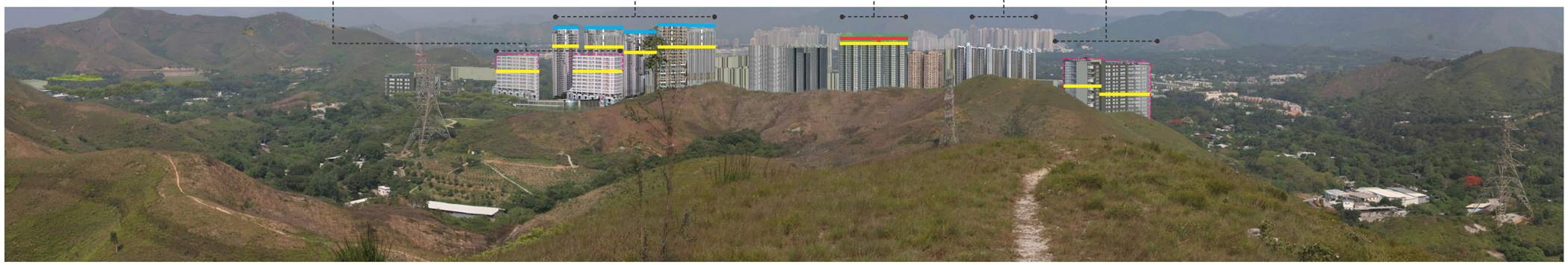
Building Height increased from 20 storeys - 130mPD

Site A1/ Area 12 (180mPD)
Proposed Public Housing Development

Building Height increased by 45M

Area 28 (130mPD)
Proposed Hospital, polyclinic and General Clinic/ Health Centre

Building Height increased from 10 storeys - 130mPD



VK1 - Photomontage after Proposed Changes

- BUILDING HEIGHT RESTRICTION UNDER OZP
- BUILDING HEIGHT RELAXATION UNDER APPLICATION NO. A/KTN/54
- BUILDING HEIGHT RELAXATION UNDER APPLICATION NO. A/KTN/84
- PROPOSED BUILDING HEIGHT RELAXATION UNDER S16 APPLICATION
- PROPOSED BUILDING HEIGHT RELAXATION UNDER OZP AMENDMENT

BUILDING HEIGHT CHANGES BETWEEN OZP RESTRICTION & APPLICATION NO. A/KTN/54

PROPOSED BUILDING HEIGHT CHANGES BETWEEN OZP RESTRICTION & THE PROPOSED DEVELOPMENT (S16 + OZP AMENDMENT)

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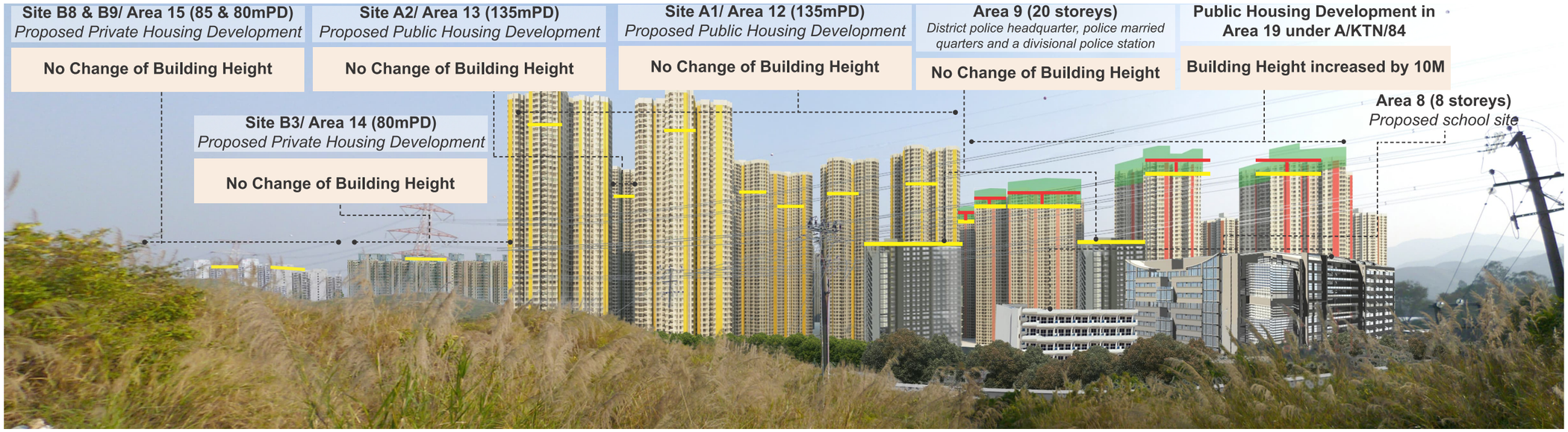
SCALE: A1 1 : 8000
DIMENSION UNIT: METRES

KEY PLAN

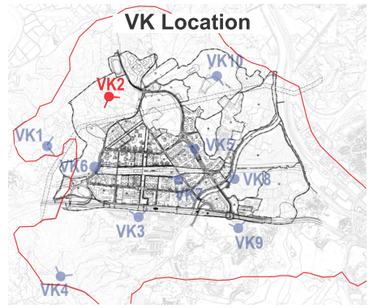
PROJECT NO.: 60624717
CONTRACT NO.: CE 19/2019 (CE)

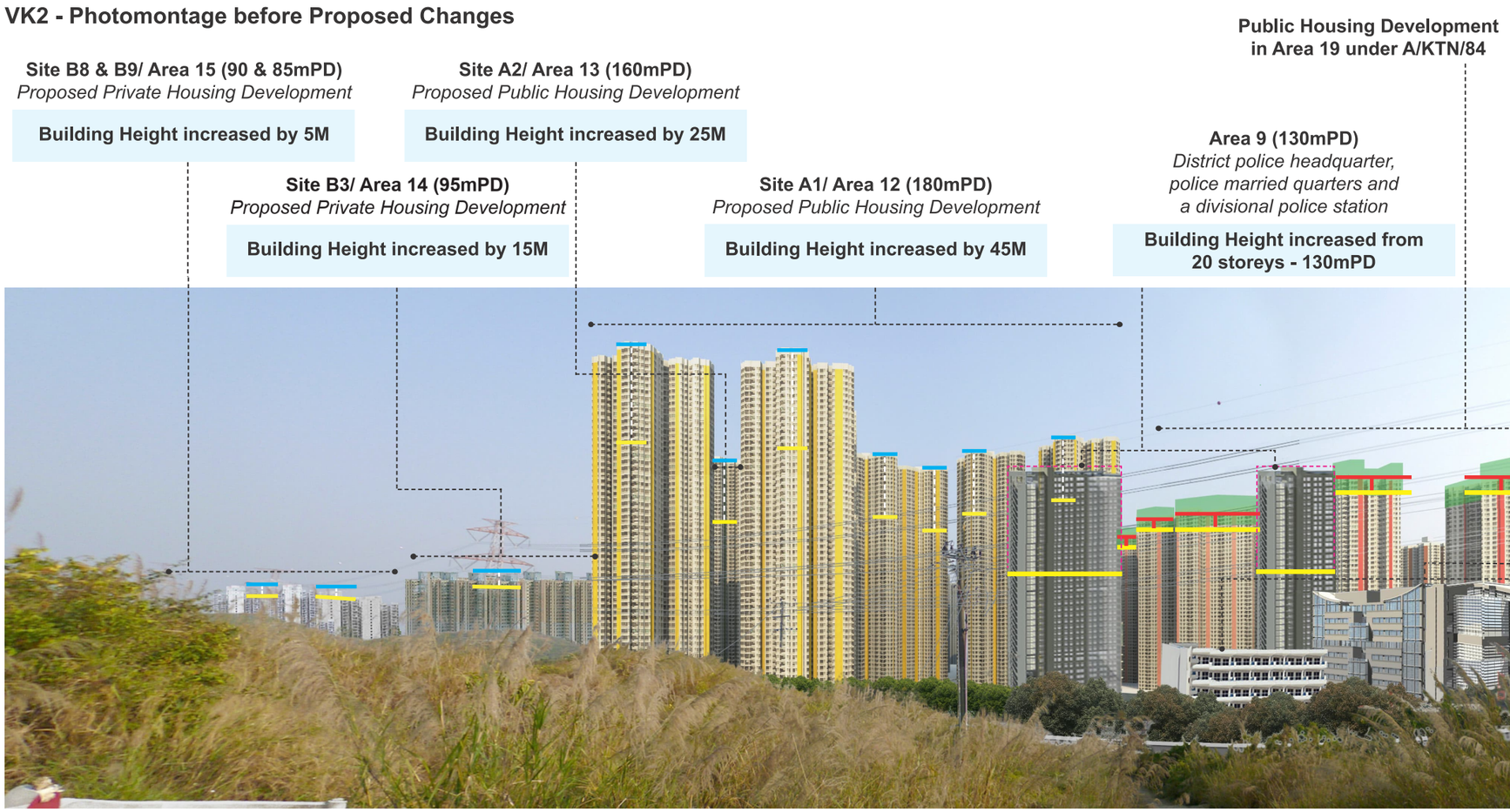
SHEET TITLE
PHOTOMONTAGE FROM VIEWPOINT VK1

SHEET NUMBER
60624717/S16/FIGURE 3.1



VK2 - Photomontage before Proposed Changes





VK2 - Photomontage after Proposed Changes

- BUILDING HEIGHT RESTRICTION UNDER OZP
- BUILDING HEIGHT RELAXATION UNDER APPLICATION NO. A/KTN/54
- BUILDING HEIGHT RELAXATION UNDER APPLICATION NO. A/KTN/84
- PROPOSED BUILDING HEIGHT RELAXATION UNDER S16 APPLICATION
- PROPOSED BUILDING HEIGHT RELAXATION UNDER OZP AMENDMENT

BUILDING HEIGHT CHANGES BETWEEN OZP RESTRICTION & APPLICATION NO. A/KTN/54

PROPOSED BUILDING HEIGHT CHANGES BETWEEN OZP RESTRICTION & THE PROPOSED DEVELOPMENT (S16 + OZP AMENDMENT)

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DEVELOPMENT OF KWU TUNG NORTH NEW DEVELOPMENT AREA, REMAINING PHASE – DESIGN AND CONSTRUCTION

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I/R 修訂	DATE 日期	DESCRIPTION 內容摘要	CHK. 複核

STATUS
階段

SCALE
比例
A1 1 : 8000

DIMENSION UNIT
尺寸單位
METRES

KEY PLAN
索引圖

PROJECT NO.
項目編號
60624717

CONTRACT NO.
合約編號
CE 19/2019 (CE)

SHEET TITLE
圖紙名稱
PHOTOMONTAGE FROM VIEWPOINT VK2

SHEET NUMBER
圖紙編號
60624717/S16/FIGURE 3.2

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Project Management Initials: Designer: Checked: Approved: ISO A1 594mm x 841mm

Plot File by: Yauky 16/8/2018
PATH P:\Projects\60335578\DRAWING\REPORTS\S16\S16_752.dgn

ISO A1 594mm x 841mm

Project Management Initials: Designer: Checked: Approved:

Area 30 (110mPD)
Mixed use (Commercial/office, hotel, residential uses and social welfare facilities)

Site B2/ Area 25 (115mPD)
Proposed Private Housing Development
No Change in Building Height

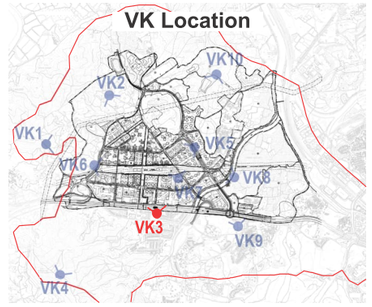
Site A5/ Area 26 (120mPD)
Proposed Public Housing Development
Building Height increased by 10M



VK3 - Photomontage before Proposed Changes

Area 31 (60mPD)
OU (Business and Technology Park)

VK Location



Area 30 (110mPD)
Mixed use (Commercial/office, hotel, residential uses and social welfare facilities)

Site B2/ Area 25 (130mPD)
Proposed Private Housing Development
Building Height increased by 15M

Site A5/ Area 26 (135mPD)
Proposed Public Housing Development
Building Height increased by 25M



VK3 - Photomontage after Proposed Changes

Area 31 (60mPD)
OU (Business and Technology Park)

BUILDING HEIGHT RESTRICTION UNDER OZP
BUILDING HEIGHT RELAXATION UNDER APPLICATION NO. A/KTN/54
PROPOSED BUILDING HEIGHT RELAXATION UNDER S16 APPLICATION

BUILDING HEIGHT CHANGES BETWEEN OZP RESTRICTION & APPLICATION NO. A/KTN/54

PROPOSED BUILDING HEIGHT CHANGES BETWEEN OZP RESTRICTION & THE PROPOSED DEVELOPMENT (S16 + OZP AMENDMENT)

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PROJECT
DEVELOPMENT OF KWU TUNG NORTH NEW DEVELOPMENT AREA, REMAINING PHASE – DESIGN AND CONSTRUCTION

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I/R	DATE	DESCRIPTION	CHK.

STATUS

SCALE: A1 1 : 8000
DIMENSION UNIT: METRES

KEY PLAN

PROJECT NO.: 60624717
CONTRACT NO.: CE 19/2019 (CE)

SHEET TITLE
PHOTOMONTAGE FROM VIEWPOINT VK3

SHEET NUMBER
60624717/S16/FIGURE 3.3

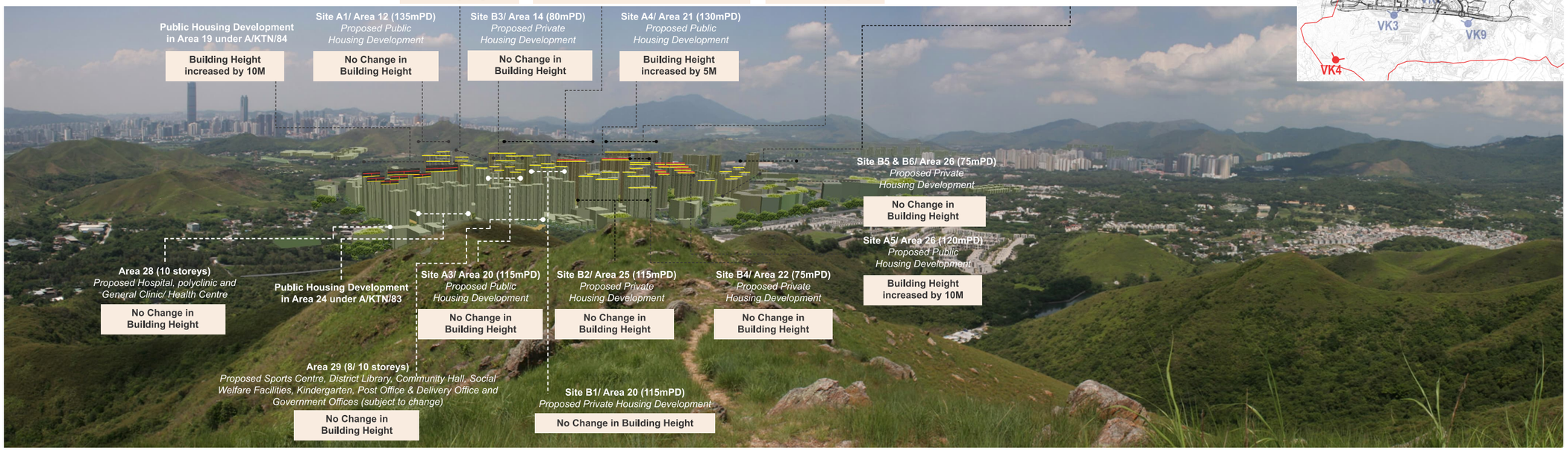
ISO A1 594mm x 841mm

Approved:

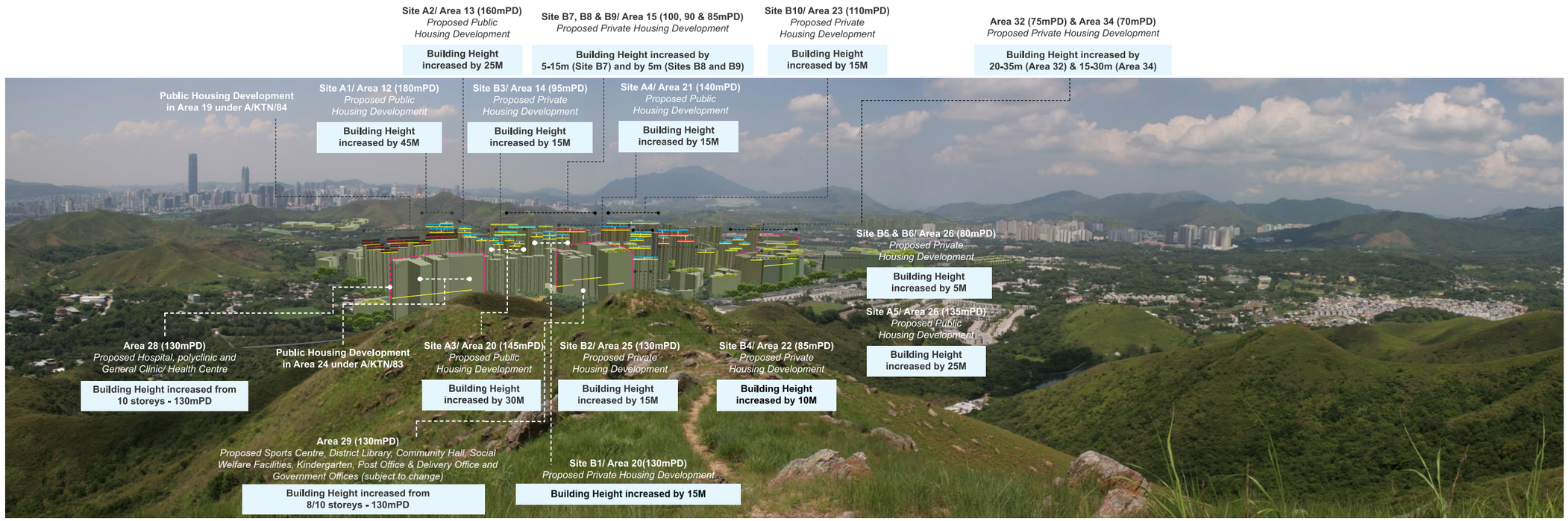
Checked:

Designer:

Project Management Initials:



VK4 - Photomontage before Proposed Changes



VK4 - Photomontage after Proposed Changes

BUILDING HEIGHT RESTRICTION UNDER OZP
BUILDING HEIGHT RELAXATION UNDER APPLICATION NO. A/KTN/54
BUILDING HEIGHT RELAXATION UNDER APPLICATION NO. A/KTN/84
PROPOSED BUILDING HEIGHT RELAXATION UNDER S16 APPLICATION
PROPOSED BUILDING HEIGHT RELAXATION UNDER OZP AMENDMENT

BUILDING HEIGHT CHANGES BETWEEN OZP RESTRICTION & APPLICATION NO. A/KTN/54

PROPOSED BUILDING HEIGHT CHANGES BETWEEN OZP RESTRICTION & THE PROPOSED DEVELOPMENT (S16 + OZP AMENDMENT)

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I/R 修訂	DATE 日期	DESCRIPTION 內容說明	CHK. 核查

STATUS
狀態

SCALE
比例
A1 1 : 8000

DIMENSION UNIT
尺寸單位
METRES

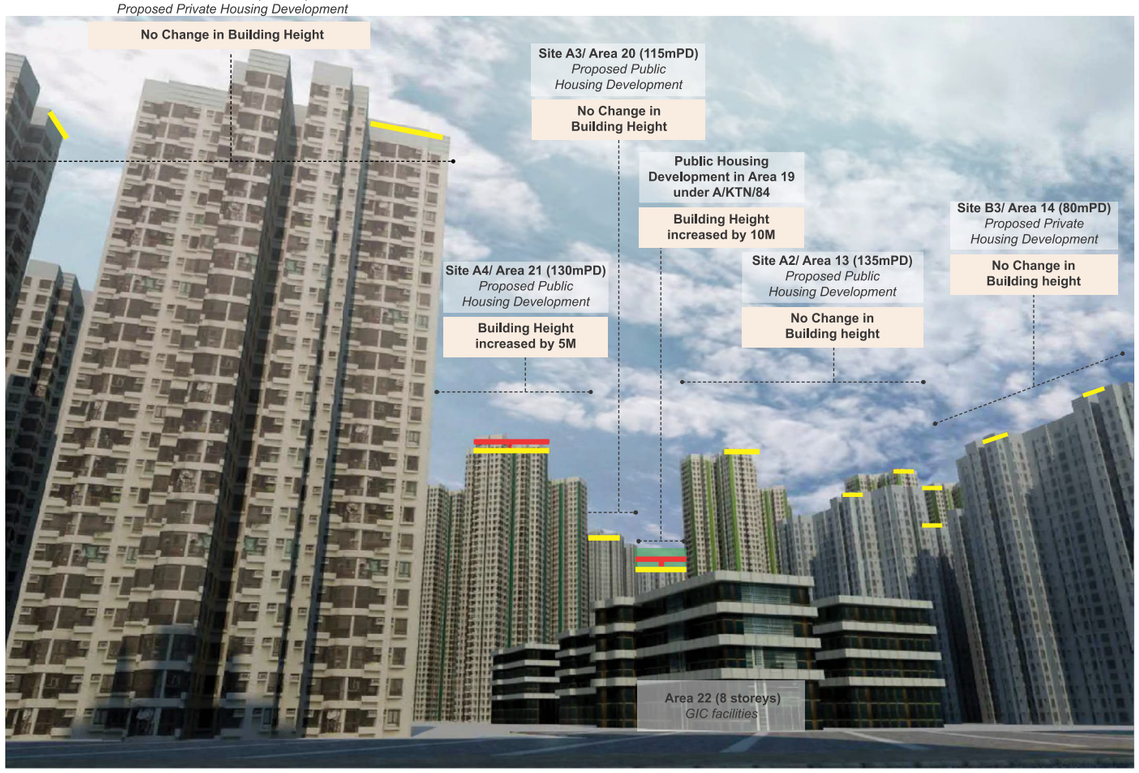
KEY PLAN
索引圖

PROJECT NO.
項目編號
60624717

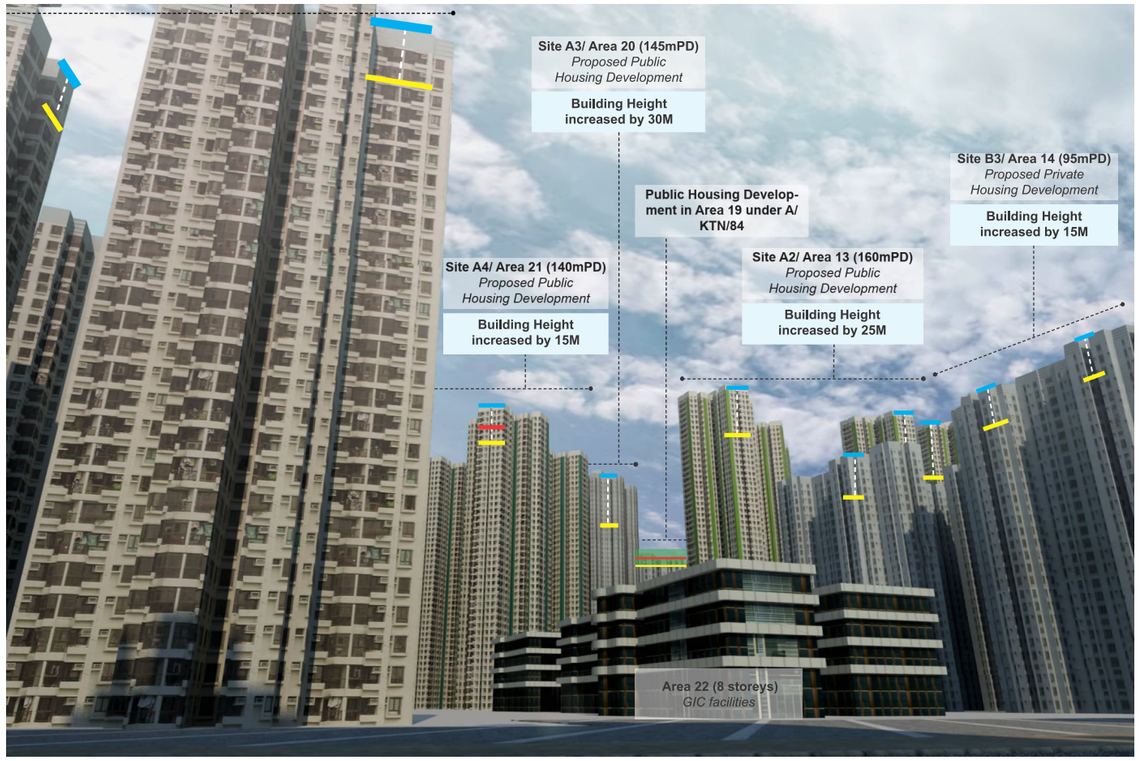
CONTRACT NO.
合約編號
CE 19/2019 (CE)

SHEET TITLE
圖紙名稱
PHOTOMONTAGE FROM VIEWPOINT VK4

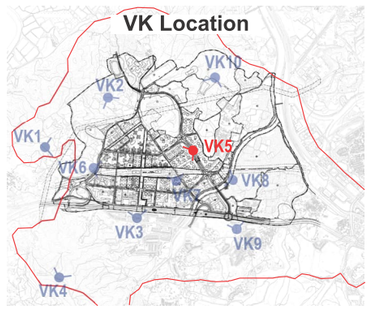
SHEET NUMBER
圖紙編號
60624717/S16/FIGURE 3.4



VK5 - Photomontage before Proposed Changes



VK5 - Photomontage after Proposed Changes



BUILDING HEIGHT RESTRICTION UNDER OZP

BUILDING HEIGHT RELAXATION UNDER APPLICATION NO. A/KTN/54

BUILDING HEIGHT RELAXATION UNDER APPLICATION NO. A/KTN/84

PROPOSED BUILDING HEIGHT RELAXATION UNDER S16 APPLICATION

BUILDING HEIGHT CHANGES BETWEEN OZP RESTRICTION & APPLICATION NO. A/KTN/54

PROPOSED BUILDING HEIGHT CHANGES BETWEEN OZP RESTRICTION & THE PROPOSED DEVELOPMENT (S16 + OZP AMENDMENT)

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STATUS
階段

SCALE 比例: A1 1 : 8000

DIMENSION UNIT 尺寸單位: METRES

KEY PLAN
索引圖

PROJECT NO. 項目編號: 60624717

CONTRACT NO. 合約編號: CE 19/2019 (CE)

SHEET TITLE
圖紙名稱

PHOTOMONTAGE FROM VIEWPOINT VK5

SHEET NUMBER
圖紙編號

60624717/S16/FIGURE 3.5

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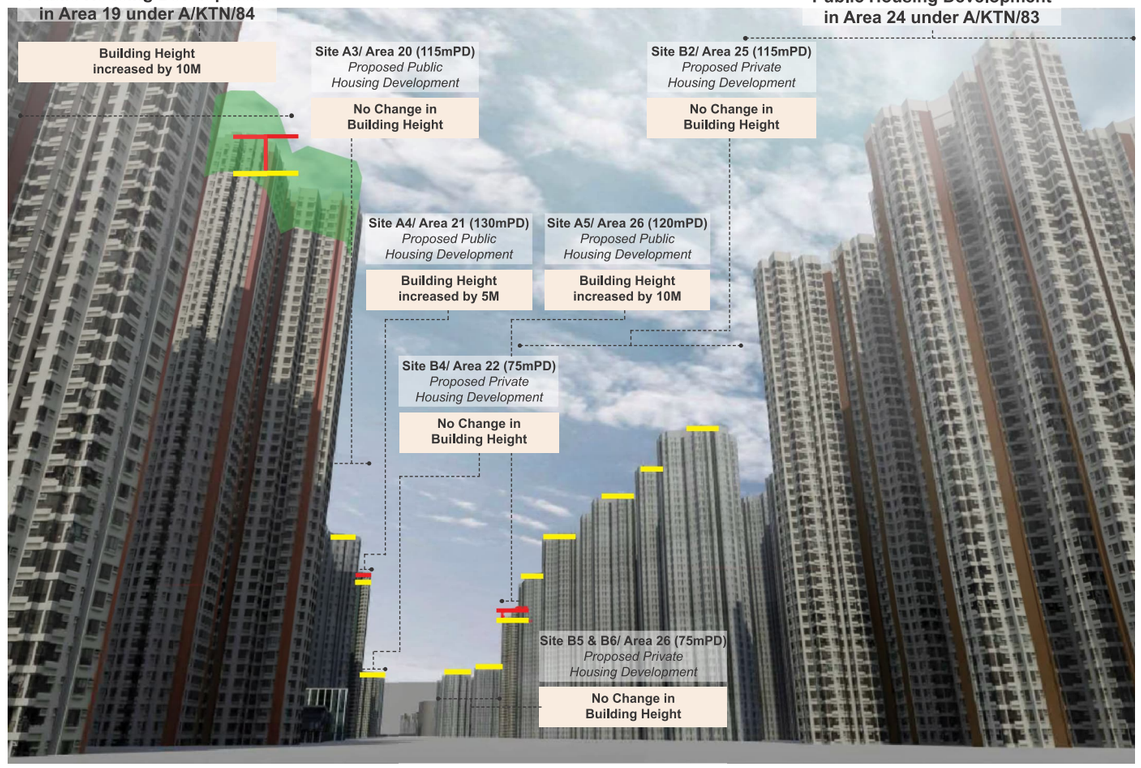
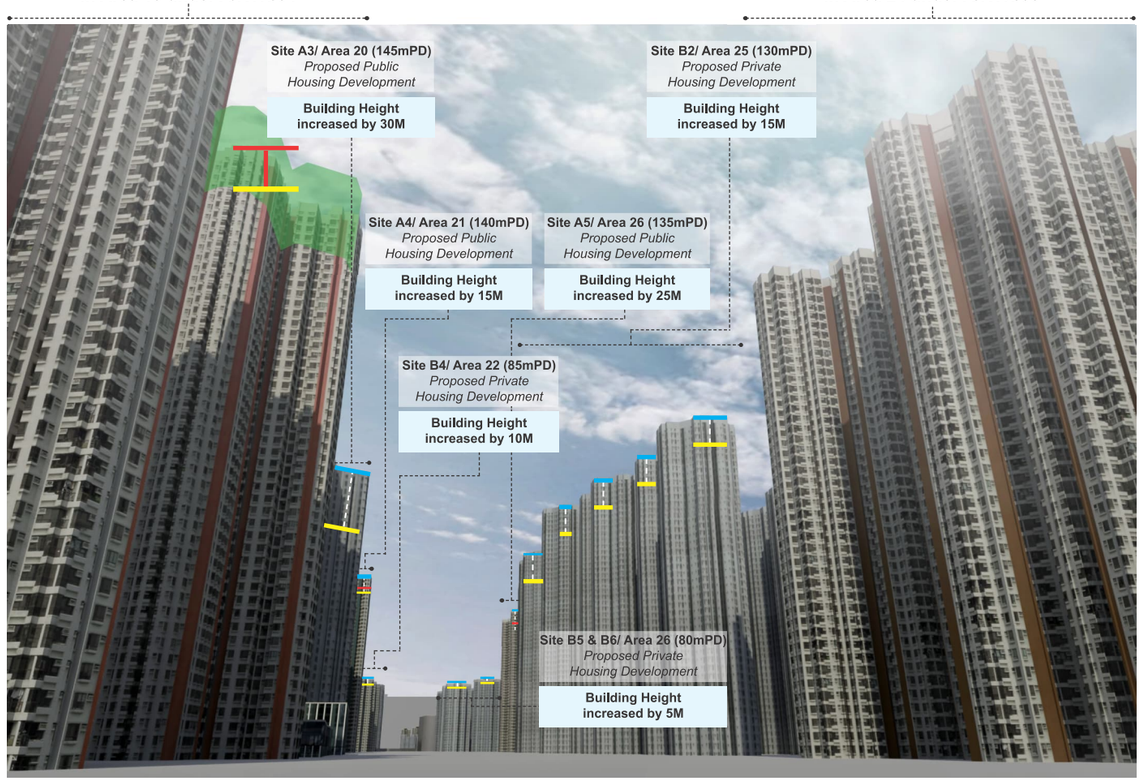
ISO A1 594mm x 841mm

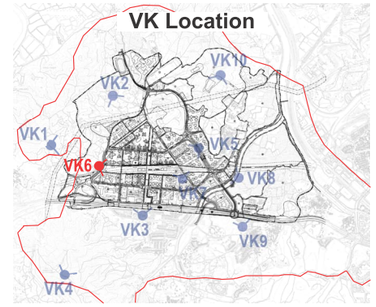
Project Management Initials: Designer: Checked: Approved:



VK6 - Photomontage before Proposed Changes



VK6 - Photomontage after Proposed Changes



- BUILDING HEIGHT RESTRICTION UNDER OZP
- BUILDING HEIGHT RELAXATION UNDER APPLICATION NO. A/KTN/54
- BUILDING HEIGHT RELAXATION UNDER APPLICATION NO. A/KTN/84
- PROPOSED BUILDING HEIGHT RELAXATION UNDER S16 APPLICATION

BUILDING HEIGHT CHANGES BETWEEN OZP RESTRICTION & APPLICATION NO. A/KTN/54

PROPOSED BUILDING HEIGHT CHANGES BETWEEN OZP RESTRICTION & THE PROPOSED DEVELOPMENT (S16 + OZP AMENDMENT)

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STATUS
階段

SCALE
比例
A1 1 : 8000

DIMENSION UNIT
尺寸單位
METRES

KEY PLAN
索引圖

PROJECT NO.
項目編號
60624717

CONTRACT NO.
合約編號
CE 19/2019 (CE)

SHEET TITLE
圖紙名稱
PHOTOMONTAGE FROM VIEWPOINT VK6

SHEET NUMBER
圖紙編號
60624717/S16/FIGURE 3.6

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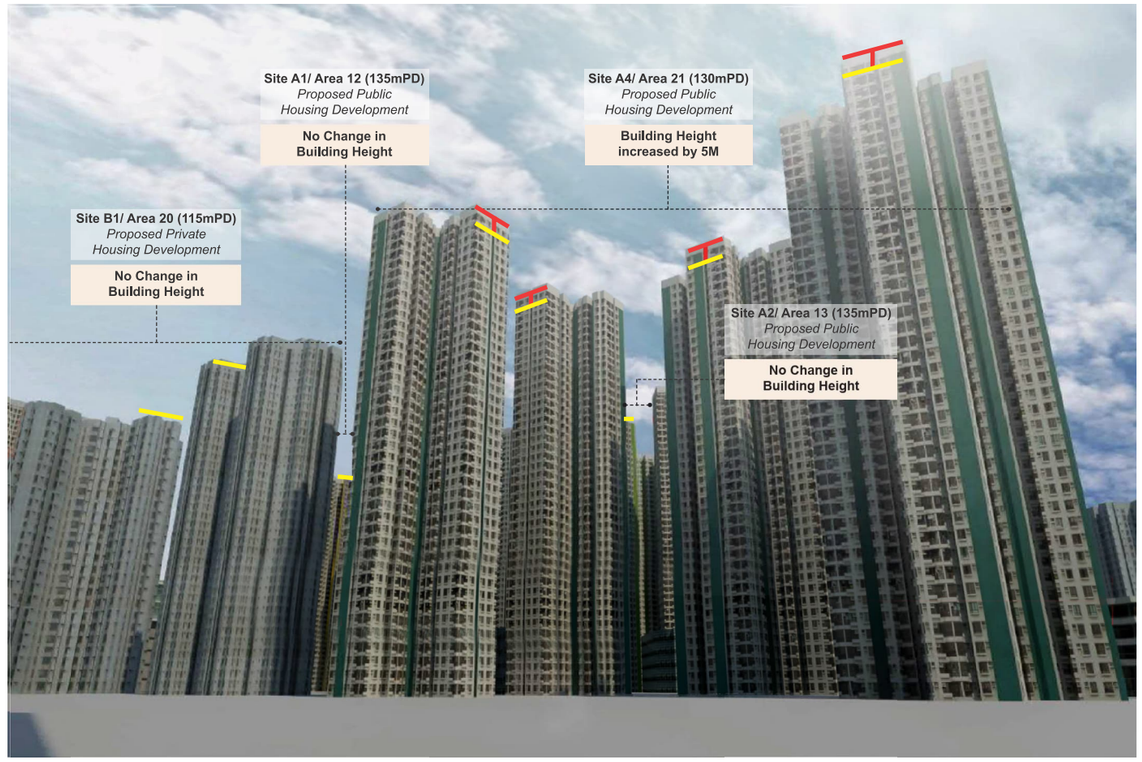
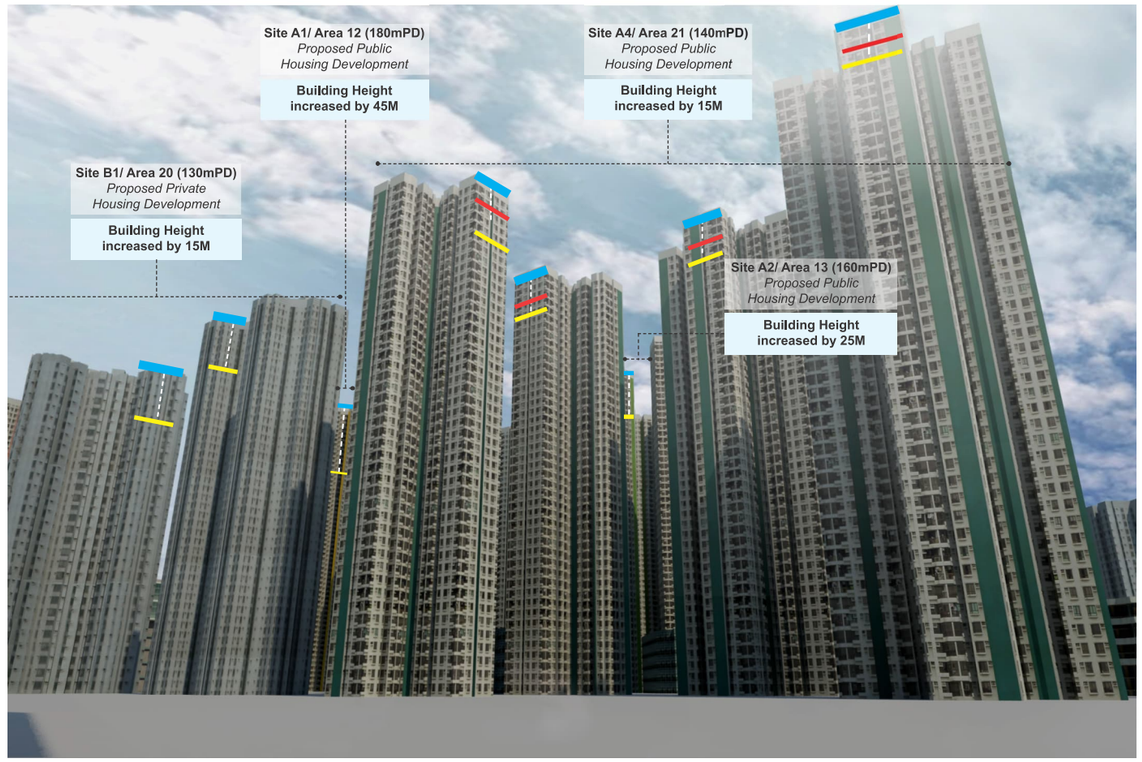
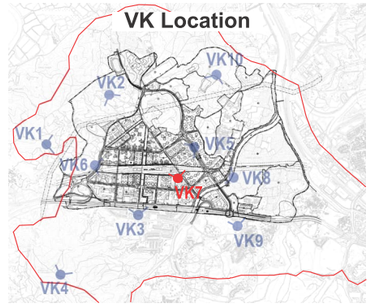


VK7 - Photomontage before Proposed Changes



VK7 - Photomontage after Proposed Changes



BUILDING HEIGHT RESTRICTION UNDER OZP

BUILDING HEIGHT RELAXATION UNDER APPLICATION NO. A/KTN/54

PROPOSED BUILDING HEIGHT RELAXATION UNDER S16 APPLICATION

BUILDING HEIGHT CHANGES BETWEEN OZP RESTRICTION & APPLICATION NO. A/KTN/54

PROPOSED BUILDING HEIGHT CHANGES BETWEEN OZP RESTRICTION & THE PROPOSED DEVELOPMENT (S16 + OZP AMENDMENT)

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PROJECT
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STATUS
階段

SCALE 比例: A1 1 : 8000

DIMENSION UNIT 尺寸單位: METRES

KEY PLAN
索引圖

PROJECT NO. 項目編號: 60624717

CONTRACT NO. 合約編號: CE 19/2019 (CE)

SHEET TITLE
圖紙名稱

PHOTOMONTAGE FROM VIEWPOINT VK7

SHEET NUMBER
圖紙編號

60624717/S16/FIGURE 3.7

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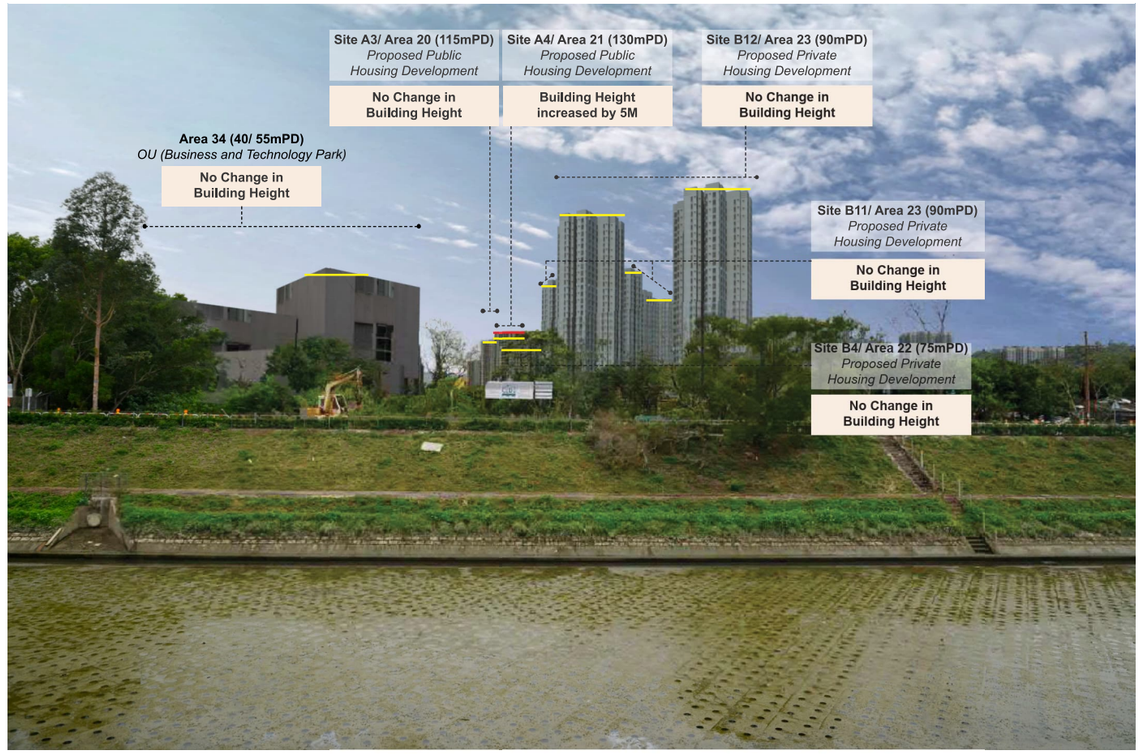
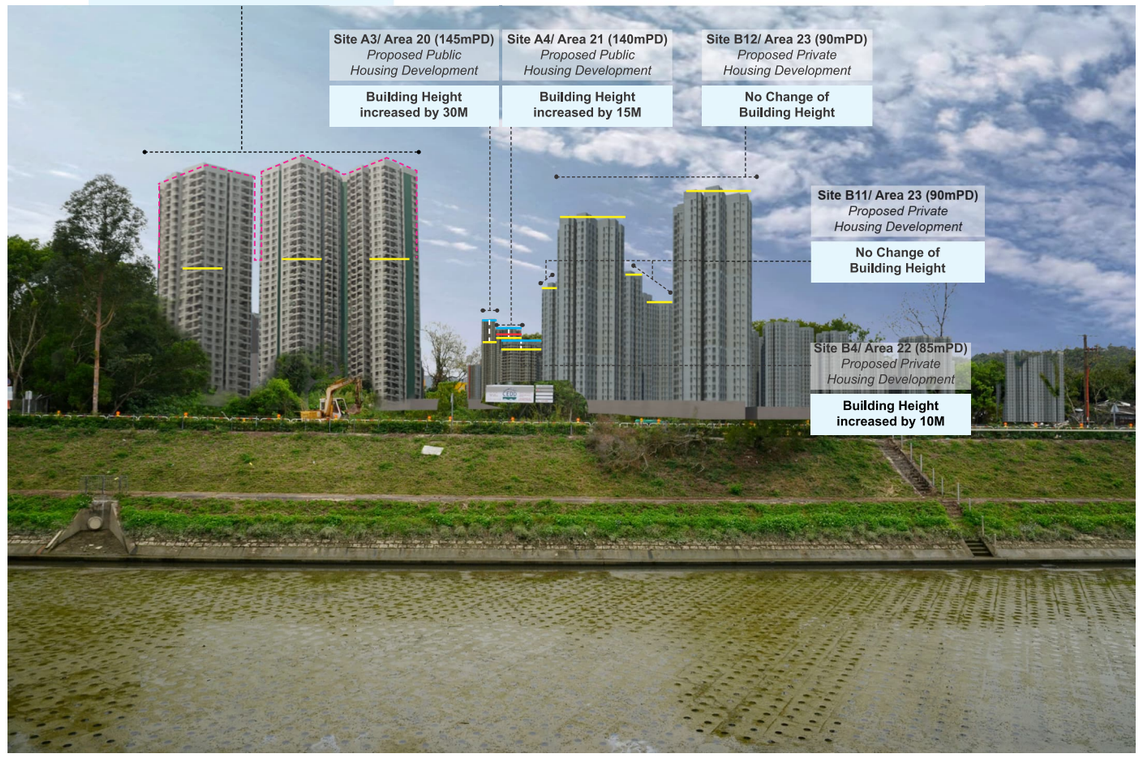
Designer:
Project Management Initials:
Plot File by: Yauky 16/8/2018
PATH P:\Projects\60335576\DRAWING\REPORTS\S16\S16_752.dgn

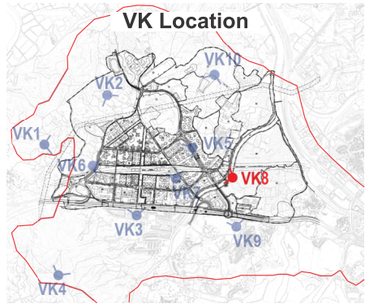
ISO A1 594mm x 841mm
Approved:
Checked:
Designer:
Project Management Initials:



VK8 - Photomontage before Proposed Changes



VK8 - Photomontage after Proposed Changes



BUILDING HEIGHT RESTRICTION UNDER OZP

BUILDING HEIGHT RELAXATION UNDER APPLICATION NO. A/KTN/54

PROPOSED BUILDING HEIGHT RELAXATION UNDER S16 APPLICATION

PROPOSED BUILDING HEIGHT RELAXATION UNDER OZP AMENDMENT

BUILDING HEIGHT CHANGES BETWEEN OZP RESTRICTION & APPLICATION NO. A/KTN/54

PROPOSED BUILDING HEIGHT CHANGES BETWEEN OZP RESTRICTION & THE PROPOSED DEVELOPMENT (S16 + OZP AMENDMENT)

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STATUS
狀態

SCALE 比例: A1 1 : 8000
DIMENSION UNIT 尺寸單位: METRES

KEY PLAN
索引圖

PROJECT NO. 項目編號: 60624717
CONTRACT NO. 合約編號: CE 19/2019 (CE)

SHEET TITLE
圖紙名稱
PHOTOMONTAGE FROM VIEWPOINT VK8

SHEET NUMBER
圖紙編號
60624717/S16/FIGURE 3.8

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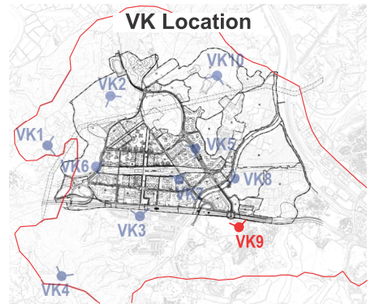
VK9 - Photomontage before Proposed Changes



VK9 - Photomontage after Proposed Changes



BUILDING HEIGHT RESTRICTION UNDER OZP

BUILDING HEIGHT RELAXATION UNDER APPLICATION NO. A/KTN/54

PROPOSED BUILDING HEIGHT RELAXATION UNDER S16 APPLICATION

PROPOSED BUILDING HEIGHT RELAXATION UNDER OZP AMENDMENT

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STATUS
階段

SCALE 比例: A1 1 : 8000

DIMENSION UNIT 尺寸單位: METRES

KEY PLAN
索引圖

PROJECT NO. 項目編號: 60624717

CONTRACT NO. 合約編號: CE 19/2019 (CE)

SHEET TITLE
圖紙名稱

PHOTOMONTAGE FROM VIEWPOINT VK9

SHEET NUMBER
圖紙編號

60624717/S16/FIGURE 3.9

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Designer:
Project Management Initials:
Plot File by: Yauky 16/8/2018
PATH: P:\Projects\60335578\DRAWING\REPORT\S16\S16_752.dgn

ISO A1 594mm x 841mm

Approved:

Checked:

Designer:

Project Management Initials:

Site B5/ Area 26 (75mPD)
Proposed Private Housing Development
No Change in Building Height

Site B4/ Area 22 (75mPD)
Proposed Private Housing Development
No Change in Building Height

Site B10/ Area 23 (95mPD)
Proposed Private Housing Development
No Change in Building Height

Site B9/ Area 15 (80mPD)
Proposed Private Housing Development
No Change in Building Height

Site A5/ Area 26 (120mPD)
Proposed Public Housing Development
Building Height increased by 10M

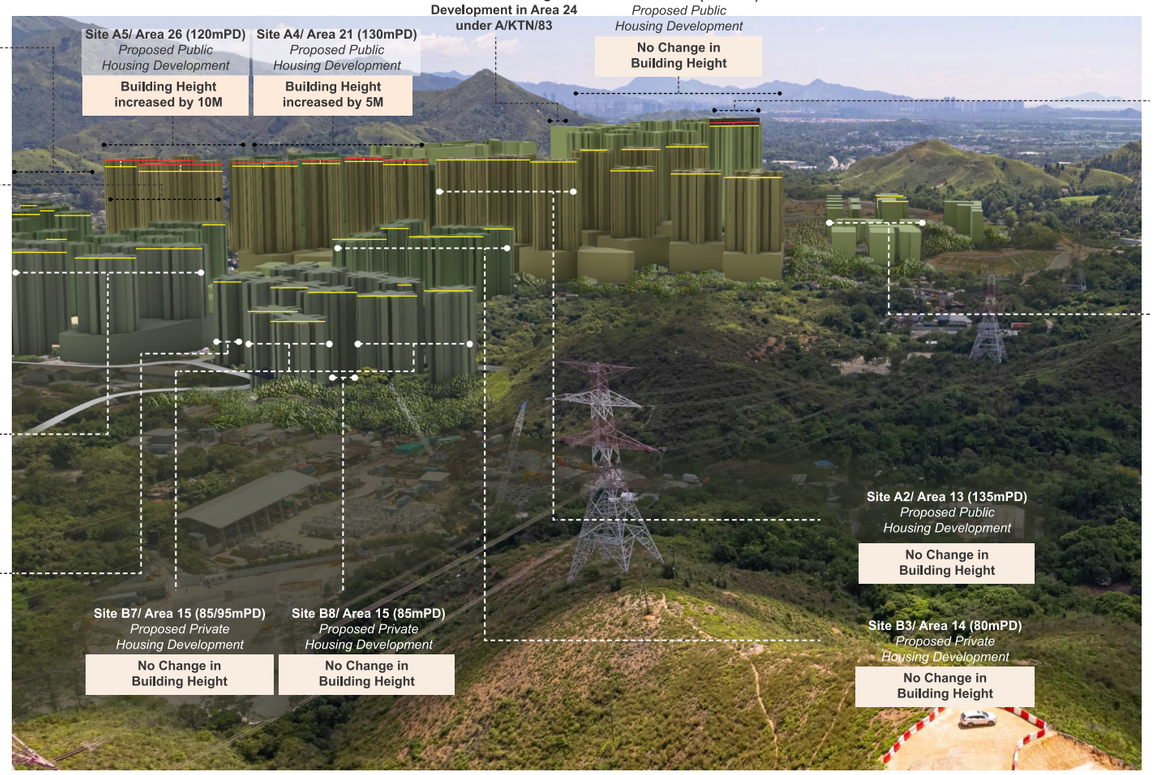
Site A4/ Area 21 (130mPD)
Proposed Public Housing Development
Building Height increased by 5M

Public Housing Development in Area 24 under A/KTN/83

Site A1/ Area 12 (135mPD)
Proposed Public Housing Development
No Change in Building Height

Public Housing Development in Area 19 under A/KTN/84
Building Height increased by 10M

Area 9 (20 storeys)
District police headquarter, police married quarters and a divisional police station
No Change in Building Height

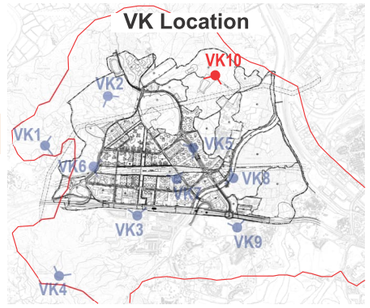


Site B7/ Area 15 (85/95mPD)
Proposed Private Housing Development
No Change in Building Height

Site B8/ Area 15 (85mPD)
Proposed Private Housing Development
No Change in Building Height

Site A2/ Area 13 (135mPD)
Proposed Public Housing Development
No Change in Building Height

Site B3/ Area 14 (80mPD)
Proposed Private Housing Development
No Change in Building Height



VK10 - Photomontage before Proposed Changes

Site B5/ Area 26 (80mPD)
Proposed Private Housing Development
Building Height increased by 5M

Site B4/ Area 22 (85mPD)
Proposed Private Housing Development
Building Height increased by 10M

Site B10/ Area 23 (110mPD)
Proposed Private Housing Development
Building Height increased by 15M

Site B9/ Area 15 (85mPD)
Proposed Private Housing Development
Building Height increased by 5M

Site A5/ Area 26 (135mPD)
Proposed Public Housing Development
Building Height increased by 25M

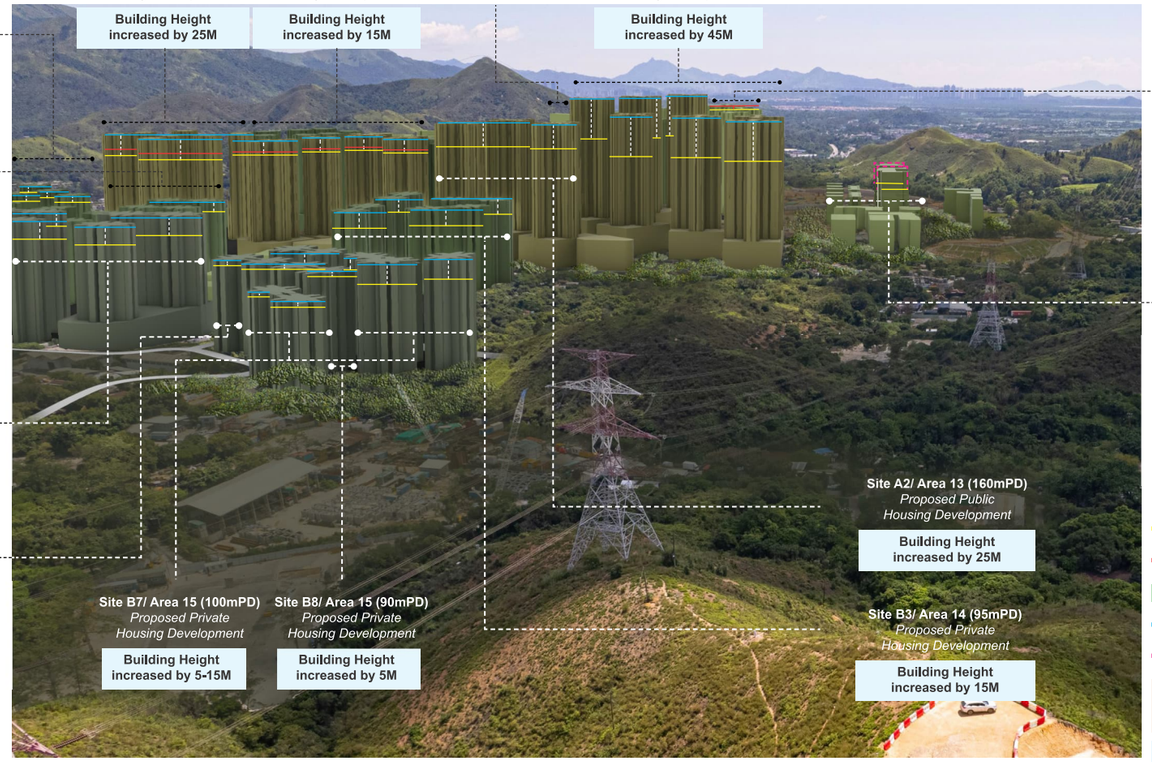
Site A4/ Area 21 (140mPD)
Proposed Public Housing Development
Building Height increased by 15M

Public Housing Development in Area 24 under A/KTN/83

Site A1/ Area 12 (180mPD)
Proposed Public Housing Development
Building Height increased by 45M

Public Housing Development in Area 19 under A/KTN/84

Area 9 (130mPD)
District police headquarter, police married quarters and a divisional police station
Building Height increased from 20 storeys - 130mPD



Site B7/ Area 15 (100mPD)
Proposed Private Housing Development
Building Height increased by 5-15M

Site B8/ Area 15 (90mPD)
Proposed Private Housing Development
Building Height increased by 5M

Site A2/ Area 13 (160mPD)
Proposed Public Housing Development
Building Height increased by 25M

Site B3/ Area 14 (95mPD)
Proposed Private Housing Development
Building Height increased by 15M

BUILDING HEIGHT RESTRICTION UNDER OZP

BUILDING HEIGHT RELAXATION UNDER APPLICATION NO. A/KTN/54

BUILDING HEIGHT RELAXATION UNDER APPLICATION NO. A/KTN/84

PROPOSED BUILDING HEIGHT RELAXATION UNDER S16 APPLICATION

PROPOSED BUILDING HEIGHT RELAXATION UNDER OZP AMENDMENT

BUILDING HEIGHT CHANGES BETWEEN OZP RESTRICTION & APPLICATION NO. A/KTN/54

PROPOSED BUILDING HEIGHT CHANGES BETWEEN OZP RESTRICTION & THE PROPOSED DEVELOPMENT (S16 + OZP AMENDMENT)

VK10 - Photomontage after Proposed Changes

Plot File by: Yauky 16/8/2019
PATH: P:\Projects\60624717\MD\04WING\REPORT\S16\S16_752.dgn

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AECOM

PROJECT
項目

DEVELOPMENT OF KWU TUNG NORTH NEW DEVELOPMENT AREA, REMAINING PHASE – DESIGN AND CONSTRUCTION

CLIENT
業主

CEDD 土木工程拓展署 Civil Engineering and Development Department

CONSULTANT
工程顧問公司

AECOM Asia Company Ltd.
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SUB-CONSULTANTS
分判工程顧問公司

ISSUE/REVISION
發行

I/R 發行	DATE 日期	DESCRIPTION 內容說明	CHK. 核查

STATUS
狀態

SCALE 比例: A1 1 : 8000

DIMENSION UNIT 尺寸單位: METRES

KEY PLAN
索引圖

PROJECT NO. 項目編號: 60624717

CONTRACT NO. 合約編號: CE 19/2019 (CE)

SHEET TITLE
圖紙名稱

PHOTOMONTAGE FROM VIEWPOINT VK10

SHEET NUMBER
圖紙編號

60624717/S16/FIGURE 3.10

Appendix G

Landscape Impact Assessment

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1 INTRODUCTION

1.1 Background

1.1.1 Regarding the latest planning circumstances, including the Northern Metropolis Development Strategy (NMDS) and the 2021 Policy Address, AECOM Asia Co. Ltd. has been commissioned by Civil Engineering and Development Department (CEDD) to review the residual landscape impact for the proposed OZP amendments for 5 sites (i.e. Area Nos. 9, 28, 29, 32 & 34) and undertake Section 16 Application for minor relaxation of the plot ratio and building height restriction at all Public and Private Housing Sites (i.e. Site Nos. A1 – 5 & B1 - 12) in Kwu Tong North New Development Area Remaining Phase.

1.1.2 This appendix reviews the landscape impact on landscape resources and landscape character areas within OZP amendment sites (i.e. Area Nos. 9, 28, 29, 32 & 34) with reference to the planned uses and development parameters in the prevailing OZP. Detail can be referred to **Figure nos. 101** and **102**. The changes arising from the Section16 Application are also reflected on relevant figures for reference.

1.2 Purpose of Landscape Impact Assessment

1.2.1 The purpose of this LIA is to assess the potential landscape impact of the Proposed Development i.e. the proposed OZP amendments, to the surrounding areas, and present sufficient information in a structured manner to facilitate the Town Planning Board (TPB) to visualize the three-dimensional relationship of the Proposed Development with the surrounding context.

1.3 Structure of the Report

1.3.1 Following this introductory section, the remainder of this LIA is arranged as follows:

- Section 2 presents the Methodology of the Landscape Impact Assessment;
- Section 3 summarizes the Proposed Changes;
- Section 4 describes the landscape impact assessment area;
- Section 5 presents the preliminary landscape impact assessment; and
- Section 6 evaluates the overall landscape impact.

2 METHODOLOGY OF THE LANDSCAPE IMPACT ASSESSMENT

2.1 Introduction

2.1.1 The landscape impacts of the Proposed Development are assessed. The landscape impacts have been assessed according to the following procedures

- **Identification of the baseline Landscape Resources (LRs) and landscape characters found within the study area.** This is achieved by site visits and desktop study of topographical maps, information databases and photographs.
- **Assessment of the degree of sensitivity of the LRs and Landscape Character Areas (LCAs).** This is influenced by a number of factors including whether the resource/character is common or rare, whether it is considered to be of local, regional, national or global importance, whether there are any statutory or regulatory limitations/requirements relating to the resource, the quality of the resource/character, the maturity of the resource and the ability of the resource/character to accommodate change.
- **The sensitivity of each landscape feature and character area is classified as follows: -**

  High: Important landscape character or resource of particularly distinctive character or high importance, sensitive to relatively small change.

  Medium: Landscape character or resource of moderately valued landscape characteristics reasonably tolerant to change.

  Low: Landscape character or resource, the nature of which is largely tolerant to change.

- **Identification of potential sources of landscape changes**. These are the various elements of the construction works and operation procedures that would generate landscape impacts.
- **The magnitude of landscape changes is classified as follows: -**

  Large: The landscape character or landscape resource would incur a major change

  Intermediate: The landscape character or landscape resource would incur a moderate change.

  Small: The landscape or landscape resource would incur slight or barely perceptible change.

  Negligible: The landscape or landscape resource would incur no discernible change.

- **Identification of potential landscape mitigation measures.** These may take the form of adopting basic engineering design to prevent and/or minimise adverse landscape impacts before adopting other mitigation or compensatory measures to alleviate the impacts. Potential mitigation measures shall also include the preservation of vegetation and natural landscape resources, transplanting trees in good condition and value, provision of screen planting, compensatory planting and any measures to mitigate the impact on the existing and planned

land users. Comprehensive mitigation measures throughout construction and operation phase shall be explored in Table 7.

- **Prediction of the significance of landscape impacts before and after the implementation of the mitigation measures.** By synthesizing the magnitude of the various impacts and the sensitivity of the various landscape resources, it is possible to categorise impacts in a logical, well-reasoned and consistent fashion. Table below shows the rationale for dividing the degree of significance into four thresholds, namely insubstantial, slight, moderate, and substantial, depending on the combination of a negligible-small-intermediate-large magnitude of change and a low-medium-high degree of sensitivity of landscape resource /character.

Table 1 – Relationship between Landscape Sensitivity and Magnitude of Change in Defining Impact Significance

		Sensitivity of Landscape Character Area and Resource		
		Low	**Medium**	**High**
Magnitude of Change	**Large**	Moderate	Moderate / Substantial	Substantial
	Intermediate	Slight / Moderate	Moderate	Moderate / Substantial
	Small	Insubstantial / Slight	Slight / Moderate	Moderate
	Negligible	Insubstantial	Insubstantial	Insubstantial

Note: All impacts are adverse unless otherwise noted with Beneficial.

- The significance of landscape impacts is categorized as follows: -

Substantial: Adverse / beneficial impact where the proposal would cause significant deterioration or improvement in existing landscape quality.

Moderate: Adverse / beneficial impact where the proposal would cause a noticeable deterioration or improvement in existing landscape quality.

Slight: Adverse / beneficial impact where the proposal would cause a barely perceptible deterioration or improvement in existing landscape quality.

Insubstantial: No discernible change in the existing landscape quality.

- **Pr*ediction of Acceptability of Impacts.*** An overall assessment of the acceptability, or otherwise, of the impacts according to the five criteria set out in Annex 10 of the EIAO-TM

3 SUMMARY OF PROPOSED CHANGES

3.1 Introduction

3.1.1 The proposed changes in the rezoning sites are shown in **Table 2** and **Table 3**. The changes in plot ratio and building height restriction of the sites under Section 16 application are also shown in Tables 2 and 3 for reference.

Table 2 - Summary of Changes in Maximum Total Plot Ratio at the Sites

Site No.	Changes in Plot Ratio compared to OZP	Increase in Plot Ratio compared to OZP	Changes in Maximum Total Plot Ratio*	Increase in Maximum Total Plot Ratio*
	Compared to OZP		Compared to Approved S16 Application (No. A/KTN/54)	
Sites under OZP Amendment				
Area 9	N/A	N/A#	N/A	N/A
Area 28	N/A	N/A#	N/A	N/A
Area 29	N/A	N/A#	N/A	N/A
Area 32	3 to 4.2	+40.0%	N/A	N/A
Area 34	3 to 4.2	+40.0%	N/A	N/A
Sites under S16 Application (for reference)				
A1	5.0 to 6.73	+35%	5.8 to 6.73	+16.0%
A2	5.0 to 6.5	+30.0%	5.8 to 6.5	+12.1%
A3	6.0 to 7.8	+30.0%	N/A	N/A
A4	5.0 to 6.5	+30.0%	5.8 to 6.5	+12.1%
A5	5.0 to 6.5	+30.0%	5.8 to 6.5	+12.1%
B1	6.0 to 7.2	+20.0%	N/A	N/A
B2	6.0 to 7.2	+20.0%	N/A	N/A
B3	3.5 to 4.2	+20.0%	N/A	N/A
B4	3.5 to 4.2	+20.0%	N/A	N/A
B5	3.5 to 4.2	+20.0%	N/A	N/A
B6	3.5 to 4.2	+20.0%	N/A	N/A
B7	3.5 to 4.2	+20.0%	N/A	N/A
B8	3.5 to 4.2	+20.0%	N/A	N/A

Site No.	Changes in Plot Ratio compared to OZP	Increase in Plot Ratio compared to OZP	Changes in Maximum Total Plot Ratio*	Increase in Maximum Total Plot Ratio*
	Compared to OZP		Compared to Approved S16 Application (No. A/KTN/54)	
B9	3.5 to 4.2	+20.0%	N/A	N/A
B10	3.5 to 4.43	+27.0%	N/A	N/A
B11	3.5 to 4.2	+20.0%	N/A	N/A
B12	3.5 to 4.2	+20.0%	N/A	N/A

 # There is no plot ratio restriction for Areas 9, 28 and 29. With increase in building height, corresponding increase in plot ratio is anticipated.

Table 3 - Summary of Changes in Building Height Restriction at the Sites

Site No.	Changes in Building Height Restriction	Building Layout Changed (Yes/No)	Changes in Building Height Restriction	Building Layout Changed (Yes/No)
	Compared to OZP		Compared to Approved S16 Application (Register.: A/KTN/54)	
Sites under OZP Amendment				
Area 9	20 storeys to 130mPD	No	N/A	N/A
Area 28	10 storeys to 130mPD	No	N/A	N/A
Area 29	8/10 storeys to 130mPD	Yes	N/A	N/A
Area 32	40/55mPD to 75mPD	Yes	N/A	N/A
Area 34	40/55mPD to 70mPD	Yes	N/A	N/A
Sites under S16 Application (for reference)				
A1	135mPD to 180mPD	Yes	N/A	N/A
A2	135mPD to 160mPD	Yes	N/A	N/A
A3	115mPD to 145mPD	No	N/A	N/A
A4	125mPD to 140mPD	Yes	130mPD to 140mPD	Yes
A5	110mPD to 135mPD	Yes	120mPD to 135mPD	Yes

Site No.	Changes in Building Height Restriction	Building Layout Changed (Yes/No)	Changes in Building Height Restriction	Building Layout Changed (Yes/No)
	Compared to OZP		Compared to Approved S16 Application (Register.: A/KTN/54)	
B1	115mPD to 130mPD	No	N/A	N/A
B2	115mPD to 130mPD	No	N/A	N/A
B3	80mPD to 95mPD	No	N/A	N/A
B4	75mPD to 85mPD	No	N/A	N/A
B5	75mPD to 80mPD	No	N/A	N/A
B6	75mPD to 80mPD	No	N/A	N/A
B7	85/95mPD to 100mPD	No	N/A	N/A
B8	85mPD to 90mPD	No	N/A	N/A
B9	80mPD to 85mPD	No	N/A	N/A
B10	95mPD to 110mPD	Yes	N/A	N/A
B11	No Change (90mPD)	No	N/A	N/A
B12	No Change (90mPD)	No	N/A	N/A

4 LANDSCAPE IMPACT ASSESSMENT AREA

4.1 Assessment Area

4.1.1 The extent of the assessment area for Landscape is according to Methodology of the Landscape Impact assessment mentioned in **Para 2.1.1**. The extent of the landscape assessment is mapped in **Figure 60624717/LA/101**.

4.2 Baseline Landscape Resources and their Sensitivity

The identified landscape resources which would be potentially affected by the proposed development, together with their sensitivity are described in Table 4.

Table 4 – Baseline Landscape Resources (LRs), Landscape Character Areas (LCAs) and their sensitivity

LR/LCA ID	Description	LR/LCA Sensitivity (High/ Medium/ Low)
KLR2	**Water Course -** this landscape resource refers to natural or semi-natural water courses, including short sections with concreated banks. Vegetation associated with the water course, within the streams and along the banks are included. The vegetation mainly consists of grasses and shrubs, and trees, and provide a natural transition between this LR. Within the Study Area of KTN NDA, this LR includes watercourses running between different rural areas and villages, incorporating streams running off Tai Shek Mo, near Fung Kong and Shek Tsai Leng and around Kwu Tung NDA.	High
KLR4	**Marsh/ Wetland** – this landscape resource refers to fresh marsh/ wetland landscape resources, often overgrown with herbaceous vegetation and often with some areas of seasonal or permanent open water. This LR is found in Long Valley, along the channelized water courses around Ma Tso Lung.	High
KLR6	**Hillside Woodland** – this landscape resource refers to woodland areas largely scattered over hillsides, including at the base of hills and associated patches of woodland. This LR is predominantly composed of native tree species and is generally located some distance from human activities. Common species in this LR include *Macaranga tanarius*, *Leucaena leucocephala*, *Celtis sinensis* and *Ficus microcarpa*. This LR is found at the hillsides of Ki Lun Shan, Tai Shek Mo, Ma Tso Lung, Tit Hang, Fung Kong Shan as well as northwest of Ho Sheung Heung.	High
KLR7	**Lowland Woodland –** this landscape resources refers to woodland growing on low lying ground (generally < 40mPD), often found near rural village area in small, fragmented patches, with differing tree species according to location. This LR can be found at area with human activities, including some Fung Shui Woodland. Common plant species in this LR include *Acacia confusa, Celtis sinensis, Cinnamomum camphora, Leucaena leucocephala and Macaranga tanarius*. This LR include woodland in lowland areas include Ki Lun Shan, Kam Tsin, Pek Shek Au, Shek Tsai Leng, Tong Kok and Fu Tei Au.	High
KLR9	**Agricultural Land** – this landscape resource refers to land used for agriculture including crops and orchards as well as ornamental plant nurseries. In this LR, there are agricultural vegetation, shrubs and trees scattered around. This LR is mainly found in Long Valley, Ho Sheung Heung, Shek Tsai Leng, Tong Kok and Tung Fong.	Medium in general, High at Long Valley and Ho Sheung Heung
KLR10	**Open Space/ Recreation Area** – this LR refers to areas that provide recreational use either in the form of playground areas, sports pitches, passive recreation parks or sitting out spaces. The vegetation associated with this LR are mainly landscaped trees and ornamental shrubs. Within the Study Area of the KTN NDA, this LR is found at Sheung Shui Community Sports and Lo Wu Saddle Club.	Medium
KLR11	**Urban Development Area** – this LR refers to urbanized areas which are heavily developed with considerable hard paved surfaces and limited landscaped area. Vegetation in this LR is mainly landscape planting with scattered amenity shrubs and trees and some small public green spaces and private gardens. Within the Study Area of the KTN NDA, it includes Lo Wu Correctional Institute and the existing formation site for the proposed Kwu Tung MTRC Station.	Low
KLR12	**Rural Development Area –** this landscape area refers to raditional villages, modern villages and small scale, low rise residential areas of lower density dominated by domestic structures (mainly of 2-3 stories) interwoven with roads and paths. This LR often has small orchard areas associated with it (most commonly planted fruit tree species are Dimocarpus longan, Litchi chinensis, Clausena lansium, Mangifera indica and Citrus maxima) and private gardens, as well as amenity planting among the built structures. This LR usually occurs in fragmented patches with agricultural or natural landscape resources adjacent to it. Within this Study Area, this LR mainly found in Ho Sheung Heung, Long Valley, Ngam Pin, along Fanling Highway, as well as in the central area of Kwu Tung	Medium
KLR13	**Industrial / Open Storage –** this landscape resource refers to areas which are heavily adapted for human industrial use, such as factory facilities, waste processing plants and other industrial buildings, often with some open areas for storage, car parking or other associated activities. Very limited vegetation is found in this LR. Within the study area, this LR mainly found in areas adjacent to villages and main roads, such as Yin Kong industrial / open storage, Shek Tsai Leng, Tong Kok and Fung Kong open storage and Pak Shek Au open storage. It also includes Sheung Shui Slaughter House, Sheung Shui Water Treatment Works and Shek Wu Hui Sewage Treatment Works.	Low
KLCA2	**Rural and Urban Peripheral Village Landscape –** this landscape character area refers to rural village areas and village areas on the fringes of urban developments, including relic landscapes of former villages. This LCA is dominated by small or medium sized villages with modern and traditional houses and some Ancestral Halls, interspersed with small agricultural plots and comprises a broad mix of other land uses including water ponds, schools, sports grounds, and playgrounds, some open storage areas and car parks, and a golf course to the southeast of Kwu Tung. This LCA can be mainly divided into five districts at Lo Wu, Ma Tso Lung and Pak Shek Au on the west, Kwu Tung in the middle, Kam Tsin and Sheung Shui Heung on the east.	Medium
KLCA4	**Industrial Landscape –** this landscape character area comprising a mix of land use including factories utility facilities, workshops, open storage and some channelized water courses. It is normally located on low lying ground or at the base of hills and may include small and fragmented areas of residential houses and their associated agricultural land. This LCA is found to the west near the San Tin Interchange, in the east at the Shek Sheung River and the area east of this river, and more centrally bordering Ma Tso Lung Road, Shek Tsai Leng and east of Fung Kong Shan.	Low
KLCA5	Lowland Agricultural Landscape – this landscape character area refers to large areas dominated by cultivated land with scattered small villages and low-rise buildings and may also include some fishponds and	High

	irrigation ponds. This LCA is mostly found among lowlands and floodplain areas. Tree vegetation is generally sparse and restricted to field boundaries, adjacent to local houses and, together with bamboo, along the banks of Sheung Yue River.	

5 PRELIMINARY LANDSCAPE IMPACT ASSESSMENT

5.1 Findings of Landscape Impact Assessment

5.1.1 The summary of the proposed changes is listed in **Section 3**. The potential landscape impacts on Landscape Resources (LRs) and Landscape Character Areas (LCAs) due to the proposed changes of the OZP amendments are assessed and described in **Table 5.** Details of Landscape Impacts on LRs and LCAs to be affected from the site development extent can be referred to **Figures 60624717/LA/101 - 102**.

Table 5 - Proposed Changes and potential landscape impacts to identified LRs and LCAs

Proposed Changes in plot ratio, building height restriction and building layout (In comparison with restriction under OZP/ agreed S.16 application: A/KTN/54)	**Potential Landscape Impacts on Landscape Resources**	**Potential Landscape Impacts on Landscape Character Areas**
Amendment Sites Under OZP Amendment		
Area 9 *Building Height Restriction:* from 20 storeys to 130mPD *Plot Ratio:* no restriction on OZP, corresponding increase is expected.	Open Space/ Recreational Space (KLR10) KLR10 is identified in Sheung Shui Community Sports within the Area 9. This area mainly consists of sports pitches and playground. Vegetation associated within this area are mainly landscaped trees planted for man-made nature. As this LR will be impacted by the site formation works in which the planned uses and development parameters are shown in the prevailing OZP, therefore the proposed change under the OZP amendment is anticipated to have **no additional landscape impact** on this landscape resource.	Rural and Urban Peripheral Village Landscape (KLCA2) This area is dominated by rural and urban peripheral village landscape (KLCA2). In view of the proposed land uses remain unchanged as Government Land. The proposed change under the OZP amendment is anticipated to have **negligible** additional landscape impact to the corresponding landscape character of the KLCA2.
Area 28 *Building Height Restriction:* from 10 storeys to 130mPD *Plot Ratio:* no restriction on OZP, corresponding increase is expected.	Water Pond (KLR3) Water pond at Pak Shek Au is identified at the Southwest of the area. As the water pond will be filled and lost during site formation in which the planned uses and development parameters are shown in the prevailing OZP, therefore the proposed change under the OZP amendment is considered to have **no additional landscape impact** on this landscape resource. Lowland Woodland (KLR7) Vegetation found in this landscape resource (KLR7) in Area 28 are impacted and lost during site clearance and formation works in which the planned uses and development parameters are shown in the prevailing OZP. Proposed change under the OZP amendment is considered to have **no additional landscape impact** on this landscape resource. Agricultural Land (KLR9) As this area is designated for building of hospital, clinic and health centre, the agricultural land in this area is prone to be impacted by site clearance and formation during construction as shown in prevailing OZP. Proposed change under the OZP amendment is considered to have **no additional landscape impact** on this landscape resource. Industrial/ Open Storage (KLR13) Vegetation falls within this industrial/ open storage (KLR13) in Area 28 are expected to be impacted during site formation as scheduled in prevailing OZP. Proposed change under the OZP amendment is considered to have **no additional landscape impact** on this landscape resource.	Rural and Urban Peripheral Village Landscape (KLCA2) This area is dominated by rural and urban peripheral village landscape (KLCA2). In view of the proposed land uses remain unchanged as Government Land and Amenity Area. The proposed change under the OZP amendment is anticipated to have **negligible** additional landscape impact to the corresponding landscape character of the KLCA2.
Area 29 *Building Height Restriction:* from 8/10 storeys to 130mPD *Plot Ratio:* No restriction on OZP, corresponding increase is expected. *Changes in Building Layout*	Lowland Woodland (KLR7) Vegetation found in the western portion of this landscape resource (KLR7) in Area 29 are expected to be impacted during site formation works in which the planned uses and development parameters are shown in the prevailing OZP. Proposed change under the OZP amendment is	Rural and Urban Peripheral Village Landscape (KLCA2) This area is dominated by rural and urban peripheral village landscape (KLCA2). Minor changes are found in land use from a mix use of education and

Proposed Changes in plot ratio, building height restriction and building layout (In comparison with restriction under OZP/ agreed S.16 application: A/KTN/54)	**Potential Landscape Impacts on Landscape Resources**	**Potential Landscape Impacts on Landscape Character Areas**
	considered to have **no additional landscape impact** on this landscape resource. <u>Rural Development Area (KLR12)</u> This area is currently dominated by the rural development area and will be changed into a more urban area with increased government facilities such as sports centre, community hall, etc. Vegetation associated with this LR in this area will be impacted during site formation works in which the planned uses and development parameters are shown in prevailing OZP. Proposed change and building layout adjustment under the OZP amendment are considered to have **no additional landscape impact** on this landscape resource.	government land into mainly allocated for government land use. As the proposed change and building layout adjustment under the OZP amendment would not alter the overall landscape character of the area, the proposed changes are anticipated to have **negligible** additional landscape impact to the overall landscape character of the KLCA2.
Area 32 *Building Height Restriction:* from 40/55mPD to 75mPD *Plot Ratio:* from 3.0 to 4.2 *Changes in Building Layout*	<u>Water Course (KLR2)</u> This stream will be impacted and permanently lost during site formation works in which the planned uses and development parameters are shown in the prevailing OZP. Proposed changes in building height, plot ratio and building layout under OZP amendments are considered to have **no additional landscape impact** on this landscape resource. <u>Marsh/ Wetland (KLR4)</u> This wetland is anticipated to be irreversibly lost during site formation works in which the planned uses and development parament are illustrated in the prevailing OZP. Proposed changes in building height, plot ratio and building layout under OZP amendments are thereof considered to have **no additional landscape impact** on this landscape resource. <u>Agricultural Land (KLR9)</u> This landscape resource dominates a majority of this area, vegetation identified in this landscape	<u>Rural and Urban Peripheral Village Landscape (KLCA2)</u> A small part of this LCA falls into the Northern portion of this area. Changes are found in proposed land use within this area, from other specified uses (Business and Technology Park) into medium-density private residential developments. Regarding the proposed changes in land use will not alter the overall landscape character of KLCA2, the proposed changes in development parameters and building layout is considered to have **negligible** additional landscape impact. <u>Lowland Agricultural Landscape (KLCA5)</u> Lowland agricultural landscape is identified as the key landscape character in this area. Changes are found in proposed land use within this area, from

Proposed Changes in plot ratio, building height restriction and building layout (In comparison with restriction under OZP/ agreed S.16 application: A/KTN/54)	**Potential Landscape Impacts on Landscape Resources**	**Potential Landscape Impacts on Landscape Character Areas**
	resource will be removed during site clearance and site formation works in which the planned uses and development parameters are shown in the prevailing OZP. Proposed changes in building height, plot ratio and building layout under OZP amendments are thereof considered to have **no additional landscape impact** on this landscape resource. <u>Industrial/ Open Storage (KLR13)</u> Sparse vegetation falls within this industrial/ open storage (KLR13) in Area 32 are expected to be impacted during site formation as scheduled in prevailing OZP. In this regard, proposed changes in building height, plot ratio relaxation and building layout are considered to have **no additional landscape impact** on this landscape resource.	other specified uses (Business and Technology Park) into medium-density private residential developments. Regarding the proposed changes in land use will not alter the overall landscape character of KLCA5, the proposed changes in development parameters and building layout is considered to have **negligible** additional landscape impact.
Area 34 *Building Height Restriction:* from 40/55mPD to 70mPD *Plot Ratio:* from 3.0 to 4.2 *Changes in Building Layout*	<u>Agricultural Land (KLR9)</u> This area is currently dominated by the agricultural land and will be irreversibly impacted by the site formation works in which the planned uses and development parameters are shown in the prevailing OZP. Proposed changes in building height, plot ratio relaxation and building layout are considered to **have no additional landscape impact** on this landscape resource.	<u>Lowland Agricultural Landscape (KLCA5)</u> Lowland agricultural landscape is identified as the key landscape character in this area. Changes are found in land use from other specified uses (Business and Technology Park) into medium-density private residential developments. Regarding the proposed changes in land use will not alter the overall landscape character of KLCA5, the proposed changes in development parameters and building layout is considered to have **negligible** additional landscape impact.

Remarks: 1. The application sites in agreed S.16 application nos. A/KTN/83 and A/KTN/84 are not included in the application sites of S.16 application nor amendment sites under OZP amendment. Those application sites are not included in the discussion above.

5.1.2 In summary, the existing landscape resources within amendment sites under OZP amendments: water course (LR2), marsh/ wetland (LR4), lowland woodland (LR7); agricultural land (LR9), open

space/ recreational area (LR10); and urban development area (LR11) will be impacted by the site formation works in which the planned uses and development parameters are shown in the prevailing OZP. The proposed change of plot ratio, building height restriction within all sites and changes in building layout at some of the sites under OZP amendment are considered to have **no additional landscape impacts** on LRs. The corresponding significance of impacts on LRs from site formation works assessed in the approved EIA report (AEIAR-175/2013) are extracted as follows: marsh/ wetland (LR4), open space/ recreational area (LR10) and urban development area (LR11) are assessed to have an insignificant residual impact; lowland woodland (LR7) is assessed to have a slight significance of residual impact; and water course (LR2) and agricultural land (LR9) are assessed to have a moderate significance of residual impact by year 10 of operation.

5.1.3 It is anticipated that with the proposed change under OZP amendments i.e. relaxation on building height restriction at all sites, adjustment in building layout in Area 29, Area 32 and Area 34, there will be an increase of plot ratio within sites. These changes in the sites would not alter the overall landscape character of the Kwu Tung North NDA. In this regard, it is anticipated that **negligible additional impacts** will be imposed to the LCAs identified in the sites under the proposed OZP amendments.

5.2 Impact Significance

Table 6 – Impact Significance on the Affected LRs during Construction and Operation Phase

LR/LCA ID	Description	LR/LCA Sensitivity (High/ Medium/ Low)	Proposed changes in plot ratio, building height restriction and building layout (In comparison with restriction under OZP/ agreed S.16 application: A/KTN/54)	Magnitude of change due to the site formation works (Magnitude of change due to proposed changes under OZP amendments) (Large/ Intermediate/ Small/ Negligible)		Significance of unmitigated Impact due to the site formation works (Significance of unmitigated Impact due to proposed changes under OZP amendments) (Substantial/ Moderate/ Slight/ Insubstantial)		Additional Mitigation Measure if Required	Justification	Residual impact Significance due to the site formation works (Residual impact Significance due to the proposed changes under OZP amendments) (Substantial/ Moderate/ Slight/ Insubstantial)		
				Construction	Operation	Construction	Operation			Construction	Operation (Day 1)	Operation (Year 10)
KLR2	Water Course	High	Proposed changes in plot ratio, building height restriction and building layout in Area 32	Intermediate (Negligible)	Intermediate (Negligible)	Moderate (Insubstantial)	Moderate (Insubstantial)	Additional mitigation measure is not required.	The increased affected area due to the proposed changes is limited and the nature of potential impact would be similar as the approved EIA report.	Slight (Insubstantial)	Slight (Insubstantial)	Insubstantial (Insubstantial)
KLR4	Marsh/ Wetland	High	Proposed changes in plot ratio, building height restriction and building layout in Area 32	Intermediate (Negligible)	Intermediate (Negligible)	Moderate (Insubstantial)	Moderate (Insubstantial)	Additional mitigation measure is not required.	The increased affected area due to the proposed changes is limited and the nature of potential impact would be similar as the approved EIA report.	Slight (Insubstantial)	Slight (Insubstantial)	Insubstantial (Insubstantial)
KLR7	Lowland Woodland	High	Proposed changes in plot ratio, building height restriction and building layout in Area 29	Intermediate (Negligible)	Intermediate (Negligible)	Moderate (Insubstantial)	Moderate (Insubstantial)	Additional mitigation measure is not required.	The increased affected area due to the proposed changes is limited and the nature of potential impact would be similar as the approved EIA report.	Slight (Insubstantial)	Slight (Insubstantial)	Insubstantial (Insubstantial)
KLR9	Agricultural Land	Medium in general, High at Long Valley and Ho Sheung Heung	Proposed changes in plot ratio, building height restriction and building layout in Area 32 and Area 34	Intermediate (Negligible)	Intermediate (Negligible)	Moderate (Insubstantial)	Moderate (Insubstantial)	Additional mitigation measure is not required.	The increased affected area due to the proposed changes is limited and the nature of potential impact would be similar as the approved EIA report.	Slight (Insubstantial)	Slight (Insubstantial)	Insubstantial (Insubstantial)
KLR10	Open Space/ Recreational Area	Medium	Proposed changes in plot ratio, building height restriction in Area 9	Small (Negligible)	Small (Negligible)	Slight (Insubstantial)	Slight (Insubstantial)	Additional mitigation measure is not required.	The increased affected area due to the proposed changes is limited and the nature of potential impact would be similar as the approved EIA report.	Slight (Insubstantial)	Slight (Insubstantial)	Insubstantial (Insubstantial)
KLR12	Rural Development Area	Medium	Proposed changes in plot ratio, building height restriction and building	Small (Negligible)	Small (Negligible)	Slight (Insubstantial)	Slight (Insubstantial)	Additional mitigation measure is	The increased affected area due to the proposed changes is limited and the nature of potential impact	Slight (Insubstantial)	Slight (Insubstantial)	Insubstantial (Insubstantial)

LR/LCA ID	Description	LR/LCA Sensitivity (High/ Medium/ Low)	Proposed changes in plot ratio, building height restriction and building layout (In comparison with restriction under OZP/ agreed S.16 application: A/KTN/54)	Magnitude of change due to the site formation works (Magnitude of change due to proposed changes under OZP amendments) (Large/ Intermediate/ Small/ Negligible)		Significance of unmitigated Impact due to the site formation works (Significance of unmitigated Impact due to proposed changes under OZP amendments) (Substantial/ Moderate/ Slight/ Insubstantial)		Additional Mitigation Measure if Required	Justification	Residual impact Significance due to the site formation works (Residual impact Significance due to the proposed changes under OZP amendments) (Substantial/ Moderate/ Slight/ Insubstantial)		
				Construction	Operation	Construction	Operation			Construction	Operation (Day 1)	Operation (Year 10)
			layout in Area 29					not required.	would be similar as the approved EIA report.			
KLR13	Industrial Area	Low	Proposed changes in plot ratio, building height restriction and building layout in Area 32	Intermediate (Negligible)	Intermediate (Negligible)	Slight (Insubstantial)	Slight beneficial (Insubstantial)	Additional mitigation measure is not required.	The increased affected area due to the proposed changes is limited and the nature of potential impact would be similar as the approved EIA report.	Slight (Insubstantial)	Slight beneficial (Insubstantial)	Slight beneficial (Insubstantial)
KLCA2	Rural and Urban Peripheral Village Landscape	Medium	Proposed changes in plot ratio, building height restriction and building layout in Area 29 and Area 32	Intermediate (Negligible)	Intermediate (Negligible)	Moderate (Insubstantial)	Moderate (Insubstantial)	Additional mitigation measure is not required.	The increased affected area due to the proposed changes is limited and the nature of potential impact would be similar as the approved EIA report.	Slight (Insubstantial)	Slight beneficial (Insubstantial)	Slight beneficial (Insubstantial)
KLCA5	Lowland Agricultural Landscape	High	Proposed changes in plot ratio, building height restriction and building layout in Area 32 and Area 34	Intermediate (Negligible)	Intermediate (Negligible)	Moderate (Insubstantial)	Moderate (Insubstantial)	Additional mitigation measure is not required.	The increased affected area due to the proposed changes is limited and the nature of potential impact would be similar as the approved EIA report.	Slight (Insubstantial)	Slight (Insubstantial)	Slight beneficial (Insubstantial)

6 OVERALL LANDSCAPE IMPACT AND MITIGATION MEASURES

6.1.1 The Landscape Impact Assessment was conducted to assess the proposed changes impacts against the landscape resources and landscape character areas. The corresponding impacts arising from the Proposed Development is considered **negligible** with reference to the proposed changes in building height and plot ratio and proposed changes in building layout and land use zoning as demonstrated in the assessment.

6.1.2 Key landscape resources and landscape character areas fall within the site areas are assessed with the proposed building layout overlaid. As aforementioned, the landscape resources are anticipated to be irreversibly impacted during site formation as scheduled in prevailing OZP. The proposed changes in development parameters under this OZP amendment are thereof considered to have no additional landscape impact on the landscape resources. Moreover, as discussed in Section 5, the proposed changes in land use would not alter the overall landscape character of the landscape character area, therefore, it is considered that negligible additional impacts will be imposed on landscape character area within the sites under OZP amendment.

6.1.3 With reference to the approved EIA report (AEIAR-175/2013), relevant mitigation measures are committed and remain valid to mitigate the impact induced by site formation works and enhance the landscape and visual amenity and minimize any potential adverse landscape and visual impacts during construction and operation phase. The proposed mitigation measures are proposed based on the latest technical circular, are described in **Table 7** below.

6.1.4 In addition, provision of greenery coverage and local open space will be achieved as required in Chapter 4 of Hong Kong Planning Standards and Guidelines to cater for the population increase and to minimize any potential adverse landscape and visual impacts. With implementation of the aforementioned landscape mitigation measures, the corresponding residual landscape impacts are considered as slight during construction stage and will be further reduced to insubstantial at operation stage.

6.1.5 **Table 7 -** Mitigation Measures during Construction and Operation Phase

Mitigation Measure Code	Summary Description
MM1	**Detailed Design – Visual** The construction and operational footprint of the Proposed Development should be kept to a practical minimum. The form, textures, finishes and colours of the proposed buildings should aim to be compatible with the existing surroundings. The engineering design should be refined to reduce visual bulkiness and incorporate aesthetically pleasing surface treatments to promote visual amenity.
MM2	***Slope Landscaping*** Site formation has been reduced as far as possible to avoid substantial slope cutting. Hydroseeding of modified slopes should be done as soon as grading works are completed to prevent erosion and subsequent loss of landscape resources and character. Woodland tree seedlings and/ or shrubs should be planted where the slope gradient and site conditions allow. In addition, landscape planting should be provided for the retaining structures associated with modified slopes, where conditions allow. All slope landscaping works should comply with GEO Publication No. 1/2011-Technical Guidelines on Landscape Treatment for Slopes
MM3	***Vertical Greening*** Where space and appropriate planting conditions allow (i.e. where suitable depth of planting medium is possible, maintenance access available and enough light penetration to ground level), climbing plants should be considered to grow up vertical surfaces of building walls/ fencing so as soften the uniform engineered structures and surfaces.
MM4	***Green Roof*** Roof greening where appropriate should be established on proposed buildings to reduce exposure to untreated concrete surfaces and particularly mitigate visual impact to VSRs at higher elevations.
MM5	***Screen Planting*** Tall screen/buffer trees and shrubs should be planted to assist in screening proposed roads/ buildings. This measure may additionally form part of the compensatory planting and will improve compatibility with the surrounding environment and create a pleasant pedestrian environment.
MM6	***Screen Hoarding*** Screen hoarding shall be erected along areas of the construction works site boundary where the works site borders with public accessible routes and/or is close to visually sensitive receivers (VSRs), to screen undesirable views of the works site. It is proposed that the screening be compatible with the surrounding environment and where possible, non-reflective, recessive colours be used.
MM7	***Compensatory Planting*** Compensatory tree planting for all felled trees shall be provided to the satisfaction of relevant Government departments. Required numbers and locations of compensatory trees shall be determined and agreed separately with Government during the Tree Preservation and Removal Proposal process under DEVB TCW No. 4/2020. Compensatory planting is proposed at the potential open areas such as open spaces, amenity areas, open areas of the streetscapes, as well as the open areas within development lots.

7 BROAD BRUSH TREE SURVEY

7.1.1 With reference to the approved EIA report (AEIAR-175/2013), a broad-brush tree survey had been conducted and approximately 17,000 numbers of trees were identified to be affected by the proposed development within the KTN NDA and FLN NDA. In particular, numbers of trees and the dominant species identified within the OZP amendment sites are summarized in Table 8 below:

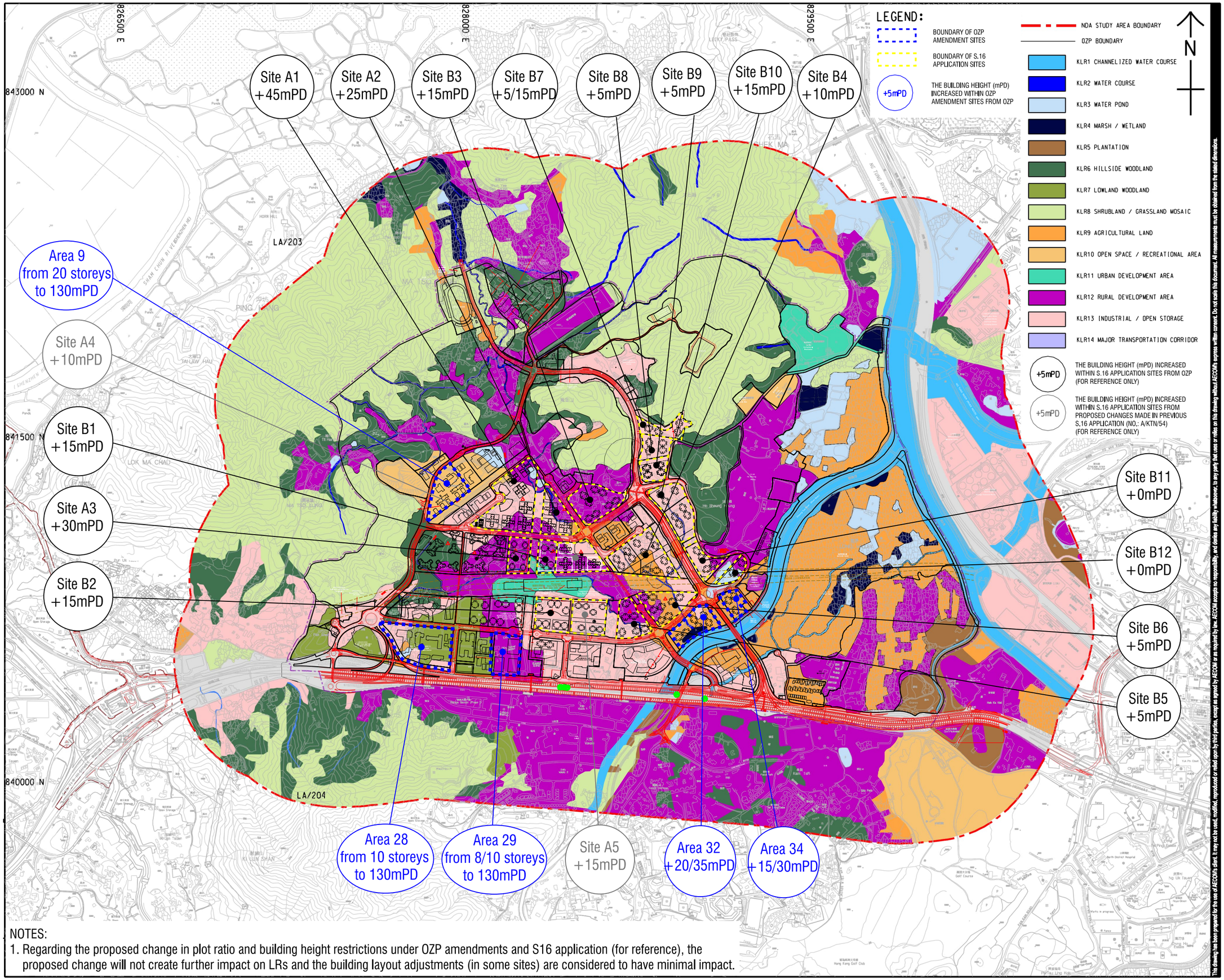
7.1.2 Table 8 – Broad Brush Tree Survey Data within OZP Amendment Sites

OZP Amendment Sites	**Nos. of trees affected by the proposed site formation works** **(Approximate nos. of trees within the OZP amendment sites)**	**Major tree species**
Area 9	Approximately 70 nos. of trees (No additional tree will be affected by the proposed changes under OZP amendments)	*Acacia confuse, Dimocarpus longan, Eucalyptus citriodora, Ficus macrocarpa, Leucaena leucocephala, Litchi chinensis, Musa x paradisiaca.* These trees are mainly found the proposed government buildings locations within Area 9.
Area 28	Approximately 440 nos. of trees (No additional tree will be affected by the proposed changes under OZP amendments)	*Celtis sinensis, Dimocarpus longan, Leucaena leucocephala, Litchi chinensis, Macaranga tanarius.* These trees are evenly distributed within the proposed government buildings in Area 28
Area 29	Approximately 110 nos. of trees (No additional tree will be affected by the proposed changes under OZP amendments)	*Bauhinia variegata, Clausena lansium, Dimocarpus longan, Leucaena leucocephala, Litchi chinensis, Macaranga tanarius.* These trees are mainly concentrated at the southern portion of the Area 29.
Area 32	Approximately 250 nos. of trees (No additional tree will be affected by the proposed changes under OZP amendments)	*Acacia auriculiformis, Eucalyptus urophylla, Leucaena leucocephala, Sapium sebiferum, Syzygium jambos.* These trees are mainly identified at the southeast portion of the Area 32.
Area 34	Approximately 180 nos. of trees (No additional tree will be affected by the proposed changes under OZP amendments)	*Ficus macrocarpa, Ficus virens, Leucaena leucocephala, Acacia spp.* These trees are mainly concentrated at the middle and south of the Area 29.

7.1.3 As aforementioned in sections 5 and 6, the existing trees found in landscape resources and landscape character areas will be affected during site formation, the proposed changes in development parameters under this OZP amendment are thereof considered to have no additional landscape impact on tree treatment. No additional trees will be removed due to the proposed changes under this OZP amendment.

7.1.4 No Old and Valuable Tree (OVTs) is found within the sites under OZP amendment. Dominant tree species and Trees of Particular Interest (TPIs) if any will be identified in the tree survey report under design phase of KTN NDA Remaining Phase under the Consultancy Agreement of CE 19/2019 (CE).

Drawings



NOTES:

1. Regarding the proposed change in plot ratio and building height restrictions under OZP amendments and S16 application (for reference), the proposed change will not create further impact on LRs and the building layout adjustments (in some sites) are considered to have minimal impact.

AECOM

PROJECT

DEVELOPMENT OF KWU TUNG NORTH AND FANLING NORTH NEW DEVELOPMENT AREAS, REMAINING PHASE - DESIGN AND CONSTRUCTION

CLIENT

土木工程拓展署
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CONTRACT NO. CE 19/2019 (CE)

SHEET TITLE

IMPACTS ON LRS IN THE STUDY AREA FOR KTN NDA

SHEET NUMBER

60624717/LA/101

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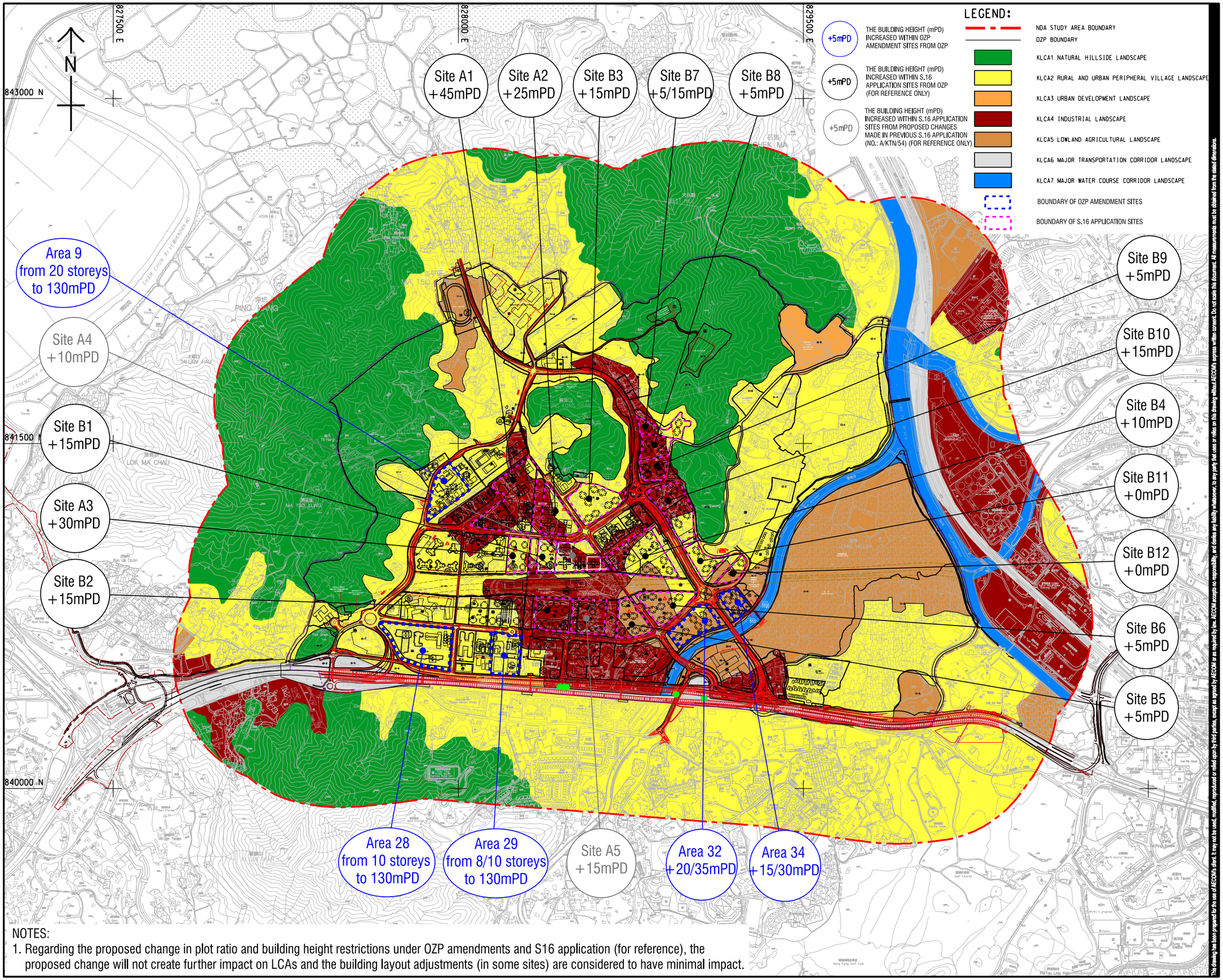

NOTES:

1. Regarding the proposed change in plot ratio and building height restrictions under OZP amendments and S16 application (for reference), the proposed change will not create further impact on LCAs and the building layout adjustments (in some sites) are considered to have minimal impact.

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PROJECT
項目

DEVELOPMENT OF KWU TUNG NORTH AND FANLING NORTH NEW DEVELOPMENT AREAS, PHASE 1 - DESIGN AND CONSTRUCTION

CLIENT
業主

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IMPACTS ON LCAS IN THE STUDY AREA FOR KTN NDA

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Appendix H

Air Ventilation Assessment Initial Study Report

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Appendix H
Air Ventilation Assessment Initial Study Report

1 INTRODUCTION

1.1 Study Background

1.1.1 AECOM has been commissioned by CEDD to provide an Air Ventilation Assessment (AVA) to support Section 16 Planning Application for a total of 17 housing sites (i.e. Area nos. 12, 13, 14, 15, 20, 21, 22, 23, 25 and 26) on top of the previous planning application No. A/KTN/54, A/KTN/83, A/KTN/84 and the approved Outline Zoning Plan (OZP) No. S/KTN/2, in which the plot ratios and building height restrictions are proposed to be relaxed for additional housing supply and community facilities.

1.1.2 In addition to the Section 16 Planning Application, the 5 Project Sites (i.e., Area nos. 9, 28, 29, 32 and 34) for relaxation of building height restrictions and land use rezoning are to be studied in this OZP amendment exercise.

1.1.3 A quantitative AVA via CFD modelling in the form of Initial Study is carried out to support the OZP amendment exercise through presenting a study of the potential air ventilation impacts associated with the proposed changes to confirm the suitability on the relaxation of building heights, modifications in building parameters and revision on the land usage for the proposed developments within the Project Sites from the perspective of air ventilation.

2 PURPOSE AND STRUCTURE OF THIS AVA INITIAL STUDY REPORT

2.1 Purpose of this Report

2.1.1 The objective of the Air Ventilation Assessment in the form of Initial Study (AVA-IS) is to ensure that air ventilation impacts are duly considered as one of the main criteria in the planning and design process for the increase in building heights and change in land usage of the proposed developments with the Project Sites.

2.1.2 This AVA-IS would provide a qualitative assessment to the design and/or design options and facilitates (including the planned/committed development(s) of the nearby areas) and identification of potential air ventilation problems and issues that would need warrant attention. It would also identify major breezeway(s), air-path(s), problematic area(s), localized wind effects and possible change in wind patterns and wind magnitude (using wind Velocity Ratio (VR) as an indicator) due to the proposed developments within the 5 Project Sites. Possible design improvements and mitigation measures would be proposed if required in this report for further design optimization.

2.1.3 This AVA – Initial Study will be conducted in accordance with “Housing Planning and Lands Bureau – Technical Circular No. 1/06, Environment, Transport and Works Bureau – Technical Circular No. 1/06” issued on 19th July 2006 (the Technical Circular) and “Technical Guide for Air Ventilation Assessment for Development in Hong Kong – Annex A” (the Technical Guide).

2.2 Structure of the Initial Study Report

2.2.1 Apart from the introductory section on the study background (**Section 1**) and the current section describing the purpose of this AVA Report (**Section 2**), the other sections are structured as follows:

- **Section 3** on the brief description on the Kwu Tung North New Development Area (KTN NDA) and the Project Sites
- **Section 4** discusses the Project Sites with examination of adjacent existing, planned and committed developments, land usage and the surrounding topographic characteristics
- **Section 5** identifies the prevailing wind directions via analysing the applicability of wind tunnel experimental wind data.
- **Section 6** detailed the proposed development layouts and scenarios for evaluation.
- **Section 7** detailed the Assessment Methodology of the CFD Modelling Approach
- **Section 8** on the Key Findings of the AVA Initial Study and Wind Directional Analysis
- **Section 9** summarizes and concludes the AVA Initial Study Report

3 KTN NDA AND PROJECT SITES

3.1 Description of the Site Environs

3.1.1 The Kwu Tung North New Development Area (KTN NDA) is located at the inland areas of Northeast New Territories and to the east is the Fanling North New Development Area (FLN NDA). The new KTN NDA is roughly trapezoid in shape in which within it covers Tsung Yuen, Ho Sheung Heung, Long Valley and Yin Kong to its eastern portion; Fung Kong, Tung Fong and Tong Kok at its center portion; Kwu Tung, Shek Tsai Leng, Dills Corner Garden and Pak Shek Au located at its southern portion. The northern portion within the KTN NDA boundary is the knoll of Fung Kong Shan and to the further north of the KTN NDA are terrains of Crest Hill while to the west of the KTN NDA exist the areas belonging to Lok Ma Chau.

3.1.2 This KTN NDA is around 447 ha in total coverage. Currently, the areas are mainly occupied by brownfield uses (i.e., some rural workshops and warehouses activities) and temporary structures. There are also some rural residential dwellings and vegetation scattered in between the brownfield uses. The proposed KTN NDA is bounded by Sheung Yue River to the east, the terrains of Lok Ma Chau to the west, the terrains of Crest Hill to the north and Fanling Highway to its south. The western part of the KTN NDA under the First Phase Assignment is currently under site formation and construction. The five Project Sites (i.e., Ar9, Ar28, Ar29, Ar32 and Ar34), which are the major focus of the current AVA Study, are scattered within the KTN NDA with Areas 28 and 29 located near the southern boundary of the KTN NDA abutting Fanling Highway. Area 9 and Areas 32, 34 are located to the north direction and east direction of Areas 28, 29 respectively. The locations and the environs of the KTN NDA and the Project Sites are illustrated in **Figure 3.1**.

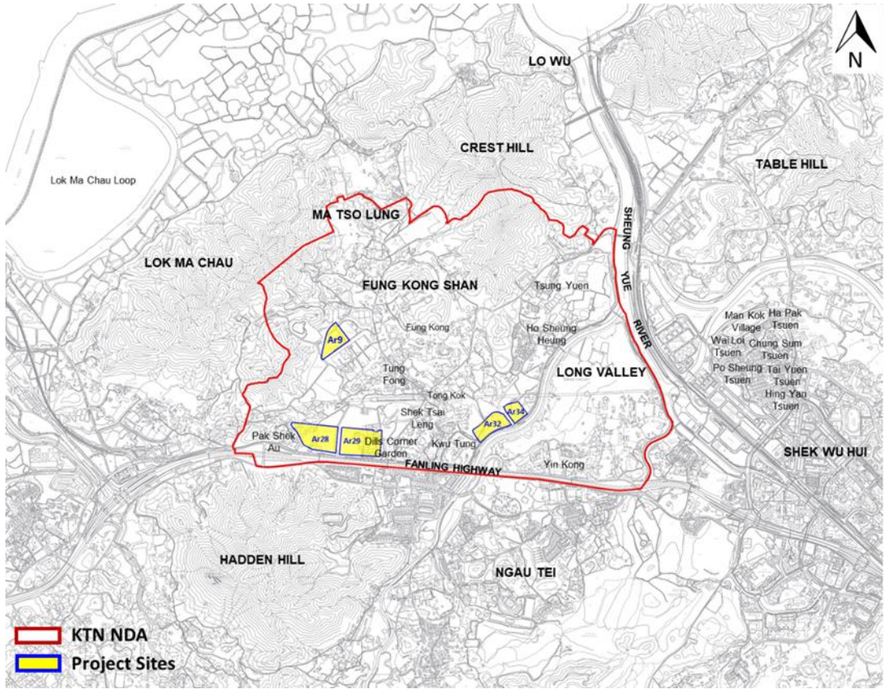


Figure 3.1 Location of KTN NDA and the Project Sites

4 LAND USE, TOPOGRAPHY AND EXISTING URBAN MORPHORLOGIES

4.1 Land Use

4.1.1 On the Outline Zoning Plan, there are various types of planned land uses within the KTN NDA as shown on **Figure 4.1**.

4.1.2 Reflecting the rural character of the KTN NDA, the largest statutory designation across the KTN NDA is “Green Belt” areas, mainly located to the northern sector of the KTN NDA with certain areas of “Government, Institution or Community (G/IC)” land uses mixed within. There are also “Agricultural” lands, “Other Specified Uses” lands and “Village Type Developments” spotted mainly at the eastern sector of the KTN NDA.

4.1.3 Among the 5 Projects Sites, Areas 9, 28 and 29 are zoned as “Government, Institution or Community (G/IC)” land uses while Areas 32 and 34 are zoned as “Other Specified Uses” lands annotated as “Business and Technology Park”. There are extensive areas zoned for “Residential (Group A)” developments as well as zoning for “Residential (Group B)” developments located at the central to south-western sector of the KTN NDA near the Project Sites. The existing developments within these planned residential areas are currently occupied by brownfields, temporary structures and low-rise village houses of Tung Fong, Fung Kong, Tong Kok and Shek Tsai Leng.

4.1.4 Since the KTN NDA is located at the rural areas of Hong Kong, the majority lands surrounding the KTN NDA are “Green Belt”, “Agriculture”, “Other Specified Uses” annotated for Business and Technology Park” as well as scattered areas of “Village Type Development”. To the west of Areas 9, 22 and 24 outside the KTN NDA are Green Belt areas of Lok Ma Chau, while to the north of the Area 9 exist Green Belt areas of Fung Kong Shan and to the further north are the “Agricultural” lands of Ma Tso Lung the “Green Belt” areas belonging to Crest Hill. There are currently scattered low-rise developments located to the east of the Areas 32 and 34 where the areas belonging to Long Valley are located. To the further east outside the KTN NDA across the Sheung Yue River are some “Other Specified Uses” lands and village houses of Wai Lo Tsuen. To the south of the Areas 22, 24, 32 and 34, across the Fanling Highway are zoned as “Residential (Group C)” land use, which are existing low rise residential developments of Europa Garden, the Valais and Casas Domingo.

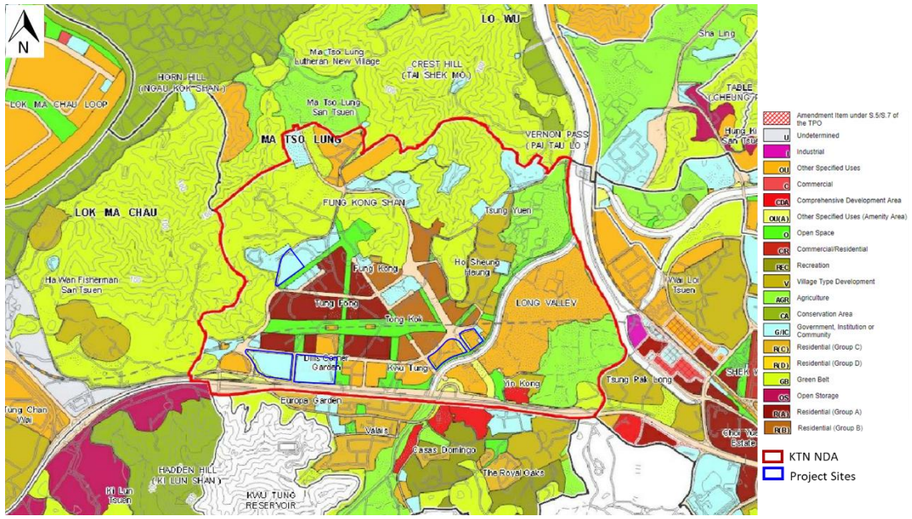


Figure 4.1 Land Use within and near the KTN NDA

4.2 Topography

4.2.1 The KTN NDA is in the north-eastern portion of the New Territories. As shown in **Figure 4.2**, the Project Sites are located on a sizable flatland surrounded by hilly terrains with varying height. The topographical height of the terrains to the north and further north-eastern directions to the KTN NDA are the hilly terrains of Crest Hill and Sandy Ridge respectively with terrain height of more than 100mPD. To the near east of the KTN NDA are Sheung Shui and Fanling Towns situated on the flatlands as well as the terrains of High Hill located to the far east. There are also hilly terrains of approximately 100mPD belonging to the Lok Ma Chau area located to the near west of the KTN NDA, while the lands belonging to San Tin are relatively flat.

4.2.2 The topographies located at the southwest, southern and south-eastern portion of KTN NDA are generally less than 50 mPD. The most observable terrains to the south and south westerly directions of the KTN NDA are Hadden Hill with maximum terrain altitude of 200mPD and Ngau Tam Shan with maximum terrain elevation of 340mPD respectively. Less steeper terrains of Fuk Tsuen Shan (~50mPD) can be found to be located at the south-east directions of the KTN NDA and Kei Lak Tsai with maximum elevation of 250mPD can be found to the further south-east directions. **Figure 4.2** illustrates the topographies near the KTN NDA and the locations of the five Project Sites.

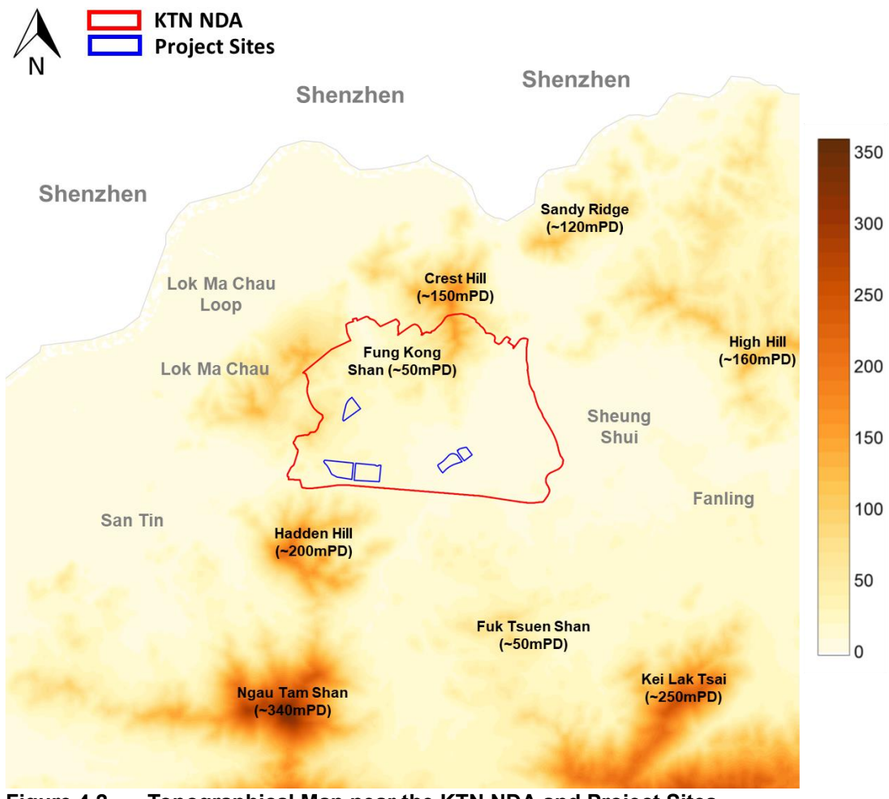


Figure 4.2 Topographical Map near the KTN NDA and Project Sites

4.3 Existing Urban Morphology

4.3.1 The KTN NDA is located at the north-eastern portion of the New Territories that is relatively less developed areas of Hong Kong. The KTN NDA is currently generally covered by rural settlements or low-rise low-density residential villages, as well as open storage yards or rural industries.

4.3.2 The KTN NDA is generally relatively flat. Several existing village environs are located inside the KTN NDA in which these villages environs are mostly preserved or to be built with 3-storey in height. These existing villages include the Tsung Yuen and Ho Sheung Heung as well as Yin Kong located at the eastern section of the KTN NDA. The areas located to the north and west of the KTN NDA are relatively rural with a few existing village house developments namely the Ma Tso Lung San Tsuen, Chau Tau Tsuen, Pun Uk Tsuen and San Tin Heung. The Lok Ma Chau Loop located to the north-west direction of the KTN NDA is planned to be developed into mid-rise buildings of approximately 54mPD.

4.3.3 To the south of the KTN NDA, at the east of the Hadden Hill exist several low density private residential developments include but not limited to the Europa Garden, Valais, Casas Domingo, The Royal Oaks, Goodwood Park, Regent Garden, St. Andrews Place and Oakville etc. To the south-east of the KTN NDA, on both sides of the portion of Fanling Highway near Shek Wu Hui, relatively urbanized areas can be found with existence of several housing estates which include the Cheung Lung Wai Estate, Ching Ho Estate, Tai Ping Estate, Choi Yuen Estate, and the Po Shek Wu Estate.

4.3.4 To the east of the KTN NDA across the Sheung Yue River mainly are lands for Industrial usage where Hi Tech Centre, Advanced Technology Centre and Jumbo Plaza are located. There are also buildings of the two Sewage Treatment Works namely the Shek Wu Hui Sewage Treatment Works and the Sheung Shui Treatment Works located to the east side of the KTN NDA. To the east and north of the Shek Wu Hui Treatment Works are the Sheung Shui Slaughterhouse and Chung Sum Tsuen with its surrounding villages respectively. The locations of the above-mentioned places are marked in **Figure 4.3**.

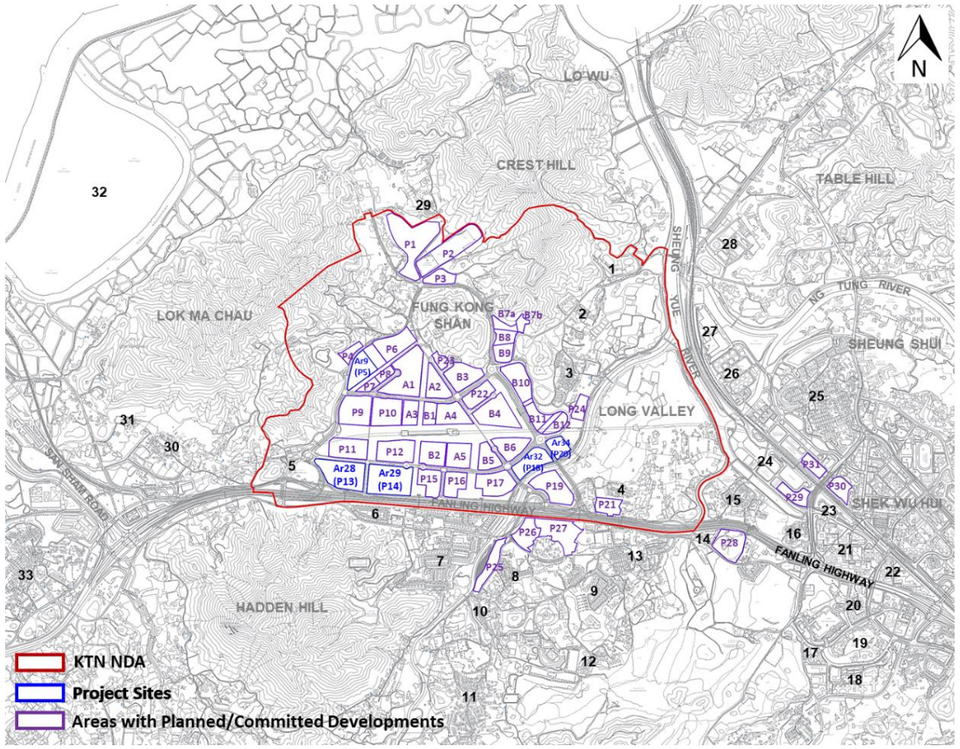
4.3.5 There are seventeen areas located within the KTN NDA, marked as A1 to A5 and B1 to B12 in **Figure 4.3** which are identified under the Section 16 Planning Application, planned to be intensified and developed into high rise public and private residential buildings. Within the KTN NDA, surrounded the cluster of these planned residential areas, exist extensive areas with other planned / committed developments. These areas are marked with prefix P from P1 to P24 in **Figure 4.3**.

4.3.6 Among these 24 areas marked with prefix P, five are the target Project Sites (i.e., Area 9 (P5), Area 28 (P13), Area 29 (P14), Area 32 (P18) and Area 34 (P20)) for relaxation of building height restrictions and land use rezoning that are to be investigated in this OZP amendment exercise.

4.3.7 P1 to P3 areas are located to the north of the Project Site cluster are mainly planned to be constructed into GIC and other specified usage buildings. The P4 to P8 areas and the P13 to P14 areas located to the near northwest and southwest directions of Areas A1 and A3 respectively are mainly planned for GIC usages. Areas P9 to P12 are planned to be constructed into high rise residential blocks with ancillary facilities. Other planned specified usage buildings such as Hospitals, Clinics, Health Centers, Commercial and Research Development Buildings as well as GIC buildings such as schools can be found at areas P13 to P20. It is worthwhile to point out that Non-Building Areas (NBAs) have been incorporated within areas P15 to P19 as well as Project Sites B10 to B14. Terraced podiums which are considered as one of the good design measures in improving the air ventilation performance can be found for the proposed developments within areas P10, P12 and P15.

4.3.8 Apart from the areas with committed / planned developments within the KTN NDA, there are also several areas with planned / committed residential developments at the near vicinity of the KTN NDA (i.e., P25 to P31). The four areas P25 to P27 located to the south direction as well as area P28 located to the south-east direction of the KTN NDA are planned to be developed into private residential blocks. There would also be high-rise residential blocks anticipate appearing within areas P29 to P31.

4.3.9 The illustrational figures in **Section 6** provide an overview of the building layouts and morphologies within the Project Sites as well as the areas with planned / committed developments.



Description	Approximate Max. Building Heights (mPD)	Description	Approximate Max. Building Heights (mPD)
Project Sites (Proposed)			
Area 9 (Ar9/P5)	~130mPD	Area 28 (Ar28/P13)	~130mPD
Area 29 (Ar29/P14)	~130mPD	Area 32 (Ar32/P18)	~75mPD
Area 34 (Ar34/P20)	~70mPD		
Areas with Planned Public/Private Residential Developments identified under the S16 Application			
A1	~180mPD	A2	~160mPD
A3	~145mPD	A4	~140mPD
A5	~135mPD	B1	~130mPD
B2	~130mPD	B3	~95mPD
B4	~85mPD	B5	~80mPD
B6	~80mPD	B7(a), (b)	~100mPD
B8	~90mPD	B9	~85mPD
B10	~110mPD	B11	~90mPD
B12	~90mPD		
Planned and Committed Developments within the KTN NDA			
P1 – Other Specified Uses (Research and Development, Commercial)	~65mPD	P2 – Existing Firing Range	-
P3 – GIC Buildings	~65mPD	P4 – GIC Building (School)	~52mPD
Ar9/P5 – GIC Buildings (District Headquarters and its Associated Married Staff Quarters, Divisional Police Station)	~101mPD	P6 – GIC Buildings (Standard Swimming Pools and Sports Centre)	~53mPD

Description	Approximate Max. Building Heights (mPD)	Description	Approximate Max. Building Heights (mPD)
P7 – GIC Buildings (Schools)	~44mPD	P8 – GIC Buildings (Schools)	~52mPD
P9 – Residential Buildings	~151mPD	P10 – Residential Buildings	~146mPD
P11 – Residential Buildings	~135mPD	P12 – Residential Buildings	~120mPD
Ar28/P13 – GIC Buildings (Hospital, Polyclinic and General Clinic / Health Centre)	~63mPD	Ar29/P14 – GIC Buildings	~64mPD
P15 – Mixed Use (Residential and Commercial Buildings)	~110mPD	P16 – Other Specified Uses (Business and Technology Park)	~60mPD
P17 – Other Specified Uses (Business and Technology Park)	~55mPD	Ar32/P18 – Other Specified Uses (Business and Technology Park)	~55mPD
P19 – Other Specified Uses (Business and Technology Park)	~55mPD	Ar34/P20 – Other Specified Uses (Business and Technology Park)	~55mPD
P21 – Residential Buildings	~18mPD	P22 – GIC Buildings (School)	~35mPD
P23 – GIC Buildings (School)	~44mPD	P24 – Village Houses	~16mPD
Planned and Committed Developments outside and near the KTN NDA			
P25 – Residential Buildings	~23mPD	P26 – Residential Buildings	~75mPD
P27 – Residential Buildings	~75mPD	P28 – Residential Buildings	~130mPD
P29 – Residential Buildings	~143mPD	P30 – Residential Buildings	~130mPD
P31 – Residential Buildings	~149mPD		
Existing Developments within and near the KTN NDA			
1. Lo Wu Correctional Institute	4 storeys	2. Tsung Yuen	~23mPD
3. Ho Sheung Heung	~23mPD	4. Yin Kong	~16mPD
5. Pak Shek Au/Planned Plant for district cooling system	~35mPD	6. Europa Garden	~36mPD
7. Valais	~23mPD	8. Casas Domingo	~22mPD
9. The Royal Oaks	~27mPD	10. Goodwood Park	~17mPD
11. Regent Garden	~22mPD	12. St. Andrews Place	~41mPD
13. Oakville	3-4 storeys	14. Golf Parkview	~31mPD
15. Tsung Pak Long	~17mPD	16. Tai Tau Leng	~15mPD
17. Cheung Lung Wai Estate	~143mPD	18. Ching Ho Estate	~133mPD
19. Royal Green	~136mPD	20. Tai Ping Estate	~91mPD
21. Choi Yuen Estate	~90mPD	22. Yuk Po Court	~71mPD
23. Po Shek Wu Estate	~114mPD	24. Hi Tech Centre, Advanced Technology Centre, Jumbo Plaza	~40mPD
25. Chung Sum Tsuen and surrounding villages	~20mPD	26. Shek Wu Hui Sewage Treatment Works	~25mPD
27. Sheung Shui Slaughterhouse	4 storeys	28. Sheung Shui Treatment Works and Freshwater Pumping Station	-
29. Ma Tso Lung San Tsuen	~25mPD	30. Chau Tau Tsuen	~13mPD
31. Pun Uk Tsuen	~19mPD	32. Lok Ma Chau Loop	Proposed development of around ~54mPD
33. San Tin Heung	~19mPD		

Figure 4.3 Existing / Committed / Planned Major Developments near / within the KTN NDA

4.4 Major Wind Corridors

4.4.1 By taking the topographical features and the planned/committed built environment into consideration, a few major wind corridors are identified in the vicinity of the Project Sites of the KTN NDA and illustrated in **Figure 4.5**.

4.4.2 Start describing from the western side of the Areas 9 and 28, the wind corridor formed in between Area P4 and Area 9 abutting Areas P9 and P11 (i.e., along Roads 1-1, 1-2 and 1-3 in **Figure 4.4**) would facilitate the flow of northerly/southerly/east-north easterly and the south-westerly prevailing wind to maintain the wind environment near the Project Sites annotated Area 9, Area 28 as well as Areas P4, P9 and P11 (see Marker (1) in **Figure 4.5**).

4.4.3 The north-south orientated wind corridor joined by Separations 3-1 to 3-4 in between Areas A1, A3, Areas P12, Project Site: Area 29 and Areas A2, B1, B2, P15 (refer to **Figure 4.4**) would connect Fung Kong Shan and Fanling Highway, promoting the penetration of northerly and southerly prevailing wind (see Marker (2) in **Figure 4.5**).

4.4.4 Roads 11-1 to 11-4 (refer to **Figure 4.4**) would form another wind corridor that benefits the flow of the northerly and southerly prevailing wind. This wind corridor abuts Project Sites: Areas 18 and 20, as well as Areas P19, P22, P23, B3, B4 and B6 to B12, which facilitates the prevailing wind flow from Fung Kong Shan towards Fanling Highway and vice versa across the Sheung Yue River (see Marker (3) in **Figure 4.5**).

4.4.5 The Sheung Yue River also acts as a major wind corridor. The branch stream of Sheung Yue River would direct the east-north easterly and south westerly wind towards Project Site Areas 32, 34 (i.e., Areas P18 and P20) and also Areas P17, P19, P24 as well as regions near the Long Valley (see Marker (4) in **Figure 4.5**).

4.4.6 A wind corridor is formed by connecting Road 12 between Areas B9 and B10, Road 2-4 between Area P22 and Area B3 as well as Road 2-2, Road 2-3 between Areas A1, A2, A3, B1 and A4. The annotations of roads are illustrated in **Figure 4.4**. NBAs incorporated within Areas B9 and B10 help to widen Road 12 and enhance the effectiveness of this wind corridor, in particular to facilitate the easterly and east-north easterly prevailing wind from Tsung Yuen towards Areas P22, P23, A1 to A4, B1, B3 and B7 to B10, ultimately reaching the vicinity of the southern section of the Project Site Area 9 (see Marker (5) in **Figure 4.5**).

4.4.7 Another wind corridor is formed by linking up Ho Sheung Heung and Kwu Tung Station which facilitate the flow of east-north easterly and easterly prevailing wind. As there are Non-Building Areas (NBAs) incorporated within the Areas B10 and B4, which leads to the formation of this major wind corridor which facilities the prevailing wind from villages houses of Ho Sheung Heung to reach the Kwu Tung Station (see Marker (6) in **Figure 4.5**).

4.4.8 There is another major wind corridor connecting the lower regions of Ho Sheung Heung near Area P24 and Roads 8-1 to 8-6 (refer to **Figure 4.4** for annotation of roads and Marker (7) in **Figure 4.5** for the location of wind corridor). There are two strips of NBAs incorporated within Areas B11 and B12, in which they would facilitate the ENE prevailing wind to penetrate these two areas and flow along this major wind corridor along Roads 8-1 to 8-6. In addition, the portion of this major wind corridor formed by Roads 8-1 to 8-4 also benefits the flow of easterly prevailing wind towards Pak Shek Au areas while the portion formed by Roads 8-5 and 8-6 favour the flow of south westerly prevailing wind towards the planned/committed residentials within Areas B11 and B12 as well as maintaining the wind environment at the north vicinity of the Project Site Areas 32 and 34.

4.4.9 Fanling Highway aligning in roughly east-west direction would facilitate the flow of easterly prevailing wind (see Marker (9) in **Figure 4.5**) and benefit the wind environment at the south vicinity of the Project Site Areas 28 and 29. In addition, there exists a green corridor in the middle portion of the KTN NDA, which elongated from Long Valley across the Sheung Yue River and along Road 13 between Project Site Area 34 and B12 (refer to **Figure 4.4**) towards Kwu Tung Station as well as further downstream regions immediate north to Pak Shek Au. This green corridor would also take up the role as wind corridor and facilitate the easterly wind to flow towards the west (see Marker (8) in **Figure 4.5**).

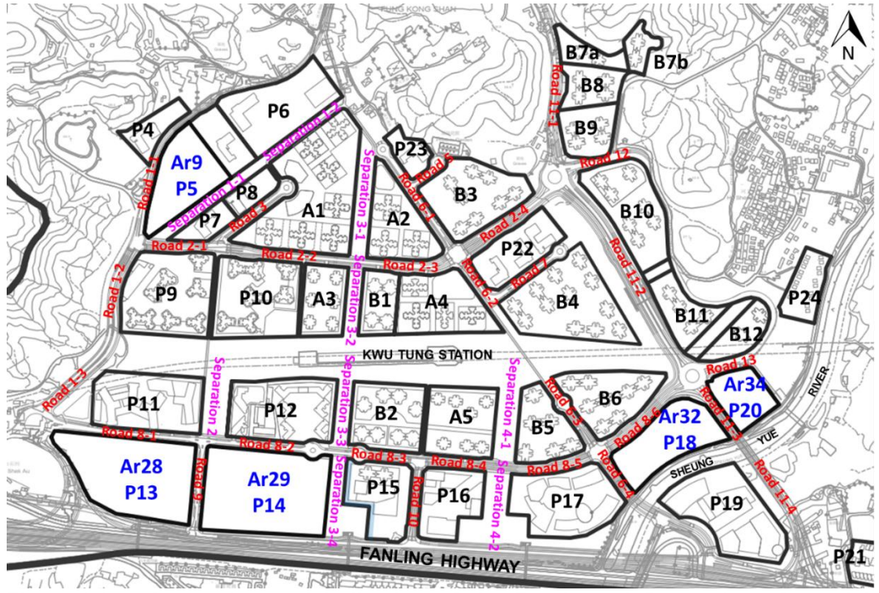


Figure 4.4 Annotation and Indication of the Roads and Separations formed by Project Sites and the Surrounding Planned/Committed Developments

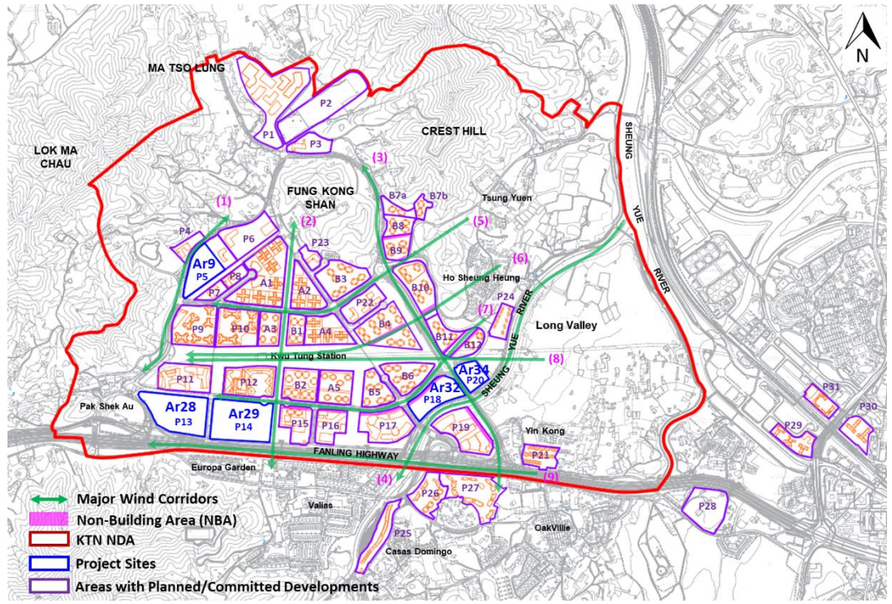


Figure 4.5 Major Wind Corridors near Project Sites

5 EXPERIMENTAL SITE WIND DATA

5.1.1 With reference to the "Experimental Site Wind Availability Study for The North-East New Territories New Development Areas" which was conducted in 2010. The site wind availability study was conducted using a 1:2000 scale topographical model to determine the effects of surrounding topography and urban environment on mean wind speeds and turbulence intensities above the KTN and FLN NDA areas. Although **Figure 5.1** shows both the two Study Areas and its corresponding locations of the measurement points in the site wind availability study, focus would be on the wind data for the KTN NDA area as the major aim of this current study and report is for evaluation of the air ventilation performance of the five Project Sites within KTN Area. Photographs of the 1:2000 scale topographical model of the KTN in the low-speed test section under north, east, south and west directions are shown in **Figures 5.2** to **5.5** for reference.

5.1.2 The wind tunnel testing techniques used for the site wind availability study satisfied the quality assurance requirements stipulated in the Australasian Wind Engineering Society Quality Assurance Manual, AWES-QAM-1-2001 (2001) and the American Society of Civil Engineers Manual and Report on Engineering Practice No. 67 for Wind Tunnel Studies of Buildings and Structures (1999). The site wind availability study was also conducted in accordance with the recommendations of Planning Department's Feasibility Study for Establishment of Air Ventilation Assessment System – Final Report (2005) and Technical Guide for Air Ventilation Assessment for Developments in Hong Kong (2006).

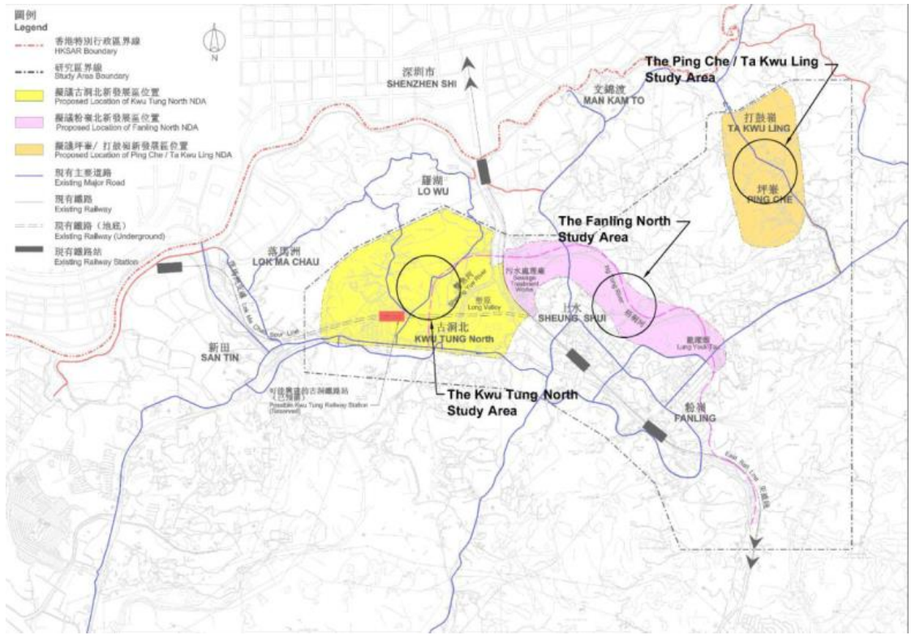


Figure 5.1 Locations of Areas for Wind Tunnel Test

Note: Source from Experimental Site Wind Availability Study for the North-East New Territories New Development Areas, Executive Summary



Figure 5.2 1:2000 scale topographical model of the Kwu Tung North Study Area in the low-speed test section (North wind direction, 0˚)



Figure 5.3 1:2000 scale topographical model of the Kwu Tung North Study Area in the low-speed test section (East wind direction, 90˚)

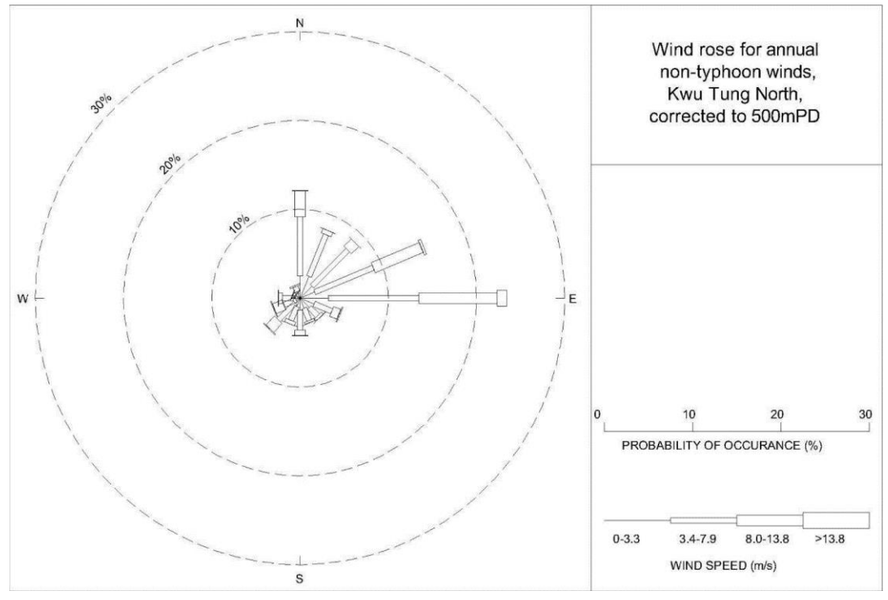


Figure 5.4 1:2000 scale topographical model of the Kwu Tung North Study Area in the low-speed test section (South wind direction, 180˚)



Figure 5.5 1:2000 scale topographical model of the Kwu Tung North Study Area in the low-speed test section (West wind direction, 270˚)

5.1.3 The wind tunnel testing results were subsequently combined with a statistical model to determine directional wind characteristics and availability for KTN Study Areas. The annual and summer wind roses at the Study Areas of KTN are shown in **Figure 5.6**. The wind rose result indicated the dominance of each of the 16 wind directions and distribution of the wind speed at 500mPD.



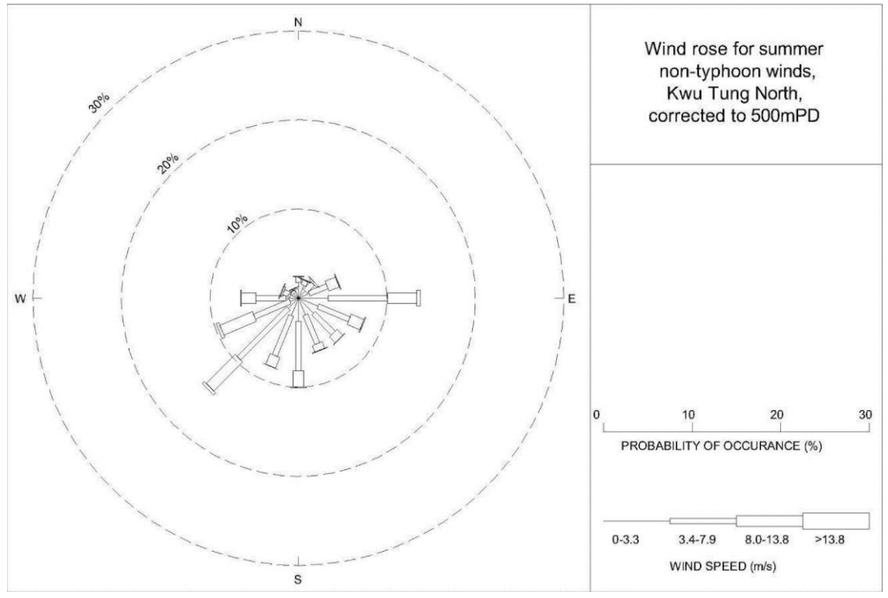


Figure 5.6 Wind Roses for annual and summer, non-typhoon winds for Kwu Tung North Study Area corrected to 500mPD

5.1.4 The wind roses from the experimental site wind availability study indicate that the annual prevailing winds at KTN are mainly dominated by winds coming from E, ENE, N directions, while majority of the summer winds are from the E, S, SW and WSW directions. In addition, the frequencies of annual and summer season occurrence of individual wind directions at 500mPD for the KTN area are shown in **Table 5.1**. The percentage of annual season occurrence of a particular wind direction at level 500mPD and the relevant wind availability data extracted from "Experimental Site Wind Availability Study for The North-East New Territories New Development Areas".

Table 5.1 Frequencies of Annual and Summer Season Occurrence of Individual Wind Directions at 500mPD for KTN Study Area

Wind Direction	% of Annual Occurrence	% of Summer Occurrence
0º (N)	**12.1%**	2.5%
22.5º (NNE)	**8.3%**	2.2%
45º (NE)	**8.8%**	2.5%
67.5º (ENE)	**15.1%**	4.8%
90º (E)	**23.4%**	**13.8%**
112.5º (ESE)	**4.9%**	**7.9%**
135º (SE)	3.1%	**6.5%**
157.5º (SSE)	3.0%	6.4%
180º (S)	4.3%	**10.1%**
202.5º (SSW)	3.1%	**8.3%**
225º (SW)	**4.9%**	**14.5%**
247.5º (WSW)	3.2%	**9.7%**
270º (W)	2.5%	**6.5%**
292.5º (WNW)	1.0%	2.0%
315º (NW)	0.6%	1.1%
337.5º (NNW)	1.5%	1.2%

5.1.5 **Table 5.1** shows that the most prevailing annual winds are from the E, ENE and N directions followed by wind from NE, NNE, ESE, and SW directions. These annual prevailing wind directions contribute to a total of 77.5% frequency occurrence. During summer season, the most dominant wind is from SW, E and S directions followed by WSW, SSW, ESE, W and SE winds. These summer winds summed up to a 77.3% of occurrences. The aforementioned annual and summer wind directions are adopted for undergoing Computational Fluid Dynamics (CFD) simulations in this study.

6 THE BASE AND PROPOSED SCENARIOS

6.1.1 Two Scenarios are examined in this Study, namely the Base Scenario and Proposed Scenario.

6.1.2 The focus in this Study is the 5 Project Sites (i.e., Ar9, Ar28, Ar29, Ar32 and Ar34 in **Figure 6.1**) for the application of the proposed OZP amendments. Three among these five Project Sites are in Areas 9, 28 and 29 zoned for "Government, Institution or Community" ("G/IC") usage. The rest two Project Sites in Areas 32 and 34, which are currently zoned as "Other Specified Uses" annotated "Business and Technology Park" ("OU (Business and Technology Park)") are proposed to be rezoned as "Residential (Group B)" ("R(B)1").

6.1.3 There are also 17 areas (i.e., Areas A1 to A5 and Areas B1 to B12 in **Figure 6.1**) which surround the Project Sites in this Study, proposed for intensification and building height relaxation under the Section 16 planning application. Among these 17 areas, 5 are zoned as "Residential (Group A)" ("R(A)") planned for public residential developments. 12 are zoned as "Residential (Group B)" ("R(B)") planned for private housing developments. The aforementioned 17 areas and the 5 Project Sites are located within the Kwu Tung North (KTN) New Development Area (NDA) and fall within the Approved Kwu Tung North Outline Zoning Plan (OZP) No. S/KTN/2 (the OZP).

6.1.4 In addition to the 17 application areas planned for residential developments under the S16 planning application as well as the 5 Project Sites under this OZP amendment application, there are also planned and committed developments located at the surroundings both within and outside the KTN NDA. The locations of these planned and committed developments are shown in **Figure 6.1** and annotated with prefix P.

6.1.5 For this AVA Initial Study using CFD approach, the differences between the Base Scenario and the Proposed Scenario would only occur for the building morphologies within the five Project Sites (i.e., Ar9, Ar28, Ar29, Ar32 and Ar34 in **Figure 6.1**). The building morphologies within the 17 surrounding areas planned for residential developments annotated as A1 to A5 and B1 to B12 would be consistent between the Base and Proposed Scenarios and would adopt the building layouts after intensification and building height relaxation under the S16 planning application. Furthermore, the planned and committed developments located both within and outside the KTN NDA would be consistent in the Base and Proposed Scenarios.

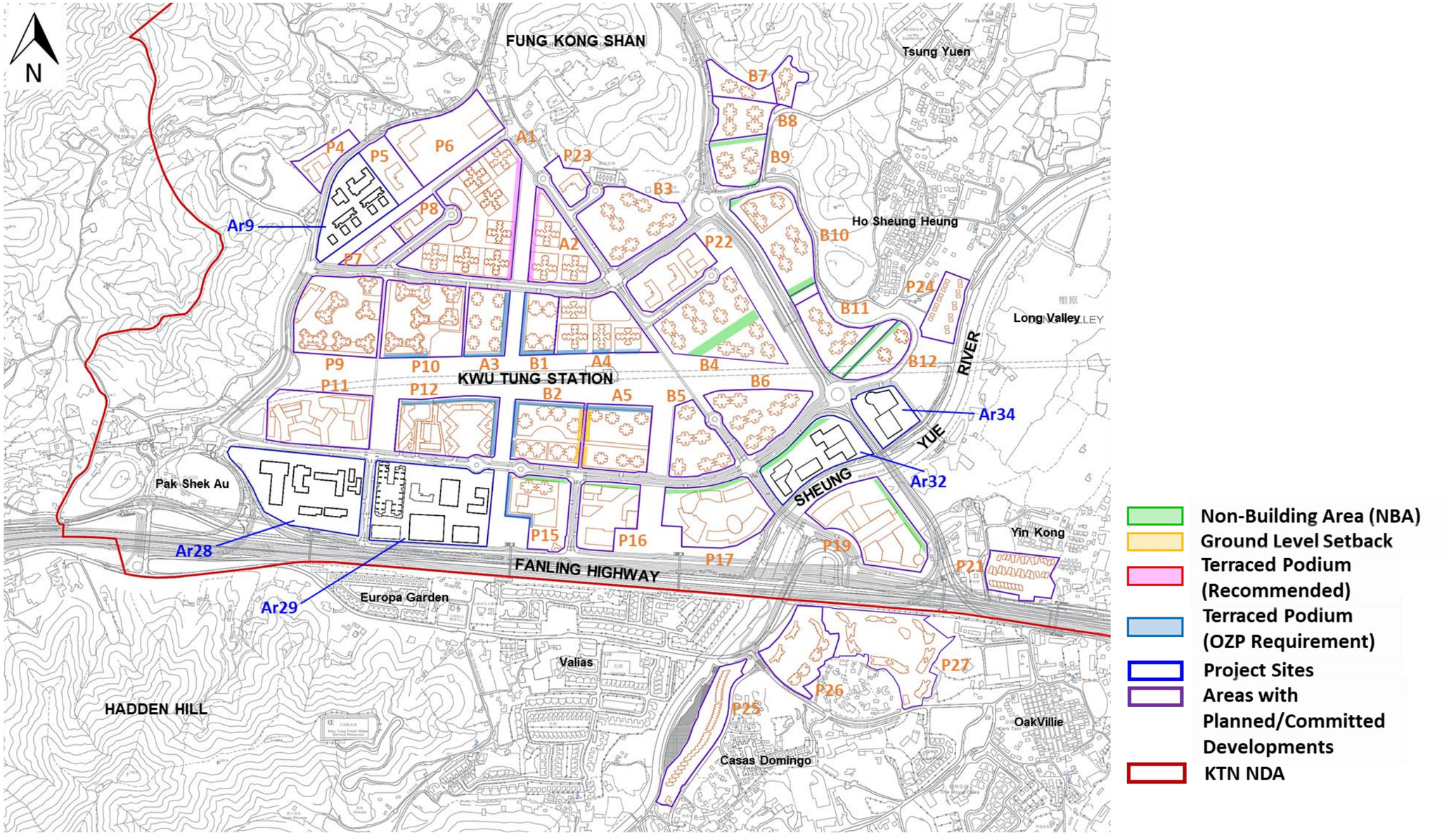
6.1.6 **Figure 6.1** illustrates the building morphologies of the Base Scenario, and the Proposed Scenario and **Table 6.1** summarises the information of the 5 Project Sites as well as the differences in building parameters under the OZP amendment application.

Table 6.1 Proposed Changes in OZP Amendment Sites (Project Sites)

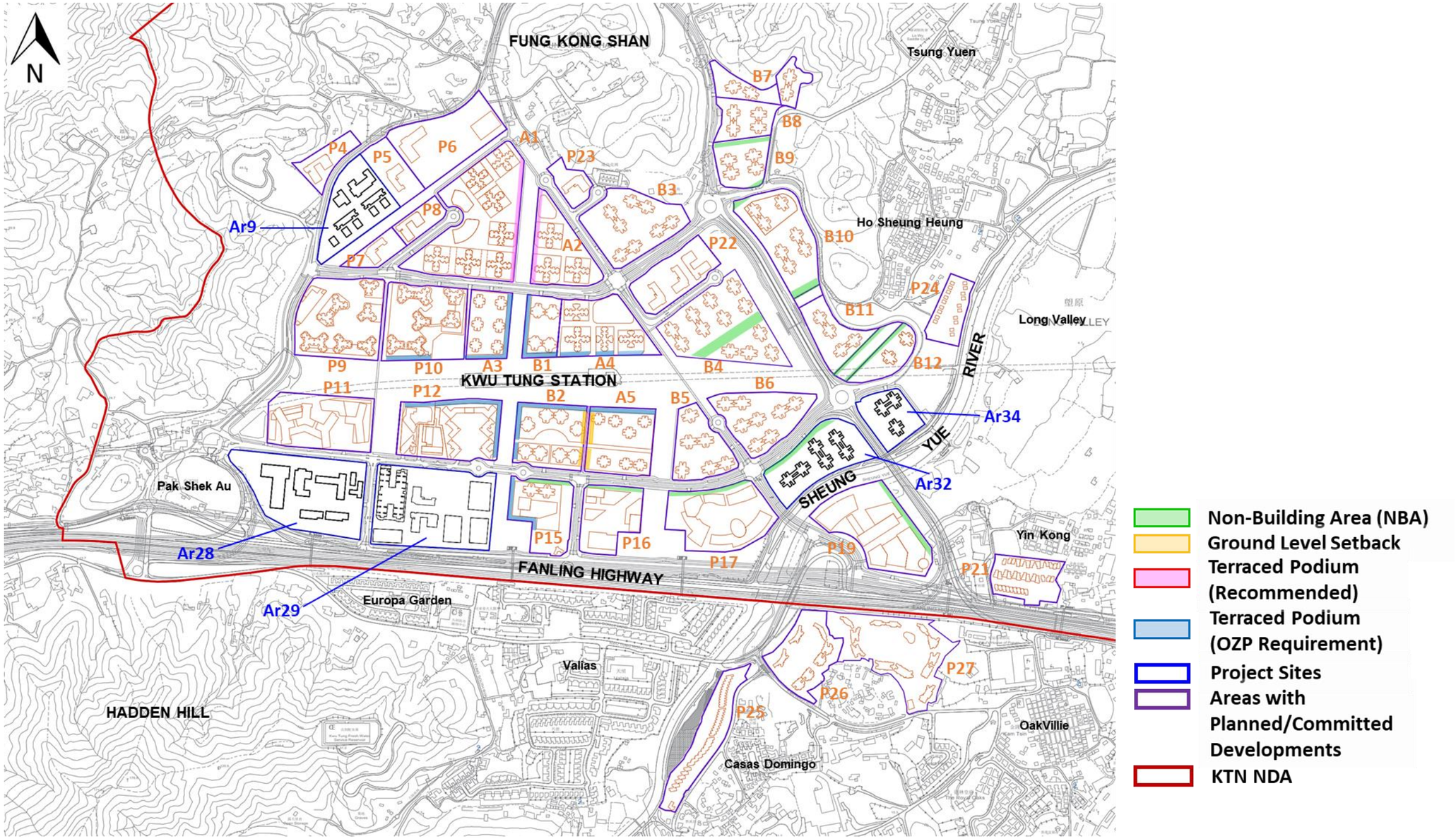
Project Site No.	OZP Planning Area	Land Use Zoning (Base Scenario)	Land Use Zoning (Proposed Scenario)	Max. BH (Base Scenario) (mPD)	Max. BH (Proposed Scenario) (mPD)	Plot Ratio (Base Scenario)	Plot Ratio (Proposed Scenario)
Ar9	9	GIC (District Headquarters and its Associated Married Staff Quarters, Divisional Police Station)	GIC (District Headquarters and its Associated Married Staff Quarters, Divisional Police Station)	20 storeys	130	N/A (Not indicated in OZP)	N/A (Corresponding Increase is expected)
Ar28	28	GIC (Hospital, Polyclinic and General Clinic / Health Centre)	GIC (Hospital, Polyclinic and General Clinic / Health Centre)	10 storeys	130	N/A (Not indicated in OZP)	N/A (Corresponding Increase is expected)

Project Site No.	OZP Planning Area	Land Use Zoning (Base Scenario)	Land Use Zoning (Proposed Scenario)	Max. BH (Base Scenario) (mPD)	Max. BH (Proposed Scenario) (mPD)	Plot Ratio (Base Scenario)	Plot Ratio (Proposed Scenario)
Ar29*	29	GIC (Schools and Joint User Building)	GIC (Joint User Government Complex and Joint User Building)	10 storeys	130	N/A (Not indicated in OZP)	N/A (Corresponding Increase is expected)
Ar32	32	OU (Business and Technology Park)	R(B)1	55	75	Non-domestic PR: 3.0	Domestic PR: 4.2
Ar34	34	OU (Business and Technology Park)	R(B)1	55	70	Non-domestic PR: 3.0	Domestic PR: 4.2

6.1.7 Noise barriers and major elevated highways would inevitably affect the localised pedestrian wind environment. Therefore, apart from the building structures, noise barriers along part of the major roads for mitigating the potential traffic noise impacts as well as major elevated highways are incorporated in the CFD models of the Base and Proposed Scenarios.



(a) Base Scenario



(b) Proposed Scenario

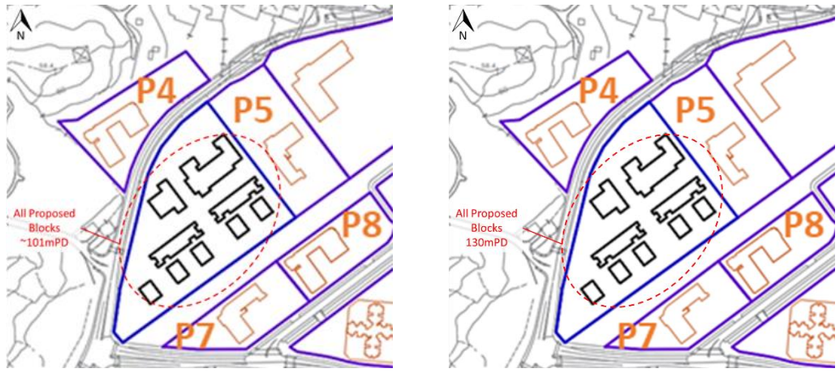
Figure 6.1 Indicative Building Layouts for the Base Scenario and Proposed Scenario

6.1.8 The changes and differences within the five Project Sites under the Base and Proposed Scenarios are discussed below:

Project Site Ar9 (Area 9):

6.1.9 Project Site Ar9 is zoned as “Government, Institution or Community” (“G/IC”) usage with nine proposed development blocks for District Headquarters, Associated Married Staff Quarters and Divisional Police Station (see **Figure 6.2**). These nine proposed blocks are all assumed to be 101mPD in height under the Base Scenario for this OZP amendment exercise.

6.1.10 For the Proposed Scenario, there is no change in the land use zoning as well as the types of GIC blocks as compared to the Base Scenario. In addition, as revealed in the indicative building layouts of the Base and Proposed Scenario in **Figure 6.2**, which have been adopted to undergo CFD simulation in this Study, the building footprints under the Proposed Scenario are consistent with the Base Scenario. The only difference is that the proposed development blocks are to be relaxed to a height of 130mPD under the Proposed Scenario.



(a) Base Scenario (b) Proposed Scenario

Figure 6.2 Indicative Building Layouts, Base and Proposed Scenarios (Area 9)

Project Site Ar28 (Area 28):

6.1.11 Similar to Project Site Ar9, Project Site Ar28 is also zoned as “Government, Institution or Community” (“G/IC”) usage for Hospital, Polyclinic and General Clinic / Health Centre (see **Figure 6.3**). These seven proposed blocks are all assumed to be around 63mPD in height under the Base Scenario for this OZP amendment exercise.

6.1.12 Similar to Area 9, there is no change in the land use zoning as well as the types of GIC blocks for the Proposed Scenario as compared to the Base Scenario. In addition, as revealed in the indicative building layouts of the Base and Proposed Scenario in **Figure 6.3**, which have been adopted to undergo CFD simulation in this Study, the building footprints under the Proposed Scenario are consistent with the Base Scenario. The only difference is that the proposed development blocks are to be relaxed to a height of 130mPD under the Proposed Scenario. It is also anticipated that the Plot Ratio under the Proposed Scenario would increase as compared to the Base Scenario.

Project Site Ar29 (Area 29):

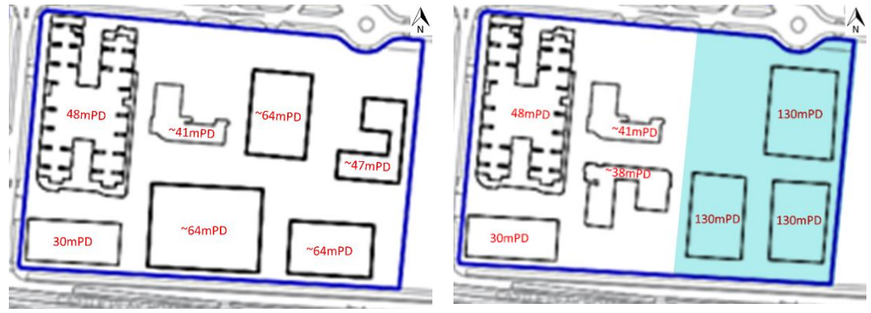
6.1.13 Project Site Ar29 is zoned as “Government, Institution or Community” (“G/IC”) usage with proposed GIC development blocks used for schools and joint user government complex under the Base Scenario. The building heights of these seven proposed blocks ranges from 30mPD to around 64mPD in height under the Base Scenario for this OZP amendment exercise (see **Figure 6.4**).

6.1.14 There is no change in the land use zoning in the Proposed Scenario as compared to the Base Scenario. However, the GIC blocks are planned for joint user buildings and joint user government complex under the Proposed Scenario. As revealed in the indicative building layouts adopted for simulations, there are changes in placements for some of the proposed development blocks as well as differences in some of the building footprints. There are also differences in the building heights for the proposed development blocks which ranges from 30mPD to 130mPD under the Proposed Scenario for Project Site Ar29 (see **Figure 6.4**). It is also anticipated that the Plot Ratio under the Proposed Scenario would increase as compared to the Base Scenario.



(a) Base Scenario (b) Proposed Scenario

Figure 6.3 Indicative Building Layouts, Base and Proposed Scenarios (Area 28)



(a) Base Scenario (b) Proposed Scenario

* Only the hatched area will be under OZP amendment

Figure 6.4 Indicative Building Layouts, Base and Proposed Scenarios (Area 29)

Project Site Ar32 (Area 32):

6.1.15 Project Site Ar32 is zoned as “Other Specified Uses” annotated “Business and Technology Park” (“OU (Business and Technology Park)”) with proposed development blocks for Business and Technology usages under the Base Scenario. The building heights of these proposed blocks ranges from 40mPD to 55mPD in height under the Base Scenario for this OZP amendment exercise (see **Figure 6.5**).

6.1.16 The land use is proposed to be rezoned to “Residential (Group B)” (“R(B)1”) for residential developments under the Proposed Scenario as compared to the Base Scenario. The plot ratio is increased from 3.0 in the Base Scenario to 4.2 in the Proposed Scenario with building heights relaxed to 75mPD. As revealed in the indicative building layout in **Figure 6.5**, podium free residential development blocks are proposed to appear within this Project Site.

Project Site Ar34 (Area 34):

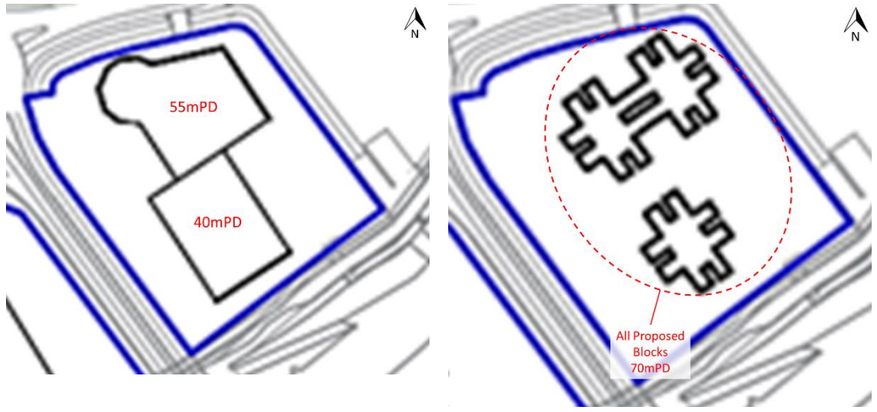
6.1.17 Similar to Project Site Ar32 located adjacent to it, Project Site Ar34 is also zoned as "Other Specified Uses" annotated "Business and Technology Park" ("OU (Business and Technology Park)") with proposed development blocks for Business and Technology usages under the Base Scenario. The building heights of the proposed blocks ranges from 40mPD to 55mPD in height under the Base Scenario for this OZP amendment exercise (see **Figure 6.6**).

6.1.18 Similar to Area 32, the land use is proposed to be rezoned to "Residential (Group B)" ("R(B)1") for residential developments under the Proposed Scenario as compared to the Base Scenario. The plot ratio is increased from 3.0 in the Base Scenario to 4.2 in the Proposed Scenario with building heights relaxed to 70mPD. As revealed in the indicative building layout in **Figure 6.6**, podium free residential development blocks are proposed to appear within this Project Site.



(a) Base Scenario (b) Proposed Scenario

Figure 6.5 Indicative Building Layouts, Base and Proposed Scenarios (Area 32)



(a) Base Scenario (b) Proposed Scenario

Figure 6.6 Building Layouts for the Base and Proposed Scenarios (Area 34)

6.1.19 To recap, the difference between the Base and Proposed Scenarios in this AVA-IS would only be those within the Project Sites. The layouts within the Project Sites are indicative only and might be subjected to further finetune/change in later design stages. Those planned and committed development layouts at the vicinity areas would serve as background. Furthermore, major noise barriers and elevated structures are incorporated in the models of the Base and

Proposed Scenarios. The CFD assessment approach and the wind directional analysis are presented in the follow up sections.

7 ASSESSMENT METHODOLOGY AND ASSUMPTIONS

7.1 General

7.1.1 This Initial AVA Study is carried out in accordance with the guidelines stipulated in the Technical Guide for AVA for Developments in Hong Kong with regards to CFD modelling. Reference is also made to the "Recommendations on the use of CFD in Predicting Pedestrian Wind Environment" issued by a working group of the COST action C14 "Impact of Wind and Storms on City Life and Built Environment" (COST stands for the European Cooperation in the field of Scientific and Technical Research). COST action C14 is developed by European Laboratories/Institutes dealing with wind and/or structural engineering, whose cumulative skills, expertise and facilities have an internationally leading position. Thus, it is considered that the COST action C14 is a valid and good reference for CFD modelling in AVA study.

7.2 Modelling Tool and Model Setup

7.2.1 Assessment is conducted by means of a 3-dimensional CFD model. The well-recognised commercial CFD package ANSYS ICEM-CFD (ANSYS, 2011a) and ANSYS FLUENT (ANSYS, 2011b) are used in this exercise. FLUENT model had been widely applied for various AVA research and studies worldwide. The application of the FLUENT model has been very much accepted by the industry for AVA application.

7.2.2 Wind Directions: In the CFD model, annual wind directions more than 75% of the time in the reference year together with the summer wind directions more than 75% of the time in the summer season (June to August) for the Project Sites are adopted for simulation of air ventilation performance (**Table 5.1** refers).

7.2.3 From the annual wind data obtained from the *Experimental Site Wind Availability Study for The North-East New Territories New Development Areas*, it is noted at KTN Site, the sum of the frequencies of occurrence of wind from N, NNE, NE, ENE, E, ESE, and SW exceeds more than 75% of the time in the reference year. Regarding the summer winds, sum of the frequencies of occurrence of wind from E, ESE, SE, S, SSW, SW, WSW and W also exceeds more than 75% of the summer season. These 12 wind directions have been selected for this AVA study at the Project Sites. Thus, the aforementioned 12 winds are adopted for this AVA study.

7.2.4 Vertical Wind Velocity Profile and Turbulence Intensity: Wind environment under different wind directions is defined in the CFD environment. The wind velocity profiles and turbulence intensity for all annual and summer wind directions follow those determined from the site wind availability study.

7.2.5 Turbulence Model: As recommended in COST action C14, realizable K-epsilon turbulence model is adopted in the CFD model to simulate the real-life problem. Common computational fluid dynamics equations are adopted in the analysis.

7.2.6 Variables including fluid velocities and fluid static pressure are calculated throughout the domain. The CFD code captures, simulates and determines the air flow inside the domain. The inflow boundary of the computational domain is set as the velocity inlet condition and the outflow boundary is set as the zero-gradient condition. For the two lateral faces and top boundaries, symmetric boundary condition is used. Lastly for the ground and building walls, no slip condition is employed. The blockage ratio for the computational domain is less than 3%.

7.2.7 The advection terms of the momentum and viscous terms are resolved with the second order numerical schemes. The scaled residuals are converged to an order of magnitude of at least 1×10^{-4} as recommended in COST action C14.

7.2.8 Computational Domain: The 3-dimensional CFD model is constructed to capture all major components such as topographical features and buildings within and in the vicinity of the Application Sites that would likely affect the wind flow. The methodology described in the Technical Guide is adopted for this assessment.

7.2.9 CFD simulations with model area covers almost the size of KTN NDA area have been conducted. The size of the computational domain of the CFD model for this Study complies with the minimum requirements of COST14, with dimension for 7300m (L) x 7300m (W) x 1800m (H) respectively and contains about 8.5 million polyhedral cells for Proposed Scenario and Base Scenario in both the modelled KTN NDA. Given the large computational domain

adopted in this assessment and the physical limitation on the computational resources of the CFD model, the grid size employed in the CFD model is taken as a global minimum and maximum size of 2m and 128 m respectively with a grid expansion ratio of 1.2. Smaller cell size down to 0.5m is used near the Project Sites. Besides, four layers of prism cells (each layer of 0.5m thick) were employed above the terrain.

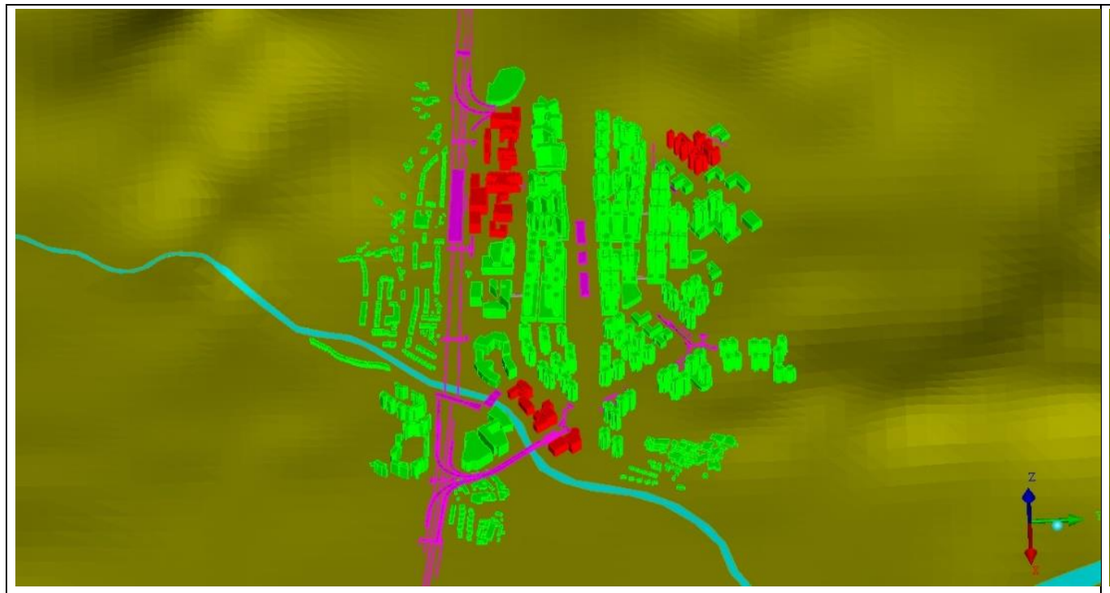
7.2.10 Owing to the focus of this current report is on the OZP amendment of five Project Sites within the KTN NDA, nevertheless, according to the Technical Guide, the Surrounding Area containing existing and committed developments up to a perpendicular distance of 2 times of the maximum building height within the Project Sites should be included in the CFD model and is considered sufficient. In this Study, a Surrounding Area of 400m from the Project Sites' boundaries is adopted and the wind data from the simulations are extracted at the perimeter of the Project Sites for Perimeter Test Points and an area within 200m from the Project Sites' boundaries (Assessment Area) for Overall Test Points.

7.2.11 Images of the general model setup and grid cell setup in the CFD model for the Base Scenario and the Proposed Scenarios are shown in **Figure 7.1**, **Figure 7.2,** and **Figure 7.3** respectively.

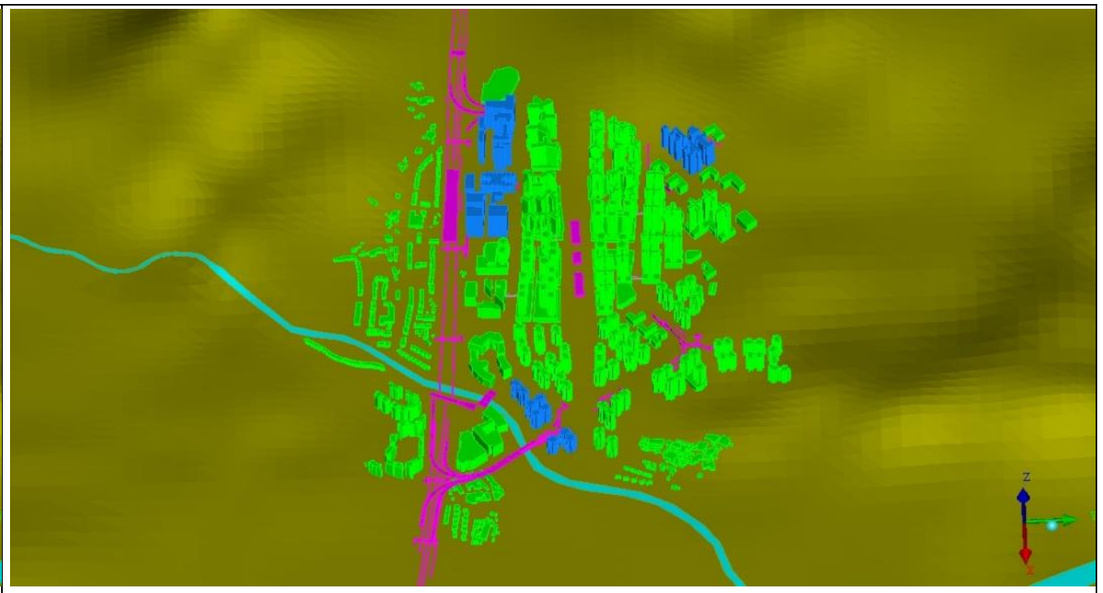
7.2.12 Test Points: Both Perimeter Test Points and Overall Test Points are selected within the Assessment Area in order to assess the impact on the immediate surroundings and local areas respectively. In addition, Special Test Points are also placed within the Project Sites to assess the potential change in wind environment within the Project Sites due to change in building morphologies. Perimeter test points are selected along the boundaries of the Project Sites with separation distance of about 30m. Overall test points are evenly distributed over open spaces, streets and other parts within the Assessment Area where pedestrian frequent access. All test points are elevated at 2m pedestrian level.

7.2.13 For the purpose of the AVA study of Project Sites, 160 Perimeter Test Points, 495 Overall Test Points and 74 Special Test Points are selected. For the detailed wind velocity ratio values extracted from the Perimeter, Overall and Special Test Points, please refer to **Annex I**.

7.2.14 **Figure 7.4** shows the Project Sites, Assessment Area and Surrounding Area with Test Point locations that would be examined in this AVA.



(a) Base Scenario, East View



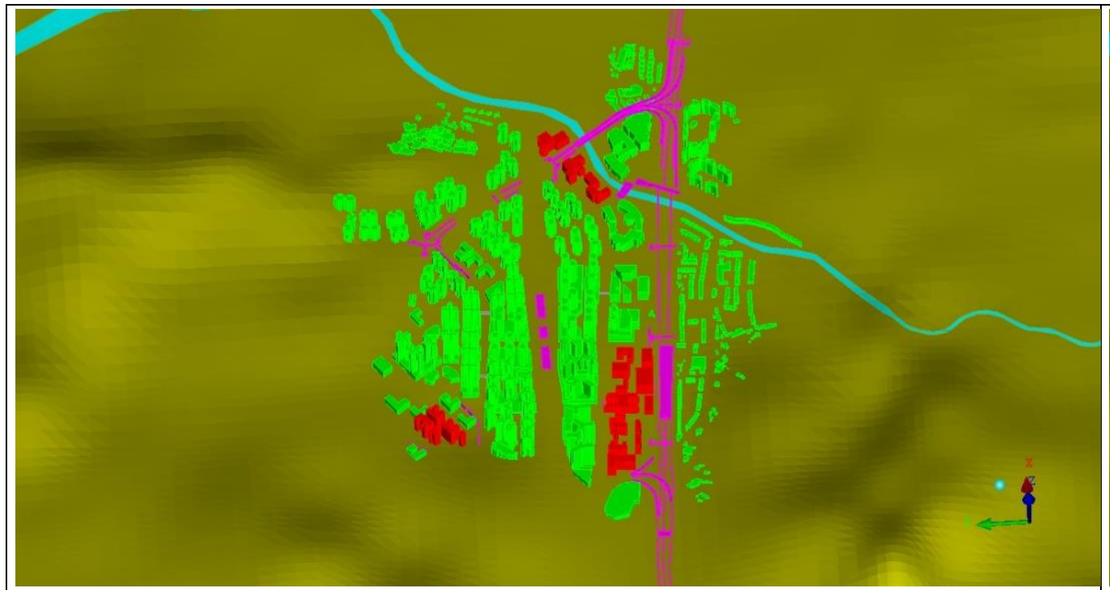
(b) Proposed Scenario, East View



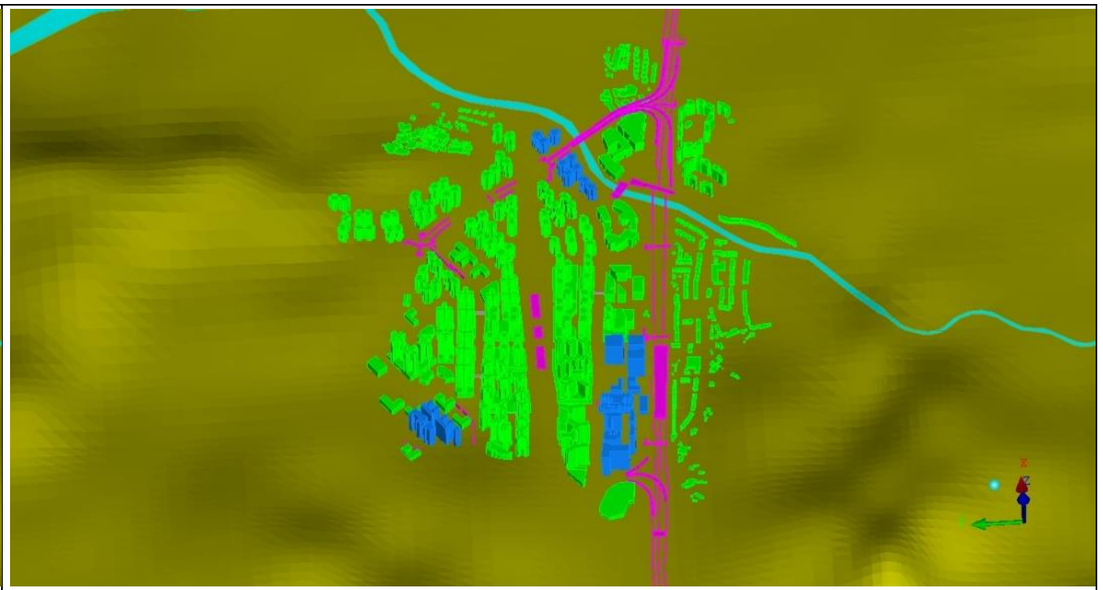
(a) Base Scenario, South View



(b) Proposed Scenario, South View



(a) Base Scenario, West View



(b) Proposed Scenario, West View

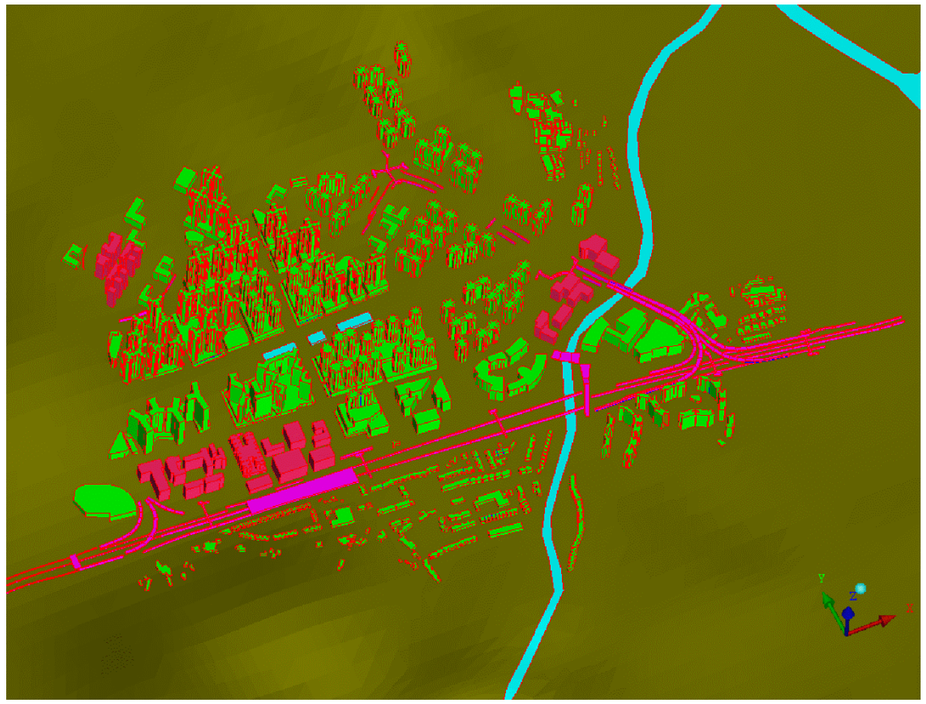


(a) Base Scenario, North View

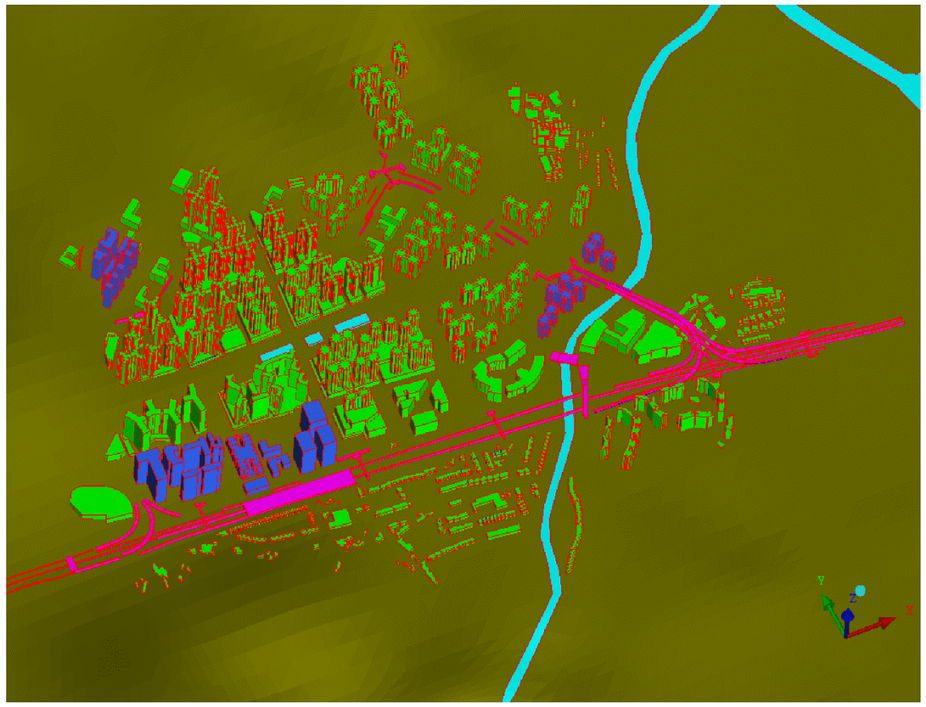


(b) Proposed Scenario, North View

Figure 7.1(a) Model for the Base and Proposed Scenarios under Different Views

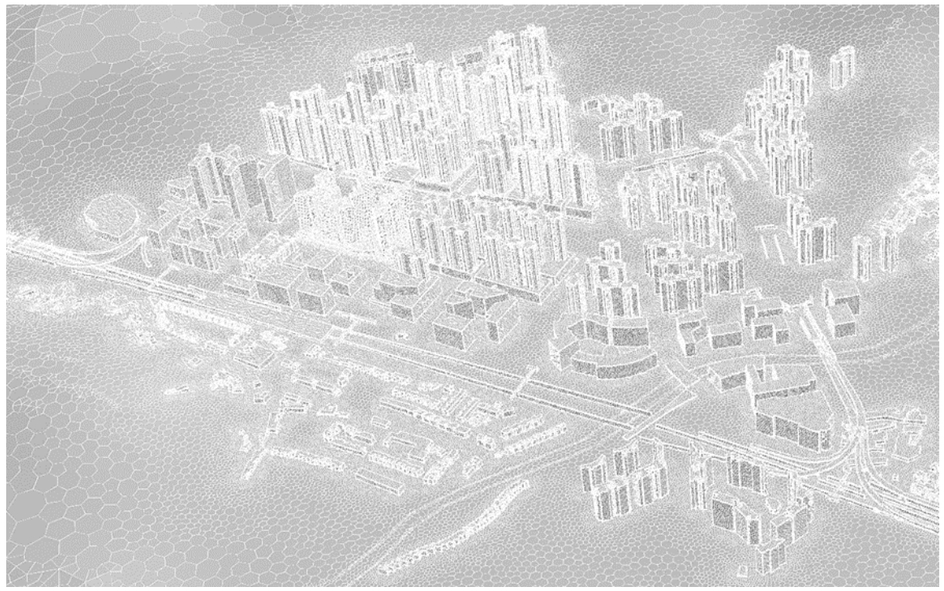


(a) Base Scenario



(b) Proposed Scenario

Figure 7.1(b) Model for the Base and Proposed Scenarios under Isometric View



(a) Base Scenario



(b) Proposed Scenario

Figure 7.2 Mesh Setup for the CFD Simulation (Base and Proposed Scenarios)

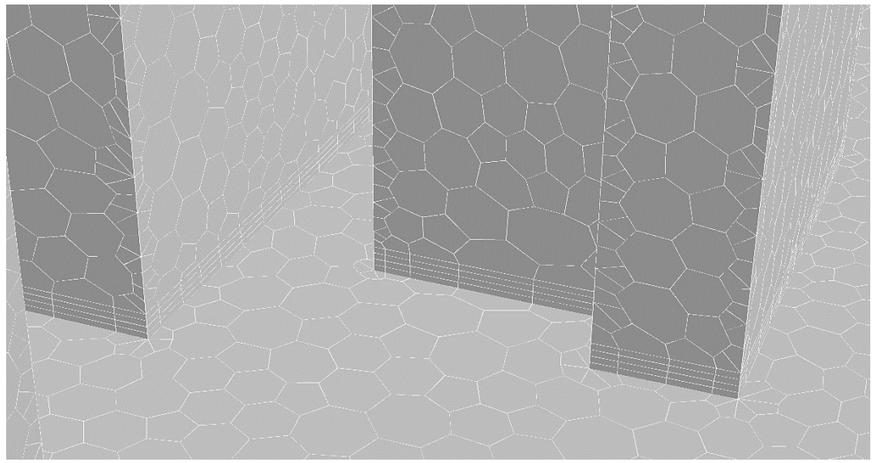


Figure 7.3 Illustration of 4 Prismatic Mesh Layers

7.2.15 As there are five Project Sites, for ease of discussion and better illustration, **Figures 7.4(a)** to **7.4(g)** illustrate the annotation of the Test Points within and at the vicinity regions of the Project Sites. The Overall Test Points within the Assessment Area would be sub-divided into smaller groups for calculation of spatial average wind velocity ratio. The Overall Test Points are divided and categorized according to Road Segments and Separations (refer to **Figure 4.4**) as well as the existing, planned/committed development areas at the vicinity of the Project Sites. There are a total of 27 Overall Test Point Group Areas, prefixed with “TA”, representing the existing, planned/committed development areas and 30 Overall Test Point Group Areas, prefixed with “TR”, representing the Roads Segments and Separations. **Table 7.1** summarizes the information on divided test point groups.

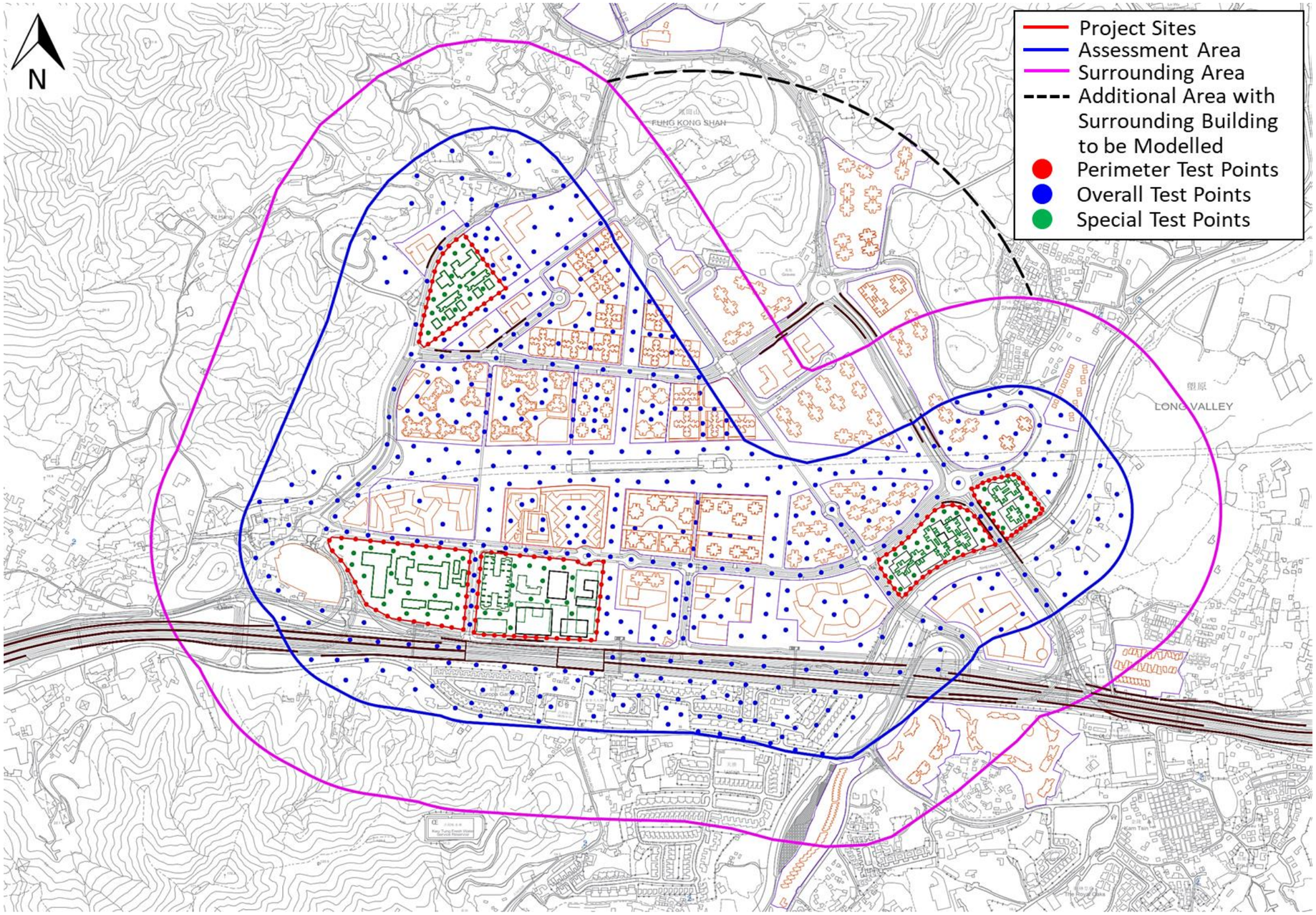


Figure 7.4(a) **Locations of Perimeter, Overall and Special Test Points**

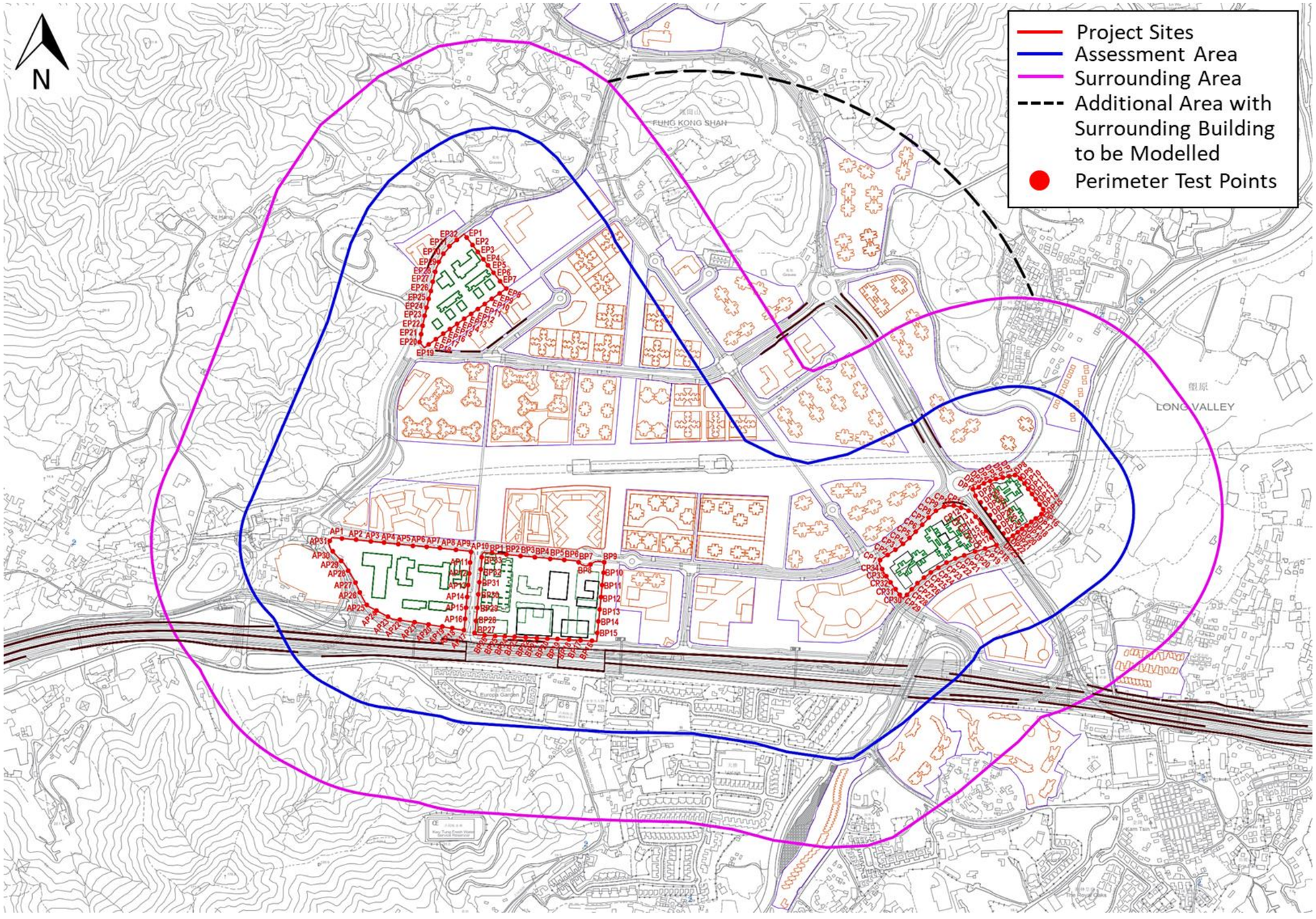


Figure 7.4(b) Annotations of the Perimeter Test Points

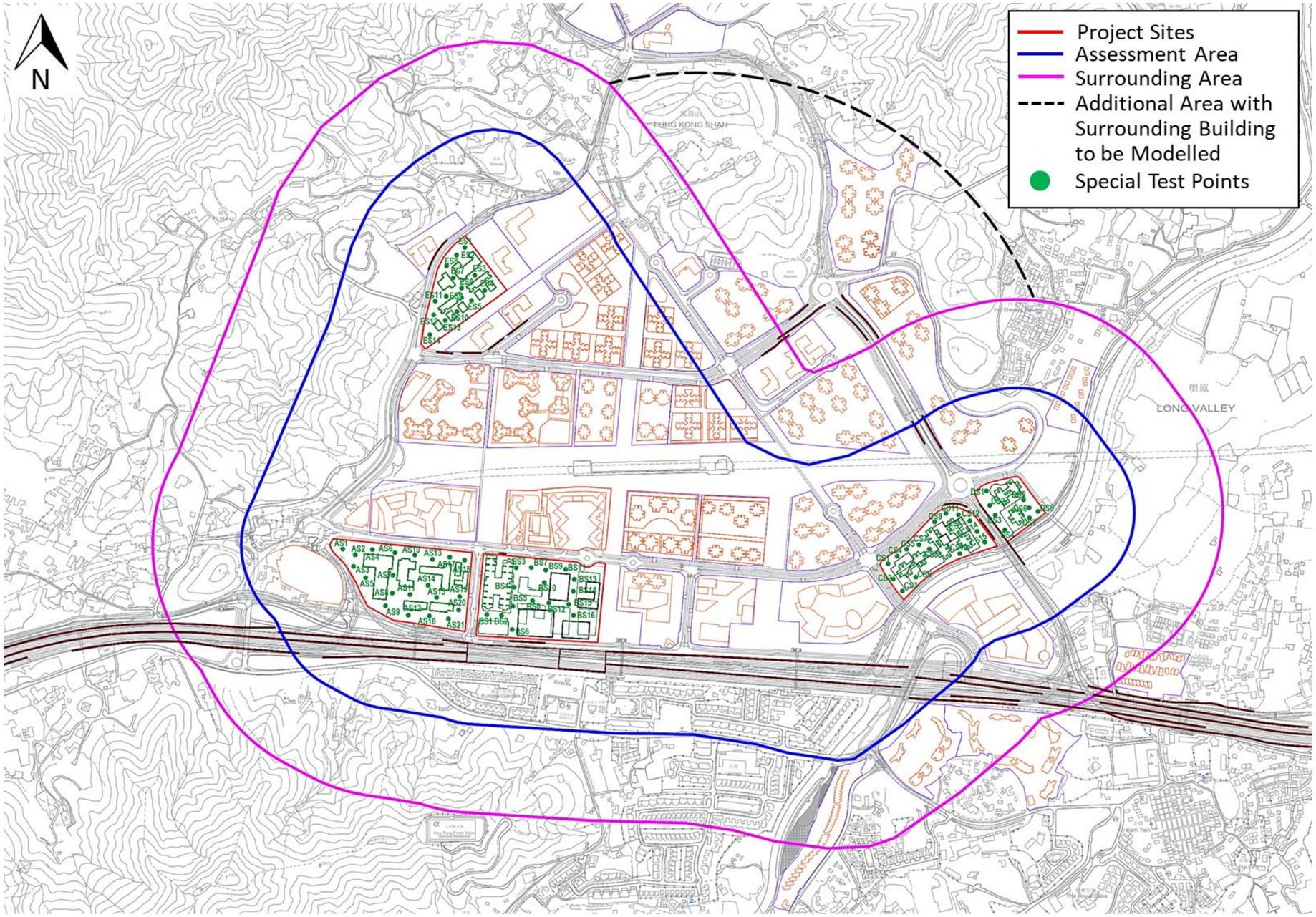


Figure 7.4(c) Annotations of the Special Test Points

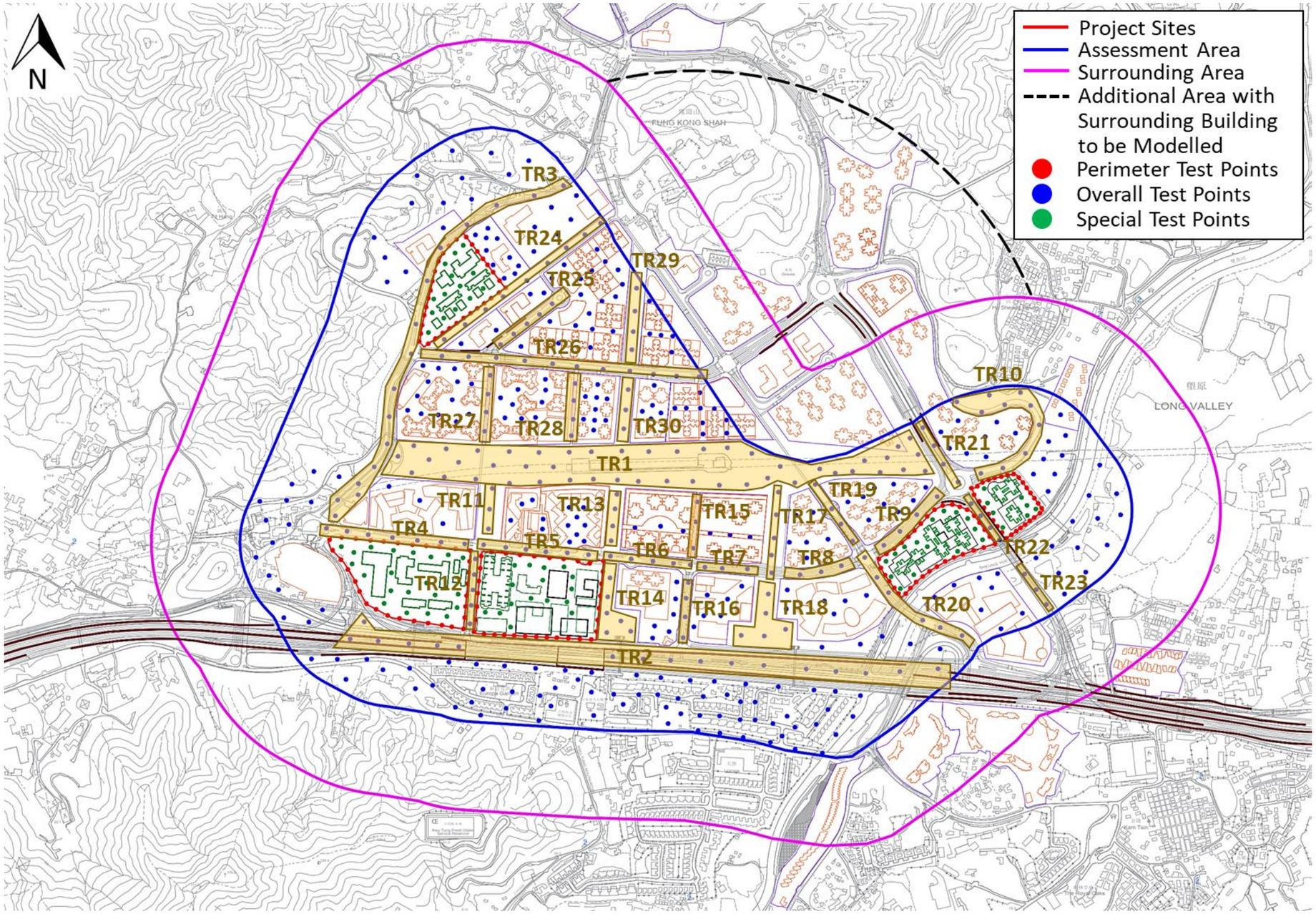


Figure 7.4(d) **Locations of Overall Test Points Groups (Roads and Separations)**

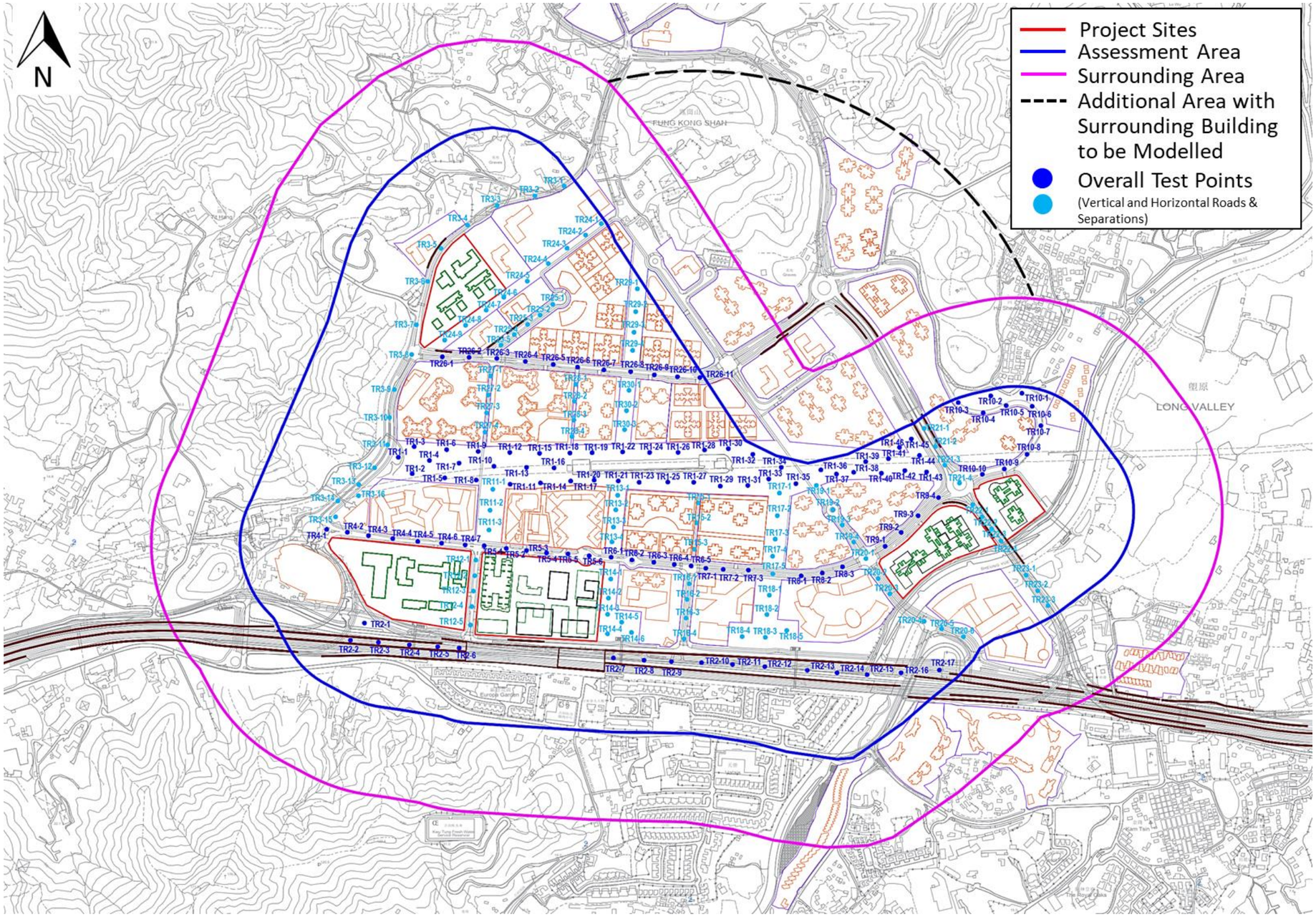


Figure 7.4(e) Annotations of the Overall Test Points Prefix "TR" (Roads and Separations)

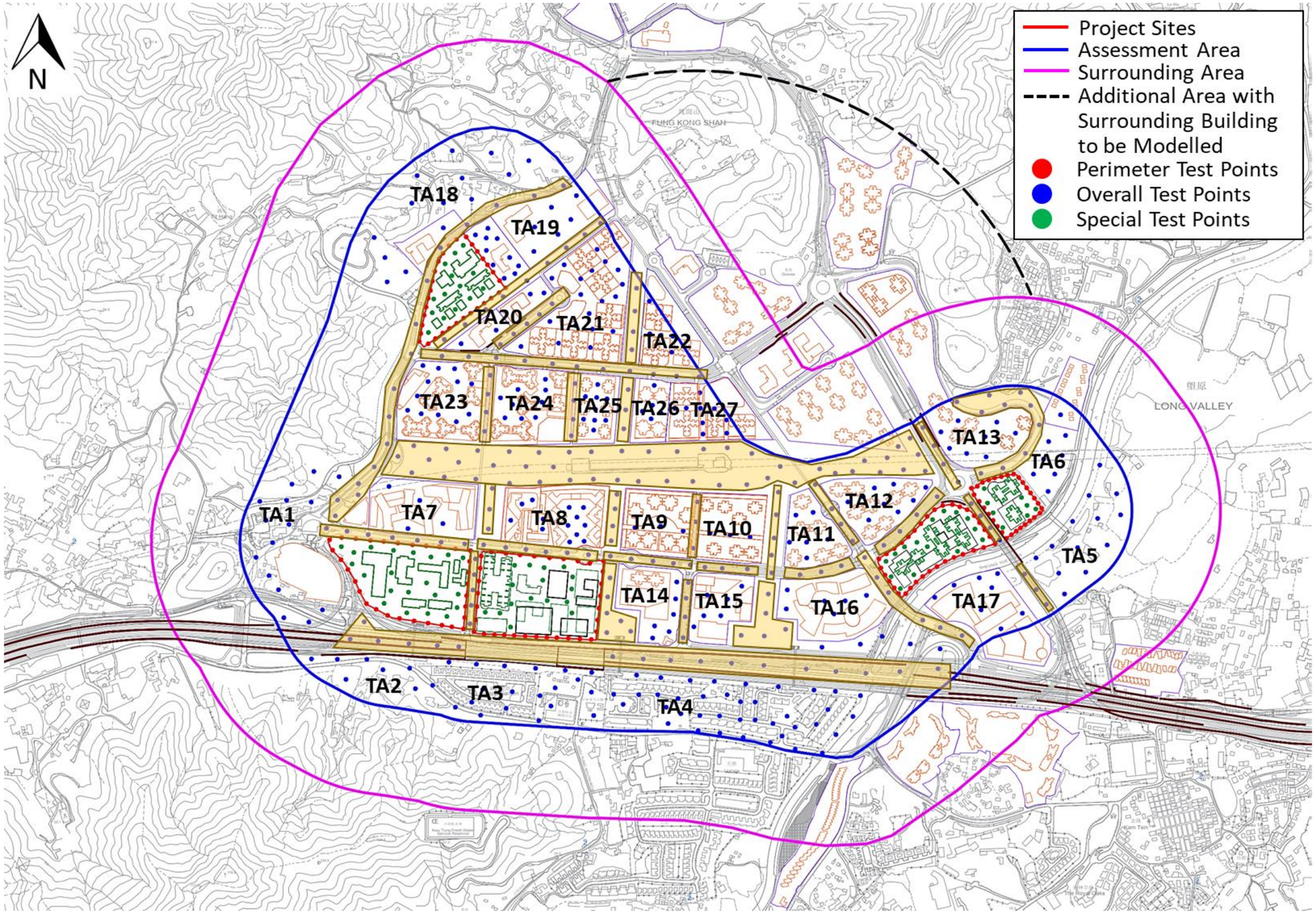


Figure 7.4(f) Locations of Overall Test Points Groups (Existing, Planned/Committed Building Regions)

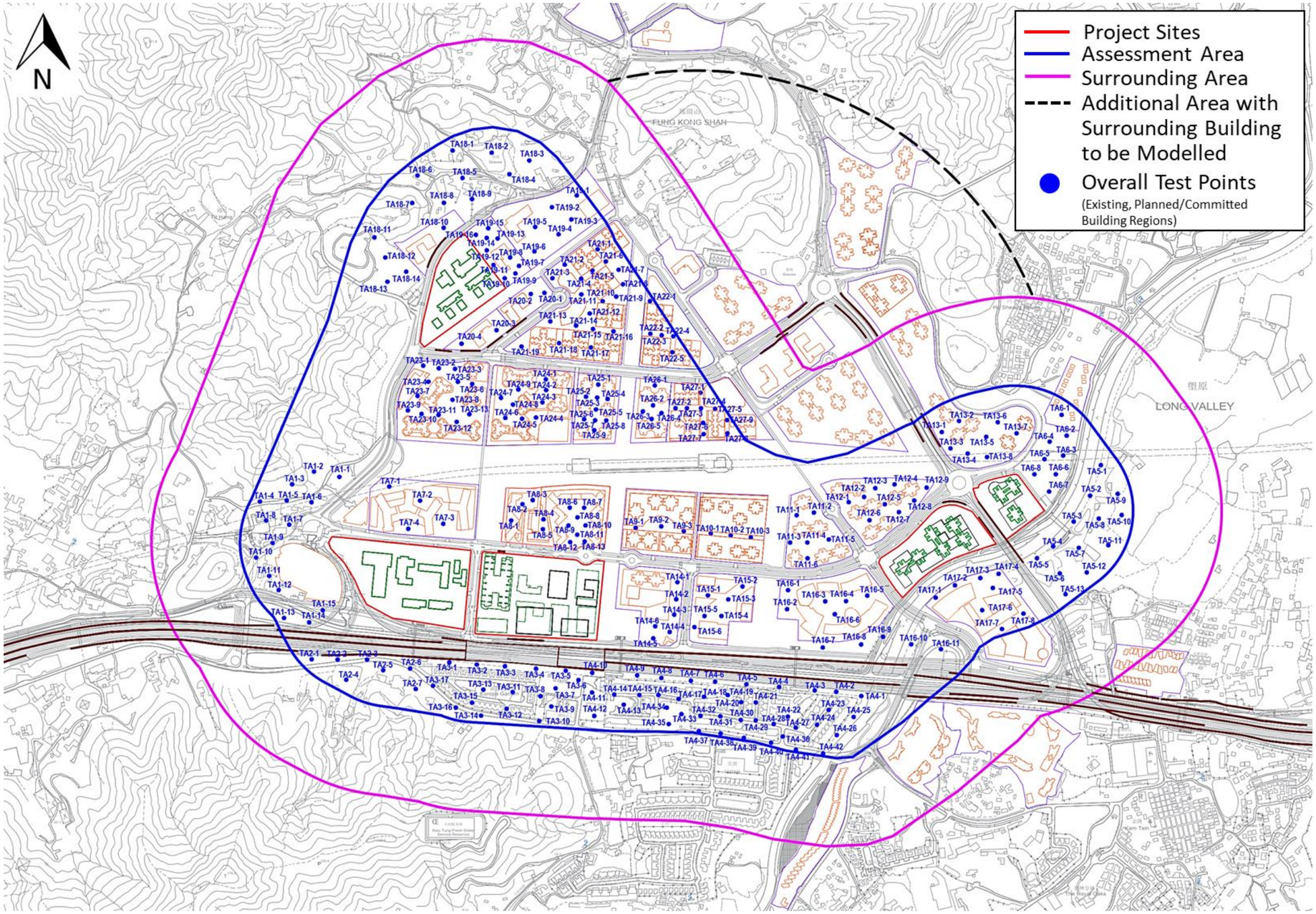


Figure 7.4(g) Annotations of the Overall Test Points Prefix "TA" (Existing, Planned/Committed Building Regions)

Table 7.1 Test Points' Grouping within Assessment Area

Test Point Group	Test Points Number	Location (Refer to Figure 4.4)
Perimeter Test Points		
AP	AP01 – AP31	Perimeter of Project Site Area 28
BP	BP01 – BP33	Perimeter of Project Site Area 29
CP	CP01 – CP34	Perimeter of Project Site Area 32
DP	DP01 – DP30	Perimeter of Project Site Area 34
EP	EP01 – EP32	Perimeter of Project Site Area 9
Special Test Points		
AS	AS01 – AS21	Within Project Site Area 28
BS	BS01 – BS16	Within Project Site Area 29
CS	CS01 – CS15	Within Project Site Area 32
DS	DS01 – DS08	Within Project Site Area 34
ES	ES01 – ES14	Within Project Site Area 9
Overall Test Points (Roads and Separations)		
TR1	TR1-1 – TR1-46	Along the Kwu Tung Station
TR2	TR2-1 – TR2-17	Along the Fanling Highway
TR3	TR3-1 – TR3-16	Along Roads 1-1, 1-2, 1-3
TR4	TR4-1 – TR4-7	Along Road 8-1
TR5	TR5-1 – TR5-6	Along Road 8-2
TR6	TR6-1 – TR6-5	Along Road 8-3
TR7	TR7-1 – TR7-3	Along Road 8-4
TR8	TR8-1 – TR8-3	Along Road 8-5
TR9	TR9-1 – TR9-4	Along Road 8-6
TR10	TR10-1 – TR10-10	Along Road 13 and vicinity of Area B12
TR11	TR11-1 – TR11-3	Along Separation 2
TR12	TR12-1 – TR12-5	Along Road 9
TR13	TR13-1 – TR13-4	Along Separation 3-3
TR14	TR14-1 – TR14-6	Along Separation 3-4
TR15	TR15-1 – TR15-3	Between Areas B2 and A5
TR16	TR16-1 – TR16-4	Along Road 10
TR17	TR17-1 – TR17-5	Along Separation 4-1
TR18	TR18-1 – TR18-5	Along Separation 4-2
TR19	TR19-1 – TR19-4	Along Road 6-3
TR20	TR20-1 – TR20-6	Along Road 6-4 and its elongation
TR21	TR21-1 – TR21-4	Along Road 11-2
TR22	TR22-1 – TR22-4	Along Road 11-3
TR23	TR23-1 – TR23-3	Along Road 11-4
TR24	TR24-1 – TR24-9	Along Separations 1-1 and 1-2

Test Point Group	Test Points Number	Location (Refer to Figure 4.4)
TR25	TR25-1 – TR25-5	Along Road 3
TR26	TR26-1 – TR26-11	Roads 2-1, 2-2 and 2-3
TR27	TR27-1 – TR27-4	Between Areas P9 and P10
TR28	TR28-1 – TR28-4	Between Areas P10 and A3
TR29	TR29-1 – TR29-4	Along Separation 3-1
TR30	TR30-1 – TR30-3	Along Separation 3-2
Overall Test Points (Existing, Planned/Committed Building Regions)		
TA1	TA1-1 – TA1-15	Pak Shek Au regions
TA2	TA2-1 – TA2-7	West of Europa Garden
TA3	TA3-1 – TA3-17	Europa Garden
TA4	TA4-1 – TA4-42	Valias and surroundings
TA5	TA5-1 – TA5-13	Long Valley areas northeast of Area P19
TA6	TA6-1 – TA6-8	Regions southeast of Areas B11 & B12
TA7	TA7-1 – TA7-4	Within Area P11
TA8	TA8-1 – TA8-13	Within Area P12
TA9	TA9-1 – TA9-3	Within Area B2
TA10	TA10-1 – TA10-3	Within Area A5
TA11	TA11-1 – TA11-6	Within Area B5
TA12	TA12-1 – TA12-9	Within Area B6
TA13	TA13-1 – TA13-8	Within Areas B11 & B12
TA14	TA14-1 – TA14-6	Within Area P15
TA15	TA15-1 – TA15-6	Within Area P16
TA16	TA16-1 – TA16-11	Within Area P17 and areas southeast
TA17	TA17-1 – TA17-8	Within Area P19
TA18	TA18-1 – TA18-14	Area P4 and northwest of Areas P5, P6
TA19	TA19-1 – TA19-16	Within Areas P5 and P6
TA20	TA20-1 – TA20-4	Within Areas P7 and P8
TA21	TA21-1 – TA21-19	Within Area A1
TA22	TA22-1 – TA22-5	Within Area A2
TA23	TA23-1 – TA23-13	Within Area P9
TA24	TA24-1 – TA24-9	Within Area P10
TA25	TA25-1 – TA25-9	Within Area A3
TA26	TA26-1 – TA26-5	Within Area B1
TA27	TA27-1 – TA27-9	Within Area A4

7.3 Wind Velocity Ratio

7.3.1 Wind velocity ratio (VR) indicates how much of the wind availability is experienced by pedestrians on the ground which is a relatively simple indicator to reflect the wind environment of the study site. VR is defined as $VR = V_P / V_{INF}$ where V_{INF} is the wind velocity at the top of the wind boundary layer (596mPD) and it would not be affected by the ground roughness and local site features and V_P is the wind velocity at the 2m pedestrian level.

7.3.2 VR_W is the frequency weighted wind velocity ratio calculated based on the frequency of occurrence of all the 7 annual wind directions and 8 summer wind directions for the purpose of comparison.

7.3.3 For Site Air Ventilation Assessment, the Site Spatial Average Wind Velocity Ratio (SVR_W) and individual VR_W of all perimeter test points are reported. SVR_W is the average of VR_W of all perimeter test points.

7.3.4 For Local Air Ventilation Assessment, the Local Spatial Average Wind Velocity Ratio (LVR_W) of all overall test points and perimeter test points, and individual VR_W of the overall test points are reported. LVR_W is the average of all overall test points and perimeter test points.

7.3.5 The SVR_W and LVR_W are worked out to understand the overall impacts on air ventilation to the immediate and further surroundings of the Project Sites due to the changes in proposed developments under the Base Scenario and Proposed Scenario.

7.3.6 The Spatial Average Velocity Ratio (SAVR) for a particular zone, defined as the spatial average of the VR_w of all test points that are relevant to that zone. In the current study, the SAVR is used as a representative and relative indicator of pedestrian level wind conditions within each relevant zone.

8 KEY FINDINGS OF THE AVA INITIAL STUDY

8.1 Local Situation

8.1.1 The local situation including the Site Environs, Site Wind Environment, and Site Wind Availability at and surround the Project Sites are described in **Sections 4** and **5** above. In addition, the Base and Proposed Scenarios as well as the wind data extraction locations are illustrated in detail in **Section 6** and **Section 7** respectively.

8.2 Wind Velocity Ratio Results

8.2.1 A summary of the predicted wind velocity ratios for the Perimeter Test Points, the Overall Test Points and the Special Test Points as well as the SVR_W and LVR_W are presented in **Table 8.1** below. Details of the predicted wind velocity ratios at each test points are presented in **Annex I**.

Table 8.1 Summary of Wind Velocity Ratios

	Wind Velocity Ratios			
	Annual Wind		Summer Wind	
	Base Scenario	Proposed Scenario	Base Scenario	Proposed Scenario
SVR_W	0.23	0.24	0.22	0.25
LVR_W	0.23	0.23	0.21	0.22
Averaged VR of Special Test Points	0.16	0.19	0.18	0.21

8.2.2 The results of VR_W for different groups of test points are summarized in **Table 8.2** below.

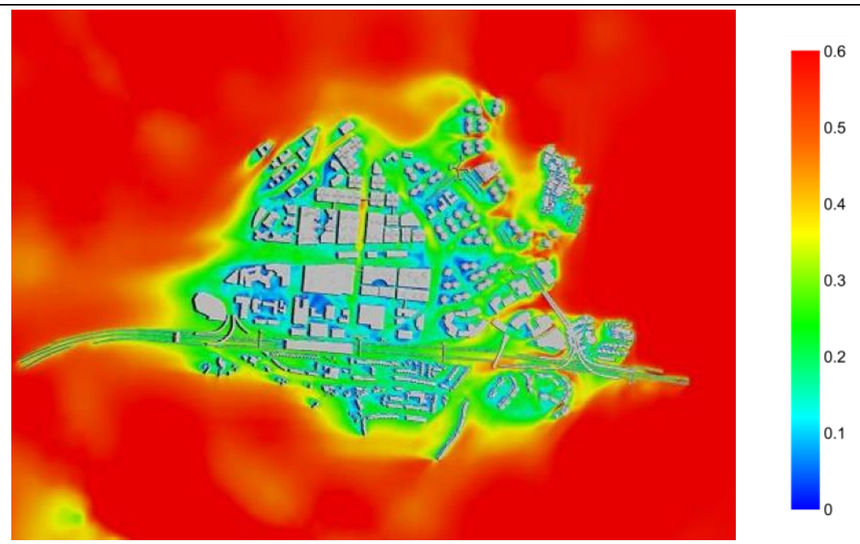
Table 8.2 Summary of Wind Velocity Ratios for Different Test Point Groups

Group	Spatial Average VR_w			
	Annual Wind		Summer Wind	
	Base Scenario	Proposed Scenario	Base Scenario	Proposed Scenario
Perimeter Test Point Groups				
AP	0.16	0.16	0.22	0.25
BP	0.15	0.17	0.19	0.23
CP	0.26	0.26	0.24	0.26
DP	0.35	0.38	0.25	0.26
EP	0.25	0.26	0.22	0.22
Special Test Point Groups				
AS	0.12	0.14	0.20	0.24
BS	0.11	0.13	0.18	0.23
CS	0.18	0.24	0.15	0.20
DS	0.26	0.31	0.18	0.22
ES	0.20	0.21	0.17	0.17
Overall Test Point Groups (Roads and Separations)				
TR1	0.20	0.22	0.20	0.22
TR2	0.26	0.26	0.28	0.28
TR3	0.28	0.28	0.28	0.28
TR4	0.13	0.14	0.21	0.19
TR5	0.11	0.19	0.19	0.29

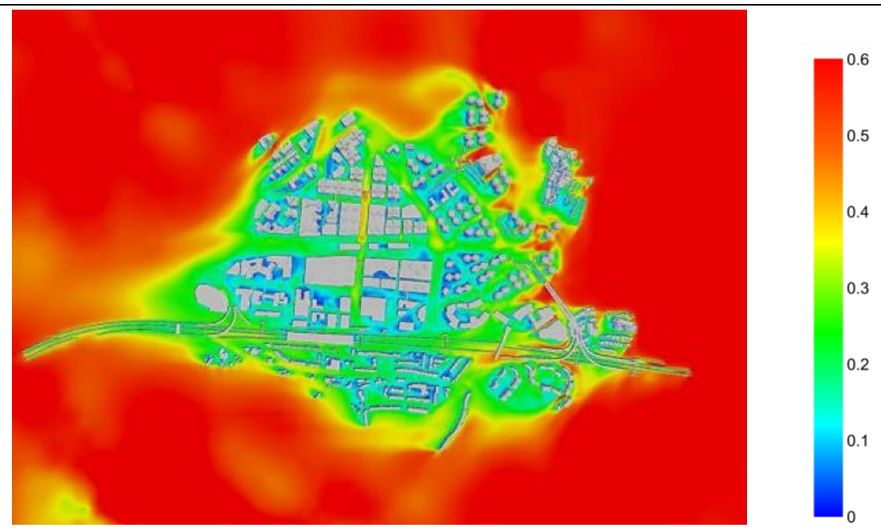
Group	Spatial Average VR_w			
	Annual Wind		Summer Wind	
	Base Scenario	Proposed Scenario	Base Scenario	Proposed Scenario
TR6	0.16	0.15	0.21	0.21
TR7	0.11	0.10	0.11	0.08
TR8	0.21	0.20	0.25	0.25
TR9	0.28	0.26	0.24	0.20
TR10	0.36	0.36	0.26	0.24
TR11	0.14	0.13	0.27	0.21
TR12	0.12	0.14	0.18	0.27
TR13	0.26	0.28	0.28	0.23
TR14	0.16	0.23	0.19	0.25
TR15	0.18	0.18	0.29	0.29
TR16	0.17	0.14	0.24	0.23
TR17	0.21	0.21	0.25	0.25
TR18	0.16	0.16	0.19	0.19
TR19	0.14	0.14	0.16	0.16
TR20	0.21	0.19	0.22	0.21
TR21	0.24	0.24	0.19	0.19
TR22	0.22	0.19	0.20	0.27
TR23	0.38	0.38	0.27	0.27
TR24	0.31	0.31	0.22	0.22
TR25	0.17	0.17	0.08	0.08
TR26	0.20	0.20	0.13	0.13
TR27	0.15	0.17	0.16	0.12
TR28	0.11	0.11	0.13	0.13
TR29	0.34	0.32	0.16	0.12
TR30	0.37	0.37	0.17	0.14
Overall Test Point Groups (Existing, Planned/Committed Building Regions)				
TA1	0.28	0.27	0.37	0.35
TA2	0.28	0.28	0.31	0.31
TA3	0.23	0.23	0.27	0.27
TA4	0.20	0.20	0.22	0.22
TA5	0.57	0.57	0.35	0.35
TA6	0.44	0.43	0.30	0.27
TA7	0.09	0.09	0.15	0.11
TA8	0.09	0.10	0.15	0.16
TA9	0.09	0.09	0.09	0.09
TA10	0.09	0.09	0.08	0.08
TA11	0.11	0.11	0.15	0.15
TA12	0.18	0.17	0.12	0.13
TA13	0.40	0.40	0.24	0.24
TA14	0.14	0.12	0.19	0.17

Group	Spatial Average VR_w			
	Annual Wind		Summer Wind	
	Base Scenario	Proposed Scenario	Base Scenario	Proposed Scenario
TA15	0.12	0.10	0.16	0.14
TA16	0.22	0.21	0.28	0.28
TA17	0.38	0.38	0.28	0.28
TA18	0.49	0.49	0.38	0.38
TA19	0.27	0.26	0.14	0.15
TA20	0.12	0.14	0.09	0.10
TA21	0.19	0.19	0.09	0.09
TA22	0.22	0.22	0.09	0.09
TA23	0.15	0.15	0.15	0.15
TA24	0.11	0.11	0.11	0.11
TA25	0.12	0.12	0.12	0.12
TA26	0.12	0.12	0.10	0.10
TA27	0.18	0.18	0.09	0.09

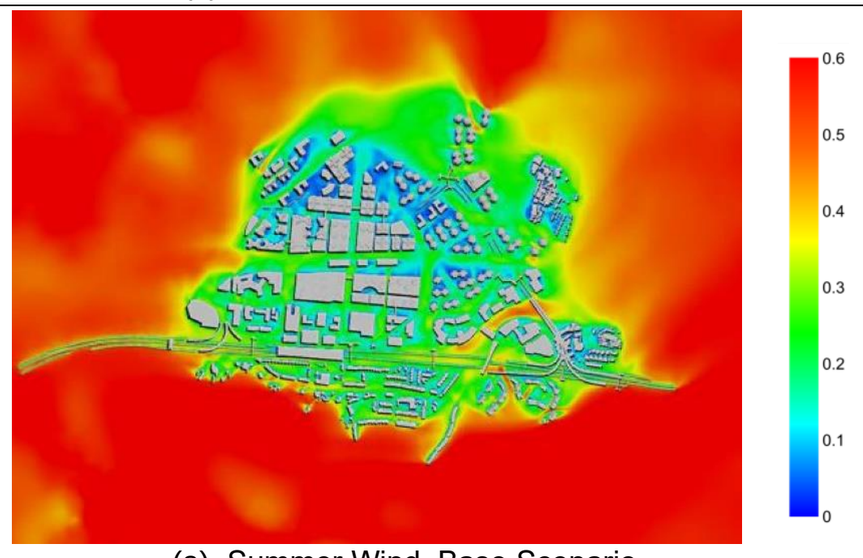
8.2.3 Contour plots of wind velocity ratio and wind vector plots at 2m above the pedestrian level of the simulated area under the annual and summer wind for Base Scenario and Proposed Scenario are shown in **Annex II** and **Annex III**. The contour plots of the frequency weighted average wind velocity ratio at 2m above pedestrian level for both Scenarios under the annual and summer wind are shown in **Figure 8.1** below.



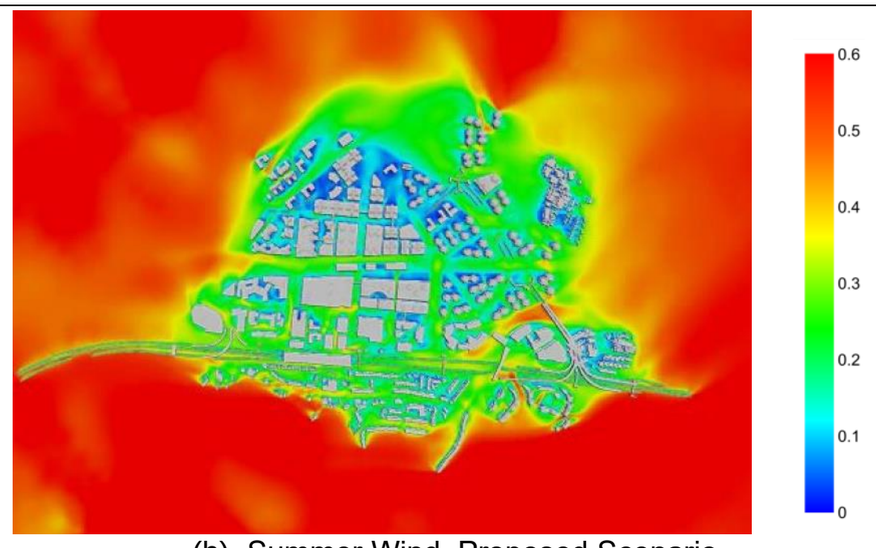
(a) Annual Wind, Base Scenario



(b) Annual Wind, Proposed Scenario



(a) Summer Wind, Base Scenario



(b) Summer Wind, Proposed Scenario

Figure 8.1 Frequency Weighted Averaged Wind Velocity Ratio Contour Plots at 2m above Pedestrian Level under the Annual and Summer Wind

8.3 Site Air Ventilation Assessment

8.3.1 As revealed from **Table 8.1**, improvements can be seen for the Proposed Scenario as compared to the Base Scenario on the Site Wind Velocity Ratio (SWR_w) under both the annual and summer seasons. Under the annual wind, a SVR_w value of 0.24 is obtained under the Proposed Scenario which is slightly better than the SVR_w value of 0.23 obtained under the Base Scenario. Even greater improvements for the Proposed Scenario with a SVR_w value of 0.25 as compared to the Base Scenario with a SVR_w value of 0.22, can be seen under the summer wind.

8.3.2 In addition to paragraph 8.3.1 and from the further break down of wind velocity ratio values according to Test Point Groups in **Table 8.2**, it can be seen that under the annual wind, wind improvements can be seen along the Project Sites' boundaries of Area 29 (Test Point Group BP), Area 34 (Test Point Group DP) and Area 9 (Test Point Group EP), with the wind environment along the boundaries of the rest two Project Site Areas 28 (Test Point Group AP) and 32 (Test Point Group CP) remain comparable. Similar situation can be observed under the summer wind, with increment in SVR_w values as compared to the Base Scenario for four out of five of the perimeter test points' groups representing the wind environment along the boundaries of Areas 28, 29, 32 and 34 under the Proposed Scenario. Nevertheless, the wind environment along the Project Site boundary of Area 9 remains comparable between the Base and Proposed Scenario under the summer wind.

8.3.3 Apart from the Project Site boundaries, wind improvements can also be seen within the Projects Sites with an average VR_w of 0.19 for the Special Test Points in the Proposed Scenario as compared to VR_w value of 0.16 in the Base Scenario under the annual prevailing wind. Similar phenomenon can also be seen under the summer season, with VR_w values of 0.21 and 0.18 under the Proposed Scenario and the Base Scenario respectively. The SVR_w values calculated from Perimeter Test Points and the VR_w values obtained from Special Test Points both reflect that the change in building layouts in some of the Project Sites as well as relaxation in building heights within the Project Sites would result in slight wind improvements along the Project Site boundaries as well as at areas within the Project Sites.

8.3.4 In addition to paragraph 8.3.3, to be more specific, wind improvements can be seen within all the five Project Sites with the building layouts of the Proposed Scenario as compared to the Base Scenario under the annual wind. In particular, more observable improvements can be seen within Area 32 (Test Point Group CS) and Area 34 (Test Point Group DS) as compared to other Special Test Point Groups under both annual and summer wind. Similarly, majority of the Project Sites under Proposed Scenario also display wind improvements as compared to the Base Scenario under the summer season. Observable wind improvements are seen within Area 29 (Test Point Group BS) and Area 32 (Test Point Group CS) as compared to other Special Test Point Groups (i.e., Test Point Groups AS and DS) under the summer seasons for the Proposed Scenario in comparison to the Base Scenario. The site wind environment for each Project Sites (i.e., Area 9, Area 28, Area 29, Area 32, and Area 34) are discussed in detail below.

Project Site Area 28 (Ar28)

8.3.5 The wind environment along the Project Site boundary of Area 28 is represented by perimeter test points AP01 to AP31. The predicted SVR_w for Base Scenario and Proposed Scenario under annual wind are both 0.16. During summer season, the predicted SVR_w is 0.22 for the Base Scenario and 0.25 for the Proposed Scenario respectively. The wind performance of the Proposed Scenario is comparable to the Base Scenario in terms of SVR_w under the annual prevailing wind and improved under the summer prevailing wind. This indicate that generally the relaxation of the building heights to 130mPD without change in proposed development layouts under the Proposed Scenario would not alter the vicinity wind environment along the boundary that surrounds Area 28.

8.3.6 Under the annual wind, wind improvements can be observed at both the northern boundary (Perimeter Test Points AP01 – AP09) and eastern boundary (Perimeter Test Points AP10 – AP17) of Area 28 for the Proposed Scenario as compared to the Base Scenario. The improvements are due to the enhanced downwash wind along the northern boundary and the strengthened wind channelling effects along the eastern boundary under the Proposed Scenario as compared to the Base Scenario.

8.3.7 Decline in VR_w values from 0.22 in the Proposed Scenario to 0.19 in the Base Scenario is observed along the southern (Perimeter Test Points AP018 – AP24) and western boundaries (AP025 – AP31) of Area 28. The enhanced wind wakes due to the relaxation of the building heights in the Proposed Scenario under the northerly/north-easterly/easterly quadrant annual prevailing wind would contribute to the decline.

8.3.8 In general, the wind improvements along the northern and eastern boundaries of Project Site Area 28 together with the wind decline along the southern and western boundaries of it under the annual prevailing wind would generate a generally comparable SVR_w value between the Base and Proposed Scenarios for this Project Site.

8.3.9 Under the summer prevailing wind directions, mainly dominant by wind from the southwestern and western quadrants, there are wind improvements under the Proposed Scenario along all four directional boundaries with strengthened wind channelling effects as compared to the Base Scenario.

8.3.10 The relaxation in building heights within Project Site Area 28 under the Proposed Scenario would bring wind improvements within the regions where the proposed buildings are situated as compared to the Base Scenario. The wind improvement is revealed from the VR_w values calculated from Special Test Points AS01 to AS21 which produce a VR_w value of 0.14 for the Proposed Scenario and 0.12 for the Base Scenario under the annual wind as well as the VR_w of 0.24 and 0.20 for the Proposed and Base Scenarios respectively under the summer wind.

Project Site Area 29 (Ar29)

8.3.11 The predicted SVR_w for Base Scenario and Proposed Scenario are 0.15 and 0.17 respectively indicating an enhancement in wind environment under the annual wind condition. Similar wind improvement can also be seen under the summer prevailing wind with predicted SVR_w of 0.19 and 0.23 for the Base Scenario and Proposed Scenario respectively. These improvements in wind environment are mainly due to the change in building morphologies at the eastern sector of Area 29 under the Proposed Scenario. As compared to the building morphologies under the Base Scenario, the H shaped building and the low-rise development located to its south within the western sector of Area 29 remain consistent. There are changes in building layouts of the proposed buildings situated at the eastern sector of Area 29 with taller, but smaller footprint GIC blocks under the Proposed Scenario as compared to the Base Scenario. Further to the more scatter placed proposed buildings at the eastern sector the Area 29, there also exist an open space located to the east of the H-shaped block and the proposed school under the Proposed Scenario, in which this feature benefits the air ventilation performance within this Project Site.

8.3.12 To have a better understanding, the 33 perimeter test points BP01 – BP33 placed along the Project Site boundary of Area 29 are further break down into 4 groups representing the north (BP01 – BP08), east (BP09 – BP15), south (BP16 – BP26) and west (BP27 – BP33) boundaries respectively. Under the annual wind, increment in wind environment can be seen along the north (VR_w of 0.13 vs 0.09), east (VR_w of 0.23 vs 0.19) and south (VR_w of 0.17 vs 0.16) Project Site boundaries under the Proposed Scenario as compared to the Base Scenario while the wind environment along the west boundary remains comparable (VR_w value of 0.15) among the two Scenarios. Similarly, there are improvements in the wind environment along all four boundaries (north boundary: 0.20 vs 0.16; east boundary: 0.21 vs 0.19; south boundary: 0.22 vs 0.21; west boundary: 0.30 vs 0.21) of Area 29 under the summer wind for the Proposed Scenario as compared to the Base Scenario.

8.3.13 Further to the above, the VR_w calculated from the Special Test Points BS01 – BS16, representing the wind environment under the annual and summer seasons within the Project Site Area 29, also reflects the wind improvements due to the change in building morphologies and relaxation in building heights in the Proposed Scenario as compared to the Base Scenario (i.e., Annual Wind, Proposed Scenario vs. Base Scenario: 0.13 vs 0.11; Summer Wind, Proposed Scenario vs. Base Scenario: 0.23 vs 0.18).

Project Site Area 32 (Ar32)

8.3.14 The predicted SVR_w for Base Scenario and Proposed Scenario under annual wind are both 0.26. During summer season, the predicted SVR_w are 0.24 and 0.26 for the Base Scenario and Proposed Scenario. There is no decline in wind performance of the Proposed Scenario as compared to the Base Scenario terms of SVR_w. indicating that generally satisfactory vicinity wind environment would be achieved at the surrounding of the Project Site Area 32 boundary after the amendments in land use from GIC zone in the Base Scenario to residential zone in the Proposed Scenario. Although the proposed residential towers have a relaxation in building heights, the proposed building adopts podium free designs with building separations incorporated, which facilitates the penetration of prevailing wind as well as strengthens the wind channel effects.

8.3.15 There is increment in wind VR_w under the Proposed Scenario when compared to the Base Scenario under both annual and summer conditions at both the north-eastern (Test Points CP11 – CP17) and south-western (Test Points CP30 – CP34) boundaries (Annual wind, north-eastern boundary: Proposed VR_w 0.24 vs Base VR_w 0.20; south-western boundary: Proposed VR_w 0.24 vs Base VR_w 0.20; Summer wind, north-eastern boundary: Proposed VR_w 0.24 vs Base VR_w 0.20; south-western boundary: Proposed VR_w 0.22 vs Base VR_w 0.19). The reason of this enhancement is mainly due to the induced downwash wind at the south-western boundary and the enhanced channelling effect along the north-eastern boundary after the construction of the proposed residential towers.

8.3.16 The building morphologies under the Proposed Scenario better facilitates the southwestern/western quadrant summer wind along the south-eastern boundary (Test Points CP18 – CP29) of Area 32, which result in wind improvement with VR_w increased from 0.30 in the Base Scenario to 0.35 in the Proposed Scenario. However, as the taller residential towers would generate stronger wind wakes near the north-western boundary (Test Points CP01 – CP10) as compared to the relatively low-rise business and technology park buildings in the Base Scenario, a decline in wind environment along the northern-west boundary is observed under the summer wind (north-western boundary: Proposed VR_w 0.18 vs Base VR_w 0.21). However, under the annual wind, the wind performance remains comparable between the Base and Proposed Scenarios along the north-western boundary (VR_w value of 0.25), while there is an wind improvement along the south-eastern boundary (Proposed VR_w 0.23 vs Base VR_w 0.21) under the Proposed Scenario due to the change in building morphologies which result in changes of local wind flow patterns.

8.3.17 Further to the above, the VR_w calculated from the Special Test Points CS01 – CS15, representing the wind environment under the annual and summer seasons within the Project Site Area 32, also reflects the wind improvements due to the change in building morphologies and types and relaxation in building heights in the Proposed Scenario as compared to the Base Scenario (i.e., Annual Wind, Proposed Scenario vs. Base Scenario: 0.24 vs 0.18; Summer Wind, Proposed Scenario vs. Base Scenario: 0.20 vs 0.15).

Project Site Area 34 (Ar34)

8.3.18 Area 34 is located adjacent to Area 32. Same as Area 32, Area 34 is proposed for business and technology usage under the Base Scenario and would be potentially rezoned for residential usages under the Proposed Scenario. The predicted SVR_w for Base Scenario and Proposed Scenario under annual wind are 0.35 and 0.38 respectively, indicating there is an improvement in wind environment along the Project Site boundary after the adoption of the residential buildings in the Proposed Scenario. During summer season, the predicted SVR_w are 0.25 and 0.26 for the Base Scenario and Proposed Scenario respectively. The change in building designs and usage in the Proposed Scenario would not cause decline but instead result in slight improvement in wind environment during the summer seasons as compared to the Base Scenario.

8.3.19 The 30 perimeter test points DP01 – DP30 placed along the Project Site boundary of Area 34 are further break down into 4 groups representing the north-west (DP01 – DP07), north- east (DP08 – DP15), south-east (DP16 – DP22) and south-west (DP23 – DP30) boundaries respectively. Under the annual wind, increment in wind environment can be seen along three of the four Project Site boundaries under the Proposed Scenario as compared to the Base Scenario while the wind environment along the southwest boundary remains comparable (i.e., north-west boundary (VR_w of 0.32 vs 0.35), north-east boundary (VR_w of 0.34 vs 0.35), southeast boundary (VR_w of 0.36 vs 0.42) and southwest boundary (VR_w of 0.39 vs 0.39)).

8.3.20 Similarly, there are improvements in the wind environment along the south-eastern boundary (VR_w of 0.32 vs 0.23) under the summer wind for the Proposed Scenario as compared to the Base Scenario. The wind environment along the north-eastern boundary remains comparable between the two Scenarios under the summer wind with a VR_w of 0.24. There is wind decline (from 0.19 in Base Scenario to 0.17 in Proposed Scenario) along the north-western boundary with more observable wakes induced by the residential buildings under the Proposed Scenario as compared to the Base Scenario. Moreover, the change in building layouts and increase in heights of the proposed buildings within Area 34 under the Proposed Scenario would also cast slight decline in wind environment along the south-western boundary as compared to the Base Scenario (VR_w from 0.31 in Base Scenario to 0.30 in Proposed Scenario).

8.3.21 Further to the above, the VR_w calculated from the Special Test Points DS01 – DS08, representing the wind environment under the annual and summer seasons within the Project Site Area 34, also reflects the wind improvements due to the change in building morphologies and types and relaxation in building heights in the Proposed Scenario as compared to the Base Scenario (i.e., Annual Wind, Proposed Scenario vs. Base Scenario: 0.31 vs 0.26; Summer Wind, Proposed Scenario vs. Base Scenario: 0.22 vs 0.18).

Project Site Area 9 (Ar9)

8.3.22 The predicted SVR_w for Base Scenario and Proposed Scenario under annual wind are 0.25 and 0.26 respectively, while under the summer wind, the predicted SVR_w for the Base Scenario and Proposed Scenario are both maintained at 0.22. The simulation results under the annual prevailing wind indicate that generally a slightly better vicinity wind environment would be achieved along the boundary of the Project Site Area 9. It is worth noting that building layout within Area 9 remains unchanged under both Scenarios but with a relaxation in building heights of the proposed developments in the Proposed Scenario as compared to the Base Scenario. The slightly strengthened wind channelling effects after the increase in building heights under the Proposed Scenario contributes to the slight increase in wind VR_w as compared to the Base Scenario.

8.3.23 The 32 perimeter test points EP01 – EP32 placed along the Project Site boundary of Area 9 are further break down into 3 groups representing the north-east (EP01 – EP07), south-east (EP08 – EP19) and north-west (EP20 – EP32) boundaries respectively. Under the annual wind, the simulation results reflect there is slight wind improvements along the south-east (VR_w of 0.24 vs 0.21) and north-west boundaries (VR_w of 0.29 vs 0.28) under the Proposed Scenario when compared to the Base Scenario while comparable wind performance (VR_w of 0.26) is observed along the northeast boundary for the two Scenarios. Under the summer prevailing wind, comparable wind performance between the Base and Proposed Scenarios are observed along all three of the Project Site boundaries.

8.3.24 Further to the above, the VR_w calculated from the Special Test Points ES01 – ES14, representing the wind environment under the annual and summer seasons within the Project Site Area 9, reflects there is no decline in the wind improvements due to the relaxation in building heights in the Proposed Scenario as compared to the Base Scenario i.e., Annual Wind, Proposed Scenario vs. Base Scenario: 0.21 vs 0.20; Summer Wind, Proposed Scenario & Base Scenario both 0.17).

Summary

8.3.25 In general, the major reason behind the improvements or declination in wind VR_w at perimeter site boundaries of the Project Sites is due to the change in building shapes, arrangements, building design as well as the height differences between the Base and Proposed Scenario, which would result in alternation of wind flow patterns and cause redirection/redistribution of wind flow.

8.4 Local Air Ventilation Assessment

8.4.1 The predicted averaged LVR_w for Base Scenario and Proposed Scenario under annual wind are comparable with VR value of 0.23. During summer season, the predicted LVR_w for Base Scenario and Proposed Scenario are 0.21 and 0.22 respectively. The predicted results in both annual and summer condition, the Proposed Scenario would not cause deterioration on the overall wind environment in comparison to the Base Scenario. This shows that the change in land usage and relaxation in building heights within the Project Sites under the Proposed Scenario would not induce an increased overall impact to the air ventilation performance of their surroundings as well as the KTN NDA.

8.4.2 The 495 Overall Test Points are divided in 57 groups in which 27 groups with prefix "TA" according to the Existing, Planned/Committed Building Regions (see **Figure 7.4(f)**) and 30 groups with prefix "TR" along Major Roads/Separations (see **Figure 7.4(d)**).

Groups with Prefix "TA"

8.4.3 As shown in **Table 8.2** above, under both annual and summer seasons, the averaged VR_w for most of the sub-groups with prefix "TA" (19 out of 27 groups without highlight in **Table 8.2**) display a comparable wind environment between the Base Scenario and the Proposed Scenario. Two of the "TA" subgroups, TA8 and TA20, which are the private housing developments located to the immediate north of Project Site Area 29 and the school sites located at the immediate southeast of the Project Site Area 9 respectively, display slight improvements in the wind environment for the Proposed Scenario as compared to the Base Scenario under both the annual and summer prevailing wind.

8.4.4 TA1 test point group is located to the immediate west of Project Site Area 28, which represents the wind environment at the Pak Shek Au regions while TA14 and TA15 test point groups, adjacent to each other, located to the immediate east of Project Site Area 29, represent the wind environment within the residential and business & technology park areas. In addition, test points within group TA6 are located within regions located to the immediate northeast of Project Site Area 34. Wind declines in the Proposed Scenario as compared to the Base Scenario is observed within all these four test point groups TA1, TA6, TA14 and TA15 under both the annual and summer seasons.

8.4.5 Two of the test points groups, TA12 and TA19, display a slight decline in wind environment under the annual wind but a minor improvement in wind environment under the summer wind for the Proposed Scenario as compared to the Base Scenario. These two areas are located near to Project Site Areas 9 and 32, in which the wind environment at the surroundings are much influenced by the building morphologies within Areas 9 and 32.

8.4.6 It is noticed that the test point groups with wind improvements or declination are all located near the Project Sites with layout changes and building height relaxation between the Base and Proposed Scenarios, therefore the changes in local wind environment as well as the wind flow patterns at these surrounding areas are attributed to the change in building morphologies between the two studied Scenarios.

Groups with Prefix "TR"

8.4.7 One third of the test point groups with prefix "TR" (10 out of 30 without highlight in **Table 8.2**) representing wind environment along major roads and separations are observed to have comparable wind environment between the Base and Proposed Scenario.

8.4.8 Test point group TR1 representing the wind environment along the Kwu Tung Station displays an improvement in wind flow under both the annual and summer prevailing wind in the Proposed Scenario as compared to the Base Scenario. Other places with wind improvements for the Proposed Scenario under the annual and summer seasons include Test point groups TR5, TR12, TR14 representing wind environment along the north, west and east boundaries of Project Site Area 29 respectively. The wind improvements along these major roads and separations are due to the strengthened wind channelling effects with the increase in building heights within Project Site Areas 28 and 29 under the Proposed Scenario as compared to the Base Scenario.

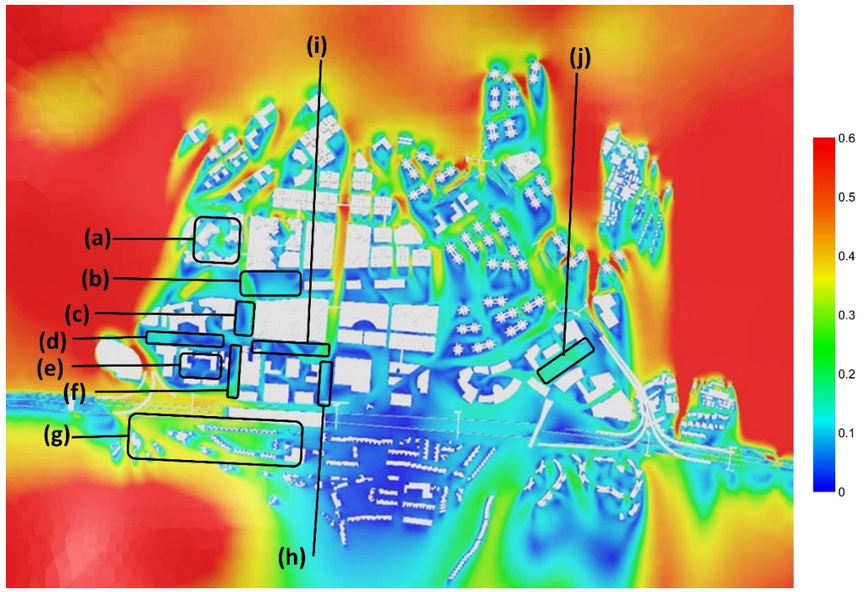
8.4.9 Wind decline is also observed at several TR test point groups for the Proposed Scenario as compared to the Base Scenario under both the annual and summer prevailing wind, in particular at the test point groups TR6 to TR9 representing the wind environment along Roads 8-3 to 8-6 (see **Figure 4.4**). Wind decline in the Proposed Scenario is also observed along Road 13 and Separation 2 in which the wind environment is represented by test groups TR10 and TR11 respectively under the annual and summer wind. The above-mentioned roads and separations are located near the Project Sites, in which the local wind patterns will be altered due to the differences in building heights and layouts between the Base and Proposed Scenarios. Moreover, wind decline is also observed within test point groups T16 (Road 10), T20 (Road 6-4), T29 and T30 (Separations 3-1 and 3-2) for the Proposed Scenario.

8.4.10 As the prevailing wind directions as well as the corresponding frequency occurrences are quite different between annual and summer seasons, the simulated wind patterns would exhibit differences at certain local areas surrounding the Project Sites. There are three test point groups in which wind improvements can be seen under the annual wind for the Proposed Scenario as compared to the Base Scenario while wind decline is observed during the summer seasons. These test point groups are TR4, TR13 and TR27 in which the first two groups are located near Project Site Areas 28 and 29 while the latter is located near Project Site Area 9. Test point group TR22 representing the wind environment along Road 11-3 sandwiched in between Project Site Areas 32 and 34, displays a decline in wind environment for the Proposed Scenario as compared to the Base Scenario under the annual prevailing wind, but with an observable wind improvement under the summer prevailing wind.

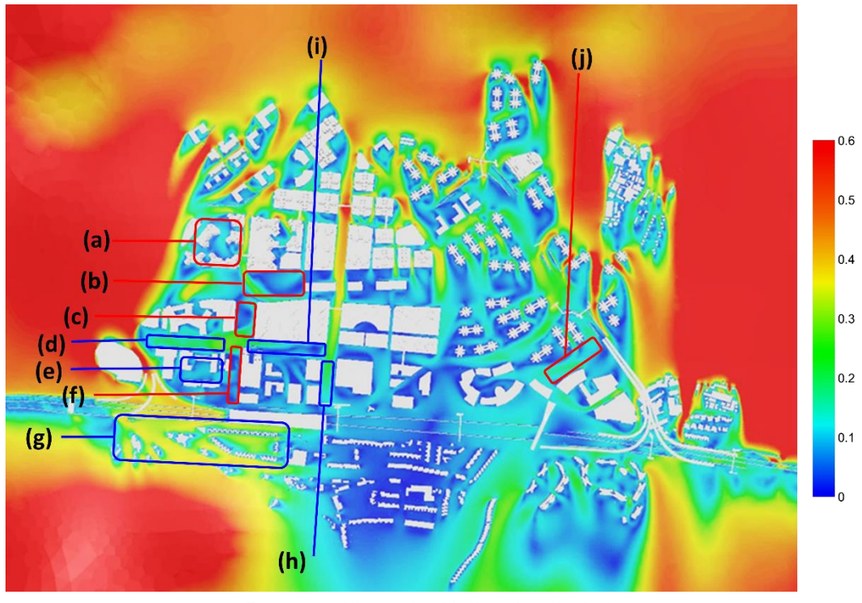
8.5 Wind Directional Analysis

8.5.1 On top of the general Site and Local Air Ventilation Analysis in **Section 8.4**, wind directional analysis on each of the identified prevailing wind directions are carried out in this section, by pinpointing the most observable regions with wind flow patterns and magnitude changes between the Base Scenario and the Proposed Scenario based on pedestrian wind contours. Annotations of the roads/separations as well as test point groups can be referred to **Figures 4.4, 6.1** and **7.4**.

N wind conditions (Annual: 12.1 %)



Base Scenario (N directional wind)



Proposed Scenario (N directional wind)

a) Owing to the increase in building heights within the Project Site Area Ar9 but without a change in building layouts, the wind wakes generated by the proposed buildings within Project Site Area Ar9 under the Proposed Scenario would stronger influence its downwind regions as compared to the Base Scenario where Area P9 (TA23) is located under the northerly wind. Therefore, it is observed there is a slight wind decline at the circled region (a) under the Proposed Scenario as compared to the Base Scenario.

b) The wind environment change within Area P9 as well as the change in building morphologies within Project Site Areas Ar28 and Ar29 under the Proposed Scenario would alter the wind flow patterns at the regions near the Kwu Tung Station and Area P10 as compared to the Base Scenario, resulting a more observable wind wake region in the Proposed Scenario at the circled region (b) as compared to the Base Scenario.

c) A more observable wind wake region can be seen along Separation 2 (see **Figure 4.4** for annotation) in the Proposed Scenario as compared to the Base Scenario under the northerly prevailing wind, which is due to the change in wind flow patterns at the local areas that surround Project Site Areas Ar28 and Ar29 with respect to the differences in building heights and building morphologies between the two studied Scenarios within the two aforementioned Project Site Areas.

d) With the increase in proposed building heights within Project Site Area Ar28 under the Proposed Scenario as compared to the Base Scenario, strengthened wind channel effect occur along Road 8-1 in between Area P11 and Project Site Area Ar28 at the circled region (d) in the Proposed Scenario.

e) The relaxation in building heights within Project Area Ar28 under the Proposed Scenario would benefit the wind environment within it under the northerly wind. A slightly better wind environment is observed under the Proposed Scenario as compared to the Base Scenario.

f) Reduced channelling wind under the northerly wind is observed along Road 9 (circled region (f)) after the building heights are relaxed within Project Site Area Ar28 in the Proposed Scenario. After the building heights are increased within Project Site Area Ar28 in the Proposed Scenario, a greater building height difference between the H-shaped building within the adjacent Project Site Area Ar29 and the proposed GIC blocks within Project Site Area Ar28 is formed, which would induce less spottable wind channelling effects as compared to the proposed buildings under the Base Scenario with relatively less building height differences.

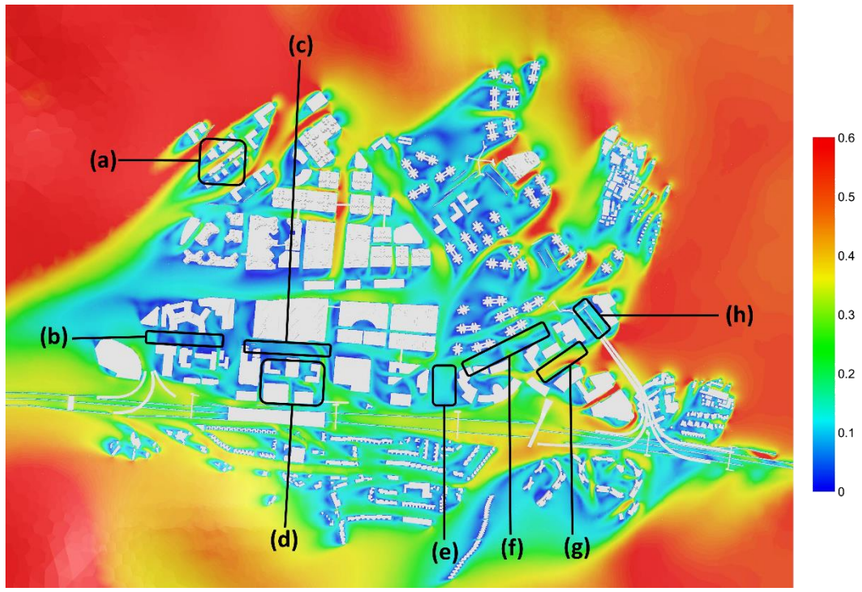
g) The relaxation in building heights within Project Area Ar28 under the Proposed Scenario would better divert the northerly wind from the Pak Shek Au Areas towards the Fanling Highway and the further downwind areas where the Europa Garden is located, resulting a slightly better wind environment in the Proposed Scenario as compared to the Base Scenario.

h) The change in building morphologies and relaxation in building heights at the eastern portion of Project Site Area Ar29 under the Proposed Scenario would better promote the flow of northerly wind along Separation 3 as compared to the Base Scenario, in which the strength of the northerly wind from Separation 3-1 could be maintained and continue its flow along Separation 3-4 towards the further downwind areas.

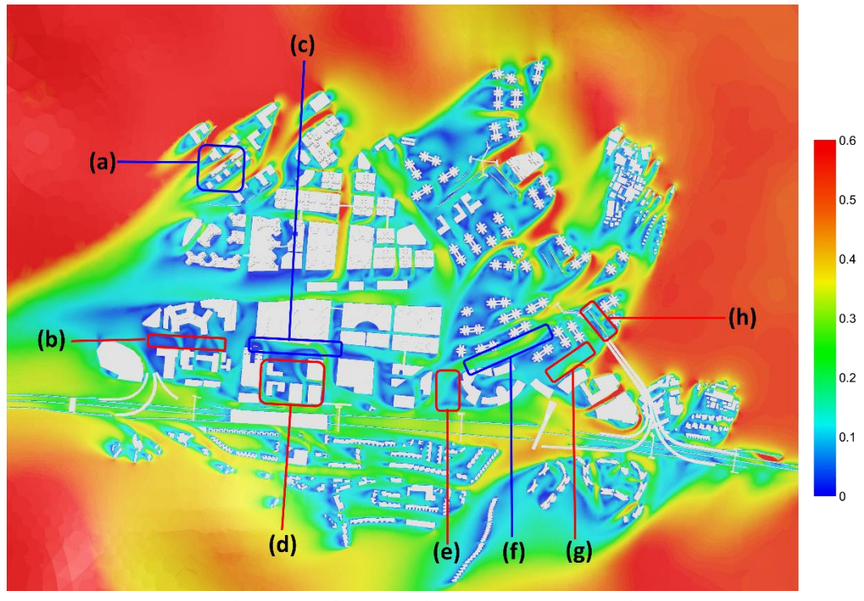
i) With the relaxation of building heights at the eastern section of Project Site Area Ar29 and partial change in building layouts under the Proposed Scenario as compared to the Base Scenario, an open area within Project Site Area Ar29 is incorporated under the Proposed Scenario as compared to the Base Scenario. The difference in building morphologies within Area Ar29 would change the local wind flow patterns along Road 8-2 (circle region (i)) between Area P12 and Area Ar29, resulting in a relative better wind environment along this local road in the Proposed Scenario as compared to the Base Scenario.

j) The change in land usage with the appearance of several podium free residential towers with taller building heights within Project Site Area Ar32 in the Proposed Scenario under the northerly prevailing wind would generate stronger wind wakes resulting in a slight decline in the wind environment at the circled immediate downwind area as compared to the Base Scenario.

NNE wind conditions (Annual: 8.3%)



Base Scenario (NNE directional wind)



Proposed Scenario (NNE directional wind)

a) The increase in building heights within Project Site Area Ar9 under the Proposed Scenario would induce stronger wind channelling effects under the NNE prevailing wind within the Project Site Area as compared to the Base Scenario, resulting in a better wind environment.

b) The increase in building heights within the Project Site Area Ar28 under the Proposed Scenario would form a more observable street canyon with the buildings within Area P11. Under the NNE prevailing wind, wind stagnation regions can be seen in both the Base Scenario and the Proposed Scenario with street canyon effects being more prominent in the Proposed Scenario as compared to the Base Scenario.

c) The relaxation of building heights at the eastern section of Project Site Area Ar29 and partial change in building layouts under the Proposed Scenario as compared to the Base Scenario with an open area within Project Site Area Ar29 incorporated under the Proposed Scenario. The difference in building morphologies within Area Ar29 would result in an enhanced wind environment along the local Road 8-2 under the NNE prevailing wind in the Proposed Scenario as compared to the Base Scenario.

d) The partial change in building layouts and the increase of building heights in some of the proposed GIC blocks within Project Site Area Ar29 under the Proposed Scenario results in a relatively weakened wind environment within the Project Site Area under the NNE prevailing wind as compared to the Base Scenario.

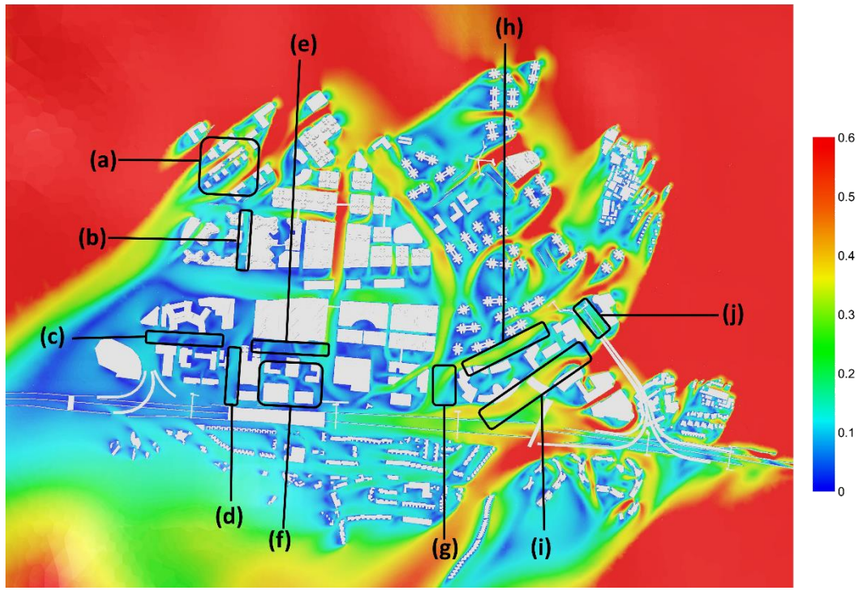
e) The wind environment at Separation 4-2 is slightly weakened in the Proposed Scenario as compared to the Base Scenario under the NNE prevailing wind. The observable change in building morphologies within Project Site Area Ar32 in the Proposed Scenario as compared to the Base Scenario alters the NNE wind flow patterns along Roads 8-5 and 8-6 and also influenced the local wind flow patterns at Separation 4-2.

f) As the building shapes of the residential towers within Project Site Areas Ar32 and Ar34 under the Proposed Scenario are very different from the building shapes of the business and technology usage buildings in the Base Scenario, the wind patterns along the local roads 8-5 and 8-6 are much affected by the building morphologies within Project Site Area Ar32 with better wind channelling effects appearing in the Proposed Scenario as compared to the Base Scenario under the NNE prevailing wind.

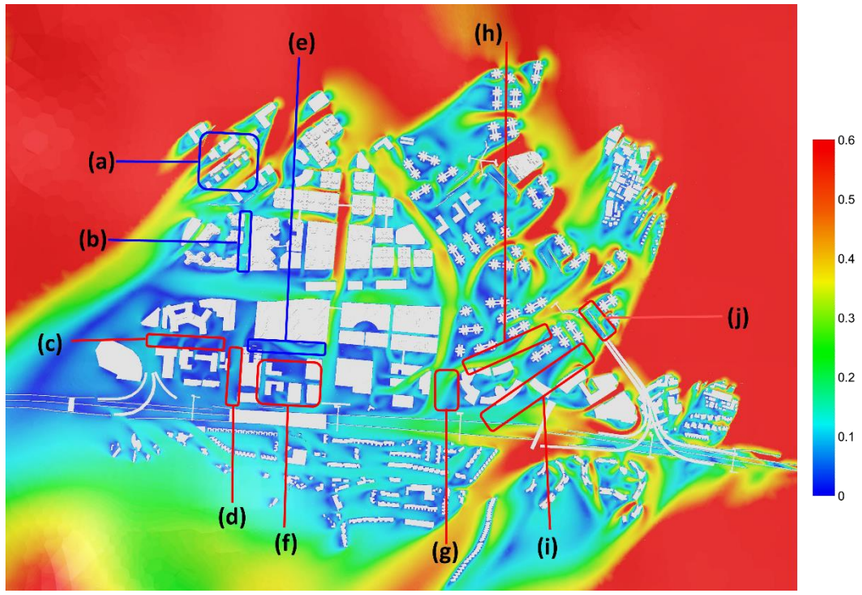
g) The building edge vortex induced by the business and technology usage building within Area P19 appearing at the circled region in the Base Scenario under the NNE wind is suppressed and diminished in the Proposed Scenario after the appearance of residential towers within Project Site Area Ar32.

h) The proposed residential buildings within Project Site Area Ar34 would generate wind wakes under the NNE wind along the Road 11-3 (circled region (h)) in the Proposed Scenario in which the wind environment slightly drops along the local road as compared to the Base Scenario.

NE wind conditions (Annual: 8.8%)



Base Scenario (NE directional wind)



Proposed Scenario (NE directional wind)

a) Similar to the NNE prevailing wind, the increase in building heights within Project Site Area Ar9 under the Proposed Scenario would induce stronger wind channelling effects under the NE prevailing wind within the Project Site Area as compared to the Base Scenario, resulting in a better wind environment.

b) A slightly stronger wind channel can be observed in the Proposed Scenario along the separation in between Areas P9 and P10 as compared to the Base Scenario under the NE prevailing wind.

c) A deep street canyon is formed along the Road 8-1 sandwiched by the buildings within Area P11 and the proposed GIC buildings within the Project Site Area Ar28. Under the NE prevailing wind, wind stagnation regions can be seen in both the Base Scenario and the Proposed Scenario with street canyon effects being more prominent in the Proposed Scenario as compared to the Base Scenario.

d) Attributed to the increased in building heights within Project Site Area Ar28 as well as the change in building layouts at the eastern section of Project Site Area Ar29, local wind flow patterns are changed in the Proposed Scenario as compared to the Base Scenario. Reduced wind channelling effects are observed in the Proposed Scenario along the local Road 9 (circled region (d) in between Project Sites Areas Ar28 and Ar29) as compared to the Base Scenario under the NE prevailing wind.

e) The difference in building morphologies within Project Site Area Ar29 as well as the relaxation of building heights at the eastern section of this Project Site would result in an enhanced wind environment along the local Road 8-2 under the NE prevailing wind in the Proposed Scenario as compared to the Base Scenario.

f) Similar to the NNE prevailing wind, the partial change in building layouts and the increase of building heights in some of the proposed GIC blocks within Project Site Area Ar29 under the Proposed Scenario alter the wind flow patterns within the Project Site which results in a relatively weakened wind environment under the NE prevailing wind as compared to the Base Scenario.

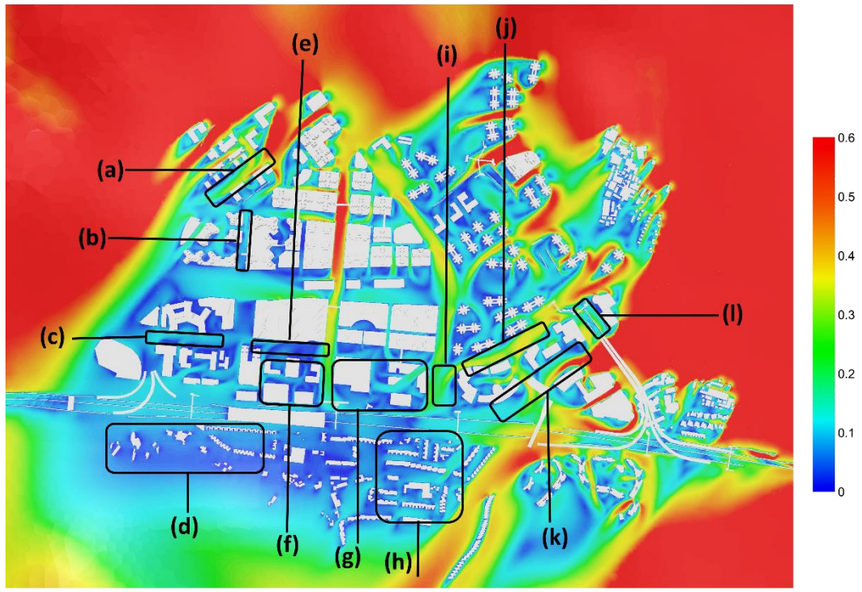
g) Very similar to the NNE wind, the wind environment at Separation 4-2 is slightly weakened in the Proposed Scenario as compared to the Base Scenario under the NE prevailing wind. The observable change in building morphologies within Project Site Area Ar32 in the Proposed Scenario as compared to the Base Scenario contribute to the change in NE wind flow patterns along Roads 8-5 and 8-6 which also influenced the local wind flow patterns at Separation 4-2.

h) As the building shapes of the residential towers within Project Site Areas Ar32 and Ar34 under the Proposed Scenario are very different from the building shapes of the business and technology usage buildings in the Base Scenario, the wind patterns along the local roads 8-5 and 8-6 (circled region (g)) are much affected by the building morphologies within Project Site Area Ar32 with better wind channelling effects appearing in the Proposed Scenario as compared to the Base Scenario under the NE prevailing wind.

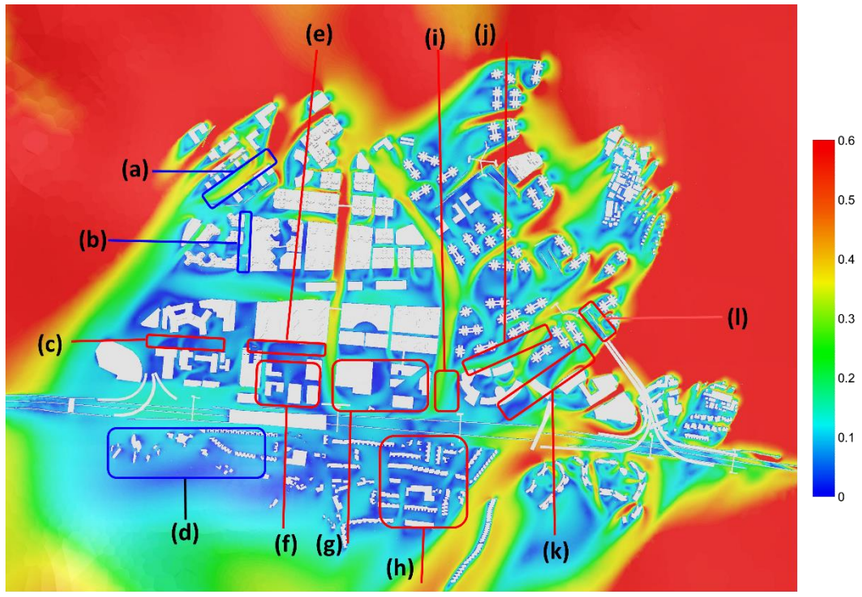
i) Same as in the NNE prevailing wind, the strong building edge vortex induced by the business and technology usage building within Area P19 appearing at the circled region in the Base Scenario under the NE wind is suppressed and diminished in the Proposed Scenario after the change of land usage with the appearance of the proposed residential towers within Project Site Area Ar32. This results in a weakened wind environment at the circled region under the Proposed Scenario as compared to the Base Scenario.

j) The wind wakes generated by the proposed residential buildings within Project Site Area Ar34 in the Proposed Scenario under the NE prevailing wind along the Road 11-3 (circled region (i)) would slightly weaken the wind environment along this local road as compared to the Base Scenario.

ENE wind conditions (Annual: 15.1%)



Base Scenario (ENE directional wind)



Proposed Scenario (ENE directional wind)

a) The relaxed building heights within Project Site Area Ar9 under the Proposed Scenario enhanced the wind channelling effects along Separation 1-2 (circled region (a)) as compared to the Base Scenario under the ENE prevailing wind.

b) The change in building parameters within Project Sites Areas Ar9 and Ar28 will change the local wind flow patterns and magnitude at certain local places. The area circled (b) between Areas P9 and P11 are also affected with a slightly stronger wind channel can be observed in the Proposed Scenario as compared to the Base Scenario under the ENE prevailing wind.

c) Similar as under the north-eastern quadrant prevailing wind, the street canyon effect still appears under the ENE prevailing wind. Wind stagnation regions can be seen in both the Base Scenario and the Proposed Scenario within the street canyon formed at Road 8-1 and being more prominent in the Proposed Scenario as compared to the Base Scenario at the circled regions.

d) It is observed from the pedestrian wind contours of the ENE prevailing wind that the changes in building morphologies and parameters within Project Site Areas Ar28 and Ar29 from the Base Scenario to the Proposed Scenario would bring benefits to the wind environment at areas near and surround Europa Garden at the circled region (d).

e) A change in wind patterns and minor decline in wind environment along the local Road 8-2 under the ENE prevailing wind in the Proposed Scenario as compared to the Base Scenario is seen. This is mainly due to the difference in building morphologies within Project Site Area Ar29 and the relaxation of building heights at the eastern section of this Project Site as well as the appearance of an open space that would result in change of the local flow patterns.

f) the partial change in building layouts and the increase of building heights in some of the proposed GIC blocks within Project Site Area Ar29 under the Proposed Scenario would result in a relatively weakened wind environment within the Project Site under the ENE prevailing wind when compared to the Base Scenario. In particular, wind wakes appear at the open space located at the leeward of the high rise GIC blocks in the Proposed Scenario in which these does not exist in the Base Scenario.

g) The change in wind flow patterns along Separation 4-2 (region circled (g)) as well as along Roads 8-5 and 8-6 (region circled (h)), would limit the entry of the wind from Separation 4-1 into Areas P15 and P16 via the building separations of the developments located within. Therefore, a weakened wind environment is resulted within Areas P15 and P16 in the Proposed Scenario as compared to the Base Scenario under the ENE prevailing wind.

h) The wind environment at the Valias (region circled (h)) is weakened under the Proposed Scenario as compared to the Base Scenario. As the change in building morphologies within Project Site Areas Ar32 and Ar34 in the Proposed Scenario would alter the wind flow patterns at the surroundings of these two Project Sites as compared to the Base Scenario under the ENE wind. There are changes in wind flow patterns and wind decline at regions circled (j), (k) and (l) between the Base Scenario and the Proposed Scenario, in which these wind flow pattern changes would influence the further downstream regions where the residential buildings of the Valias are located.

i) Very similar to the other north-eastern quadrant prevailing wind, the wind environment at Separation 4-2 is slightly weakened as well in the Proposed Scenario when compared to the Base Scenario under the ENE prevailing wind. The observable change in building morphologies within Project Site Area Ar32 in the Proposed Scenario as compared to the Base Scenario contribute to the slight drop in ENE wind channel and flow patterns along Roads 8-5 and 8-6 which also influenced the local wind magnitude at Separation 4-2.

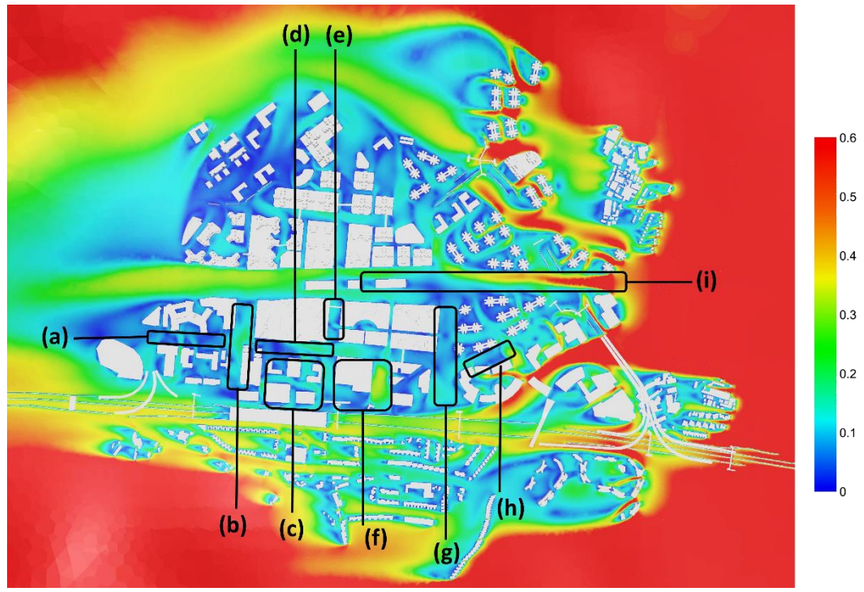
j) The building shapes of the residential towers within Project Site Areas Ar32 and Ar34 under the Proposed Scenario are different from the building geometries of the business and technology usage buildings in the Base Scenario, the change in building morphologies within Project Site Area Ar32 contribute to the change in the wind patterns and magnitude along the local roads 8-5 and 8-6 (circled region (h)) with weakened wind channelling effects appearing in the Proposed Scenario as compared to the Base Scenario under the ENE prevailing wind.

k) The building edge vortex induced by the business and technology usage building within Area P19 and its propagation appearing at the circled region in the Base Scenario under the ENE

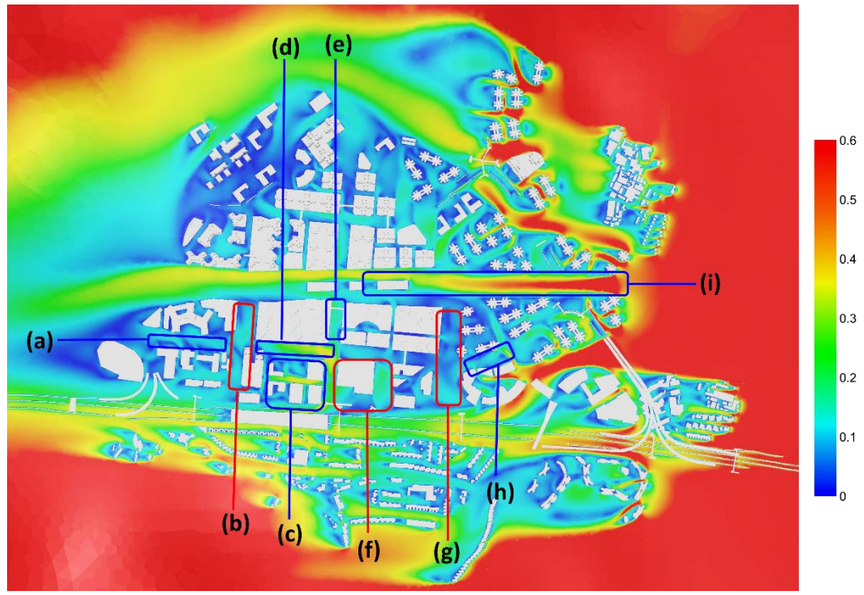
wind is suppressed and become less observable in the Proposed Scenario after the change of land usage with the appearance of the proposed residential towers within Project Site Area Ar32. This results in a weakened wind environment at the circled region under the Proposed Scenario as compared to the Base Scenario.

l) Same as under the NE prevailing wind, the wind wakes generated by the proposed residential buildings within Project Site Area Ar34 in the Proposed Scenario under the ENE prevailing wind would slightly weaken the wind environment along the Road 11-3 (circled region (i)) located at the immediate downwind as compared to the Base Scenario.

E wind conditions (Annual: 23.4%; Summer: 13.8%)



Base Scenario (E directional wind)



Proposed Scenario (E directional wind)

a) The taller GIC buildings within Project Site Area Ar28 would create better wind channelling along Road 8-1 in the Proposed Scenario as compared to the Base Scenario with proposed GIC buildings with lower building heights under the E prevailing wind. This is revealed clearly in the pedestrian wind contours for the E wind of the two studied Scenarios.

b) The relaxation of building heights within the Project Site Area Ar29 in the Proposed Scenario would generate more extensive wind wakes as compared to the Base Scenario that would affect the wind environment along Road 9 (region circled (b)) located to the downstream under the E prevailing wind.

c) The change in proposed GIC building layouts, footprints and building heights within Project Site Area Ar29 would ensure good building permeability and facilitate the penetrate of the easterly wind which result in a better air ventilation performance within the Project Site Area Ar29 in the Proposed Scenario as compared to the Base Scenario under the E prevailing wind.

d) In addition to point (c) above, the wind environment along local Road 8-2 (region circled (d)) located to the immediate north of the Project Site Area Ar29, also benefits from the change in building morphologies and arrangements in the Proposed Scenario. As compared to the Base Scenario, the wind environment along this local road is enhanced in the Proposed Scenario under the easterly prevailing wind.

e) With the change in building morphologies as well the building heights within the Project Site Areas Ar28 and Ar29, there is an alteration of wind flow patterns at regions near these two Project Sites between the Base Scenario and the Proposed Scenario. Separation 3-3 located near the two Project Sites Ar28 and Ar29 in between Areas P12 and B2 (region circled (e)) is observed to have an improvement in wind environment in the Proposed Scenario as compared to the Base Scenario under the easterly prevailing wind.

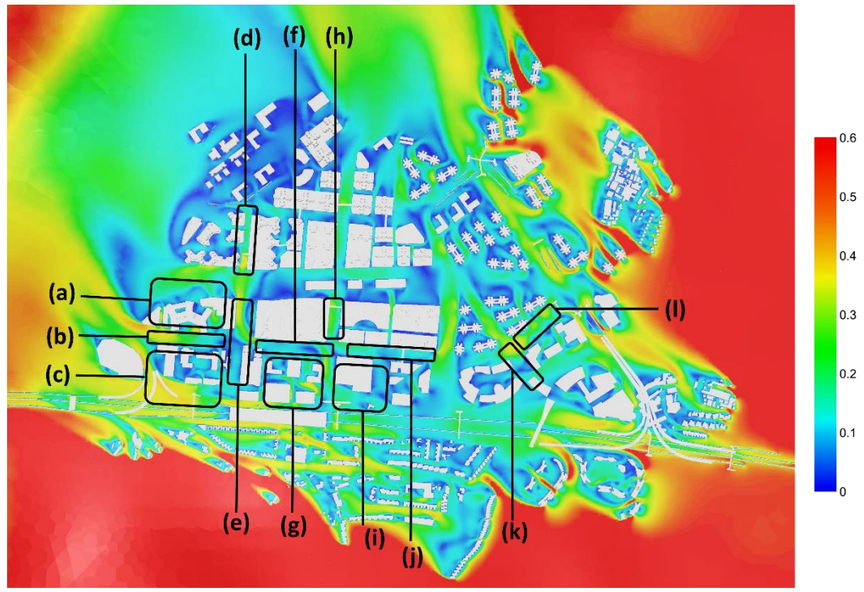
f) In addition to point (e), the regions in which the wind environment being influenced near the Project Sites Ar28 and Ar29 include Area P15 located to the near east of Project Site Ar28. Slight decline of wind environment is seen under the Proposed Scenario as compared to the Base Scenario under the easterly prevailing wind, in particular along local Road 10 (location refer to **Figure 4.4**) in between Areas P15 and P16.

g) The wind environment at Separations 4-1 and 4-2 (region circled (g)) is slightly weakened in the Proposed Scenario when compared to the Base Scenario under the E prevailing wind. The major contribution to the drawback is due to the observable change in building morphologies within Project Site Area Ar32 as well as the change in wind flow patterns along the Kwu Tung Station due to the change of building geometries within Project Site Ar34 in the Proposed Scenario as compared to the Base Scenario. These factors would generate cumulative wind impacts to these downwind regions which contribute to the slight drop in local wind magnitude at the circled region.

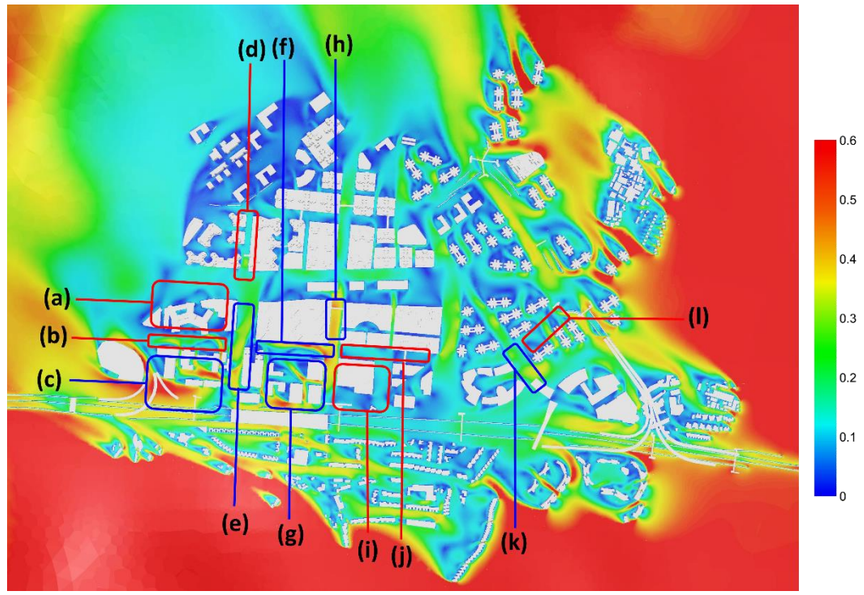
h) With the update of the business and technology usage block to six residential towers in Project Site Ar32, local wind enhancement can be seen along Road 8-5 (region circled (h)) in the Proposed Scenario as compared to the Base Scenario under the easterly prevailing wind.

i) The update of the business and technology usage block to three residential towers within Project Site Ar34 would enhance the flow of easterly wind along the Kwu Tung Station under the Proposed Scenario as compared to the Base Scenario. A stronger east wind channel can be seen from the pedestrian easterly wind contours for the Proposed Scenario as compared to the Base Scenario.

ESE wind conditions (Annual: 4.9%; Summer: 7.9%)



Base Scenario (ESE directional wind)



Proposed Scenario (ESE directional wind)

a) The wind environment at the downwind regions of Area P11 along the Kwu Tung Station under the ESE prevailing wind is weakened as compared to the Base Scenario after the appearance of taller GIC buildings within Project Sites Areas Ar28 and Ar29 located to the upwind.

b) The taller GIC buildings within Project Site Areas Ar28 and Ar29 would generate wakes that would result in wind stagnation areas to its immediate downwind along Road 8-1 in the Proposed Scenario as compared to the Base Scenario under the ESE prevailing wind, resulting in a reduction in the air ventilation performance along this local road.

c) The wind environment at the regions within the Project Site Area Ar28 as well as the areas located to its south show improvements under the Proposed Scenario as compared to the Base Scenario, indicating the taller GIC blocks within Project Site Area Ar28 are capable to provide better air ventilation performance as compared to the Base Scenario at the near surroundings under the ESE prevailing wind.

d) There is slight drawback in wind environment along the separation in between Areas P9 and P10 under the Proposed Scenario as compared to the Base Scenario. This is mainly due to the change in wind flow patterns at the downwind regions of Area P11 (circled region (a)) as well as along the Separation 2 (circled region (e)) between the Base and Proposed Scenarios, which would also affect the flow along the aforementioned separation between Areas P9 and P10.

e) Under the ESE prevailing wind, the wind channel along Road 9 and Separation 2 (region circled (e)) is enhanced in the Proposed Scenario after relaxation in building heights within Project Site Area Ar28.

f) In addition to the above point (e), the change in building geometries and heights within Project Site Area Ar29 located adjacent to Project Site Area Ar28 under the Proposed Scenario would alter the wind flow patterns at the immediate surrounding local areas under the ESE wind. Wind improvements are seen along local Road 8-2 (region circled (f)) in the Proposed Scenario as compared to the Base Scenario.

g) The change in building morphologies of the proposed GIC buildings within Project Site Area Ar29 would result a better air ventilation performance within the Project Site Area Ar29 in the Proposed Scenario as compared to the Base Scenario under the ESE prevailing wind.

h) Another place with wind magnitude changes is along Separation 3-3 (circled region (h)), in which stronger channelling wind is observed under the Proposed Scenario as compared to the Base Scenario along this separation under the ESE wind.

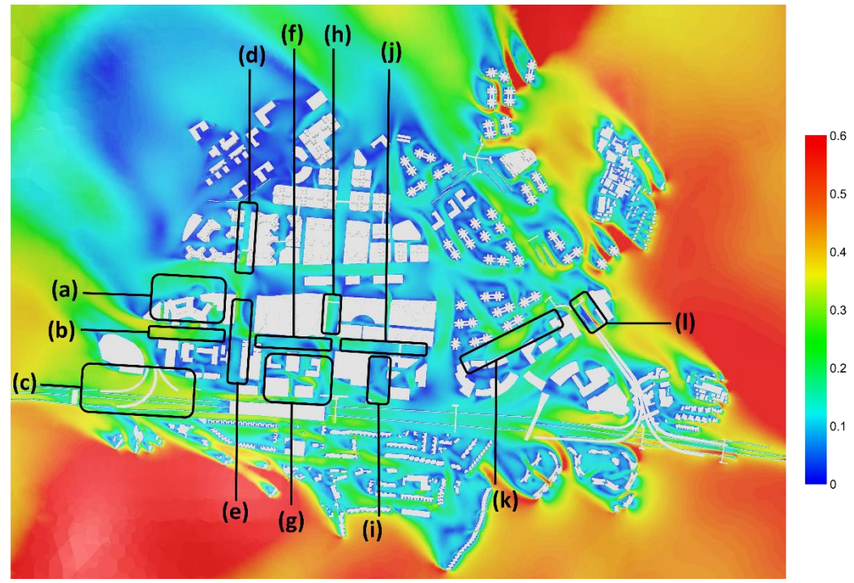
i) Apart from Separation 3-3, better SE wind entry along the local Road 10 located in between Areas P15 and P16 can be seen under the Proposed Scenario with local wind improvements as compared to the Base Scenario, however, certain drawbacks in the wind environment can be seen at areas located to the immediate south of the residential block within Area P15 under the Proposed Scenario as compared to the Base Scenario.

j) Nevertheless, the wind flow along local Roads 8-3 and 8-4 (region circled (j)) is reduced in the Proposed Scenario as compared to the Base Scenario under the ESE summer prevailing wind as revealed from the model simulation results.

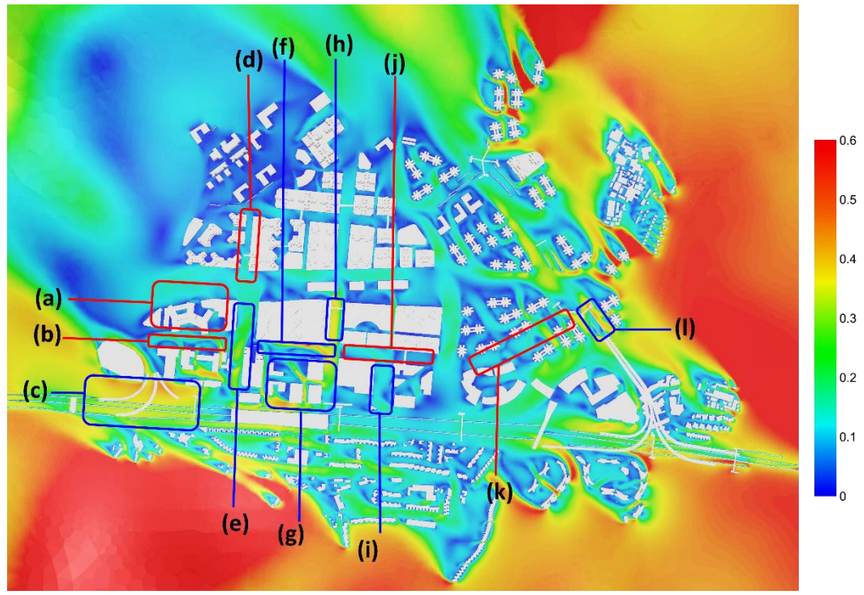
k) With the geometries of the residential towers within the Project Site Area Ar32 is adopted as in the Proposed Scenario, a better entry of ESE wind into the local Road 6-4 (circled region (k)) can be observed with an improved wind environment as compared to the Base Scenario.

l) Although the orientations of the residential blocks within Project Site Area Ar32 favour the flow of southeastern quadrant prevailing wind. As compared to the business and technology block within the Project Site Area Ar34 under the Base Scenario, the taller building heights and the difference in building geometries would generate wakes that would limit the wind flow as well as alter the flow patterns along local Road 8-6 in the Proposed Scenario, resulting a drawback in wind environment at the circled region.

SE wind conditions (Summer: 6.5%)



Base Scenario (SE directional wind)



Proposed Scenario (SE directional wind)

a) The wind environment at the downwind regions of Area P11 along the Kwu Tung Station under the SE prevailing wind is weakened as compared to the Base Scenario after building heights of the proposed developments within Project Site Area Ar28 are relaxed under the Proposed Scenario. The taller GIC buildings within Project Site Area Ar28 together with the residential buildings within Area P11 would generate cumulative wind impacts to the circled region.

b) The taller GIC buildings within Project Site Area Ar28 would also create more observable wind stagnation areas to its immediate downwind along Road 8-1 in the Proposed Scenario as compared to the Base Scenario under the SE prevailing wind. This is revealed clearly in the pedestrian wind contours for the SE wind of the two studied Scenarios.

c) The wind environment at the regions within the Project Site Area Ar28 as well as the areas located to its south show improvements under the Proposed Scenario as compared to the Base Scenario, indicating the taller GIC blocks within Project Site Area Ar28 are capable to provide better air ventilation performance as compared to the Base Scenario at the near surroundings under the SE prevailing wind.

d) There is slight decline in wind environment along the separation in between Areas P9 and P10 under the Proposed Scenario as compared to the Base Scenario. This is mainly due to the change in wind flow patterns at the downwind regions of Area P11 (circled region (a)) which would also affect the flow along the aforementioned separation between Areas P9 and P10.

e) Under the SE prevailing wind, the wind channel along Road 9 and Separation 2 (region circled (e)) is enhanced in the Proposed Scenario after relaxation in building heights within Project Site Area Ar28.

f) In addition to the above point (e), the change in proposed building layouts, footprints and building heights within Project Site Area Ar29 located adjacent to Project Site Area Ar28 under the Proposed Scenario would alter the wind flow patterns at the immediate surrounding local areas under the SE wind. Wind improvements are seen along local Road 8-2 (region circled (f)) in the Proposed Scenario as compared to the Base Scenario.

g) The change in proposed GIC building layouts, footprints and building heights within Project Site Area Ar29 would result a better air ventilation performance within the Project Site Area Ar29 in the Proposed Scenario as compared to the Base Scenario under the SE prevailing wind.

h) As mentioned in point (f) above, the change in building morphologies within Project Site Area Ar29 in the Proposed Scenario would alter the wind flow patterns at the immediate surrounding local areas under the SE wind. One of the places with wind magnitude changes is along Separation 3-3 (circled region (h)), in which stronger channelling wind is observed under the Proposed Scenario as compared to the Base Scenario along this separation under the SE wind.

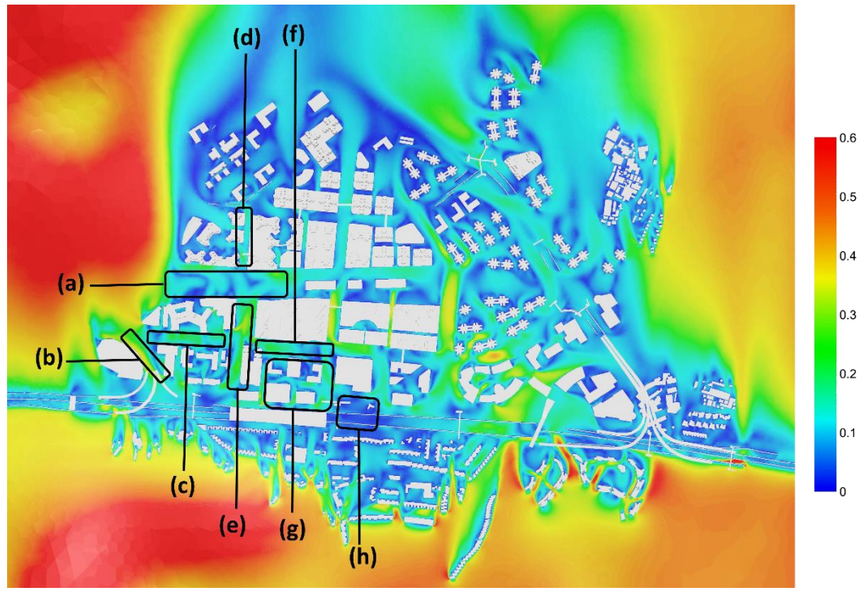
i) Apart from Separation 3-3, better SE wind entry along the local Road 10 (region circled (i)) can be seen under the Proposed Scenario with local wind improvements as compared to the Base Scenario.

j) Nevertheless, the wind flow along local Roads 8-3 and 8-4 (region circled (j)) is limited in the Proposed Scenario as compared to the Base Scenario under the SE summer prevailing wind as revealed from the model simulation results.

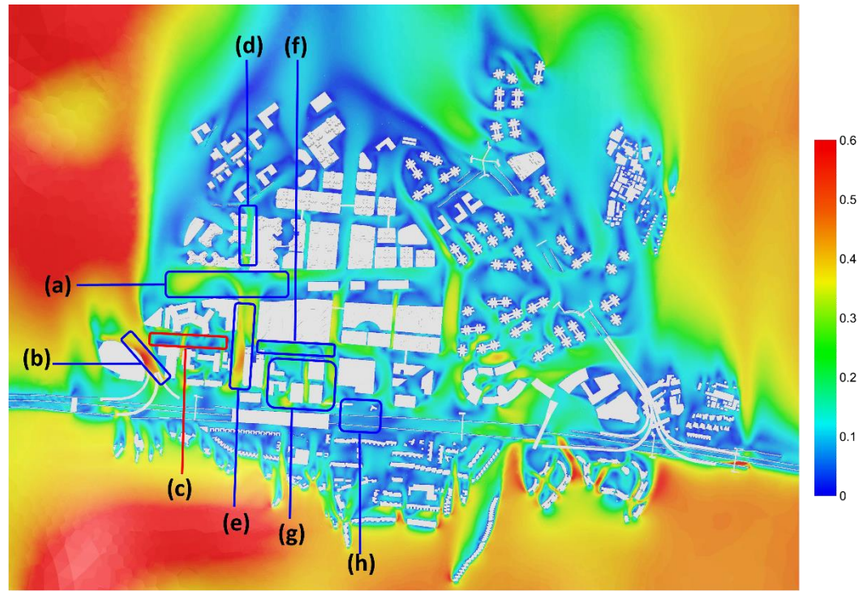
k) Although the proposed residential building blocks within Project Site Area Ar32 in the Proposed Scenario are aligned in the SE-NW directions with building separations incorporated, the taller building heights and the difference in building geometries as compared the Base Scenario would generate wakes that would limit the wind flow as well as alter the flow patterns along local Roads 8-5 and 8-6 (region circled (k)) located at the downwind of Project Site Area Ar32 under the SE wind. As a result, a slightly weakened wind environment is seen along the circled region.

l) The shorter frontages of the residential buildings within the Project Site Area Ar34 are aligned to the prevailing summer SE wind. Also the orientation of these residential blocks favours the flow of the SE prevailing wind. As compared to the business and technology block within the Project Site Area Ar34 under the Base Scenario, an improvement of wind flow along the local Road 11-3 (region circled (l)) can be seen under the Proposed Scenario.

S wind conditions (Summer: 10.1%)



Base Scenario (S directional wind)



Proposed Scenario (S directional wind)

a) The regions along the Kwu Tung Station near Areas P9 to P12 have an improvement in wind environment under the Proposed Scenario as compared to the Base Scenario under the southerly summer prevailing wind. The increased in building heights of the proposed GIC blocks within Project Site Area Ar28 enhances the wind channelling effect along Road 9 and Separation 2 (regions circled (e)) in the Proposed Scenario under the southerly wind which also benefits the wind performance at the circled region (a).

b) The increased building heights within the Project Site Area Ar28 would divert the southerly wind to flow via the separation between the district cooling system building and the inverted L shaped GIC building within Project Site Area Ar28, inducing a stronger wind channelling effect in the Proposed Scenario as compared to the Base Scenario under the southerly wind.

c) With the increased building heights within Project Site Area Ar28 in the Proposed Scenario, stronger wind wakes are generated as compared to the Base Scenario, which would influence the wind environment along local Road 8-1 (region circled (c)). A weakened wind environment is seen along Road 8-1 in the Proposed Scenario as compared to the Base Scenario under the southerly prevailing wind.

d) The wind channelling effect along Road 9 and Separation 2 (regions circled (e)) in the Proposed Scenario under the southerly wind not only benefits the wind performance at the the regions along the Kwu Tung Station near Areas P9 to P12, it also enhances the wind venturi effect along the separation between Areas P9 and P10 in the Proposed Scenario compared to the Base Scenario under the southerly wind.

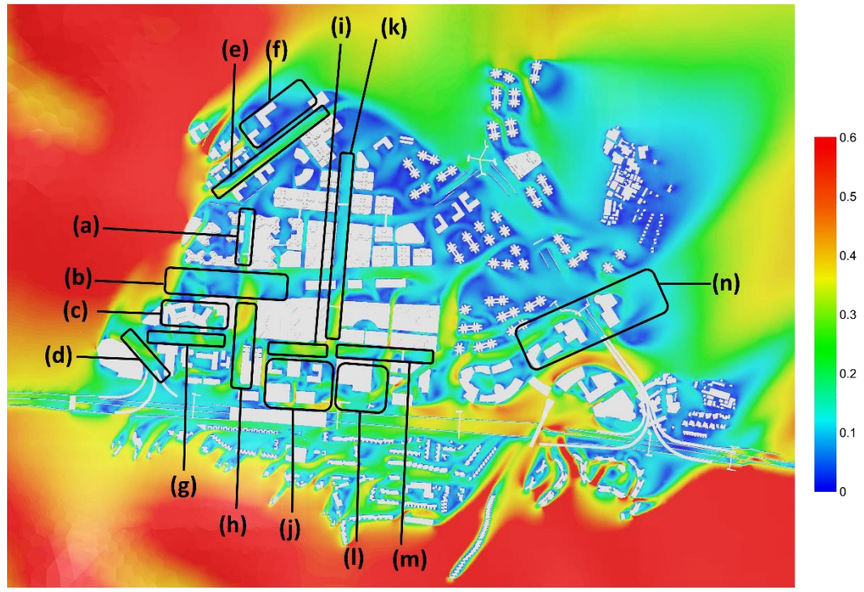
e) As mentioned in points (a) and (d) above, the increased in building heights of the proposed GIC blocks within Project Site Area Ar28 enhances the wind channelling effect along Road 9 and Separation 2 (regions circled (e)) in the Proposed Scenario in comparison to the Base Scenario under the southerly wind.

f) The rearrangements and changes of the building block layouts at the eastern sector of Project Site Area Ar29 with the incorporation of an open space within under the Proposed Scenario benefits the flow of southerly wind towards the local Road 8-2 located to the immediate north of the Project Site Area Ar29. The pedestrian level wind contours of the southerly wind are indicating a wind enhancement along Road 8-2 in the Proposed Scenario as compared to the Base Scenario.

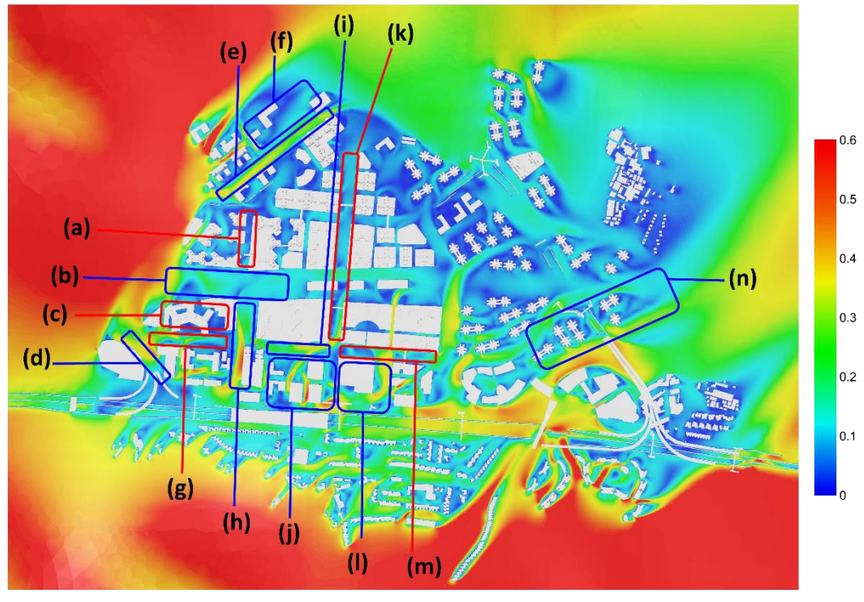
g) The placements of the proposed GIC building blocks are all orientated in a north south direction, with taller but less massive blocks appearing in the Proposed Scenario as compared to the Base Scenario. In addition, an open space is incorporated in the Proposed Scenario. These design features would result in better penetration of the southerly wind in the Proposed Scenario as compared to the Base Scenario. Therefore, a better wind environment is achieved within the Project Site Area Ar29 in the Proposed Scenario as compared to the Base Scenario.

h) Nevertheless, in addition to point (g) above, the change in building morphologies within Project Site Area Ar29 under the Proposed Scenario would result in slight improvement in the wind environment at nearby regions as circled with annotation (h) located south to Area P15 under the Proposed Scenario.

SSW wind conditions (Summer: 8.3%)



Base Scenario (SSW directional wind)



Proposed Scenario (SSW directional wind)

a) The wind channelling effect along Road 9 and Separation 2 (regions circled (h)) in the Proposed Scenario under the SSW wind not only benefits the wind performance at the the regions along the Kwu Tung Station near Areas P9 to P12, but it also weakened the wind venturi effect along the separation between Areas P9 and P10 in the Proposed Scenario compared to the Base Scenario under the SSW wind.

b) With the increase in building heights for the proposed buildings within Project Site Ar28 under the Proposed Scenario as compared to the Base Scenario, stronger building edge vortices around building corners within the Project Site are induced and propagated along Road 9 and Separation 2. This not only influence the wind environment along these two local places but also create benefit to the regions along the Kwu Tung Station near Areas P9 to P12, in which wind improvement is observed at the regions circled (b) in the Proposed Scenario as compared to the Base Scenario under the SSW wind.

c) There is a drawback in wind environment at Area P11 with residential buildings under the Proposed Scenario as compared to the Base Scenario. With the more taller building heights within Project Site Ar28 in the Proposed Scenario as compared to the Base Scenario, under the SSW prevailing wind, the wind wakes generated by the proposed buildings would create stronger wind impacts to the regions located downwind.

d) The increased building heights within the Project Site Area Ar28 would divert the SSW wind to flow via the separation between the district cooling system building and the inverted L shaped GIC building within Project Site Area Ar28, inducing a stronger wind channelling effect in the Proposed Scenario as compared to the Base Scenario under the SSW wind.

e) The wind channelling effects along the Separations 1-1 and 1-2 would be enhanced in the Proposed Scenario as compared to the Base Scenario under the SSW wind with the increase in building heights of the proposed buildings within Project Site Area Ar9.

f) In additional to point (f) above, benefited from the enhanced wind channel effects along Separations 1-1 and 1-2, the region circled (f) under the Proposed Scenario has also an improvement in wind environment as compared to the Base Scenario under the SSW wind.

g) In addition to point (c) above, there are also drawbacks in wind environment seen along Road 4-1 in between Area P11 and Project Site Ar28. With the more observable building height difference profiles of the proposed buildings within Area P11 and the Project Site Ar28 in the Base Scenario as compared to the Proposed Scenario, under the SSW prevailing wind, downwash wind along this local road appears to be weakened in the Proposed Scenario as compared to the Base Scenario under the SSW wind.

h) As mentioned in point (a) above, the increased in building heights of the proposed GIC blocks within Project Site Area Ar28 enhances the wind channelling effect along Road 9 and Separation 2 (regions circled (h)) in the Proposed Scenario in comparison to the Base Scenario under the SSW wind.

i) The rearrangements and changes of the building block layouts at the eastern sector of Project Site Area Ar29 with the incorporation of an open space within under the Proposed Scenario benefits the flow of SSW wind towards the local Road 8-2 located to the immediate north of the Project Site Area Ar29. The pedestrian level wind contours of the SSW wind are indicating a slight wind enhancement along Road 8-2 in the Proposed Scenario as compared to the Base Scenario.

j) With taller but less massive blocks appearing in the Proposed Scenario as compared to the Base Scenario together with an open space is incorporated in the Proposed Scenario, would result in better penetration of the SSW wind in the Proposed Scenario as compared to the Base Scenario. Therefore, a better wind environment is achieved within the Project Site Area Ar29 in the Proposed Scenario as compared to the Base Scenario. Despite there is an overall wind improvement within Project Site Area Ar29, it is observed that there is a wind stagnation region appearing at the southwestern corner of this Project Site under the Proposed Scenario as compared to the Base Scenario. This wind shadow region is formed due to difference and change in building morphologies between the Base Scenario and the Proposed Scenario near the region.

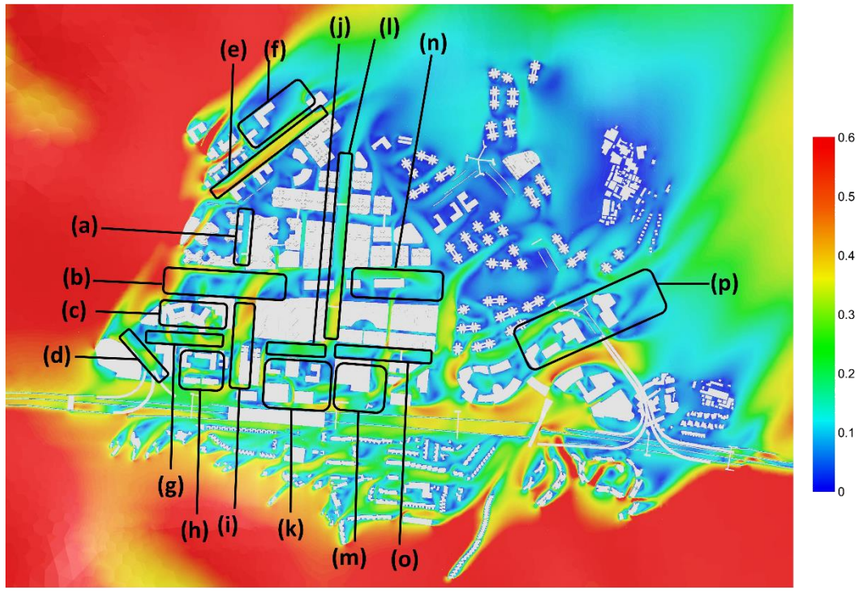
k) The redistribution of wind flow patterns due to the morphologies change within Project Site Area Ar29 under the Proposed Scenario would reduce the SSW wind flow magnitude along Separations 3-1 to 3-3 as compared to the Base Scenario as seen from the SSW pedestrian wind contours.

l) The change in building morphologies with Project Site Area Ar29 in the Proposed Scenario would also result in minor change in the predicted wind flow patterns at the near local surroundings. An improvement in wind environment within Area P15 adjacent to Project Site Area Ar29 can also be observed in the Proposed Scenario as compared to the Base Scenario under the SSW wind.

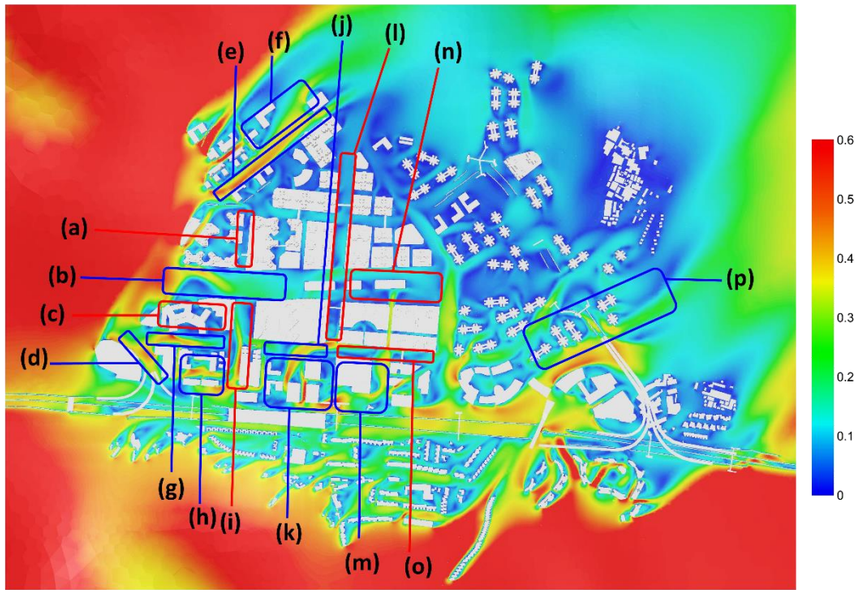
m) In addition to point (k), the change in building morphologies within Project Site Area Ar29 under the Proposed Scenario would also result in slight decline in the wind environment along local Roads 8-3 and 8-4 due to change in local wind flow patterns at nearby regions of the Project Site Area Ar29 as well as Area P15, with less SSW wind diverted into the mentioned local roads under the Proposed Scenario as compared to the Base Scenario.

n) With the podium free residential blocks with building separations incorporated within Project Site Areas Ar32 and Ar34 under the Proposed Scenario, the wind performance is slightly improved at the region circled and annotated as (n) as compared to the Base Scenario under the SSW summer prevailing wind.

SW wind conditions (Annual: 4.9%; Summer: 14.5%)



Base Scenario (SW directional wind)



Proposed Scenario (SW directional wind)

a) Similar as in the SSW prevailing wind, slight weakening of the wind venturi effect along the separation between Areas P9 and P10 in the Proposed Scenario compared to the Base Scenario is also observed under the SW wind.

b) With the increase in building heights for the proposed buildings within Project Site Ar28 under the Proposed Scenario as compared to the Base Scenario, stronger building edge vortices around building corners within the Project Site are induced and propagated along Road 9 and Separation 2. However, the appearance of building edge vortices at the proposed GIC buildings within Project Site Area Ar28 would suppress those generated by the residential buildings within Area P11, influencing the wind flow patterns and enhancing the wind environment at the regions circled (b) in the Proposed Scenario as compared to the Base Scenario under the SW wind.

c) Similar to the SSW wind, there is a drawback in wind environment within Area P11 with residential buildings under the Proposed Scenario as compared to the Base Scenario. With the more taller building heights within Project Site Ar28 in the Proposed Scenario as compared to the Base Scenario, under the SW prevailing wind, the wind wakes generated by the proposed buildings would influence Area P11 located downwind.

d) Under the SW prevailing wind, stronger downwash wind can be seen at the separation between the district cooling system building and the inverted L shaped GIC building within Project Site Area Ar28 in the Proposed Scenario as compared to the Base Scenario, therefore a better wind environment can be seen at the circled region in the Proposed Scenario as compared to the Base Scenario.

e) The wind channelling effects along the Separations 1-1 and 1-2 would be enhanced in the Proposed Scenario as compared to the Base Scenario under the SW wind with the increase in building heights of the proposed buildings within Project Site Area Ar9.

f) In additional to point (f) above, the region circled (f) under the Proposed Scenario has also an improvement in wind environment as compared to the Base Scenario under the SW wind, being benefited from the enhanced wind channel effects along Separations 1-1 and 1-2.

g) Building edge vortex is generated at the building edge of the inverted L shaped building under the Proposed Scenario in which this vortex is not available in the Base Scenario under the SW summer prevailing wind. The building edge vortex would propagate and enhance the wind environment along local Road 8-1 (region circled (g)) in the Proposed Scenario as compared to the Base Scenario.

h) Owing to the increase in building heights but without changes in building layouts within Project Site Area Ar28 in the Proposed Scenario, under the SW wind, observable wind improvements can be seen within this Project Site as compared with the Base Scenario with stronger wind channelling effects induced.

i) As mentioned in point (b) above, the increased in building heights of the proposed GIC blocks within Project Site Area Ar28 in the Proposed Scenario would induce stronger building edge vortices around building corners and propagated along Road 9 and Separation 2 under the SW wind. However, the appearance of building edge vortices at the proposed GIC buildings within Project Site Area Ar28 would suppress those generated by the residential buildings within Area P11, influencing the wind flow patterns and slightly reduce the wind environment at the circled region in the Proposed Scenario.

j) The rearrangements and changes of the building block layouts at the eastern sector of Project Site Area Ar29 with the incorporation of an open space within under the Proposed Scenario benefits the flow of SW wind towards the local Road 8-2 located to the immediate north of the Project Site Area Ar29.

k) With taller but less massive blocks appearing in the Proposed Scenario as compared to the Base Scenario together with an open space is incorporated in the Proposed Scenario, would result in better penetration of the SW wind in the Proposed Scenario as compared to the Base Scenario. Therefore, a better wind environment is also achieved within the Project Site Area Ar29 in the Proposed Scenario as compared to the Base Scenario.

l) The redistribution of wind flow patterns due to the morphologies change within Project Site Area Ar29 under the Proposed Scenario would reduce the SW wind flow magnitude along Separations 3-1 to 3-3 as compared to the Base Scenario as revealed from the SW pedestrian wind contours.

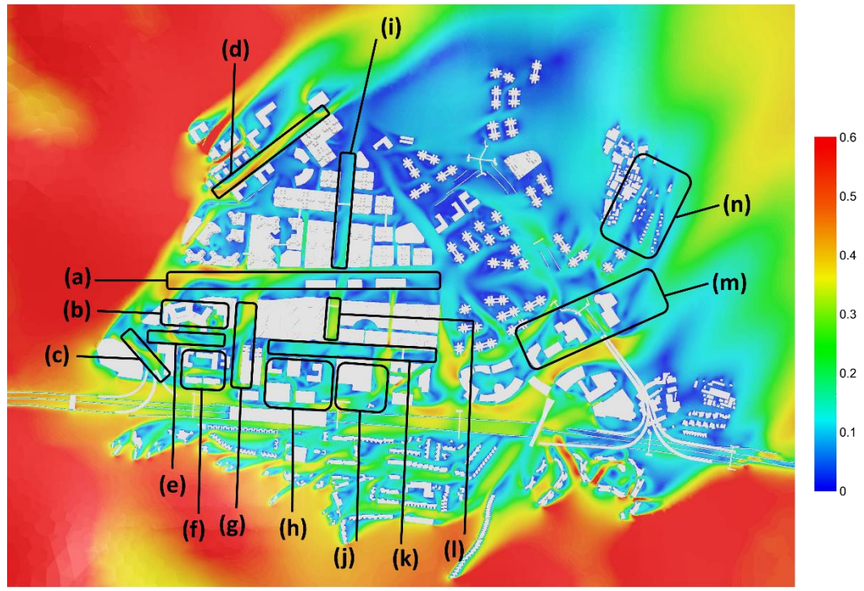
m) Similar to the SSW wind, minor changes in the predicted SW wind flow patterns at the near local surroundings in building morphologies with Project Site Area Ar29 in the Proposed Scenario would result in improvements in wind environment within Area P15 adjacent to Project Site Area Ar29 in the Proposed Scenario as compared to the Base Scenario.

n) Owing to the reduced SW wind flowing along Separations 3-1 to 3-3 (region circled (l)) in the Proposed Scenario, the amount of SW wind reaching the regions of the Kwu Tung Station to the north of Areas B2 and A5 (region circled (n)) is reduced as compared to the Base Scenario under the SW summer prevailing wind. This is clearly revealed in the SW pedestrian wind contours of the Base and Proposed Scenarios.

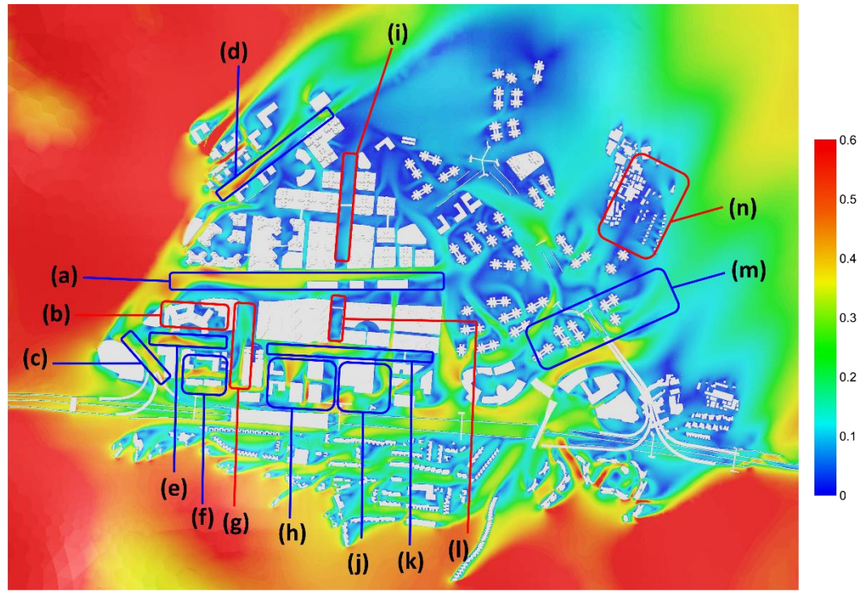
o) In addition to point (m), the change in building morphologies within Project Site Area Ar29 under the Proposed Scenario would also result in slight decline in the wind environment along local Roads 8-3 and 8-4 due to change in local wind flow patterns at nearby regions of the Project Site Area Ar29 as well as Area P15, with less SW wind being diverted into the mentioned local roads under the Proposed Scenario as compared to the Base Scenario.

p) With the podium free residential blocks with building separations incorporated within Project Site Areas Ar32 and Ar34 under the Proposed Scenario, the wind performance is slightly improved at the region circled and annotated as (p) as compared to the Base Scenario under the SW summer prevailing wind.

WSW wind conditions (Summer: 9.7%)



Base Scenario (WSW directional wind)



Proposed Scenario (WSW directional wind)

a) Owing to the increase in building heights of the GIC blocks within Project Site Area Ar28, the wind flow patterns near the district cooling plant building at Pak Shek Au region are altered in the Proposed Scenario as compared to the Base Scenario. This indirectly influence the wind flow patterns along the Kwu Tung Station with strengthened wind is observed under the Proposed Scenario as compared to the Base Scenario under the WSW prevailing wind.

b) The residential buildings within Area P11 would be influenced by the wind wakes generated by the taller GIC blocks within Project Site Area Ar28 in the Proposed Scenario under the WSW prevailing wind, this would result in a declined wind environment at the residential buildings within Area P11 for the Proposed Scenario as compared to the Base Scenario.

c) Strengthened downwash wind under the WSW prevailing wind can be seen along the separation between the district cooling plant block and the proposed inverted L shaped GIC block within Project Site Area Ar28 (region circled (c)) for the Proposed Scenario as compared to the Base Scenario.

d) The taller proposed GIC blocks in the Proposed Scenario would enhance the wind channelling effects along Separations 1-1 and 1-2 (region circled (d)) with stronger trailing vortices appearing at building edges that propagates under the Proposed Scenario as compared to the Base Scenario under the WSW prevailing wind.

e) The taller inverted L shaped GIC block in the Proposed Scenario would generate a stronger building edge vortex under the Proposed Scenario as compared to the Base Scenario under the WSW prevailing wind, this would improve the wind channel along Road 8-1 (region circled (e)) in the Proposed Scenario as compared to the Base Scenario.

f) The wind environment within the Project Site Area Ar28 would be improved as well in the Proposed Scenario as compared to the Base Scenario after the increment in building heights under the WSW summer prevailing wind.

g) There is a decline in wind environment along Separations 3-3 and 3-4 (region circled (g)) under the Proposed Scenario as compared to the Base Scenario, in which the increase in building heights within the Project Site Area Ar28 would generate larger wind wakes that would affect the wind flow along the circled region.

h) The rearrangements in proposed building blocks as well as the incorporation of the open space within the Project Site Area Ar29 under the Proposed Scenario would be beneficial to the air ventilation performance within the Project Site as compared to the Base Scenario under the WSW summer prevailing wind.

i) The enhanced wind flow along the Kwu Tung Station in the Proposed Scenario would limit the wind entry into the Separations 3-1 and 3-2 (region circled (i)) as compared to the Base Scenario under the WSW prevailing wind, reducing the air ventilation performance at the circled region.

j) There is a redistribution of wind flow at areas surround the Area P15 after the building morphologies changes within Project Site Area Ar29 in the Proposed Scenario as compared to the Base Scenario. This would result in an improvement in the wind environment at the circled region annotated as (j) representing the wind environment near the Area P15 under the Proposed Scenario as compared to the Base Scenario.

k) On top of the discussion in point (h) above, there is strengthened wind channelling effect along the local Roads 8-2, 8-3 and 8-4 (region circled (k)) in the Proposed Scenario as compared to the Base Scenario under the WSW wind, attributed to the building geometry changes within Project Site Area Ar29.

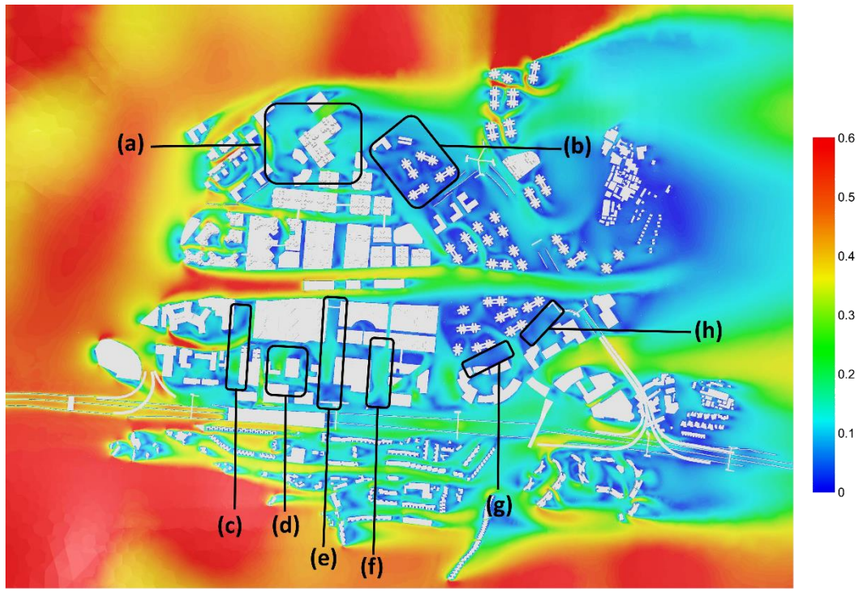
l) Nevertheless, the relatively better wind environment that occurs along the Separation 3-3 (region circled (l)) in the Base Scenario disappeared in the Proposed Scenario under the WSW wind, resulting a weakened wind environment at the circled region (l) as indicated in the WSW pedestrian wind contour for the Proposed Scenario.

m) With the podium free residential blocks with building separations incorporated within Project Site Areas Ar32 and Ar34 under the Proposed Scenario, the wind performance is improved at the region circled and annotated as (m) as compared to the Base Scenario under the WSW summer prevailing wind.

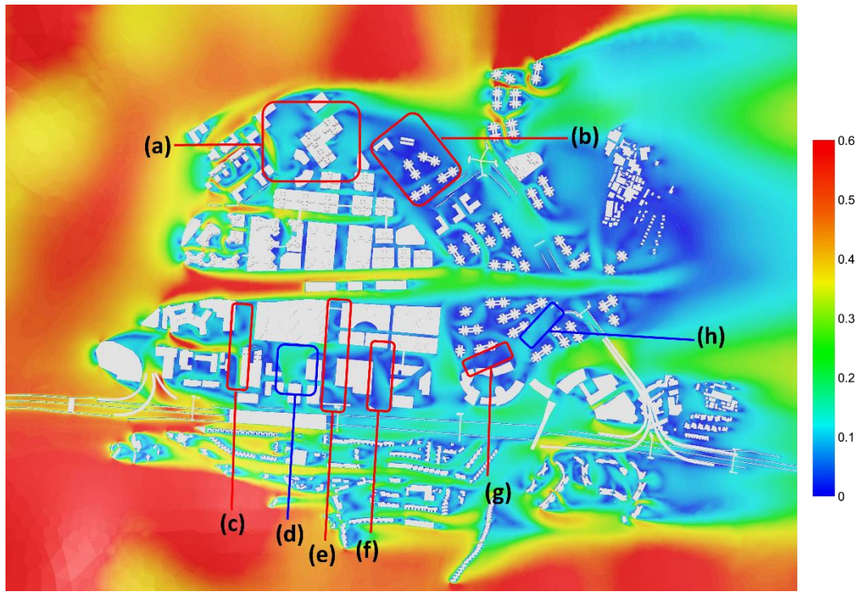
n) Under the WSW wind, the proposed residential buildings within Project Site Area Ar34 under the Proposed Scenario would generate larger wind wakes that would influence the wind

environment at Area P24 and Ho Sheung Heung areas located at the downwind. From the pedestrian wind contours of the WSW wind, the wind channel along Road 13 under the Base Scenario disappeared in the Proposed Scenario with building morphological changes within Project Site Areas Ar32 and Ar34, thus resulting a decline in wind environment at the circled region in the Proposed Scenario as compared to the Base Scenario.

W wind conditions (Summer: 6.5%)



Base Scenario (W directional wind)



Proposed Scenario (W directional wind)

a) A slight decline in wind environment is revealed from the pedestrian level wind contours at the regions located east of the Project Site Area Ar9 (circled region (a)) in the Proposed Scenario as compared to the Base Scenario under the westerly wind. Since the morphologies of the proposed buildings in Area Ar9 is unchanged but with an increase of building heights under the Proposed Scenario, the wind wakes would create wind wakes to the circled downwind areas.

b) In addition to point (a), the wind environment within the regions located further downwind where Areas B3 and P23 are situated would also be affected by the cumulative wind impacts of the proposed buildings with increased heights in Area Ar9, the proposed developments within Areas A1 and A2, located at the upwind. Therefore, a weakened wind environment is seen at Area B3 and Area P23 in the Proposed Scenario when compared with the Base Scenario.

c) The building heights within Project Site Area Ar28 are increased in the Proposed Scenario as compared to the Base Scenario, therefore under the westerly wind, the wind wakes generated under the Proposed Scenario would have stronger wind impacts along Road 9 (circled region (b) in between Project Site Areas Ar28 and Ar29) as compared to the Base Scenario.

d) With the introduction of an open space within Project Site Area Ar29 in the Proposed Scenario by changing the building layouts, placements and heights as compared to the Base Scenario, the wind environment within this Project Site under the westerly wind is improved under the Proposed Scenario. Downwash wind occurs at the location of the open space under the Proposed Scenario, promoting the air ventilation performance.

e) More observable wind stagnation areas are observed at the leeward of the proposed GIC blocks within Project Site Area Ar29 after the relaxation of building heights in the Proposed Scenario along Separations 3-3 and 3-4 (circled region (d)) as compared to the Base Scenario under the westerly wind.

f) Strengthened cumulative wind impacts by the buildings with increased building heights within Project Sites Areas Ar28, Ar29 under the Proposed Scenario as well as residential developments within Area P15, affect the wind environment along the local Road 10 (circled region (e)) under the westerly wind. An observable decline in wind environment in the Proposed Scenario in comparison to the Base Scenario along Road 10 can be seen from the pedestrian wind contours of the westerly wind.

g) Owing to the redistribution of wind and difference in wind flow patterns under the westerly wind between the Proposed Scenario and the Base Scenario, more spottable wind stagnation zones occur along Road 8-5 (circled region (f)) in the Proposed Scenario as compared to the Base Scenario under the westerly summer prevailing wind.

h) As the building shapes of the residential towers within Project Site Areas Ar32 under the Proposed Scenario are very different from the building shapes of the business and technology usage buildings in the Base Scenario, enhanced wind channelling effects occur along the local Road 8-6 (circled region (g)) in the Proposed Scenario with the residential towers as compared to the Base Scenario with business and technology usage buildings under the W prevailing wind.

8.6 Recommendations for the Proposed Buildings in Project Sites

8.6.1 There is no declination in the wind environment for the Proposed Scenario in this Study under the annual and summer prevailing wind as compared to the Base Scenario. In addition, no district wise decline in the wind environment can been seen in the KTN NDA from the model simulation results on the wind field.

8.6.2 Although the proposed building morphologies within the five Project Sites are generally maintained consistent between the Base Scenario and the Proposed Scenario with relaxation in building heights, the building height changes as well as the building geometry alterations at some Project Sites in the Proposed Scenario would inevitably change the predicted local wind flow patterns at areas that surrounding the Project Sites as compared to the Base Scenario and give rise to improvements/drawbacks of the local wind environment at certain specific regions.

8.6.3 The local roads and separations where wind improvements occur under both the annual and summer seasons include places along Road 8-2, Road 9 and Separation 3-4, which surround Project Site Area Ar29, in which stronger wind channelling effects are induced due to the building morphology changes in the Proposed Scenario as compared to the Base Scenario. Moreover, the wind environment at Area P12 located at the near north of Project Site Ar29 is also benefited from the wind improvement along Road 8-2 and nearby regions, in which wind improvements can be seen there in the Proposed Scenario as compared to the Base Scenario under both the annual and summer seasons. Apart from the above, areas with wind improvements include Areas P7 and P8 which benefited from the wind improvements along Separations 1-1 and 1-2 in the Proposed Scenario as compared to the Base Scenario under both the annual and summer seasons, due to the strengthened wind channelling effect along these separations after the relaxation of proposed building heights within Project Site Area Ar9.

8.6.4 It cannot be avoided that the taller and relaxed building heights in the Proposed Scenario would generate larger wind wakes that cover the downwind regions as well as create deep street canyons with wind stagnation areas as compared to the Base Scenario. Notably the Areas P15 and P16 located to the east of the Project Site Areas Ar28 and Ar29 as well along the local Road 8 located north to these areas are observed to have a weakened wind environment in the Proposed Scenario as compared to the Base Scenario under both the annual and summer seasons. In addition, the change of the proposed Business and Technology blocks within Project Site Areas Ar32 and Ar34 in the Base Scenario to proposed residential towers in the Proposed Scenario would create larger wakes that affect the regions near Ho Sheung Heung (i.e., regions near Area P24) under both the annual and summer seasons, and the wind weakening phenomenon is more observable under the summer seasons.

8.6.5 In view of the above, some further general good design measures from the aspect of air ventilation, if feasible, can be considered for the purpose of fine-tuning in future development stages of planning and engineering.

- Building Permeabilities should be incorporated in the proposed building designs as far as practical with a minimum of at least 20% building permeability to be maintained.
- Incorporation of addition ground level setbacks to mitigate the wind impacts arising from the wind wakes generated by proposed buildings within the Project Sites to the surrounding areas.
- Long continuous facades are suggested to be avoided, with shorter frontages of the proposed buildings facing the prevailing wind directions.
- Make reference to the recommendations of design measures in HKPSG; and
- Incorporate greening measures with a target of not less than 30% for sites larger than 1 ha, and not less than 20% for sites below 1 ha, preferably through tree planting at grade.

9 SUMMARY AND CONCLUSION

9.1.1 This AVA Study Report aims at assessing the characteristics of the wind availability of the five Project Sites (i.e., Project Sites Areas Ar9, Ar28, Ar29, Ar32 and Ar34) under OZP amendment, providing a general wind pattern and a quantitative estimate of wind performance at the pedestrian level under the annual and summer wind directions with the highest occurrence and investigating the effectiveness of ventilation for two development Scenarios namely the Base Scenario and the Proposed Scenario for the Project Sites within the KTN NDA.

9.1.2 From the finding of this AVA Initial Study, the SVR_w for Base Scenario is maintained at 0.23 under the annual prevailing winds from N, NNE, NE, ENE, E, ESE, and SW directions which amount to about 77.5% of the whole time in a year, while that of the Proposed Scenario is maintained at 0.24. Thus, the Proposed Scenario is considered to have slightly improved wind environment to the Base Scenario in terms of air ventilation performance in the vicinity of the Project Sites under annual prevailing wind directions.

9.1.3 The LVR_w for the Base Scenario is 0.23 under the annual wind directions stated above, and that of the Proposed Scheme is also maintained at 0.23. It can be concluded that the Proposed Scenario has maintained a similar wind environment with the Base Scenario under the major annual wind directions.

9.1.4 From the finding of this AVA Initial Study, the SVR_w for the Base Scenario is maintained at 0.22 under the summer prevailing wind from E, ESE, SE, S, SSW, SW, WSW and W directions which amount to about 77.3% of the whole time in a year, while that of the Proposed Scenario is increased to 0.25. It can be concluded that the Proposed Scenario performs better than the Base Scenario along the Project Site boundaries during the summer seasons. The reasons behind the wind improvements are that under the summer prevailing wind directions, mainly dominant by wind from the southwestern and western quadrants, there are wind improvements under the Proposed Scenario along the Project Site boundaries with strengthened wind channelling effects as compared to the Base Scenario for Project Site Area Ar28 with relaxed building heights as well as Project Site Area Ar29 with building morphological changes. In addition, the proposed podium free designed residential towers within Project Site Areas Ar32 and Ar34 in the Proposed Scenario would induce downwash wind and enhanced wind channelling effects along the Project Site boundaries as compared to the Base Scenario, which also contributes to the improvement of SVR_w value under the summer seasons.

9.1.5 The LVR_w for the Base Scenario is 0.21 under the same summer wind directions, and that of the Proposed Scenario is 0.22. The simulation results show that the summer wind environment would not exhibit declination under the Proposed Scenario as compared to the Base Scenario.

9.1.6 The building arrangements, orientations, and footprints of proposed buildings within the three Project Sites without change in planned land use (i.e., Project Sites Area Ar9, Ar28 and Ar29) are generally maintained consistent between the Base Scenario and the Proposed Scenario but with relaxation in building heights. Although there are proposed amendments in land usage from Business and Technology Park to Residential usages for the rest two of the Project Sites (i.e., Project Sites Areas Ar32 and Ar34), the proposed residential towers adopt podium free designs with building separations incorporated to ensure wind permeability. The overall CFD modelling results show that the Proposed Scenario with relaxed heights and proposed changes in building morphologies is able to maintain the air ventilation performance at the pedestrian level within the Project Sites and around their immediate vicinity as compared to that of the Base Scenario under the identified prevailing annual and summer wind directions. Based on the CFD simulation results, a district-wise decline in wind environment within the KTN NDA is not anticipated after the proposed OZP amendment exercise for the Project Sites.

Annex I

Details of the Predicted Wind Velocity Ratio

Annex I - Details of the Predicted Wind Velocity Ratio (VR_W)

	Base Annual							
Test Point	**N**	**NNE**	**NE**	**ENE**	**E**	**ESE**	**SW**	
Wind speed at infinity	**6.16**	**4.68**	**5.51**	**7.38**	**7.49**	**5.41**	**6.65**	**VR_w**
Wind probability	**0.121**	**0.083**	**0.088**	**0.151**	**0.234**	**0.049**	**0.049**	**0.775**
AP01	0.04	0.21	0.11	0.10	0.07	0.38	0.08	0.11
AP02	0.19	0.18	0.12	0.14	0.07	0.40	0.07	0.14
AP03	0.21	0.05	0.06	0.16	0.07	0.41	0.20	0.14
AP04	0.16	0.04	0.04	0.11	0.04	0.38	0.34	0.11
AP05	0.05	0.09	0.08	0.09	0.16	0.30	0.29	0.13
AP06	0.02	0.03	0.02	0.11	0.13	0.27	0.28	0.10
AP07	0.04	0.09	0.06	0.12	0.03	0.21	0.42	0.09
AP08	0.02	0.07	0.07	0.11	0.06	0.18	0.35	0.09
AP09	0.03	0.05	0.08	0.09	0.10	0.04	0.36	0.09
AP10	0.10	0.09	0.08	0.06	0.21	0.08	0.30	0.13
AP11	0.04	0.12	0.09	0.03	0.15	0.08	0.19	0.10
AP12	0.03	0.07	0.09	0.04	0.04	0.10	0.08	0.05
AP13	0.02	0.12	0.13	0.03	0.15	0.11	0.09	0.09
AP14	0.03	0.17	0.11	0.09	0.12	0.18	0.10	0.11
AP15	0.16	0.15	0.10	0.13	0.10	0.20	0.32	0.14
AP16	0.29	0.16	0.09	0.14	0.03	0.21	0.36	0.15
AP17	0.39	0.29	0.10	0.12	0.07	0.25	0.29	0.18
AP18	0.41	0.28	0.08	0.13	0.08	0.22	0.33	0.19
AP19	0.39	0.29	0.08	0.14	0.10	0.20	0.34	0.19
AP20	0.35	0.31	0.08	0.14	0.13	0.24	0.33	0.20
AP21	0.31	0.37	0.10	0.14	0.20	0.35	0.32	0.23
AP22	0.24	0.39	0.10	0.13	0.21	0.40	0.29	0.22
AP23	0.31	0.38	0.09	0.14	0.21	0.42	0.31	0.24
AP24	0.37	0.38	0.07	0.15	0.22	0.45	0.32	0.25
AP25	0.42	0.37	0.08	0.15	0.23	0.48	0.23	0.26
AP26	0.44	0.22	0.13	0.09	0.13	0.32	0.24	0.20
AP27	0.45	0.20	0.14	0.04	0.14	0.24	0.33	0.20
AP28	0.49	0.26	0.16	0.03	0.21	0.33	0.38	0.24
AP29	0.50	0.29	0.14	0.07	0.16	0.37	0.28	0.23
AP30	0.51	0.28	0.11	0.11	0.05	0.37	0.17	0.20
AP31	0.50	0.24	0.09	0.09	0.08	0.31	0.10	0.18
BP01	0.05	0.02	0.03	0.03	0.11	0.08	0.08	0.06
BP02	0.06	0.10	0.02	0.02	0.04	0.25	0.09	0.06
BP03	0.14	0.08	0.12	0.10	0.07	0.15	0.26	0.11
BP04	0.05	0.08	0.04	0.02	0.01	0.15	0.13	0.05
BP05	0.02	0.11	0.04	0.06	0.06	0.17	0.24	0.08
BP06	0.19	0.12	0.14	0.02	0.14	0.12	0.30	0.13
BP07	0.04	0.11	0.07	0.03	0.13	0.07	0.27	0.09
BP08	0.14	0.05	0.10	0.04	0.20	0.03	0.25	0.13
BP09	0.28	0.15	0.27	0.31	0.23	0.29	0.25	0.25
BP10	0.23	0.30	0.22	0.28	0.14	0.34	0.16	0.22
BP11	0.21	0.34	0.21	0.25	0.22	0.36	0.05	0.23
BP12	0.18	0.30	0.13	0.21	0.22	0.30	0.07	0.20
BP13	0.15	0.21	0.03	0.17	0.15	0.16	0.23	0.15
BP14	0.11	0.17	0.07	0.12	0.13	0.22	0.29	0.14
BP15	0.05	0.12	0.08	0.12	0.14	0.14	0.06	0.11
BP16	0.18	0.14	0.03	0.07	0.18	0.15	0.46	0.15
BP17	0.18	0.19	0.02	0.13	0.10	0.18	0.38	0.14
BP18	0.17	0.23	0.04	0.14	0.07	0.27	0.30	0.14
BP19	0.17	0.27	0.10	0.14	0.13	0.34	0.32	0.18
BP20	0.18	0.18	0.03	0.14	0.08	0.28	0.33	0.14
BP21	0.18	0.24	0.06	0.13	0.06	0.33	0.23	0.14
BP22	0.18	0.30	0.11	0.11	0.03	0.38	0.10	0.14

Annex I - Details of the Predicted Wind Velocity Ratio (VR_W)

	Base Annual							
Test Point	**N**	**NNE**	**NE**	**ENE**	**E**	**ESE**	**SW**	
Wind speed at infinity	**6.16**	**4.68**	**5.51**	**7.38**	**7.49**	**5.41**	**6.65**	**VR_w**
Wind probability	**0.121**	**0.083**	**0.088**	**0.151**	**0.234**	**0.049**	**0.049**	**0.775**
BP23	0.19	0.37	0.16	0.10	0.04	0.45	0.05	0.15
BP24	0.21	0.31	0.09	0.10	0.14	0.42	0.04	0.17
BP25	0.24	0.32	0.09	0.10	0.13	0.43	0.05	0.17
BP26	0.29	0.34	0.11	0.10	0.14	0.43	0.07	0.19
BP27	0.32	0.33	0.14	0.09	0.09	0.34	0.22	0.17
BP28	0.22	0.12	0.04	0.09	0.01	0.10	0.17	0.09
BP29	0.19	0.06	0.06	0.11	0.10	0.14	0.25	0.12
BP30	0.22	0.11	0.10	0.10	0.15	0.08	0.36	0.15
BP31	0.20	0.16	0.12	0.14	0.18	0.10	0.39	0.18
BP32	0.20	0.16	0.14	0.14	0.22	0.10	0.34	0.19
BP33	0.17	0.11	0.14	0.12	0.27	0.07	0.21	0.18
CP01	0.18	0.15	0.28	0.40	0.26	0.38	0.23	0.27
CP02	0.17	0.05	0.29	0.44	0.10	0.36	0.26	0.22
CP03	0.15	0.12	0.28	0.41	0.18	0.27	0.26	0.24
CP04	0.17	0.15	0.26	0.38	0.08	0.09	0.26	0.19
CP05	0.23	0.10	0.25	0.39	0.18	0.18	0.29	0.23
CP06	0.29	0.19	0.29	0.40	0.11	0.20	0.30	0.24
CP07	0.27	0.25	0.31	0.40	0.25	0.13	0.31	0.28
CP08	0.20	0.26	0.42	0.46	0.15	0.24	0.35	0.28
CP09	0.16	0.28	0.46	0.48	0.28	0.16	0.34	0.31
CP10	0.05	0.12	0.22	0.23	0.34	0.36	0.32	0.24
CP11	0.08	0.06	0.12	0.14	0.30	0.36	0.27	0.19
CP12	0.14	0.08	0.13	0.16	0.24	0.31	0.27	0.19
CP13	0.23	0.14	0.19	0.21	0.30	0.32	0.29	0.24
CP14	0.15	0.20	0.26	0.25	0.25	0.26	0.21	0.23
CP15	0.12	0.14	0.23	0.23	0.10	0.12	0.17	0.15
CP16	0.10	0.18	0.30	0.29	0.18	0.12	0.14	0.20
CP17	0.03	0.14	0.38	0.31	0.16	0.29	0.08	0.20
CP18	0.03	0.23	0.20	0.23	0.74	0.49	0.16	0.36
CP19	0.11	0.11	0.42	0.41	0.66	0.35	0.12	0.39
CP20	0.11	0.05	0.03	0.09	0.55	0.31	0.09	0.24
CP21	0.20	0.25	0.13	0.03	0.51	0.27	0.17	0.26
CP22	0.23	0.30	0.17	0.04	0.45	0.20	0.13	0.25
CP23	0.18	0.24	0.15	0.07	0.43	0.19	0.25	0.24
CP24	0.19	0.31	0.23	0.13	0.53	0.23	0.31	0.31
CP25	0.21	0.33	0.26	0.11	0.56	0.26	0.30	0.32
CP26	0.22	0.34	0.27	0.08	0.55	0.27	0.30	0.32
CP27	0.18	0.36	0.29	0.17	0.57	0.25	0.28	0.34
CP28	0.20	0.43	0.32	0.04	0.64	0.26	0.21	0.35
CP29	0.23	0.46	0.33	0.07	0.68	0.26	0.22	0.37
CP30	0.24	0.44	0.17	0.23	0.55	0.22	0.06	0.33
CP31	0.03	0.07	0.12	0.24	0.14	0.04	0.17	0.13
CP32	0.04	0.15	0.10	0.09	0.27	0.07	0.15	0.15
CP33	0.10	0.22	0.05	0.15	0.33	0.17	0.13	0.19
CP34	0.13	0.24	0.14	0.38	0.36	0.28	0.13	0.27
DP01	0.09	0.16	0.29	0.26	0.35	0.35	0.05	0.24
DP02	0.30	0.09	0.14	0.12	0.37	0.36	0.08	0.23
DP03	0.58	0.19	0.30	0.27	0.17	0.31	0.17	0.28
DP04	0.40	0.42	0.58	0.49	0.20	0.05	0.29	0.35
DP05	0.34	0.50	0.61	0.48	0.26	0.06	0.21	0.36
DP06	0.39	0.44	0.47	0.35	0.18	0.09	0.18	0.30
DP07	0.43	0.49	0.49	0.49	0.56	0.21	0.20	0.47
DP08	0.44	0.36	0.34	0.44	0.63	0.43	0.22	0.46

Annex I - Details of the Predicted Wind Velocity Ratio (VR_W)

	Base Annual							
Test Point	**N**	**NNE**	**NE**	**ENE**	**E**	**ESE**	**SW**	
Wind speed at infinity	**6.16**	**4.68**	**5.51**	**7.38**	**7.49**	**5.41**	**6.65**	**VR_w**
Wind probability	**0.121**	**0.083**	**0.088**	**0.151**	**0.234**	**0.049**	**0.049**	**0.775**
DP09	0.11	0.15	0.10	0.28	0.49	0.46	0.16	0.29
DP10	0.09	0.11	0.12	0.11	0.38	0.46	0.03	0.21
DP11	0.05	0.22	0.26	0.19	0.31	0.44	0.06	0.22
DP12	0.07	0.32	0.32	0.40	0.31	0.39	0.14	0.29
DP13	0.20	0.41	0.39	0.50	0.35	0.36	0.17	0.36
DP14	0.31	0.49	0.51	0.54	0.40	0.37	0.07	0.42
DP15	0.38	0.54	0.60	0.58	0.46	0.38	0.11	0.47
DP16	0.32	0.54	0.61	0.58	0.45	0.33	0.12	0.45
DP17	0.14	0.53	0.55	0.58	0.40	0.26	0.10	0.40
DP18	0.05	0.56	0.57	0.67	0.45	0.20	0.11	0.42
DP19	0.02	0.31	0.32	0.48	0.59	0.11	0.06	0.35
DP20	0.07	0.12	0.13	0.10	0.61	0.18	0.05	0.26
DP21	0.05	0.18	0.19	0.16	0.64	0.30	0.04	0.29
DP22	0.19	0.12	0.16	0.09	0.65	0.42	0.31	0.32
DP23	0.37	0.16	0.22	0.21	0.60	0.41	0.21	0.36
DP24	0.40	0.24	0.29	0.29	0.59	0.49	0.24	0.40
DP25	0.43	0.29	0.31	0.36	0.84	0.65	0.15	0.51
DP26	0.45	0.26	0.29	0.34	0.74	0.60	0.15	0.47
DP27	0.46	0.23	0.27	0.31	0.69	0.55	0.10	0.44
DP28	0.40	0.19	0.23	0.27	0.62	0.48	0.09	0.38
DP29	0.27	0.13	0.16	0.19	0.56	0.43	0.09	0.31
DP30	0.12	0.10	0.10	0.11	0.45	0.40	0.06	0.23
EP01	0.36	0.57	0.68	0.62	0.25	0.13	0.11	0.42
EP02	0.25	0.34	0.32	0.25	0.18	0.09	0.07	0.22
EP03	0.36	0.21	0.25	0.22	0.10	0.02	0.03	0.18
EP04	0.58	0.35	0.41	0.39	0.08	0.07	0.38	0.31
EP05	0.35	0.28	0.36	0.36	0.05	0.01	0.32	0.23
EP06	0.27	0.37	0.45	0.43	0.04	0.04	0.11	0.24
EP07	0.13	0.30	0.38	0.39	0.02	0.04	0.20	0.19
EP08	0.30	0.43	0.43	0.29	0.03	0.07	0.41	0.24
EP09	0.39	0.39	0.46	0.43	0.01	0.07	0.40	0.27
EP10	0.45	0.33	0.35	0.33	0.01	0.04	0.36	0.24
EP11	0.39	0.31	0.32	0.30	0.02	0.02	0.32	0.22
EP12	0.30	0.27	0.27	0.24	0.04	0.06	0.30	0.19
EP13	0.29	0.27	0.26	0.22	0.06	0.08	0.27	0.19
EP14	0.20	0.25	0.23	0.19	0.06	0.09	0.26	0.16
EP15	0.22	0.26	0.22	0.17	0.06	0.09	0.33	0.16
EP16	0.28	0.27	0.23	0.17	0.05	0.10	0.45	0.18
EP17	0.33	0.29	0.25	0.18	0.05	0.09	0.59	0.20
EP18	0.36	0.34	0.31	0.20	0.05	0.05	0.47	0.21
EP19	0.31	0.36	0.34	0.23	0.04	0.06	0.43	0.21
EP20	0.27	0.33	0.28	0.16	0.04	0.04	0.54	0.19
EP21	0.10	0.18	0.13	0.06	0.04	0.01	0.46	0.10
EP22	0.05	0.09	0.11	0.08	0.04	0.05	0.41	0.09
EP23	0.20	0.18	0.18	0.22	0.02	0.08	0.56	0.16
EP24	0.22	0.39	0.46	0.43	0.05	0.11	0.56	0.27
EP25	0.07	0.31	0.33	0.30	0.04	0.12	0.52	0.19
EP26	0.08	0.07	0.08	0.07	0.03	0.11	0.38	0.08
EP27	0.33	0.10	0.13	0.12	0.06	0.08	0.50	0.15
EP28	0.64	0.54	0.64	0.61	0.24	0.15	0.64	0.47
EP29	0.58	0.57	0.71	0.69	0.25	0.17	0.68	0.50
EP30	0.53	0.63	0.77	0.72	0.26	0.16	0.66	0.51
EP31	0.44	0.65	0.75	0.69	0.26	0.13	0.59	0.48

Annex I - Details of the Predicted Wind Velocity Ratio (VR_W)

	Base Annual							
Test Point	**N**	**NNE**	**NE**	**ENE**	**E**	**ESE**	**SW**	
Wind speed at infinity	**6.16**	**4.68**	**5.51**	**7.38**	**7.49**	**5.41**	**6.65**	**VR_w**
Wind probability	**0.121**	**0.083**	**0.088**	**0.151**	**0.234**	**0.049**	**0.049**	**0.775**
EP32	0.39	0.67	0.75	0.69	0.26	0.12	0.40	0.47
Average SVR	**0.23**	**0.25**	**0.22**	**0.22**	**0.23**	**0.23**	**0.25**	**0.23**
TR1-1	0.15	0.14	0.12	0.09	0.37	0.31	0.39	0.22
TR1-2	0.44	0.20	0.08	0.12	0.31	0.10	0.08	0.23
TR1-3	0.03	0.11	0.13	0.11	0.34	0.33	0.37	0.20
TR1-4	0.39	0.15	0.17	0.15	0.35	0.29	0.20	0.26
TR1-5	0.19	0.20	0.11	0.17	0.26	0.16	0.14	0.19
TR1-6	0.22	0.13	0.15	0.13	0.34	0.26	0.39	0.23
TR1-7	0.17	0.14	0.19	0.19	0.33	0.17	0.09	0.22
TR1-8	0.16	0.19	0.18	0.21	0.21	0.34	0.12	0.20
TR1-9	0.08	0.13	0.12	0.12	0.35	0.28	0.23	0.20
TR1-10	0.29	0.08	0.18	0.20	0.33	0.26	0.29	0.25
TR1-11	0.08	0.24	0.21	0.25	0.17	0.04	0.07	0.17
TR1-12	0.06	0.00	0.09	0.11	0.35	0.14	0.31	0.18
TR1-13	0.14	0.10	0.17	0.20	0.30	0.08	0.17	0.20
TR1-14	0.20	0.29	0.28	0.30	0.17	0.02	0.03	0.21
TR1-15	0.08	0.03	0.06	0.05	0.31	0.12	0.27	0.15
TR1-16	0.11	0.11	0.13	0.13	0.28	0.08	0.13	0.17
TR1-17	0.18	0.29	0.28	0.28	0.22	0.07	0.06	0.22
TR1-18	0.18	0.05	0.05	0.05	0.32	0.18	0.10	0.16
TR1-19	0.06	0.03	0.02	0.03	0.31	0.18	0.17	0.13
TR1-20	0.15	0.29	0.23	0.24	0.25	0.02	0.06	0.21
TR1-21	0.39	0.30	0.34	0.41	0.24	0.23	0.34	0.32
TR1-22	0.48	0.33	0.48	0.52	0.26	0.21	0.17	0.37
TR1-23	0.05	0.34	0.24	0.15	0.24	0.04	0.03	0.18
TR1-24	0.03	0.07	0.10	0.09	0.30	0.26	0.22	0.16
TR1-25	0.10	0.35	0.31	0.23	0.23	0.07	0.07	0.21
TR1-26	0.11	0.10	0.10	0.08	0.30	0.25	0.27	0.18
TR1-27	0.15	0.31	0.28	0.20	0.23	0.09	0.03	0.20
TR1-28	0.34	0.22	0.33	0.27	0.27	0.20	0.30	0.28
TR1-29	0.10	0.27	0.25	0.17	0.18	0.12	0.07	0.17
TR1-30	0.34	0.19	0.29	0.25	0.22	0.11	0.29	0.25
TR1-31	0.06	0.19	0.15	0.09	0.10	0.10	0.10	0.11
TR1-32	0.07	0.22	0.10	0.09	0.13	0.03	0.22	0.12
TR1-33	0.29	0.24	0.25	0.23	0.03	0.18	0.08	0.17
TR1-34	0.18	0.27	0.37	0.35	0.12	0.25	0.22	0.23
TR1-35	0.09	0.15	0.24	0.28	0.06	0.14	0.14	0.15
TR1-36	0.18	0.10	0.09	0.04	0.13	0.04	0.06	0.10
TR1-37	0.18	0.13	0.05	0.09	0.11	0.07	0.08	0.11
TR1-38	0.05	0.19	0.17	0.13	0.18	0.02	0.08	0.13
TR1-39	0.10	0.12	0.05	0.06	0.39	0.17	0.10	0.18
TR1-40	0.05	0.17	0.12	0.06	0.13	0.19	0.10	0.11
TR1-41	0.06	0.12	0.07	0.05	0.46	0.17	0.12	0.20
TR1-42	0.22	0.23	0.35	0.20	0.27	0.13	0.08	0.23
TR1-43	0.32	0.04	0.11	0.08	0.21	0.20	0.03	0.16
TR1-44	0.33	0.20	0.29	0.25	0.52	0.25	0.06	0.33
TR1-45	0.37	0.28	0.38	0.35	0.24	0.31	0.02	0.29
TR1-46	0.21	0.32	0.35	0.16	0.31	0.04	0.04	0.24
TR2-1	0.41	0.33	0.09	0.15	0.26	0.42	0.33	0.27
TR2-2	0.42	0.27	0.03	0.16	0.35	0.34	0.26	0.27
TR2-3	0.42	0.30	0.06	0.15	0.37	0.36	0.31	0.29
TR2-4	0.41	0.35	0.10	0.14	0.39	0.40	0.29	0.30
TR2-5	0.44	0.23	0.06	0.14	0.24	0.27	0.28	0.23
TR2-6	0.30	0.16	0.03	0.08	0.11	0.15	0.15	0.14
TR2-7	0.05	0.25	0.19	0.05	0.29	0.25	0.05	0.17
TR2-8	0.05	0.31	0.25	0.08	0.34	0.29	0.21	0.22
TR2-9	0.03	0.34	0.27	0.12	0.36	0.28	0.29	0.24
TR2-10	0.02	0.36	0.29	0.06	0.32	0.23	0.32	0.22

Annex I - Details of the Predicted Wind Velocity Ratio (VR_W)

	Base Annual							
Test Point	**N**	**NNE**	**NE**	**ENE**	**E**	**ESE**	**SW**	
Wind speed at infinity	**6.16**	**4.68**	**5.51**	**7.38**	**7.49**	**5.41**	**6.65**	**VR_w**
Wind probability	**0.121**	**0.083**	**0.088**	**0.151**	**0.234**	**0.049**	**0.049**	**0.775**
TR2-11	0.03	0.36	0.33	0.05	0.34	0.18	0.41	0.23
TR2-12	0.11	0.36	0.32	0.17	0.36	0.21	0.42	0.27
TR2-13	0.16	0.36	0.30	0.17	0.36	0.26	0.39	0.28
TR2-14	0.16	0.38	0.36	0.25	0.36	0.26	0.42	0.31
TR2-15	0.17	0.40	0.43	0.36	0.30	0.25	0.45	0.32
TR2-16	0.17	0.38	0.43	0.38	0.30	0.23	0.29	0.31
TR2-17	0.03	0.36	0.41	0.38	0.32	0.30	0.53	0.32
TR3-1	0.42	0.62	0.68	0.64	0.18	0.12	0.15	0.41
TR3-2	0.40	0.54	0.59	0.55	0.22	0.14	0.02	0.37
TR3-3	0.45	0.69	0.75	0.70	0.30	0.16	0.03	0.47
TR3-4	0.45	0.68	0.74	0.68	0.29	0.12	0.43	0.48
TR3-5	0.49	0.72	0.77	0.71	0.28	0.09	0.68	0.51
TR3-6	0.64	0.49	0.59	0.58	0.23	0.15	0.51	0.44
TR3-7	0.28	0.21	0.25	0.31	0.02	0.09	0.46	0.19
TR3-8	0.27	0.26	0.26	0.17	0.04	0.09	0.61	0.19
TR3-9	0.37	0.13	0.08	0.21	0.08	0.09	0.72	0.20
TR3-10	0.38	0.18	0.07	0.11	0.09	0.04	0.54	0.17
TR3-11	0.38	0.10	0.09	0.04	0.35	0.27	0.51	0.25
TR3-12	0.32	0.17	0.03	0.05	0.36	0.27	0.56	0.24
TR3-13	0.38	0.10	0.08	0.04	0.21	0.21	0.44	0.19
TR3-14	0.51	0.04	0.12	0.02	0.02	0.11	0.48	0.15
TR3-15	0.51	0.16	0.14	0.06	0.07	0.05	0.40	0.17
TR3-16	0.25	0.02	0.06	0.08	0.05	0.05	0.25	0.10
TR4-1	0.59	0.21	0.10	0.05	0.09	0.43	0.27	0.21
TR4-2	0.10	0.16	0.08	0.08	0.07	0.45	0.11	0.11
TR4-3	0.20	0.02	0.12	0.15	0.08	0.41	0.20	0.14
TR4-4	0.07	0.12	0.08	0.15	0.16	0.30	0.24	0.14
TR4-5	0.06	0.07	0.07	0.11	0.06	0.27	0.31	0.10
TR4-6	0.04	0.04	0.09	0.13	0.04	0.17	0.29	0.09
TR4-7	0.15	0.05	0.06	0.10	0.16	0.05	0.35	0.13
TR5-1	0.10	0.09	0.14	0.10	0.27	0.23	0.33	0.18
TR5-2	0.02	0.11	0.03	0.14	0.04	0.27	0.12	0.08
TR5-3	0.07	0.08	0.10	0.11	0.03	0.13	0.23	0.09
TR5-4	0.05	0.10	0.05	0.03	0.09	0.14	0.19	0.08
TR5-5	0.03	0.07	0.06	0.03	0.24	0.11	0.30	0.12
TR5-6	0.05	0.17	0.04	0.03	0.25	0.15	0.25	0.13
TR6-1	0.27	0.10	0.23	0.35	0.20	0.13	0.26	0.23
TR6-2	0.03	0.13	0.01	0.03	0.24	0.23	0.19	0.12
TR6-3	0.01	0.18	0.05	0.06	0.21	0.23	0.26	0.13
TR6-4	0.09	0.21	0.11	0.08	0.13	0.16	0.13	0.12
TR6-5	0.10	0.20	0.14	0.13	0.24	0.10	0.33	0.18
TR7-1	0.08	0.26	0.02	0.02	0.10	0.13	0.05	0.09
TR7-2	0.12	0.25	0.15	0.15	0.08	0.15	0.14	0.14
TR7-3	0.10	0.12	0.08	0.12	0.07	0.14	0.19	0.10
TR8-1	0.19	0.28	0.32	0.21	0.16	0.09	0.43	0.21
TR8-2	0.21	0.22	0.36	0.30	0.13	0.23	0.25	0.22
TR8-3	0.21	0.09	0.36	0.27	0.10	0.20	0.32	0.20
TR9-1	0.26	0.23	0.40	0.40	0.19	0.38	0.32	0.29
TR9-2	0.27	0.29	0.39	0.37	0.20	0.31	0.34	0.29
TR9-3	0.25	0.26	0.39	0.39	0.15	0.30	0.30	0.27
TR9-4	0.26	0.35	0.44	0.43	0.12	0.23	0.29	0.28
TR10-1	0.05	0.21	0.16	0.13	0.43	0.65	0.12	0.25
TR10-2	0.51	0.15	0.20	0.11	0.55	0.50	0.10	0.34
TR10-3	0.32	0.12	0.28	0.33	0.24	0.27	0.03	0.25
TR10-4	0.49	0.26	0.35	0.29	0.31	0.47	0.05	0.33
TR10-5	0.30	0.28	0.26	0.26	0.59	0.10	0.13	0.35
TR10-6	0.25	0.11	0.14	0.18	0.52	0.70	0.17	0.31
TR10-7	0.56	0.37	0.46	0.42	0.35	0.52	0.04	0.40

Annex I - Details of the Predicted Wind Velocity Ratio (VR_W)

	Base Annual							
Test Point	**N**	**NNE**	**NE**	**ENE**	**E**	**ESE**	**SW**	
Wind speed at infinity	**6.16**	**4.68**	**5.51**	**7.38**	**7.49**	**5.41**	**6.65**	**VR_w**
Wind probability	**0.121**	**0.083**	**0.088**	**0.151**	**0.234**	**0.049**	**0.049**	**0.775**
TR10-8	0.48	0.46	0.59	0.49	0.51	0.42	0.26	0.48
TR10-9	0.04	0.47	0.60	0.53	0.77	0.41	0.17	0.50
TR10-10	0.45	0.47	0.57	0.59	0.10	0.25	0.19	0.36
TR11-1	0.19	0.11	0.06	0.13	0.09	0.11	0.46	0.14
TR11-2	0.06	0.10	0.07	0.04	0.17	0.05	0.49	0.12
TR11-3	0.08	0.09	0.11	0.06	0.23	0.29	0.39	0.16
TR12-1	0.05	0.12	0.13	0.03	0.22	0.10	0.11	0.12
TR12-2	0.03	0.14	0.14	0.06	0.13	0.17	0.22	0.11
TR12-3	0.06	0.18	0.12	0.10	0.19	0.15	0.21	0.14
TR12-4	0.20	0.12	0.09	0.14	0.08	0.18	0.33	0.14
TR12-5	0.28	0.12	0.09	0.09	0.01	0.15	0.23	0.11
TR13-1	0.38	0.11	0.27	0.41	0.17	0.31	0.44	0.28
TR13-2	0.36	0.03	0.28	0.42	0.17	0.29	0.37	0.27
TR13-3	0.32	0.11	0.25	0.39	0.09	0.29	0.37	0.24
TR13-4	0.30	0.17	0.26	0.38	0.13	0.25	0.37	0.25
TR14-1	0.08	0.08	0.17	0.32	0.15	0.24	0.02	0.16
TR14-2	0.06	0.20	0.14	0.30	0.21	0.29	0.09	0.19
TR14-3	0.05	0.28	0.10	0.27	0.16	0.23	0.34	0.19
TR14-4	0.07	0.21	0.08	0.23	0.10	0.15	0.22	0.14
TR14-5	0.03	0.29	0.12	0.06	0.14	0.24	0.16	0.13
TR14-6	0.14	0.32	0.09	0.09	0.06	0.25	0.38	0.14
TR15-1	0.13	0.24	0.22	0.19	0.19	0.31	0.31	0.20
TR15-2	0.10	0.18	0.19	0.19	0.10	0.23	0.31	0.16
TR15-3	0.11	0.09	0.15	0.22	0.16	0.15	0.43	0.17
TR16-1	0.13	0.08	0.02	0.02	0.25	0.11	0.36	0.14
TR16-2	0.13	0.05	0.06	0.03	0.35	0.12	0.35	0.18
TR16-3	0.11	0.10	0.27	0.14	0.33	0.12	0.30	0.21
TR16-4	0.06	0.25	0.10	0.05	0.24	0.22	0.10	0.15
TR17-1	0.18	0.23	0.31	0.30	0.09	0.30	0.33	0.21
TR17-2	0.21	0.23	0.35	0.33	0.08	0.30	0.37	0.23
TR17-3	0.17	0.17	0.36	0.32	0.03	0.31	0.37	0.20
TR17-4	0.11	0.20	0.35	0.33	0.11	0.37	0.33	0.22
TR17-5	0.07	0.17	0.25	0.31	0.08	0.30	0.17	0.17
TR18-1	0.03	0.19	0.23	0.25	0.09	0.25	0.21	0.16
TR18-2	0.10	0.18	0.30	0.27	0.21	0.14	0.12	0.20
TR18-3	0.10	0.12	0.21	0.26	0.17	0.12	0.31	0.18
TR18-4	0.06	0.20	0.10	0.05	0.05	0.10	0.21	0.09
TR18-5	0.17	0.15	0.17	0.13	0.17	0.19	0.29	0.17
TR19-1	0.12	0.05	0.19	0.11	0.09	0.28	0.05	0.12
TR19-2	0.15	0.04	0.09	0.17	0.05	0.29	0.07	0.12
TR19-3	0.12	0.04	0.09	0.11	0.18	0.32	0.09	0.14
TR19-4	0.11	0.16	0.16	0.16	0.19	0.34	0.09	0.17
TR20-1	0.21	0.24	0.34	0.32	0.31	0.39	0.29	0.30
TR20-2	0.06	0.27	0.15	0.31	0.40	0.17	0.10	0.26
TR20-3	0.21	0.31	0.13	0.34	0.20	0.12	0.17	0.23
TR20-4	0.09	0.23	0.15	0.32	0.19	0.03	0.40	0.20
TR20-5	0.20	0.29	0.18	0.14	0.19	0.10	0.29	0.19
TR20-6	0.22	0.06	0.03	0.04	0.08	0.03	0.33	0.10
TR21-1	0.24	0.08	0.09	0.12	0.21	0.41	0.03	0.17
TR21-2	0.30	0.12	0.14	0.13	0.19	0.45	0.07	0.19
TR21-3	0.32	0.18	0.09	0.09	0.57	0.31	0.15	0.30
TR21-4	0.20	0.42	0.51	0.51	0.08	0.17	0.15	0.28
TR22-1	0.28	0.21	0.37	0.39	0.28	0.34	0.08	0.30
TR22-2	0.17	0.10	0.11	0.15	0.10	0.03	0.17	0.12
TR22-3	0.06	0.10	0.21	0.16	0.07	0.08	0.16	0.11
TR22-4	0.05	0.24	0.19	0.29	0.63	0.51	0.12	0.34
TR23-1	0.11	0.52	0.62	0.62	0.65	0.28	0.51	0.51
TR23-2	0.18	0.43	0.51	0.51	0.28	0.19	0.32	0.35

Annex I - Details of the Predicted Wind Velocity Ratio (VR_W)

	Base Annual							
Test Point	**N**	**NNE**	**NE**	**ENE**	**E**	**ESE**	**SW**	
Wind speed at infinity	**6.16**	**4.68**	**5.51**	**7.38**	**7.49**	**5.41**	**6.65**	**VR_W**
Wind probability	**0.121**	**0.083**	**0.088**	**0.151**	**0.234**	**0.049**	**0.049**	**0.775**
TR23-3	0.33	0.42	0.50	0.50	0.09	0.03	0.19	0.29
TR24-1	0.16	0.57	0.63	0.56	0.15	0.07	0.39	0.34
TR24-2	0.23	0.54	0.56	0.49	0.15	0.05	0.33	0.32
TR24-3	0.41	0.55	0.61	0.58	0.15	0.05	0.38	0.38
TR24-4	0.45	0.54	0.58	0.55	0.09	0.08	0.44	0.36
TR24-5	0.41	0.45	0.56	0.56	0.06	0.07	0.49	0.34
TR24-6	0.44	0.52	0.51	0.33	0.03	0.07	0.50	0.29
TR24-7	0.51	0.41	0.40	0.36	0.02	0.04	0.47	0.28
TR24-8	0.45	0.37	0.35	0.30	0.06	0.11	0.47	0.26
TR24-9	0.38	0.36	0.35	0.26	0.04	0.08	0.45	0.23
TR25-1	0.13	0.05	0.06	0.11	0.02	0.05	0.09	0.07
TR25-2	0.25	0.34	0.45	0.47	0.04	0.07	0.05	0.24
TR25-3	0.52	0.21	0.20	0.14	0.04	0.09	0.11	0.18
TR25-4	0.45	0.22	0.25	0.23	0.05	0.08	0.06	0.19
TR25-5	0.35	0.19	0.21	0.19	0.09	0.08	0.03	0.17
TR26-1	0.30	0.21	0.22	0.15	0.05	0.08	0.27	0.16
TR26-2	0.29	0.21	0.25	0.21	0.05	0.06	0.05	0.16
TR26-3	0.35	0.12	0.13	0.12	0.05	0.15	0.08	0.13
TR26-4	0.29	0.22	0.24	0.18	0.18	0.21	0.14	0.21
TR26-5	0.33	0.30	0.33	0.27	0.08	0.12	0.07	0.21
TR26-6	0.28	0.36	0.40	0.33	0.14	0.12	0.18	0.25
TR26-7	0.08	0.29	0.33	0.27	0.18	0.06	0.04	0.19
TR26-8	0.55	0.47	0.58	0.62	0.18	0.21	0.24	0.41
TR26-9	0.31	0.30	0.29	0.23	0.20	0.10	0.09	0.23
TR26-10	0.22	0.19	0.07	0.09	0.12	0.06	0.15	0.13
TR26-11	0.29	0.21	0.18	0.16	0.03	0.15	0.09	0.14
TR27-1	0.44	0.21	0.22	0.17	0.08	0.26	0.13	0.20
TR27-2	0.20	0.08	0.04	0.03	0.04	0.27	0.13	0.09
TR27-3	0.27	0.15	0.13	0.09	0.05	0.26	0.17	0.14
TR27-4	0.30	0.11	0.10	0.07	0.09	0.43	0.30	0.16
TR28-1	0.28	0.03	0.04	0.04	0.10	0.14	0.23	0.11
TR28-2	0.22	0.06	0.03	0.01	0.12	0.17	0.24	0.11
TR28-3	0.21	0.08	0.04	0.04	0.09	0.16	0.09	0.10
TR28-4	0.23	0.09	0.08	0.08	0.10	0.15	0.06	0.11
TR29-1	0.37	0.39	0.45	0.45	0.10	0.17	0.21	0.29
TR29-2	0.47	0.40	0.43	0.50	0.08	0.25	0.22	0.32
TR29-3	0.51	0.45	0.49	0.55	0.03	0.28	0.24	0.33
TR29-4	0.61	0.55	0.63	0.66	0.05	0.32	0.28	0.41
TR30-1	0.52	0.44	0.56	0.59	0.11	0.21	0.26	0.37
TR30-2	0.50	0.42	0.54	0.58	0.14	0.23	0.26	0.37
TR30-3	0.50	0.40	0.53	0.56	0.13	0.20	0.23	0.36
TA1-1	0.58	0.14	0.06	0.19	0.32	0.16	0.50	0.29
TA1-2	0.67	0.16	0.23	0.34	0.34	0.06	0.62	0.36
TA1-3	0.65	0.12	0.24	0.41	0.28	0.41	0.63	0.37
TA1-4	0.62	0.14	0.25	0.50	0.16	0.38	0.62	0.35
TA1-5	0.63	0.13	0.09	0.36	0.13	0.35	0.61	0.29
TA1-6	0.64	0.13	0.07	0.23	0.07	0.34	0.35	0.23
TA1-7	0.57	0.18	0.06	0.23	0.04	0.31	0.55	0.23
TA1-8	0.60	0.16	0.04	0.38	0.05	0.33	0.60	0.26
TA1-9	0.58	0.08	0.08	0.25	0.01	0.05	0.56	0.20
TA1-10	0.62	0.25	0.07	0.29	0.12	0.37	0.53	0.28
TA1-11	0.64	0.28	0.09	0.15	0.23	0.31	0.34	0.28
TA1-12	0.57	0.32	0.07	0.10	0.24	0.37	0.28	0.26
TA1-13	0.47	0.34	0.07	0.12	0.30	0.37	0.36	0.28
TA1-14	0.45	0.33	0.06	0.13	0.31	0.39	0.39	0.28
TA1-15	0.44	0.33	0.02	0.12	0.21	0.41	0.41	0.24
TA2-1	0.38	0.42	0.13	0.09	0.42	0.31	0.50	0.32
TA2-2	0.38	0.35	0.11	0.10	0.39	0.31	0.35	0.29

Annex I - Details of the Predicted Wind Velocity Ratio (VR_W)

	Base Annual							
Test Point	**N**	**NNE**	**NE**	**ENE**	**E**	**ESE**	**SW**	
Wind speed at infinity	**6.16**	**4.68**	**5.51**	**7.38**	**7.49**	**5.41**	**6.65**	**VR_W**
Wind probability	**0.121**	**0.083**	**0.088**	**0.151**	**0.234**	**0.049**	**0.049**	**0.775**
TA2-3	0.32	0.34	0.10	0.11	0.39	0.30	0.17	0.27
TA2-4	0.41	0.42	0.16	0.06	0.40	0.32	0.18	0.30
TA2-5	0.32	0.25	0.09	0.09	0.28	0.30	0.10	0.22
TA2-6	0.35	0.39	0.17	0.09	0.27	0.22	0.21	0.25
TA2-7	0.25	0.35	0.12	0.05	0.42	0.31	0.42	0.28
TA3-1	0.35	0.34	0.08	0.13	0.43	0.43	0.32	0.30
TA3-2	0.37	0.34	0.08	0.12	0.42	0.44	0.33	0.31
TA3-3	0.33	0.33	0.10	0.12	0.40	0.43	0.34	0.29
TA3-4	0.26	0.36	0.15	0.10	0.40	0.43	0.36	0.29
TA3-5	0.18	0.30	0.14	0.09	0.37	0.36	0.32	0.25
TA3-6	0.12	0.33	0.17	0.07	0.31	0.31	0.25	0.22
TA3-7	0.08	0.29	0.11	0.06	0.37	0.37	0.23	0.23
TA3-8	0.08	0.14	0.11	0.03	0.20	0.17	0.22	0.13
TA3-9	0.06	0.07	0.07	0.02	0.04	0.06	0.10	0.06
TA3-10	0.23	0.35	0.19	0.03	0.39	0.39	0.36	0.27
TA3-11	0.27	0.26	0.15	0.06	0.19	0.20	0.26	0.19
TA3-12	0.10	0.15	0.13	0.01	0.11	0.07	0.10	0.10
TA3-13	0.32	0.38	0.17	0.07	0.38	0.31	0.24	0.28
TA3-14	0.20	0.22	0.11	0.02	0.26	0.28	0.10	0.18
TA3-15	0.10	0.08	0.05	0.02	0.11	0.11	0.13	0.09
TA3-16	0.35	0.47	0.23	0.03	0.54	0.61	0.48	0.37
TA3-17	0.26	0.41	0.19	0.05	0.35	0.33	0.42	0.27
TA4-1	0.14	0.43	0.50	0.38	0.41	0.27	0.30	0.36
TA4-2	0.14	0.45	0.47	0.32	0.45	0.27	0.13	0.35
TA4-3	0.14	0.43	0.43	0.27	0.45	0.24	0.18	0.33
TA4-4	0.08	0.31	0.29	0.13	0.35	0.16	0.19	0.23
TA4-5	0.02	0.17	0.25	0.12	0.24	0.13	0.19	0.17
TA4-6	0.03	0.18	0.20	0.02	0.25	0.18	0.30	0.16
TA4-7	0.02	0.24	0.19	0.07	0.31	0.29	0.32	0.20
TA4-8	0.04	0.28	0.21	0.11	0.38	0.32	0.32	0.23
TA4-9	0.06	0.31	0.22	0.08	0.40	0.32	0.33	0.25
TA4-10	0.12	0.23	0.10	0.07	0.40	0.27	0.26	0.22
TA4-11	0.08	0.32	0.17	0.05	0.35	0.45	0.26	0.23
TA4-12	0.07	0.25	0.11	0.03	0.30	0.32	0.30	0.18
TA4-13	0.06	0.23	0.14	0.04	0.20	0.24	0.29	0.15
TA4-14	0.06	0.20	0.12	0.04	0.23	0.25	0.23	0.15
TA4-15	0.05	0.12	0.05	0.04	0.26	0.21	0.27	0.14
TA4-16	0.02	0.23	0.12	0.07	0.32	0.27	0.20	0.18
TA4-17	0.02	0.25	0.16	0.03	0.35	0.21	0.16	0.18
TA4-18	0.03	0.23	0.18	0.05	0.28	0.21	0.30	0.18
TA4-19	0.02	0.14	0.11	0.03	0.08	0.17	0.21	0.09
TA4-20	0.04	0.18	0.05	0.07	0.10	0.16	0.08	0.09
TA4-21	0.05	0.12	0.17	0.08	0.27	0.15	0.14	0.15
TA4-22	0.12	0.23	0.29	0.20	0.31	0.06	0.15	0.22
TA4-23	0.12	0.23	0.22	0.13	0.28	0.12	0.20	0.20
TA4-24	0.15	0.22	0.22	0.14	0.21	0.13	0.15	0.18
TA4-25	0.21	0.45	0.55	0.46	0.23	0.16	0.33	0.33
TA4-26	0.23	0.42	0.54	0.45	0.07	0.28	0.30	0.29
TA4-27	0.07	0.11	0.09	0.13	0.09	0.12	0.19	0.11
TA4-28	0.10	0.20	0.23	0.11	0.22	0.18	0.15	0.17
TA4-29	0.10	0.23	0.15	0.08	0.09	0.21	0.11	0.12
TA4-30	0.05	0.19	0.19	0.07	0.18	0.20	0.21	0.14
TA4-31	0.01	0.20	0.19	0.10	0.20	0.20	0.31	0.16
TA4-32	0.01	0.26	0.25	0.11	0.27	0.19	0.21	0.19
TA4-33	0.03	0.26	0.22	0.05	0.28	0.12	0.26	0.18
TA4-34	0.04	0.27	0.19	0.07	0.33	0.22	0.06	0.19
TA4-35	0.04	0.27	0.19	0.07	0.27	0.40	0.29	0.19
TA4-36	0.08	0.08	0.24	0.23	0.06	0.12	0.27	0.14

Annex I - Details of the Predicted Wind Velocity Ratio (VR_W)

	Base Annual							
Test Point	**N**	**NNE**	**NE**	**ENE**	**E**	**ESE**	**SW**	
Wind speed at infinity	**6.16**	**4.68**	**5.51**	**7.38**	**7.49**	**5.41**	**6.65**	**VR_W**
Wind probability	**0.121**	**0.083**	**0.088**	**0.151**	**0.234**	**0.049**	**0.049**	**0.775**
TA4-37	0.01	0.29	0.22	0.05	0.27	0.36	0.29	0.19
TA4-38	0.01	0.27	0.20	0.06	0.24	0.26	0.29	0.17
TA4-39	0.03	0.28	0.24	0.09	0.24	0.21	0.36	0.19
TA4-40	0.08	0.22	0.26	0.20	0.22	0.19	0.36	0.21
TA4-41	0.12	0.21	0.10	0.10	0.21	0.21	0.22	0.16
TA4-42	0.24	0.36	0.53	0.45	0.13	0.21	0.21	0.29
TA5-1	0.56	0.59	0.70	0.68	0.63	0.59	0.25	0.60
TA5-2	0.52	0.59	0.69	0.68	0.62	0.58	0.18	0.59
TA5-3	0.53	0.59	0.69	0.68	0.62	0.52	0.11	0.58
TA5-4	0.45	0.59	0.69	0.68	0.62	0.43	0.27	0.58
TA5-5	0.16	0.55	0.64	0.63	0.61	0.42	0.44	0.52
TA5-6	0.48	0.54	0.64	0.64	0.63	0.40	0.33	0.57
TA5-7	0.53	0.58	0.69	0.68	0.65	0.41	0.24	0.59
TA5-8	0.57	0.59	0.69	0.68	0.64	0.59	0.19	0.61
TA5-9	0.64	0.58	0.69	0.68	0.64	0.59	0.21	0.62
TA5-10	0.64	0.58	0.69	0.68	0.65	0.60	0.20	0.62
TA5-11	0.61	0.58	0.69	0.68	0.66	0.55	0.19	0.61
TA5-12	0.52	0.56	0.67	0.66	0.66	0.44	0.21	0.59
TA5-13	0.46	0.51	0.60	0.60	0.13	0.10	0.26	0.37
TA6-1	0.21	0.26	0.36	0.21	0.09	0.25	0.18	0.20
TA6-2	0.40	0.30	0.34	0.40	0.59	0.55	0.26	0.44
TA6-3	0.47	0.52	0.58	0.64	0.58	0.54	0.16	0.54
TA6-4	0.51	0.40	0.45	0.36	0.54	0.49	0.27	0.46
TA6-5	0.45	0.42	0.45	0.38	0.54	0.50	0.20	0.45
TA6-6	0.53	0.54	0.60	0.64	0.56	0.54	0.06	0.54
TA6-7	0.50	0.53	0.60	0.60	0.51	0.51	0.06	0.51
TA6-8	0.41	0.33	0.31	0.32	0.49	0.51	0.16	0.39
TA7-1	0.20	0.07	0.06	0.03	0.12	0.06	0.18	0.10
TA7-2	0.08	0.05	0.01	0.02	0.12	0.08	0.07	0.07
TA7-3	0.12	0.12	0.01	0.05	0.09	0.26	0.19	0.10
TA7-4	0.05	0.04	0.06	0.11	0.09	0.27	0.28	0.10
TA8-1	0.03	0.02	0.01	0.03	0.04	0.08	0.07	0.04
TA8-2	0.04	0.09	0.02	0.07	0.06	0.07	0.13	0.06
TA8-3	0.03	0.03	0.05	0.11	0.02	0.04	0.13	0.05
TA8-4	0.01	0.07	0.04	0.04	0.03	0.14	0.28	0.06
TA8-5	0.03	0.04	0.03	0.01	0.06	0.01	0.06	0.04
TA8-6	0.07	0.07	0.26	0.22	0.09	0.16	0.24	0.14
TA8-7	0.08	0.14	0.12	0.11	0.12	0.05	0.30	0.12
TA8-8	0.09	0.04	0.02	0.03	0.08	0.20	0.34	0.09
TA8-9	0.04	0.02	0.07	0.02	0.25	0.14	0.15	0.11
TA8-10	0.04	0.17	0.13	0.16	0.30	0.08	0.28	0.18
TA8-11	0.08	0.09	0.04	0.03	0.10	0.18	0.32	0.10
TA8-12	0.08	0.01	0.10	0.06	0.05	0.10	0.25	0.07
TA8-13	0.04	0.05	0.08	0.06	0.09	0.14	0.17	0.08
TA9-1	0.06	0.16	0.13	0.12	0.18	0.15	0.14	0.14
TA9-2	0.02	0.07	0.03	0.07	0.11	0.07	0.07	0.07
TA9-3	0.02	0.08	0.03	0.04	0.08	0.07	0.14	0.06
TA10-1	0.07	0.23	0.17	0.11	0.06	0.01	0.05	0.10
TA10-2	0.02	0.22	0.18	0.13	0.05	0.03	0.14	0.10
TA10-3	0.07	0.09	0.10	0.10	0.05	0.01	0.17	0.08
TA11-1	0.13	0.08	0.12	0.08	0.04	0.09	0.14	0.08
TA11-2	0.11	0.07	0.05	0.10	0.06	0.07	0.06	0.08
TA11-3	0.07	0.13	0.04	0.03	0.17	0.15	0.27	0.11
TA11-4	0.11	0.20	0.02	0.01	0.17	0.11	0.21	0.12
TA11-5	0.10	0.23	0.19	0.14	0.15	0.08	0.31	0.16
TA11-6	0.05	0.06	0.10	0.12	0.08	0.16	0.33	0.10
TA12-1	0.17	0.11	0.11	0.09	0.06	0.10	0.05	0.10
TA12-2	0.26	0.25	0.24	0.19	0.04	0.15	0.08	0.16

Annex I - Details of the Predicted Wind Velocity Ratio (VR_W)

	Base Annual							
Test Point	**N**	**NNE**	**NE**	**ENE**	**E**	**ESE**	**SW**	
Wind speed at infinity	**6.16**	**4.68**	**5.51**	**7.38**	**7.49**	**5.41**	**6.65**	**VR_W**
Wind probability	**0.121**	**0.083**	**0.088**	**0.151**	**0.234**	**0.049**	**0.049**	**0.775**
TA12-3	0.14	0.15	0.15	0.12	0.10	0.15	0.03	0.12
TA12-4	0.27	0.26	0.26	0.21	0.09	0.11	0.05	0.18
TA12-5	0.31	0.05	0.08	0.03	0.27	0.30	0.04	0.17
TA12-6	0.05	0.31	0.32	0.28	0.25	0.24	0.18	0.23
TA12-7	0.11	0.27	0.31	0.27	0.15	0.12	0.14	0.20
TA12-8	0.07	0.43	0.35	0.31	0.08	0.27	0.04	0.20
TA12-9	0.36	0.35	0.26	0.22	0.23	0.31	0.03	0.26
TA13-1	0.35	0.39	0.48	0.41	0.33	0.11	0.14	0.35
TA13-2	0.49	0.44	0.49	0.45	0.41	0.12	0.13	0.40
TA13-3	0.08	0.22	0.26	0.25	0.25	0.46	0.17	0.23
TA13-4	0.19	0.46	0.40	0.34	0.40	0.08	0.10	0.32
TA13-5	0.65	0.58	0.65	0.58	0.12	0.47	0.16	0.43
TA13-6	0.51	0.40	0.40	0.49	0.62	0.15	0.18	0.47
TA13-7	0.68	0.28	0.29	0.12	0.77	0.73	0.13	0.48
TA13-8	0.70	0.24	0.40	0.32	0.68	0.35	0.09	0.48
TA14-1	0.11	0.11	0.05	0.08	0.26	0.13	0.28	0.15
TA14-2	0.10	0.09	0.03	0.07	0.33	0.10	0.22	0.16
TA14-3	0.10	0.09	0.18	0.11	0.35	0.09	0.08	0.19
TA14-4	0.08	0.29	0.06	0.08	0.28	0.21	0.28	0.18
TA14-5	0.08	0.10	0.09	0.11	0.04	0.08	0.22	0.09
TA14-6	0.08	0.23	0.04	0.07	0.05	0.15	0.25	0.09
TA15-1	0.03	0.21	0.12	0.11	0.05	0.12	0.28	0.10
TA15-2	0.06	0.23	0.32	0.24	0.04	0.10	0.25	0.15
TA15-3	0.05	0.07	0.36	0.26	0.02	0.17	0.30	0.14
TA15-4	0.02	0.06	0.12	0.08	0.05	0.06	0.23	0.07
TA15-5	0.03	0.12	0.25	0.18	0.06	0.07	0.19	0.11
TA15-6	0.08	0.03	0.04	0.02	0.27	0.09	0.26	0.13
TA16-1	0.04	0.23	0.36	0.36	0.19	0.17	0.50	0.24
TA16-2	0.05	0.08	0.07	0.02	0.05	0.17	0.38	0.08
TA16-3	0.03	0.17	0.07	0.15	0.20	0.10	0.18	0.14
TA16-4	0.03	0.05	0.07	0.27	0.18	0.09	0.15	0.14
TA16-5	0.21	0.33	0.24	0.15	0.52	0.17	0.15	0.30
TA16-6	0.06	0.07	0.18	0.10	0.16	0.13	0.22	0.13
TA16-7	0.21	0.30	0.43	0.15	0.29	0.20	0.48	0.27
TA16-8	0.20	0.32	0.46	0.18	0.52	0.20	0.53	0.35
TA16-9	0.17	0.29	0.42	0.16	0.45	0.16	0.50	0.31
TA16-10	0.08	0.33	0.35	0.29	0.07	0.26	0.41	0.21
TA16-11	0.09	0.39	0.46	0.42	0.22	0.33	0.36	0.30
TA17-1	0.21	0.10	0.38	0.47	0.20	0.15	0.56	0.29
TA17-2	0.13	0.23	0.17	0.18	0.15	0.20	0.51	0.19
TA17-3	0.16	0.47	0.54	0.58	0.48	0.22	0.44	0.44
TA17-4	0.08	0.57	0.69	0.70	0.73	0.33	0.49	0.57
TA17-5	0.12	0.54	0.64	0.64	0.22	0.09	0.11	0.36
TA17-6	0.07	0.09	0.12	0.13	0.31	0.09	0.06	0.17
TA17-7	0.22	0.61	0.72	0.71	0.37	0.08	0.27	0.46
TA17-8	0.26	0.69	0.85	0.83	0.49	0.30	0.15	0.55
TA18-1	0.56	0.68	0.74	0.66	0.39	0.20	0.69	0.55
TA18-2	0.54	0.66	0.72	0.65	0.35	0.17	0.65	0.52
TA18-3	0.50	0.63	0.69	0.63	0.33	0.14	0.26	0.47
TA18-4	0.50	0.66	0.72	0.65	0.33	0.16	0.34	0.49
TA18-5	0.55	0.69	0.75	0.68	0.37	0.19	0.66	0.54
TA18-6	0.57	0.70	0.75	0.67	0.39	0.20	0.69	0.55
TA18-7	0.58	0.71	0.77	0.69	0.38	0.19	0.71	0.56
TA18-8	0.54	0.70	0.76	0.68	0.36	0.19	0.58	0.53
TA18-9	0.52	0.69	0.75	0.68	0.34	0.18	0.44	0.52
TA18-10	0.46	0.64	0.68	0.62	0.29	0.13	0.23	0.45
TA18-11	0.62	0.74	0.80	0.71	0.36	0.21	0.69	0.57
TA18-12	0.63	0.67	0.76	0.69	0.29	0.21	0.66	0.53

Annex I - Details of the Predicted Wind Velocity Ratio (VR_W)

	Base Annual							
Test Point	**N**	**NNE**	**NE**	**ENE**	**E**	**ESE**	**SW**	
Wind speed at infinity	**6.16**	**4.68**	**5.51**	**7.38**	**7.49**	**5.41**	**6.65**	**VR_w**
Wind probability	**0.121**	**0.083**	**0.088**	**0.151**	**0.234**	**0.049**	**0.049**	**0.775**
TA18-13	0.53	0.38	0.36	0.35	0.18	0.22	0.62	0.34
TA18-14	0.27	0.28	0.22	0.10	0.05	0.19	0.53	0.18
TA19-1	0.33	0.55	0.62	0.45	0.14	0.07	0.29	0.33
TA19-2	0.45	0.57	0.64	0.58	0.14	0.01	0.12	0.37
TA19-3	0.12	0.20	0.25	0.33	0.04	0.08	0.26	0.17
TA19-4	0.32	0.38	0.49	0.50	0.10	0.04	0.35	0.30
TA19-5	0.23	0.61	0.71	0.65	0.16	0.02	0.09	0.36
TA19-6	0.51	0.58	0.69	0.66	0.12	0.08	0.26	0.41
TA19-7	0.29	0.55	0.65	0.51	0.04	0.06	0.23	0.31
TA19-8	0.05	0.17	0.20	0.26	0.04	0.03	0.09	0.12
TA19-9	0.29	0.53	0.61	0.37	0.04	0.07	0.34	0.28
TA19-10	0.10	0.20	0.27	0.31	0.02	0.05	0.17	0.15
TA19-11	0.17	0.29	0.38	0.39	0.03	0.02	0.29	0.20
TA19-12	0.35	0.29	0.33	0.29	0.04	0.07	0.43	0.22
TA19-13	0.12	0.27	0.31	0.21	0.02	0.05	0.16	0.14
TA19-14	0.44	0.14	0.15	0.14	0.14	0.09	0.13	0.18
TA19-15	0.49	0.45	0.55	0.48	0.23	0.12	0.10	0.36
TA19-16	0.40	0.47	0.59	0.53	0.24	0.13	0.23	0.38
TA20-1	0.25	0.18	0.22	0.25	0.02	0.03	0.09	0.15
TA20-2	0.26	0.33	0.42	0.44	0.02	0.01	0.05	0.22
TA20-3	0.06	0.09	0.07	0.05	0.03	0.04	0.11	0.05
TA20-4	0.07	0.08	0.08	0.06	0.02	0.07	0.28	0.07
TA21-1	0.33	0.36	0.45	0.45	0.22	0.09	0.03	0.30
TA21-2	0.09	0.08	0.08	0.06	0.04	0.03	0.06	0.06
TA21-3	0.15	0.04	0.04	0.05	0.03	0.07	0.05	0.06
TA21-4	0.24	0.27	0.29	0.29	0.11	0.07	0.13	0.20
TA21-5	0.08	0.30	0.33	0.33	0.14	0.09	0.11	0.20
TA21-6	0.32	0.45	0.52	0.52	0.21	0.13	0.11	0.34
TA21-7	0.13	0.21	0.24	0.23	0.07	0.04	0.03	0.14
TA21-8	0.07	0.39	0.44	0.45	0.12	0.04	0.03	0.23
TA21-9	0.10	0.33	0.38	0.36	0.08	0.05	0.03	0.19
TA21-10	0.10	0.44	0.50	0.48	0.17	0.09	0.05	0.27
TA21-11	0.17	0.23	0.26	0.25	0.04	0.07	0.03	0.15
TA21-12	0.23	0.17	0.21	0.19	0.06	0.04	0.02	0.14
TA21-13	0.07	0.12	0.17	0.20	0.03	0.01	0.06	0.09
TA21-14	0.25	0.34	0.39	0.36	0.06	0.03	0.02	0.21
TA21-15	0.24	0.49	0.57	0.50	0.18	0.21	0.18	0.33
TA21-16	0.18	0.48	0.55	0.50	0.16	0.10	0.04	0.29
TA21-17	0.30	0.06	0.08	0.09	0.04	0.22	0.18	0.12
TA21-18	0.23	0.12	0.14	0.12	0.06	0.19	0.14	0.13
TA21-19	0.33	0.09	0.10	0.08	0.05	0.02	0.06	0.11
TA22-1	0.23	0.36	0.43	0.33	0.02	0.15	0.07	0.21
TA22-2	0.25	0.28	0.29	0.20	0.08	0.11	0.04	0.18
TA22-3	0.42	0.32	0.34	0.27	0.09	0.09	0.02	0.23
TA22-4	0.44	0.25	0.28	0.26	0.14	0.23	0.13	0.25
TA22-5	0.30	0.33	0.37	0.32	0.10	0.19	0.04	0.24
TA23-1	0.23	0.17	0.18	0.12	0.03	0.10	0.20	0.13
TA23-2	0.16	0.18	0.18	0.12	0.07	0.12	0.40	0.14
TA23-3	0.10	0.16	0.17	0.14	0.03	0.13	0.09	0.10
TA23-4	0.15	0.33	0.35	0.28	0.09	0.06	0.48	0.22
TA23-5	0.20	0.17	0.22	0.22	0.08	0.17	0.10	0.16
TA23-6	0.17	0.06	0.13	0.15	0.02	0.24	0.14	0.11
TA23-7	0.28	0.27	0.30	0.26	0.11	0.02	0.54	0.22
TA23-8	0.30	0.17	0.19	0.19	0.16	0.12	0.04	0.18
TA23-9	0.30	0.24	0.26	0.23	0.08	0.12	0.45	0.21
TA23-10	0.14	0.10	0.09	0.08	0.03	0.19	0.07	0.08
TA23-11	0.25	0.12	0.12	0.12	0.13	0.10	0.17	0.14
TA23-12	0.19	0.06	0.12	0.13	0.15	0.06	0.12	0.13

Annex I - Details of the Predicted Wind Velocity Ratio (VR_W)

	Base Annual							
Test Point	**N**	**NNE**	**NE**	**ENE**	**E**	**ESE**	**SW**	
Wind speed at infinity	**6.16**	**4.68**	**5.51**	**7.38**	**7.49**	**5.41**	**6.65**	**VR_w**
Wind probability	**0.121**	**0.083**	**0.088**	**0.151**	**0.234**	**0.049**	**0.049**	**0.775**
TA23-13	0.07	0.06	0.05	0.08	0.16	0.01	0.12	0.10
TA24-1	0.40	0.01	0.01	0.01	0.13	0.13	0.08	0.12
TA24-2	0.13	0.07	0.08	0.10	0.12	0.12	0.13	0.11
TA24-3	0.15	0.07	0.05	0.01	0.14	0.16	0.10	0.10
TA24-4	0.11	0.05	0.05	0.06	0.10	0.08	0.25	0.09
TA24-5	0.41	0.12	0.17	0.16	0.19	0.22	0.04	0.20
TA24-6	0.34	0.11	0.15	0.12	0.13	0.21	0.03	0.16
TA24-7	0.45	0.06	0.13	0.12	0.04	0.07	0.05	0.14
TA24-8	0.10	0.03	0.01	0.01	0.04	0.04	0.02	0.04
TA24-9	0.03	0.04	0.04	0.04	0.11	0.16	0.05	0.07
TA25-1	0.26	0.12	0.05	0.04	0.05	0.06	0.04	0.09
TA25-2	0.06	0.22	0.21	0.18	0.14	0.15	0.01	0.14
TA25-3	0.07	0.03	0.05	0.07	0.14	0.05	0.04	0.08
TA25-4	0.13	0.26	0.25	0.21	0.15	0.02	0.07	0.17
TA25-5	0.14	0.04	0.02	0.03	0.04	0.03	0.17	0.06
TA25-6	0.08	0.16	0.15	0.11	0.24	0.20	0.18	0.16
TA25-7	0.11	0.07	0.12	0.10	0.24	0.12	0.07	0.14
TA25-8	0.03	0.16	0.11	0.06	0.26	0.23	0.13	0.15
TA25-9	0.16	0.03	0.02	0.02	0.08	0.06	0.11	0.07
TA26-1	0.31	0.25	0.25	0.12	0.12	0.07	0.07	0.18
TA26-2	0.09	0.03	0.01	0.03	0.10	0.27	0.10	0.08
TA26-3	0.08	0.18	0.16	0.12	0.13	0.09	0.08	0.12
TA26-4	0.06	0.02	0.04	0.04	0.16	0.17	0.13	0.09
TA26-5	0.06	0.18	0.15	0.12	0.13	0.17	0.01	0.12
TA27-1	0.40	0.21	0.04	0.17	0.10	0.25	0.17	0.18
TA27-2	0.26	0.27	0.14	0.13	0.02	0.25	0.16	0.14
TA27-3	0.06	0.21	0.23	0.19	0.13	0.05	0.02	0.14
TA27-4	0.12	0.21	0.27	0.22	0.13	0.03	0.05	0.16
TA27-5	0.24	0.19	0.13	0.15	0.06	0.12	0.07	0.13
TA27-6	0.27	0.32	0.31	0.24	0.09	0.20	0.09	0.20
TA27-7	0.32	0.35	0.37	0.30	0.08	0.11	0.08	0.22
TA27-8	0.42	0.35	0.36	0.30	0.06	0.07	0.04	0.23
TA27-9	0.26	0.25	0.25	0.21	0.14	0.28	0.05	0.20
Average LVR	**0.23**	**0.25**	**0.25**	**0.23**	**0.21**	**0.21**	**0.23**	**0.23**
AS01	0.17	0.25	0.12	0.10	0.08	0.22	0.13	0.13
AS02	0.13	0.23	0.15	0.12	0.15	0.10	0.20	0.15
AS03	0.30	0.23	0.15	0.07	0.21	0.21	0.40	0.20
AS04	0.17	0.05	0.02	0.03	0.03	0.36	0.22	0.09
AS05	0.25	0.08	0.09	0.05	0.03	0.06	0.25	0.09
AS06	0.04	0.14	0.08	0.07	0.17	0.28	0.19	0.12
AS07	0.13	0.09	0.11	0.07	0.20	0.07	0.09	0.12
AS08	0.10	0.06	0.12	0.02	0.19	0.10	0.11	0.11
AS09	0.05	0.22	0.07	0.16	0.25	0.33	0.24	0.18
AS10	0.13	0.03	0.02	0.02	0.10	0.22	0.31	0.09
AS11	0.03	0.10	0.04	0.13	0.06	0.07	0.34	0.09
AS12	0.07	0.35	0.10	0.14	0.19	0.40	0.28	0.19
AS13	0.13	0.02	0.02	0.03	0.07	0.16	0.31	0.08
AS14	0.06	0.05	0.07	0.12	0.12	0.18	0.17	0.10
AS15	0.03	0.16	0.04	0.09	0.09	0.12	0.20	0.09
AS16	0.18	0.25	0.08	0.15	0.12	0.25	0.32	0.17
AS17	0.10	0.07	0.02	0.05	0.10	0.13	0.37	0.10
AS18	0.05	0.06	0.02	0.02	0.11	0.05	0.32	0.08
AS19	0.06	0.21	0.11	0.11	0.06	0.18	0.19	0.11
AS20	0.11	0.15	0.11	0.10	0.14	0.21	0.23	0.14
AS21	0.28	0.11	0.05	0.17	0.07	0.13	0.40	0.15
BS01	0.10	0.06	0.03	0.17	0.11	0.17	0.41	0.13
BS02	0.09	0.06	0.05	0.13	0.04	0.10	0.29	0.09
BS03	0.16	0.02	0.12	0.12	0.06	0.11	0.34	0.11

Annex I - Details of the Predicted Wind Velocity Ratio (VR_W)

	Base Annual							
Test Point	**N**	**NNE**	**NE**	**ENE**	**E**	**ESE**	**SW**	
Wind speed at infinity	**6.16**	**4.68**	**5.51**	**7.38**	**7.49**	**5.41**	**6.65**	**VR_w**
Wind probability	**0.121**	**0.083**	**0.088**	**0.151**	**0.234**	**0.049**	**0.049**	**0.775**
BS04	0.18	0.10	0.12	0.14	0.07	0.18	0.41	0.14
BS05	0.15	0.07	0.10	0.15	0.17	0.13	0.41	0.16
BS06	0.08	0.09	0.10	0.04	0.16	0.15	0.13	0.11
BS07	0.03	0.06	0.01	0.04	0.04	0.15	0.15	0.05
BS08	0.02	0.19	0.08	0.09	0.18	0.17	0.23	0.13
BS09	0.02	0.09	0.03	0.08	0.05	0.18	0.23	0.07
BS10	0.02	0.04	0.02	0.08	0.09	0.04	0.14	0.06
BS11	0.12	0.13	0.06	0.01	0.05	0.17	0.27	0.09
BS12	0.14	0.26	0.13	0.11	0.21	0.28	0.32	0.19
BS13	0.12	0.17	0.12	0.03	0.20	0.23	0.03	0.13
BS14	0.04	0.10	0.05	0.02	0.18	0.23	0.10	0.10
BS15	0.08	0.20	0.05	0.10	0.14	0.13	0.20	0.12
BS16	0.07	0.06	0.03	0.01	0.15	0.27	0.12	0.09
CS01	0.16	0.11	0.18	0.44	0.16	0.31	0.22	0.23
CS02	0.05	0.12	0.04	0.09	0.20	0.03	0.12	0.11
CS03	0.09	0.12	0.07	0.15	0.11	0.07	0.11	0.11
CS04	0.12	0.04	0.15	0.39	0.12	0.19	0.19	0.18
CS05	0.07	0.19	0.08	0.27	0.11	0.10	0.13	0.14
CS06	0.19	0.10	0.05	0.16	0.20	0.11	0.04	0.15
CS07	0.15	0.18	0.20	0.16	0.20	0.17	0.13	0.18
CS08	0.17	0.18	0.24	0.28	0.19	0.19	0.29	0.21
CS09	0.17	0.12	0.23	0.29	0.10	0.20	0.23	0.18
CS10	0.16	0.15	0.12	0.08	0.18	0.14	0.24	0.15
CS11	0.19	0.24	0.39	0.42	0.17	0.05	0.29	0.25
CS12	0.21	0.16	0.24	0.27	0.26	0.12	0.17	0.23
CS13	0.08	0.15	0.27	0.27	0.21	0.36	0.05	0.20
CS14	0.08	0.23	0.38	0.38	0.14	0.38	0.02	0.22
CS15	0.10	0.19	0.43	0.42	0.06	0.44	0.04	0.22
DS01	0.67	0.08	0.12	0.12	0.19	0.35	0.15	0.24
DS02	0.53	0.16	0.21	0.22	0.29	0.30	0.16	0.28
DS03	0.40	0.19	0.25	0.25	0.10	0.16	0.14	0.21
DS04	0.33	0.24	0.29	0.26	0.35	0.43	0.25	0.31
DS05	0.09	0.29	0.34	0.22	0.08	0.15	0.06	0.17
DS06	0.04	0.32	0.35	0.36	0.17	0.23	0.15	0.23
DS07	0.02	0.37	0.39	0.46	0.22	0.23	0.08	0.26
DS08	0.21	0.48	0.49	0.53	0.37	0.31	0.04	0.38
ES01	0.29	0.44	0.53	0.55	0.24	0.14	0.12	0.35
ES02	0.40	0.43	0.48	0.51	0.23	0.13	0.11	0.35
ES03	0.32	0.35	0.41	0.36	0.01	0.09	0.58	0.25
ES04	0.06	0.17	0.19	0.19	0.01	0.01	0.04	0.09
ES05	0.21	0.06	0.08	0.08	0.02	0.02	0.09	0.08
ES06	0.40	0.49	0.57	0.52	0.04	0.08	0.55	0.34
ES07	0.30	0.09	0.11	0.10	0.03	0.03	0.13	0.11
ES08	0.56	0.48	0.55	0.53	0.22	0.13	0.12	0.39
ES09	0.28	0.47	0.53	0.48	0.03	0.09	0.47	0.29
ES10	0.02	0.03	0.03	0.02	0.01	0.03	0.06	0.02
ES11	0.14	0.38	0.41	0.39	0.02	0.10	0.54	0.23
ES12	0.06	0.04	0.07	0.06	0.06	0.05	0.49	0.09
ES13	0.06	0.06	0.05	0.03	0.04	0.04	0.27	0.06
ES14	0.12	0.18	0.14	0.06	0.05	0.03	0.37	0.10
Average VR	**0.16**	**0.17**	**0.17**	**0.18**	**0.13**	**0.17**	**0.22**	**0.16**

Annex I - Details of the Predicted Wind Velocity Ratio (VR_W)

	Proposed Annual							
Test Point	**N**	**NNE**	**NE**	**ENE**	**E**	**ESE**	**SW**	
Wind speed at infinity	**6.16**	**4.68**	**5.51**	**7.38**	**7.49**	**5.41**	**6.65**	**VR_w**
Wind probability	**0.121**	**0.083**	**0.088**	**0.151**	**0.234**	**0.049**	**0.049**	**0.775**
AP01	0.07	0.08	0.10	0.08	0.10	0.12	0.27	0.10
AP02	0.22	0.04	0.12	0.10	0.14	0.18	0.31	0.14
AP03	0.26	0.04	0.05	0.12	0.17	0.30	0.48	0.17
AP04	0.26	0.01	0.02	0.01	0.21	0.35	0.54	0.17
AP05	0.23	0.04	0.09	0.08	0.07	0.28	0.46	0.14
AP06	0.26	0.03	0.02	0.02	0.13	0.28	0.38	0.13
AP07	0.26	0.06	0.05	0.05	0.14	0.10	0.29	0.13
AP08	0.30	0.06	0.04	0.08	0.16	0.10	0.26	0.14
AP09	0.33	0.11	0.06	0.09	0.15	0.19	0.22	0.16
AP10	0.31	0.13	0.06	0.10	0.08	0.32	0.07	0.14
AP11	0.13	0.14	0.06	0.11	0.12	0.37	0.10	0.13
AP12	0.02	0.12	0.06	0.02	0.10	0.28	0.10	0.08
AP13	0.03	0.09	0.09	0.05	0.14	0.19	0.11	0.09
AP14	0.12	0.20	0.08	0.08	0.16	0.40	0.21	0.15
AP15	0.04	0.20	0.07	0.08	0.13	0.36	0.45	0.14
AP16	0.04	0.15	0.07	0.19	0.11	0.24	0.44	0.14
AP17	0.03	0.27	0.09	0.17	0.08	0.26	0.31	0.14
AP18	0.04	0.24	0.07	0.19	0.14	0.19	0.36	0.15
AP19	0.07	0.24	0.07	0.19	0.18	0.24	0.35	0.17
AP20	0.15	0.28	0.07	0.20	0.18	0.35	0.29	0.19
AP21	0.12	0.34	0.08	0.21	0.20	0.48	0.20	0.21
AP22	0.06	0.36	0.08	0.20	0.18	0.56	0.07	0.19
AP23	0.16	0.35	0.06	0.21	0.17	0.59	0.03	0.20
AP24	0.32	0.36	0.04	0.20	0.19	0.65	0.13	0.24
AP25	0.42	0.34	0.07	0.16	0.19	0.65	0.27	0.26
AP26	0.45	0.13	0.11	0.02	0.05	0.33	0.41	0.16
AP27	0.47	0.06	0.13	0.02	0.04	0.19	0.41	0.15
AP28	0.50	0.05	0.12	0.07	0.12	0.27	0.50	0.20
AP29	0.49	0.09	0.12	0.13	0.10	0.25	0.49	0.20
AP30	0.52	0.17	0.10	0.13	0.08	0.25	0.36	0.20
AP31	0.53	0.16	0.08	0.09	0.06	0.17	0.27	0.17
BP01	0.11	0.01	0.01	0.01	0.04	0.02	0.04	0.04
BP02	0.08	0.02	0.01	0.05	0.06	0.04	0.35	0.07
BP03	0.06	0.08	0.09	0.08	0.19	0.09	0.24	0.12
BP04	0.04	0.10	0.04	0.04	0.26	0.19	0.23	0.13
BP05	0.05	0.08	0.09	0.04	0.29	0.05	0.09	0.13
BP06	0.11	0.04	0.18	0.05	0.31	0.17	0.43	0.18
BP07	0.10	0.08	0.14	0.09	0.31	0.14	0.43	0.19
BP08	0.07	0.06	0.16	0.07	0.33	0.08	0.10	0.16
BP09	0.28	0.25	0.26	0.29	0.43	0.51	0.04	0.32
BP10	0.26	0.30	0.24	0.27	0.39	0.53	0.08	0.31
BP11	0.26	0.28	0.23	0.22	0.25	0.44	0.02	0.24
BP12	0.26	0.24	0.21	0.17	0.14	0.36	0.05	0.19
BP13	0.22	0.27	0.17	0.13	0.26	0.42	0.04	0.22
BP14	0.17	0.12	0.16	0.05	0.14	0.21	0.14	0.13
BP15	0.12	0.15	0.17	0.02	0.39	0.27	0.19	0.20
BP16	0.03	0.32	0.18	0.02	0.41	0.29	0.46	0.23
BP17	0.07	0.33	0.13	0.03	0.29	0.35	0.33	0.20
BP18	0.14	0.30	0.12	0.02	0.26	0.36	0.40	0.20
BP19	0.13	0.31	0.11	0.04	0.24	0.44	0.26	0.19
BP20	0.10	0.33	0.11	0.07	0.23	0.52	0.11	0.19
BP21	0.12	0.34	0.04	0.09	0.25	0.55	0.04	0.19
BP22	0.10	0.29	0.04	0.12	0.20	0.47	0.07	0.17

Annex I - Details of the Predicted Wind Velocity Ratio (VR_W)

Test Point	Proposed Annual							
	N	NNE	NE	ENE	E	ESE	SW	
Wind speed at infinity	6.16	4.68	5.51	7.38	7.49	5.41	6.65	VR_w
Wind probability	0.121	0.083	0.088	0.151	0.234	0.049	0.049	0.775
BP23	0.11	0.21	0.05	0.10	0.15	0.37	0.10	0.14
BP24	0.09	0.22	0.07	0.14	0.17	0.41	0.06	0.15
BP25	0.08	0.18	0.07	0.13	0.14	0.27	0.05	0.13
BP26	0.06	0.27	0.09	0.09	0.14	0.29	0.07	0.13
BP27	0.06	0.33	0.12	0.16	0.12	0.40	0.25	0.18
BP28	0.09	0.10	0.03	0.11	0.05	0.23	0.23	0.10
BP29	0.03	0.10	0.04	0.11	0.12	0.32	0.31	0.13
BP30	0.05	0.14	0.07	0.07	0.16	0.32	0.49	0.15
BP31	0.06	0.17	0.10	0.12	0.13	0.40	0.53	0.17
BP32	0.07	0.12	0.11	0.14	0.07	0.29	0.51	0.14
BP33	0.19	0.14	0.11	0.13	0.13	0.35	0.45	0.18
CP01	0.20	0.18	0.36	0.31	0.16	0.24	0.20	0.23
CP02	0.21	0.23	0.39	0.37	0.15	0.07	0.19	0.24
CP03	0.22	0.26	0.39	0.37	0.14	0.05	0.22	0.24
CP04	0.24	0.27	0.37	0.38	0.09	0.13	0.21	0.23
CP05	0.26	0.26	0.36	0.39	0.15	0.10	0.18	0.25
CP06	0.29	0.25	0.33	0.37	0.27	0.29	0.23	0.30
CP07	0.27	0.27	0.35	0.36	0.10	0.14	0.29	0.24
CP08	0.23	0.32	0.42	0.42	0.18	0.05	0.11	0.26
CP09	0.21	0.24	0.31	0.23	0.30	0.19	0.04	0.24
CP10	0.07	0.24	0.33	0.28	0.32	0.41	0.14	0.26
CP11	0.10	0.17	0.24	0.24	0.22	0.36	0.21	0.21
CP12	0.12	0.12	0.17	0.18	0.21	0.36	0.24	0.19
CP13	0.18	0.17	0.14	0.20	0.34	0.40	0.23	0.25
CP14	0.17	0.23	0.28	0.26	0.40	0.30	0.23	0.29
CP15	0.20	0.17	0.24	0.21	0.21	0.21	0.32	0.22
CP16	0.22	0.27	0.34	0.30	0.22	0.05	0.32	0.25
CP17	0.18	0.29	0.37	0.32	0.22	0.27	0.13	0.26
CP18	0.08	0.16	0.20	0.18	0.69	0.47	0.34	0.35
CP19	0.20	0.27	0.39	0.33	0.51	0.33	0.38	0.37
CP20	0.15	0.20	0.32	0.27	0.35	0.24	0.41	0.28
CP21	0.12	0.11	0.12	0.12	0.33	0.31	0.38	0.21
CP22	0.07	0.20	0.12	0.18	0.35	0.27	0.42	0.23
CP23	0.09	0.15	0.08	0.08	0.48	0.30	0.36	0.24
CP24	0.06	0.13	0.11	0.11	0.51	0.22	0.31	0.24
CP25	0.03	0.10	0.12	0.13	0.50	0.19	0.30	0.24
CP26	0.08	0.10	0.09	0.10	0.56	0.28	0.30	0.26
CP27	0.18	0.13	0.07	0.09	0.62	0.37	0.28	0.30
CP28	0.22	0.14	0.07	0.11	0.64	0.38	0.20	0.31
CP29	0.21	0.14	0.10	0.15	0.62	0.35	0.19	0.31
CP30	0.19	0.14	0.12	0.16	0.61	0.37	0.08	0.30
CP31	0.18	0.15	0.10	0.12	0.55	0.39	0.14	0.28
CP32	0.10	0.12	0.08	0.20	0.47	0.33	0.15	0.25
CP33	0.04	0.08	0.15	0.33	0.08	0.25	0.15	0.15
CP34	0.15	0.03	0.28	0.34	0.15	0.25	0.11	0.19
DP01	0.06	0.42	0.58	0.49	0.34	0.45	0.16	0.35
DP02	0.16	0.42	0.60	0.47	0.36	0.33	0.15	0.37
DP03	0.45	0.42	0.56	0.46	0.15	0.06	0.10	0.32
DP04	0.54	0.42	0.56	0.46	0.11	0.14	0.04	0.33
DP05	0.34	0.41	0.54	0.45	0.08	0.16	0.09	0.29
DP06	0.27	0.39	0.51	0.41	0.23	0.10	0.14	0.31
DP07	0.40	0.55	0.65	0.61	0.61	0.07	0.14	0.51
DP08	0.13	0.32	0.30	0.46	0.71	0.46	0.19	0.43

Annex I - Details of the Predicted Wind Velocity Ratio (VR_W)

Test Point	Proposed Annual							
	N	NNE	NE	ENE	E	ESE	SW	
Wind speed at infinity	6.16	4.68	5.51	7.38	7.49	5.41	6.65	VR_w
Wind probability	0.121	0.083	0.088	0.151	0.234	0.049	0.049	0.775
DP09	0.12	0.11	0.14	0.35	0.57	0.54	0.20	0.34
DP10	0.16	0.17	0.27	0.09	0.36	0.49	0.17	0.24
DP11	0.11	0.29	0.29	0.28	0.28	0.37	0.08	0.25
DP12	0.05	0.35	0.30	0.45	0.34	0.36	0.15	0.30
DP13	0.16	0.42	0.38	0.51	0.39	0.37	0.16	0.36
DP14	0.27	0.48	0.50	0.54	0.42	0.37	0.11	0.41
DP15	0.36	0.53	0.59	0.57	0.46	0.38	0.18	0.46
DP16	0.31	0.54	0.60	0.58	0.45	0.33	0.26	0.46
DP17	0.14	0.53	0.55	0.58	0.42	0.26	0.28	0.42
DP18	0.07	0.54	0.50	0.62	0.43	0.21	0.29	0.41
DP19	0.04	0.55	0.57	0.70	0.55	0.20	0.32	0.47
DP20	0.05	0.45	0.52	0.63	0.66	0.30	0.40	0.48
DP21	0.08	0.20	0.37	0.35	0.67	0.40	0.43	0.40
DP22	0.09	0.16	0.22	0.24	0.60	0.42	0.35	0.33
DP23	0.31	0.12	0.20	0.16	0.56	0.39	0.26	0.32
DP24	0.44	0.25	0.36	0.32	0.39	0.36	0.24	0.36
DP25	0.47	0.35	0.46	0.46	0.69	0.46	0.22	0.50
DP26	0.48	0.29	0.34	0.40	0.67	0.48	0.13	0.47
DP27	0.46	0.18	0.24	0.24	0.58	0.51	0.08	0.38
DP28	0.34	0.28	0.30	0.36	0.65	0.53	0.10	0.42
DP29	0.19	0.15	0.13	0.15	0.61	0.50	0.18	0.32
DP30	0.07	0.20	0.41	0.29	0.49	0.52	0.22	0.33
EP01	0.33	0.50	0.62	0.58	0.26	0.15	0.10	0.38
EP02	0.24	0.41	0.45	0.39	0.19	0.04	0.08	0.27
EP03	0.35	0.21	0.24	0.23	0.06	0.01	0.03	0.17
EP04	0.58	0.34	0.39	0.38	0.02	0.04	0.33	0.28
EP05	0.36	0.29	0.36	0.35	0.01	0.01	0.35	0.22
EP06	0.27	0.42	0.49	0.47	0.05	0.06	0.09	0.26
EP07	0.15	0.36	0.46	0.45	0.02	0.04	0.25	0.23
EP08	0.28	0.35	0.36	0.32	0.03	0.07	0.44	0.23
EP09	0.40	0.45	0.53	0.48	0.01	0.07	0.43	0.30
EP10	0.48	0.39	0.43	0.41	0.03	0.06	0.39	0.28
EP11	0.41	0.38	0.43	0.40	0.02	0.04	0.35	0.26
EP12	0.32	0.37	0.40	0.36	0.03	0.05	0.33	0.24
EP13	0.30	0.36	0.40	0.34	0.05	0.06	0.30	0.24
EP14	0.22	0.34	0.38	0.33	0.07	0.09	0.27	0.22
EP15	0.18	0.33	0.36	0.31	0.06	0.08	0.36	0.21
EP16	0.20	0.33	0.35	0.30	0.06	0.07	0.42	0.22
EP17	0.27	0.35	0.36	0.30	0.07	0.06	0.57	0.24
EP18	0.33	0.38	0.38	0.31	0.07	0.05	0.47	0.25
EP19	0.31	0.35	0.36	0.31	0.06	0.04	0.45	0.24
EP20	0.19	0.35	0.33	0.24	0.06	0.04	0.50	0.20
EP21	0.06	0.19	0.15	0.09	0.06	0.02	0.42	0.11
EP22	0.17	0.10	0.13	0.10	0.06	0.07	0.38	0.12
EP23	0.28	0.21	0.23	0.24	0.04	0.05	0.53	0.19
EP24	0.27	0.47	0.54	0.50	0.08	0.04	0.51	0.31
EP25	0.09	0.41	0.41	0.38	0.02	0.01	0.48	0.21
EP26	0.09	0.08	0.07	0.07	0.03	0.04	0.37	0.08
EP27	0.38	0.11	0.17	0.15	0.02	0.07	0.52	0.16
EP28	0.64	0.56	0.66	0.61	0.22	0.14	0.65	0.47
EP29	0.58	0.57	0.62	0.60	0.26	0.18	0.67	0.47
EP30	0.52	0.58	0.68	0.66	0.27	0.19	0.65	0.48
EP31	0.41	0.59	0.70	0.67	0.27	0.17	0.59	0.47

Annex I - Details of the Predicted Wind Velocity Ratio (VR_W)

	Proposed Annual							
Test Point	**N**	**NNE**	**NE**	**ENE**	**E**	**ESE**	**SW**	
Wind speed at infinity	**6.16**	**4.68**	**5.51**	**7.38**	**7.49**	**5.41**	**6.65**	**VR_w**
Wind probability	**0.121**	**0.083**	**0.088**	**0.151**	**0.234**	**0.049**	**0.049**	**0.775**
EP32	0.36	0.63	0.74	0.69	0.28	0.16	0.43	0.46
Average SVR	**0.21**	**0.25**	**0.25**	**0.25**	**0.25**	**0.26**	**0.27**	**0.24**
TR1-1	0.11	0.16	0.14	0.13	0.38	0.18	0.41	0.23
TR1-2	0.43	0.22	0.14	0.13	0.29	0.13	0.11	0.24
TR1-3	0.07	0.12	0.07	0.04	0.39	0.22	0.41	0.20
TR1-4	0.38	0.17	0.18	0.18	0.34	0.20	0.12	0.26
TR1-5	0.21	0.21	0.17	0.17	0.20	0.12	0.10	0.18
TR1-6	0.24	0.15	0.08	0.05	0.39	0.18	0.27	0.22
TR1-7	0.20	0.16	0.20	0.21	0.32	0.16	0.35	0.24
TR1-8	0.09	0.19	0.19	0.20	0.14	0.21	0.26	0.17
TR1-9	0.08	0.16	0.15	0.14	0.41	0.21	0.18	0.22
TR1-10	0.28	0.08	0.18	0.22	0.29	0.28	0.26	0.24
TR1-11	0.22	0.25	0.21	0.24	0.08	0.08	0.27	0.18
TR1-12	0.02	0.02	0.09	0.13	0.41	0.21	0.19	0.19
TR1-13	0.05	0.10	0.18	0.21	0.26	0.14	0.22	0.18
TR1-14	0.14	0.30	0.28	0.30	0.12	0.04	0.23	0.20
TR1-15	0.10	0.03	0.06	0.06	0.37	0.16	0.16	0.17
TR1-16	0.06	0.12	0.13	0.13	0.24	0.10	0.19	0.15
TR1-17	0.19	0.31	0.28	0.28	0.19	0.07	0.14	0.22
TR1-18	0.07	0.05	0.06	0.06	0.40	0.24	0.11	0.18
TR1-19	0.04	0.04	0.02	0.03	0.40	0.24	0.21	0.17
TR1-20	0.03	0.32	0.24	0.24	0.25	0.03	0.18	0.20
TR1-21	0.31	0.31	0.35	0.41	0.20	0.41	0.12	0.30
TR1-22	0.46	0.33	0.49	0.53	0.36	0.19	0.24	0.40
TR1-23	0.03	0.34	0.24	0.14	0.17	0.07	0.10	0.16
TR1-24	0.04	0.09	0.10	0.09	0.40	0.28	0.18	0.19
TR1-25	0.07	0.35	0.31	0.23	0.18	0.08	0.05	0.19
TR1-26	0.02	0.09	0.11	0.08	0.40	0.28	0.16	0.19
TR1-27	0.09	0.31	0.28	0.20	0.18	0.09	0.03	0.18
TR1-28	0.34	0.22	0.34	0.28	0.39	0.23	0.17	0.31
TR1-29	0.10	0.27	0.25	0.17	0.10	0.13	0.07	0.15
TR1-30	0.34	0.19	0.30	0.27	0.33	0.12	0.18	0.28
TR1-31	0.07	0.18	0.15	0.09	0.03	0.10	0.08	0.09
TR1-32	0.08	0.22	0.10	0.09	0.36	0.04	0.13	0.19
TR1-33	0.30	0.24	0.26	0.23	0.10	0.18	0.10	0.20
TR1-34	0.19	0.27	0.38	0.35	0.41	0.25	0.32	0.33
TR1-35	0.09	0.16	0.25	0.29	0.11	0.14	0.11	0.16
TR1-36	0.18	0.10	0.04	0.04	0.45	0.06	0.05	0.19
TR1-37	0.18	0.13	0.03	0.10	0.38	0.06	0.06	0.19
TR1-38	0.05	0.19	0.17	0.14	0.46	0.02	0.07	0.22
TR1-39	0.10	0.12	0.04	0.05	0.54	0.13	0.07	0.22
TR1-40	0.05	0.17	0.13	0.08	0.43	0.18	0.05	0.20
TR1-41	0.08	0.12	0.08	0.05	0.49	0.18	0.09	0.21
TR1-42	0.22	0.23	0.34	0.20	0.52	0.15	0.08	0.31
TR1-43	0.32	0.09	0.11	0.06	0.47	0.30	0.04	0.25
TR1-44	0.33	0.20	0.28	0.24	0.40	0.38	0.12	0.30
TR1-45	0.37	0.28	0.36	0.34	0.21	0.38	0.03	0.28
TR1-46	0.23	0.33	0.36	0.18	0.19	0.21	0.06	0.22
TR2-1	0.44	0.32	0.07	0.22	0.22	0.54	0.24	0.27
TR2-2	0.45	0.26	0.04	0.24	0.33	0.42	0.15	0.29
TR2-3	0.47	0.29	0.04	0.24	0.35	0.41	0.24	0.30
TR2-4	0.46	0.33	0.09	0.22	0.37	0.40	0.26	0.31
TR2-5	0.46	0.23	0.05	0.21	0.25	0.22	0.31	0.25
TR2-6	0.33	0.16	0.05	0.13	0.10	0.13	0.20	0.15
TR2-7	0.07	0.30	0.12	0.05	0.29	0.19	0.10	0.17
TR2-8	0.10	0.33	0.18	0.10	0.31	0.22	0.25	0.21
TR2-9	0.11	0.34	0.21	0.16	0.31	0.22	0.31	0.24
TR2-10	0.09	0.36	0.23	0.12	0.29	0.19	0.33	0.22

Annex I - Details of the Predicted Wind Velocity Ratio (VR_W)

	Proposed Annual							
Test Point	**N**	**NNE**	**NE**	**ENE**	**E**	**ESE**	**SW**	
Wind speed at infinity	**6.16**	**4.68**	**5.51**	**7.38**	**7.49**	**5.41**	**6.65**	**VR_w**
Wind probability	**0.121**	**0.083**	**0.088**	**0.151**	**0.234**	**0.049**	**0.049**	**0.775**
TR2-11	0.06	0.36	0.28	0.08	0.31	0.15	0.42	0.22
TR2-12	0.05	0.34	0.25	0.08	0.36	0.19	0.42	0.24
TR2-13	0.13	0.36	0.27	0.07	0.37	0.25	0.38	0.25
TR2-14	0.16	0.38	0.34	0.24	0.37	0.25	0.41	0.30
TR2-15	0.20	0.41	0.43	0.34	0.30	0.25	0.44	0.33
TR2-16	0.18	0.39	0.45	0.38	0.31	0.22	0.28	0.32
TR2-17	0.02	0.38	0.44	0.39	0.33	0.29	0.51	0.32
TR3-1	0.42	0.62	0.67	0.64	0.18	0.13	0.26	0.41
TR3-2	0.40	0.54	0.59	0.55	0.22	0.15	0.06	0.37
TR3-3	0.43	0.68	0.74	0.69	0.30	0.17	0.06	0.46
TR3-4	0.42	0.67	0.74	0.68	0.30	0.14	0.43	0.48
TR3-5	0.48	0.73	0.80	0.73	0.29	0.14	0.64	0.52
TR3-6	0.65	0.49	0.59	0.54	0.20	0.15	0.50	0.43
TR3-7	0.33	0.25	0.31	0.33	0.05	0.04	0.42	0.22
TR3-8	0.24	0.27	0.28	0.22	0.05	0.04	0.58	0.20
TR3-9	0.40	0.17	0.08	0.14	0.03	0.17	0.69	0.18
TR3-10	0.39	0.19	0.07	0.12	0.08	0.19	0.52	0.18
TR3-11	0.32	0.11	0.07	0.03	0.39	0.11	0.50	0.23
TR3-12	0.33	0.19	0.08	0.07	0.35	0.09	0.55	0.24
TR3-13	0.41	0.17	0.04	0.02	0.27	0.09	0.40	0.20
TR3-14	0.53	0.03	0.10	0.02	0.04	0.11	0.47	0.15
TR3-15	0.54	0.08	0.13	0.04	0.05	0.06	0.46	0.16
TR3-16	0.27	0.02	0.03	0.03	0.06	0.04	0.25	0.09
TR4-1	0.61	0.14	0.09	0.04	0.06	0.14	0.29	0.17
TR4-2	0.18	0.01	0.07	0.06	0.15	0.09	0.18	0.11
TR4-3	0.21	0.07	0.13	0.12	0.20	0.10	0.38	0.17
TR4-4	0.22	0.12	0.08	0.03	0.10	0.19	0.22	0.12
TR4-5	0.25	0.03	0.01	0.02	0.17	0.25	0.11	0.12
TR4-6	0.30	0.07	0.06	0.10	0.14	0.27	0.13	0.15
TR4-7	0.33	0.09	0.03	0.10	0.11	0.18	0.14	0.14
TR5-1	0.31	0.13	0.11	0.12	0.18	0.37	0.39	0.20
TR5-2	0.28	0.02	0.02	0.04	0.16	0.18	0.32	0.14
TR5-3	0.25	0.12	0.03	0.02	0.24	0.34	0.28	0.17
TR5-4	0.14	0.20	0.14	0.03	0.32	0.36	0.08	0.19
TR5-5	0.06	0.20	0.06	0.03	0.35	0.39	0.35	0.20
TR5-6	0.01	0.24	0.10	0.09	0.39	0.52	0.44	0.23
TR6-1	0.32	0.06	0.23	0.36	0.34	0.44	0.35	0.31
TR6-2	0.04	0.05	0.03	0.03	0.15	0.13	0.15	0.08
TR6-3	0.02	0.12	0.04	0.05	0.15	0.17	0.14	0.10
TR6-4	0.09	0.20	0.14	0.11	0.11	0.19	0.07	0.12
TR6-5	0.12	0.19	0.11	0.09	0.13	0.14	0.37	0.14
TR7-1	0.07	0.25	0.02	0.03	0.06	0.05	0.05	0.07
TR7-2	0.11	0.26	0.16	0.13	0.05	0.10	0.10	0.12
TR7-3	0.12	0.16	0.11	0.11	0.04	0.08	0.15	0.10
TR8-1	0.14	0.30	0.22	0.14	0.13	0.04	0.43	0.18
TR8-2	0.20	0.27	0.26	0.19	0.10	0.22	0.25	0.19
TR8-3	0.25	0.32	0.22	0.18	0.20	0.22	0.32	0.23
TR9-1	0.24	0.35	0.36	0.26	0.21	0.12	0.24	0.25
TR9-2	0.20	0.33	0.39	0.34	0.25	0.13	0.30	0.28
TR9-3	0.24	0.30	0.37	0.35	0.12	0.14	0.31	0.24
TR9-4	0.27	0.39	0.45	0.45	0.07	0.13	0.18	0.26
TR10-1	0.05	0.20	0.17	0.12	0.44	0.66	0.08	0.25
TR10-2	0.51	0.15	0.19	0.10	0.56	0.50	0.07	0.34
TR10-3	0.32	0.12	0.28	0.33	0.25	0.24	0.03	0.25
TR10-4	0.49	0.26	0.35	0.28	0.31	0.39	0.08	0.32
TR10-5	0.29	0.29	0.27	0.27	0.59	0.11	0.10	0.35
TR10-6	0.25	0.12	0.15	0.18	0.51	0.71	0.17	0.31
TR10-7	0.55	0.37	0.45	0.41	0.35	0.52	0.11	0.40

Annex I - Details of the Predicted Wind Velocity Ratio (VR_W)

	Proposed Annual							
Test Point	**N**	**NNE**	**NE**	**ENE**	**E**	**ESE**	**SW**	
Wind speed at infinity	**6.16**	**4.68**	**5.51**	**7.38**	**7.49**	**5.41**	**6.65**	**VR_w**
Wind probability	**0.121**	**0.083**	**0.088**	**0.151**	**0.234**	**0.049**	**0.049**	**0.775**
TR10-8	0.20	0.45	0.58	0.47	0.51	0.43	0.12	0.43
TR10-9	0.10	0.53	0.65	0.56	0.77	0.36	0.20	0.53
TR10-10	0.40	0.44	0.49	0.59	0.41	0.11	0.03	0.41
TR11-1	0.17	0.13	0.07	0.08	0.05	0.30	0.16	0.11
TR11-2	0.04	0.10	0.08	0.05	0.15	0.32	0.11	0.11
TR11-3	0.28	0.11	0.11	0.08	0.20	0.35	0.14	0.17
TR12-1	0.23	0.16	0.10	0.10	0.05	0.40	0.08	0.13
TR12-2	0.07	0.12	0.11	0.10	0.15	0.27	0.23	0.13
TR12-3	0.11	0.21	0.10	0.09	0.18	0.47	0.31	0.17
TR12-4	0.04	0.17	0.06	0.09	0.13	0.43	0.44	0.14
TR12-5	0.03	0.09	0.06	0.13	0.08	0.27	0.28	0.11
TR13-1	0.35	0.06	0.28	0.42	0.25	0.51	0.02	0.28
TR13-2	0.37	0.01	0.29	0.43	0.24	0.47	0.04	0.28
TR13-3	0.34	0.06	0.26	0.40	0.23	0.49	0.14	0.27
TR13-4	0.33	0.06	0.27	0.39	0.26	0.48	0.09	0.28
TR14-1	0.29	0.15	0.19	0.34	0.38	0.44	0.07	0.29
TR14-2	0.26	0.23	0.18	0.29	0.26	0.38	0.13	0.25
TR14-3	0.22	0.22	0.15	0.25	0.30	0.29	0.26	0.25
TR14-4	0.19	0.22	0.12	0.16	0.31	0.11	0.58	0.23
TR14-5	0.04	0.24	0.08	0.14	0.23	0.09	0.29	0.16
TR14-6	0.11	0.27	0.10	0.17	0.12	0.12	0.46	0.17
TR15-1	0.08	0.22	0.21	0.19	0.19	0.35	0.38	0.20
TR15-2	0.11	0.17	0.20	0.20	0.08	0.29	0.36	0.17
TR15-3	0.12	0.08	0.16	0.23	0.08	0.25	0.46	0.16
TR16-1	0.15	0.07	0.03	0.07	0.17	0.17	0.39	0.13
TR16-2	0.15	0.03	0.04	0.03	0.24	0.16	0.41	0.15
TR16-3	0.13	0.07	0.23	0.10	0.22	0.10	0.35	0.17
TR16-4	0.09	0.24	0.08	0.06	0.11	0.18	0.10	0.11
TR17-1	0.19	0.24	0.33	0.31	0.08	0.30	0.35	0.22
TR17-2	0.22	0.24	0.37	0.34	0.02	0.29	0.37	0.22
TR17-3	0.17	0.18	0.37	0.34	0.12	0.30	0.34	0.23
TR17-4	0.10	0.18	0.37	0.35	0.03	0.36	0.28	0.20
TR17-5	0.08	0.12	0.26	0.35	0.07	0.30	0.15	0.17
TR18-1	0.06	0.23	0.19	0.33	0.08	0.24	0.21	0.18
TR18-2	0.08	0.21	0.26	0.32	0.16	0.14	0.12	0.20
TR18-3	0.07	0.13	0.19	0.28	0.04	0.10	0.37	0.15
TR18-4	0.10	0.29	0.06	0.05	0.07	0.07	0.18	0.11
TR18-5	0.12	0.12	0.10	0.15	0.18	0.17	0.31	0.16
TR19-1	0.12	0.06	0.14	0.12	0.10	0.31	0.04	0.11
TR19-2	0.14	0.04	0.13	0.17	0.09	0.29	0.06	0.12
TR19-3	0.11	0.03	0.12	0.14	0.20	0.32	0.14	0.15
TR19-4	0.10	0.06	0.21	0.19	0.21	0.30	0.09	0.17
TR20-1	0.21	0.30	0.15	0.05	0.12	0.30	0.25	0.16
TR20-2	0.05	0.09	0.22	0.27	0.25	0.25	0.09	0.19
TR20-3	0.16	0.16	0.16	0.24	0.50	0.35	0.12	0.29
TR20-4	0.17	0.28	0.15	0.15	0.17	0.12	0.39	0.19
TR20-5	0.23	0.29	0.11	0.14	0.18	0.11	0.29	0.19
TR20-6	0.22	0.06	0.03	0.04	0.08	0.05	0.32	0.10
TR21-1	0.23	0.09	0.09	0.13	0.18	0.36	0.04	0.16
TR21-2	0.30	0.12	0.14	0.13	0.17	0.39	0.03	0.18
TR21-3	0.31	0.19	0.08	0.09	0.69	0.23	0.24	0.34
TR21-4	0.19	0.40	0.46	0.47	0.07	0.23	0.08	0.26
TR22-1	0.27	0.16	0.31	0.25	0.28	0.36	0.20	0.26
TR22-2	0.19	0.09	0.15	0.11	0.04	0.22	0.38	0.13
TR22-3	0.06	0.06	0.05	0.06	0.06	0.16	0.37	0.09
TR22-4	0.03	0.11	0.13	0.12	0.61	0.53	0.28	0.29
TR23-1	0.10	0.53	0.62	0.61	0.65	0.27	0.50	0.50
TR23-2	0.25	0.44	0.51	0.51	0.30	0.19	0.31	0.36

Annex I - Details of the Predicted Wind Velocity Ratio (VR_W)

	Proposed Annual							
Test Point	**N**	**NNE**	**NE**	**ENE**	**E**	**ESE**	**SW**	
Wind speed at infinity	**6.16**	**4.68**	**5.51**	**7.38**	**7.49**	**5.41**	**6.65**	**VR_w**
Wind probability	**0.121**	**0.083**	**0.088**	**0.151**	**0.234**	**0.049**	**0.049**	**0.775**
TR23-3	0.36	0.43	0.49	0.49	0.08	0.03	0.19	0.29
TR24-1	0.16	0.58	0.64	0.57	0.15	0.07	0.36	0.34
TR24-2	0.23	0.53	0.54	0.48	0.14	0.10	0.28	0.31
TR24-3	0.40	0.54	0.59	0.57	0.14	0.07	0.37	0.37
TR24-4	0.44	0.53	0.58	0.55	0.09	0.08	0.45	0.35
TR24-5	0.42	0.45	0.56	0.56	0.06	0.06	0.50	0.33
TR24-6	0.44	0.45	0.44	0.36	0.02	0.07	0.52	0.28
TR24-7	0.52	0.42	0.45	0.43	0.03	0.02	0.49	0.30
TR24-8	0.47	0.40	0.43	0.39	0.07	0.10	0.47	0.29
TR24-9	0.40	0.36	0.37	0.34	0.06	0.06	0.48	0.26
TR25-1	0.13	0.02	0.05	0.11	0.02	0.05	0.05	0.06
TR25-2	0.26	0.36	0.47	0.52	0.04	0.06	0.06	0.25
TR25-3	0.55	0.22	0.20	0.15	0.04	0.08	0.12	0.18
TR25-4	0.45	0.24	0.26	0.25	0.05	0.08	0.08	0.19
TR25-5	0.36	0.22	0.23	0.21	0.09	0.10	0.08	0.18
TR26-1	0.32	0.28	0.30	0.22	0.02	0.07	0.28	0.18
TR26-2	0.35	0.26	0.30	0.26	0.07	0.12	0.05	0.20
TR26-3	0.39	0.17	0.19	0.18	0.05	0.10	0.12	0.16
TR26-4	0.28	0.22	0.22	0.06	0.18	0.21	0.13	0.18
TR26-5	0.26	0.31	0.33	0.26	0.04	0.11	0.19	0.19
TR26-6	0.22	0.36	0.39	0.32	0.11	0.12	0.10	0.23
TR26-7	0.03	0.29	0.33	0.27	0.15	0.07	0.17	0.19
TR26-8	0.54	0.48	0.59	0.62	0.17	0.20	0.11	0.40
TR26-9	0.28	0.30	0.29	0.24	0.21	0.10	0.09	0.23
TR26-10	0.21	0.20	0.07	0.10	0.13	0.05	0.10	0.13
TR26-11	0.29	0.22	0.18	0.16	0.04	0.18	0.08	0.15
TR27-1	0.45	0.26	0.27	0.23	0.07	0.19	0.03	0.21
TR27-2	0.36	0.16	0.06	0.05	0.06	0.20	0.06	0.13
TR27-3	0.37	0.21	0.20	0.16	0.07	0.17	0.06	0.17
TR27-4	0.29	0.14	0.14	0.12	0.12	0.33	0.11	0.16
TR28-1	0.25	0.04	0.04	0.04	0.11	0.14	0.18	0.11
TR28-2	0.19	0.06	0.03	0.01	0.14	0.17	0.15	0.10
TR28-3	0.18	0.09	0.05	0.04	0.10	0.15	0.11	0.10
TR28-4	0.18	0.10	0.09	0.09	0.10	0.13	0.06	0.11
TR29-1	0.38	0.39	0.44	0.45	0.09	0.17	0.10	0.28
TR29-2	0.47	0.39	0.42	0.48	0.05	0.25	0.10	0.29
TR29-3	0.51	0.45	0.49	0.56	0.02	0.27	0.08	0.32
TR29-4	0.61	0.55	0.63	0.66	0.04	0.31	0.11	0.39
TR30-1	0.51	0.44	0.56	0.60	0.15	0.21	0.12	0.37
TR30-2	0.49	0.42	0.55	0.58	0.18	0.24	0.15	0.38
TR30-3	0.48	0.40	0.53	0.57	0.16	0.22	0.08	0.36
TA1-1	0.59	0.18	0.04	0.20	0.32	0.21	0.53	0.30
TA1-2	0.65	0.18	0.20	0.29	0.35	0.28	0.58	0.36
TA1-3	0.64	0.17	0.20	0.31	0.31	0.21	0.64	0.35
TA1-4	0.62	0.11	0.22	0.40	0.25	0.23	0.62	0.34
TA1-5	0.63	0.07	0.08	0.28	0.22	0.15	0.61	0.28
TA1-6	0.62	0.05	0.06	0.23	0.13	0.16	0.38	0.23
TA1-7	0.56	0.10	0.06	0.22	0.03	0.24	0.44	0.20
TA1-8	0.60	0.12	0.03	0.28	0.11	0.23	0.59	0.25
TA1-9	0.58	0.17	0.08	0.20	0.03	0.23	0.54	0.22
TA1-10	0.62	0.27	0.07	0.22	0.05	0.42	0.51	0.25
TA1-11	0.64	0.26	0.09	0.15	0.03	0.35	0.33	0.22
TA1-12	0.57	0.29	0.07	0.14	0.02	0.49	0.25	0.21
TA1-13	0.47	0.31	0.07	0.16	0.21	0.45	0.34	0.26
TA1-14	0.46	0.31	0.05	0.19	0.24	0.49	0.32	0.27
TA1-15	0.45	0.31	0.02	0.18	0.18	0.58	0.34	0.25
TA2-1	0.37	0.37	0.12	0.15	0.39	0.37	0.47	0.31
TA2-2	0.39	0.34	0.13	0.17	0.38	0.34	0.35	0.30

Annex I - Details of the Predicted Wind Velocity Ratio (VR_W)

	Proposed Annual							
Test Point	**N**	**NNE**	**NE**	**ENE**	**E**	**ESE**	**SW**	
Wind speed at infinity	**6.16**	**4.68**	**5.51**	**7.38**	**7.49**	**5.41**	**6.65**	**VR_w**
Wind probability	**0.121**	**0.083**	**0.088**	**0.151**	**0.234**	**0.049**	**0.049**	**0.775**
TA2-3	0.36	0.33	0.09	0.18	0.39	0.34	0.23	0.29
TA2-4	0.41	0.38	0.17	0.09	0.40	0.37	0.12	0.29
TA2-5	0.37	0.16	0.08	0.15	0.27	0.28	0.14	0.22
TA2-6	0.38	0.41	0.20	0.13	0.27	0.19	0.23	0.26
TA2-7	0.29	0.30	0.12	0.11	0.42	0.37	0.37	0.29
TA3-1	0.35	0.31	0.07	0.20	0.40	0.40	0.33	0.30
TA3-2	0.37	0.30	0.08	0.18	0.38	0.43	0.36	0.30
TA3-3	0.36	0.29	0.10	0.17	0.37	0.44	0.35	0.29
TA3-4	0.35	0.35	0.16	0.16	0.38	0.48	0.35	0.31
TA3-5	0.29	0.31	0.14	0.13	0.38	0.40	0.32	0.28
TA3-6	0.18	0.34	0.17	0.09	0.32	0.32	0.23	0.23
TA3-7	0.06	0.28	0.10	0.06	0.40	0.42	0.21	0.22
TA3-8	0.12	0.15	0.13	0.06	0.19	0.18	0.21	0.14
TA3-9	0.07	0.08	0.07	0.03	0.04	0.06	0.12	0.06
TA3-10	0.33	0.36	0.18	0.08	0.39	0.41	0.36	0.29
TA3-11	0.33	0.27	0.16	0.11	0.19	0.17	0.26	0.21
TA3-12	0.12	0.18	0.16	0.03	0.11	0.08	0.07	0.10
TA3-13	0.32	0.37	0.18	0.10	0.38	0.32	0.25	0.28
TA3-14	0.24	0.22	0.11	0.04	0.27	0.28	0.11	0.19
TA3-15	0.14	0.07	0.05	0.03	0.09	0.08	0.15	0.08
TA3-16	0.37	0.46	0.24	0.05	0.53	0.57	0.47	0.37
TA3-17	0.34	0.42	0.23	0.08	0.35	0.25	0.41	0.29
TA4-1	0.17	0.45	0.52	0.39	0.41	0.27	0.30	0.37
TA4-2	0.13	0.46	0.48	0.33	0.45	0.27	0.13	0.36
TA4-3	0.12	0.43	0.43	0.26	0.45	0.24	0.17	0.33
TA4-4	0.04	0.30	0.28	0.11	0.33	0.15	0.17	0.22
TA4-5	0.02	0.19	0.24	0.06	0.23	0.11	0.20	0.16
TA4-6	0.06	0.20	0.21	0.06	0.25	0.17	0.31	0.18
TA4-7	0.07	0.25	0.19	0.12	0.30	0.27	0.33	0.22
TA4-8	0.09	0.28	0.20	0.13	0.35	0.28	0.35	0.24
TA4-9	0.10	0.31	0.19	0.08	0.37	0.28	0.37	0.24
TA4-10	0.21	0.27	0.13	0.11	0.40	0.28	0.28	0.26
TA4-11	0.10	0.33	0.17	0.08	0.37	0.42	0.27	0.24
TA4-12	0.09	0.25	0.12	0.04	0.32	0.33	0.26	0.20
TA4-13	0.07	0.23	0.14	0.07	0.17	0.22	0.29	0.15
TA4-14	0.07	0.20	0.12	0.05	0.29	0.25	0.28	0.18
TA4-15	0.05	0.18	0.07	0.06	0.31	0.22	0.28	0.18
TA4-16	0.03	0.23	0.11	0.11	0.29	0.24	0.19	0.18
TA4-17	0.04	0.24	0.12	0.08	0.32	0.18	0.17	0.18
TA4-18	0.04	0.23	0.14	0.03	0.25	0.19	0.31	0.17
TA4-19	0.03	0.14	0.09	0.07	0.07	0.16	0.23	0.09
TA4-20	0.02	0.17	0.05	0.05	0.09	0.15	0.07	0.08
TA4-21	0.03	0.13	0.13	0.13	0.26	0.15	0.14	0.16
TA4-22	0.08	0.21	0.24	0.09	0.30	0.06	0.14	0.19
TA4-23	0.09	0.24	0.25	0.12	0.27	0.12	0.19	0.20
TA4-24	0.12	0.22	0.21	0.12	0.20	0.14	0.14	0.17
TA4-25	0.21	0.45	0.55	0.46	0.24	0.16	0.33	0.34
TA4-26	0.21	0.42	0.52	0.44	0.08	0.26	0.30	0.29
TA4-27	0.05	0.11	0.09	0.06	0.08	0.10	0.19	0.09
TA4-28	0.06	0.18	0.19	0.05	0.21	0.16	0.14	0.15
TA4-29	0.05	0.22	0.13	0.10	0.10	0.20	0.12	0.12
TA4-30	0.01	0.18	0.15	0.08	0.16	0.18	0.21	0.13
TA4-31	0.02	0.20	0.15	0.05	0.19	0.19	0.31	0.15
TA4-32	0.03	0.26	0.21	0.05	0.25	0.17	0.24	0.17
TA4-33	0.03	0.25	0.18	0.10	0.27	0.11	0.28	0.18
TA4-34	0.03	0.27	0.15	0.11	0.31	0.21	0.07	0.19
TA4-35	0.04	0.29	0.17	0.12	0.25	0.39	0.29	0.20
TA4-36	0.07	0.08	0.21	0.14	0.06	0.12	0.27	0.12

Annex I - Details of the Predicted Wind Velocity Ratio (VR_W)

	Proposed Annual							
Test Point	**N**	**NNE**	**NE**	**ENE**	**E**	**ESE**	**SW**	
Wind speed at infinity	**6.16**	**4.68**	**5.51**	**7.38**	**7.49**	**5.41**	**6.65**	**VR_w**
Wind probability	**0.121**	**0.083**	**0.088**	**0.151**	**0.234**	**0.049**	**0.049**	**0.775**
TA4-37	0.03	0.31	0.19	0.04	0.26	0.34	0.29	0.19
TA4-38	0.02	0.29	0.17	0.04	0.23	0.25	0.29	0.17
TA4-39	0.01	0.29	0.18	0.05	0.23	0.20	0.36	0.17
TA4-40	0.05	0.24	0.20	0.08	0.22	0.20	0.36	0.18
TA4-41	0.09	0.24	0.04	0.07	0.21	0.22	0.22	0.15
TA4-42	0.22	0.35	0.51	0.43	0.13	0.20	0.21	0.28
TA5-1	0.56	0.59	0.69	0.67	0.62	0.59	0.19	0.60
TA5-2	0.53	0.59	0.68	0.67	0.61	0.58	0.29	0.59
TA5-3	0.54	0.58	0.68	0.66	0.60	0.52	0.19	0.58
TA5-4	0.46	0.58	0.67	0.65	0.61	0.42	0.17	0.56
TA5-5	0.21	0.54	0.62	0.61	0.59	0.42	0.42	0.51
TA5-6	0.49	0.55	0.63	0.62	0.62	0.40	0.32	0.56
TA5-7	0.54	0.58	0.67	0.66	0.63	0.41	0.24	0.58
TA5-8	0.58	0.58	0.68	0.67	0.62	0.58	0.17	0.60
TA5-9	0.65	0.58	0.68	0.67	0.63	0.59	0.23	0.61
TA5-10	0.66	0.58	0.68	0.67	0.63	0.60	0.20	0.62
TA5-11	0.62	0.58	0.68	0.67	0.65	0.55	0.21	0.61
TA5-12	0.53	0.56	0.66	0.65	0.65	0.44	0.21	0.58
TA5-13	0.46	0.51	0.60	0.59	0.14	0.09	0.26	0.37
TA6-1	0.20	0.26	0.36	0.20	0.10	0.25	0.05	0.19
TA6-2	0.40	0.31	0.36	0.41	0.58	0.55	0.08	0.43
TA6-3	0.49	0.52	0.57	0.64	0.57	0.55	0.11	0.53
TA6-4	0.51	0.39	0.44	0.35	0.53	0.50	0.08	0.44
TA6-5	0.49	0.42	0.43	0.38	0.53	0.51	0.15	0.45
TA6-6	0.55	0.53	0.58	0.62	0.55	0.54	0.12	0.54
TA6-7	0.50	0.52	0.58	0.59	0.50	0.50	0.08	0.50
TA6-8	0.25	0.33	0.31	0.33	0.49	0.52	0.18	0.36
TA7-1	0.18	0.14	0.03	0.03	0.19	0.05	0.12	0.12
TA7-2	0.09	0.04	0.01	0.02	0.11	0.08	0.03	0.07
TA7-3	0.10	0.11	0.02	0.05	0.07	0.04	0.09	0.07
TA7-4	0.19	0.03	0.07	0.06	0.16	0.07	0.03	0.11
TA8-1	0.06	0.02	0.01	0.02	0.04	0.04	0.07	0.04
TA8-2	0.03	0.12	0.03	0.06	0.10	0.01	0.03	0.06
TA8-3	0.03	0.06	0.01	0.10	0.06	0.03	0.05	0.06
TA8-4	0.04	0.03	0.04	0.04	0.05	0.16	0.26	0.06
TA8-5	0.04	0.05	0.03	0.01	0.07	0.07	0.06	0.05
TA8-6	0.08	0.05	0.25	0.21	0.08	0.37	0.26	0.15
TA8-7	0.06	0.14	0.11	0.12	0.14	0.15	0.37	0.14
TA8-8	0.03	0.03	0.06	0.07	0.10	0.05	0.39	0.09
TA8-9	0.07	0.15	0.11	0.06	0.06	0.27	0.19	0.10
TA8-10	0.05	0.19	0.13	0.05	0.28	0.06	0.30	0.16
TA8-11	0.08	0.08	0.11	0.10	0.15	0.36	0.29	0.14
TA8-12	0.10	0.05	0.11	0.03	0.09	0.32	0.32	0.11
TA8-13	0.05	0.05	0.11	0.07	0.07	0.52	0.20	0.11
TA9-1	0.09	0.15	0.13	0.11	0.16	0.13	0.06	0.13
TA9-2	0.02	0.06	0.04	0.07	0.12	0.09	0.12	0.08
TA9-3	0.01	0.08	0.03	0.04	0.08	0.05	0.06	0.06
TA10-1	0.02	0.22	0.15	0.08	0.01	0.02	0.07	0.07
TA10-2	0.06	0.21	0.18	0.11	0.02	0.02	0.15	0.10
TA10-3	0.08	0.09	0.09	0.11	0.09	0.05	0.16	0.10
TA11-1	0.12	0.08	0.10	0.08	0.09	0.11	0.17	0.11
TA11-2	0.11	0.06	0.08	0.11	0.04	0.06	0.09	0.08
TA11-3	0.05	0.11	0.04	0.03	0.08	0.24	0.18	0.09
TA11-4	0.10	0.18	0.01	0.01	0.09	0.09	0.15	0.09
TA11-5	0.10	0.23	0.17	0.14	0.09	0.14	0.29	0.15
TA11-6	0.05	0.09	0.10	0.14	0.14	0.16	0.32	0.13
TA12-1	0.19	0.14	0.14	0.12	0.02	0.10	0.09	0.10
TA12-2	0.25	0.26	0.25	0.22	0.03	0.20	0.12	0.16

Annex I - Details of the Predicted Wind Velocity Ratio (VR_W)

	Proposed Annual							
Test Point	**N**	**NNE**	**NE**	**ENE**	**E**	**ESE**	**SW**	
Wind speed at infinity	**6.16**	**4.68**	**5.51**	**7.38**	**7.49**	**5.41**	**6.65**	**VR_w**
Wind probability	**0.121**	**0.083**	**0.088**	**0.151**	**0.234**	**0.049**	**0.049**	**0.775**
TA12-3	0.13	0.16	0.15	0.13	0.06	0.15	0.09	0.11
TA12-4	0.27	0.28	0.27	0.23	0.05	0.03	0.06	0.17
TA12-5	0.30	0.06	0.09	0.04	0.17	0.27	0.13	0.15
TA12-6	0.07	0.33	0.33	0.26	0.18	0.11	0.17	0.21
TA12-7	0.11	0.35	0.31	0.22	0.19	0.18	0.04	0.20
TA12-8	0.07	0.45	0.43	0.33	0.16	0.11	0.29	0.24
TA12-9	0.36	0.36	0.32	0.26	0.04	0.19	0.35	0.23
TA13-1	0.37	0.39	0.47	0.40	0.34	0.06	0.07	0.34
TA13-2	0.49	0.44	0.50	0.45	0.41	0.10	0.13	0.41
TA13-3	0.09	0.22	0.26	0.25	0.23	0.52	0.06	0.22
TA13-4	0.19	0.47	0.41	0.36	0.38	0.17	0.16	0.33
TA13-5	0.65	0.59	0.65	0.59	0.12	0.35	0.16	0.42
TA13-6	0.50	0.40	0.40	0.49	0.64	0.20	0.17	0.48
TA13-7	0.65	0.28	0.28	0.19	0.76	0.74	0.15	0.48
TA13-8	0.71	0.24	0.39	0.30	0.69	0.43	0.12	0.48
TA14-1	0.11	0.07	0.07	0.01	0.20	0.18	0.31	0.13
TA14-2	0.10	0.09	0.03	0.01	0.24	0.14	0.18	0.12
TA14-3	0.08	0.15	0.16	0.02	0.23	0.15	0.09	0.13
TA14-4	0.12	0.27	0.13	0.15	0.10	0.11	0.30	0.15
TA14-5	0.12	0.09	0.02	0.14	0.04	0.04	0.25	0.09
TA14-6	0.07	0.22	0.09	0.12	0.11	0.06	0.29	0.12
TA15-1	0.04	0.11	0.14	0.09	0.14	0.03	0.22	0.11
TA15-2	0.05	0.13	0.29	0.14	0.07	0.08	0.15	0.12
TA15-3	0.04	0.14	0.34	0.15	0.05	0.13	0.29	0.13
TA15-4	0.02	0.08	0.10	0.06	0.02	0.05	0.26	0.06
TA15-5	0.03	0.12	0.25	0.04	0.02	0.07	0.18	0.08
TA15-6	0.10	0.06	0.04	0.05	0.13	0.07	0.28	0.10
TA16-1	0.04	0.24	0.34	0.25	0.13	0.18	0.52	0.21
TA16-2	0.08	0.02	0.04	0.11	0.10	0.18	0.38	0.11
TA16-3	0.07	0.12	0.08	0.05	0.24	0.15	0.17	0.13
TA16-4	0.02	0.08	0.12	0.19	0.16	0.23	0.15	0.13
TA16-5	0.19	0.23	0.06	0.09	0.60	0.30	0.16	0.29
TA16-6	0.06	0.05	0.18	0.07	0.22	0.07	0.21	0.13
TA16-7	0.17	0.29	0.22	0.17	0.28	0.19	0.46	0.24
TA16-8	0.16	0.31	0.21	0.02	0.50	0.24	0.52	0.28
TA16-9	0.15	0.29	0.14	0.03	0.41	0.22	0.49	0.24
TA16-10	0.12	0.35	0.40	0.31	0.09	0.24	0.40	0.23
TA16-11	0.09	0.41	0.48	0.43	0.23	0.31	0.36	0.31
TA17-1	0.13	0.25	0.32	0.33	0.12	0.21	0.56	0.23
TA17-2	0.20	0.21	0.42	0.50	0.18	0.21	0.53	0.30
TA17-3	0.12	0.44	0.31	0.57	0.62	0.23	0.49	0.45
TA17-4	0.08	0.57	0.64	0.68	0.75	0.33	0.48	0.56
TA17-5	0.13	0.56	0.64	0.62	0.22	0.09	0.13	0.35
TA17-6	0.06	0.08	0.09	0.10	0.28	0.08	0.08	0.14
TA17-7	0.27	0.64	0.74	0.73	0.37	0.07	0.29	0.47
TA17-8	0.31	0.71	0.86	0.83	0.49	0.31	0.16	0.56
TA18-1	0.54	0.68	0.75	0.66	0.40	0.20	0.69	0.55
TA18-2	0.53	0.66	0.72	0.65	0.36	0.17	0.63	0.53
TA18-3	0.50	0.63	0.68	0.62	0.33	0.15	0.18	0.47
TA18-4	0.49	0.65	0.71	0.65	0.33	0.17	0.28	0.49
TA18-5	0.53	0.69	0.75	0.68	0.37	0.20	0.65	0.55
TA18-6	0.55	0.70	0.76	0.67	0.39	0.21	0.69	0.56
TA18-7	0.55	0.72	0.78	0.70	0.39	0.20	0.71	0.57
TA18-8	0.52	0.70	0.76	0.69	0.36	0.20	0.56	0.54
TA18-9	0.50	0.69	0.75	0.68	0.34	0.19	0.43	0.52
TA18-10	0.43	0.65	0.70	0.64	0.30	0.12	0.23	0.46
TA18-11	0.61	0.75	0.81	0.72	0.37	0.19	0.69	0.58
TA18-12	0.62	0.68	0.77	0.70	0.31	0.19	0.65	0.54

Annex I - Details of the Predicted Wind Velocity Ratio (VR_W)

	Proposed Annual							
Test Point	**N**	**NNE**	**NE**	**ENE**	**E**	**ESE**	**SW**	
Wind speed at infinity	**6.16**	**4.68**	**5.51**	**7.38**	**7.49**	**5.41**	**6.65**	**VR_w**
Wind probability	**0.121**	**0.083**	**0.088**	**0.151**	**0.234**	**0.049**	**0.049**	**0.775**
TA18-13	0.53	0.37	0.36	0.37	0.20	0.19	0.60	0.35
TA18-14	0.24	0.24	0.16	0.06	0.05	0.17	0.53	0.16
TA19-1	0.33	0.56	0.63	0.46	0.14	0.07	0.40	0.34
TA19-2	0.45	0.56	0.63	0.58	0.14	0.02	0.24	0.37
TA19-3	0.12	0.20	0.25	0.33	0.04	0.07	0.35	0.17
TA19-4	0.32	0.37	0.48	0.49	0.09	0.04	0.43	0.30
TA19-5	0.22	0.60	0.70	0.64	0.16	0.02	0.18	0.36
TA19-6	0.50	0.57	0.67	0.65	0.12	0.08	0.37	0.41
TA19-7	0.25	0.52	0.60	0.42	0.04	0.06	0.32	0.28
TA19-8	0.08	0.21	0.24	0.27	0.04	0.02	0.10	0.13
TA19-9	0.25	0.47	0.52	0.24	0.05	0.07	0.40	0.24
TA19-10	0.08	0.26	0.35	0.37	0.02	0.05	0.19	0.17
TA19-11	0.17	0.31	0.39	0.39	0.04	0.03	0.31	0.21
TA19-12	0.35	0.28	0.33	0.30	0.02	0.04	0.42	0.22
TA19-13	0.16	0.25	0.30	0.29	0.03	0.04	0.16	0.16
TA19-14	0.41	0.14	0.16	0.13	0.13	0.07	0.12	0.17
TA19-15	0.46	0.39	0.49	0.43	0.23	0.13	0.10	0.34
TA19-16	0.37	0.39	0.50	0.46	0.24	0.14	0.25	0.34
TA20-1	0.26	0.14	0.19	0.29	0.02	0.03	0.04	0.15
TA20-2	0.27	0.34	0.44	0.46	0.03	0.02	0.04	0.23
TA20-3	0.17	0.09	0.09	0.07	0.03	0.04	0.13	0.08
TA20-4	0.08	0.12	0.11	0.06	0.03	0.06	0.31	0.08
TA21-1	0.32	0.36	0.44	0.44	0.21	0.10	0.03	0.30
TA21-2	0.08	0.11	0.10	0.09	0.03	0.04	0.06	0.07
TA21-3	0.19	0.06	0.07	0.08	0.03	0.07	0.03	0.07
TA21-4	0.24	0.30	0.33	0.32	0.12	0.07	0.11	0.22
TA21-5	0.09	0.34	0.38	0.37	0.14	0.08	0.14	0.22
TA21-6	0.30	0.45	0.52	0.52	0.21	0.12	0.13	0.33
TA21-7	0.13	0.22	0.24	0.23	0.07	0.03	0.03	0.14
TA21-8	0.08	0.39	0.44	0.45	0.13	0.04	0.07	0.24
TA21-9	0.11	0.33	0.37	0.35	0.08	0.05	0.02	0.19
TA21-10	0.11	0.40	0.46	0.43	0.16	0.09	0.08	0.26
TA21-11	0.16	0.07	0.08	0.09	0.03	0.07	0.01	0.08
TA21-12	0.22	0.16	0.19	0.18	0.06	0.05	0.04	0.13
TA21-13	0.06	0.11	0.16	0.09	0.03	0.01	0.04	0.07
TA21-14	0.25	0.34	0.39	0.36	0.06	0.03	0.04	0.21
TA21-15	0.23	0.48	0.56	0.51	0.19	0.19	0.08	0.32
TA21-16	0.17	0.46	0.54	0.49	0.16	0.10	0.07	0.29
TA21-17	0.30	0.10	0.13	0.13	0.09	0.21	0.11	0.14
TA21-18	0.26	0.13	0.15	0.14	0.07	0.18	0.11	0.14
TA21-19	0.37	0.09	0.09	0.06	0.05	0.02	0.10	0.11
TA22-1	0.20	0.36	0.43	0.33	0.06	0.15	0.04	0.21
TA22-2	0.24	0.28	0.29	0.21	0.08	0.10	0.04	0.17
TA22-3	0.41	0.32	0.34	0.27	0.09	0.08	0.06	0.23
TA22-4	0.44	0.25	0.29	0.27	0.15	0.23	0.07	0.25
TA22-5	0.32	0.34	0.38	0.33	0.12	0.18	0.03	0.24
TA23-1	0.22	0.23	0.25	0.19	0.01	0.05	0.19	0.15
TA23-2	0.20	0.22	0.23	0.17	0.03	0.09	0.39	0.16
TA23-3	0.05	0.18	0.20	0.16	0.02	0.11	0.09	0.11
TA23-4	0.21	0.36	0.38	0.32	0.07	0.05	0.47	0.24
TA23-5	0.12	0.11	0.21	0.23	0.07	0.13	0.11	0.14
TA23-6	0.10	0.05	0.07	0.11	0.02	0.19	0.14	0.08
TA23-7	0.24	0.29	0.32	0.29	0.09	0.02	0.53	0.23
TA23-8	0.17	0.17	0.18	0.19	0.16	0.11	0.12	0.17
TA23-9	0.23	0.26	0.29	0.26	0.07	0.07	0.44	0.21
TA23-10	0.12	0.09	0.09	0.07	0.05	0.12	0.07	0.08
TA23-11	0.05	0.12	0.11	0.11	0.10	0.04	0.17	0.10
TA23-12	0.10	0.07	0.11	0.13	0.14	0.06	0.10	0.12

Annex I - Details of the Predicted Wind Velocity Ratio (VR_W)

	Proposed Annual							
Test Point	**N**	**NNE**	**NE**	**ENE**	**E**	**ESE**	**SW**	
Wind speed at infinity	**6.16**	**4.68**	**5.51**	**7.38**	**7.49**	**5.41**	**6.65**	**VR_w**
Wind probability	**0.121**	**0.083**	**0.088**	**0.151**	**0.234**	**0.049**	**0.049**	**0.775**
TA23-13	0.14	0.03	0.03	0.03	0.16	0.01	0.13	0.10
TA24-1	0.35	0.01	0.01	0.01	0.15	0.12	0.09	0.11
TA24-2	0.06	0.06	0.07	0.09	0.14	0.11	0.10	0.09
TA24-3	0.22	0.07	0.07	0.03	0.16	0.16	0.14	0.12
TA24-4	0.06	0.06	0.05	0.07	0.11	0.07	0.07	0.07
TA24-5	0.39	0.12	0.19	0.17	0.20	0.21	0.05	0.20
TA24-6	0.34	0.12	0.18	0.16	0.15	0.21	0.09	0.18
TA24-7	0.38	0.06	0.13	0.14	0.06	0.04	0.15	0.13
TA24-8	0.08	0.03	0.01	0.01	0.03	0.05	0.08	0.03
TA24-9	0.05	0.05	0.05	0.05	0.12	0.15	0.18	0.08
TA25-1	0.24	0.12	0.05	0.04	0.06	0.06	0.21	0.10
TA25-2	0.02	0.23	0.21	0.18	0.15	0.15	0.06	0.15
TA25-3	0.06	0.04	0.07	0.08	0.16	0.04	0.07	0.09
TA25-4	0.10	0.26	0.25	0.20	0.17	0.02	0.13	0.17
TA25-5	0.12	0.03	0.03	0.03	0.04	0.02	0.04	0.05
TA25-6	0.05	0.16	0.14	0.10	0.30	0.21	0.06	0.17
TA25-7	0.03	0.08	0.12	0.09	0.29	0.09	0.07	0.14
TA25-8	0.05	0.16	0.10	0.06	0.33	0.23	0.18	0.17
TA25-9	0.02	0.04	0.02	0.04	0.09	0.14	0.16	0.07
TA26-1	0.30	0.25	0.26	0.12	0.13	0.08	0.06	0.17
TA26-2	0.08	0.03	0.02	0.03	0.10	0.26	0.12	0.08
TA26-3	0.06	0.18	0.16	0.12	0.13	0.09	0.12	0.12
TA26-4	0.05	0.03	0.05	0.04	0.18	0.17	0.02	0.09
TA26-5	0.04	0.18	0.15	0.11	0.14	0.17	0.06	0.12
TA27-1	0.38	0.22	0.04	0.17	0.14	0.28	0.05	0.18
TA27-2	0.26	0.27	0.14	0.13	0.07	0.28	0.08	0.16
TA27-3	0.09	0.22	0.24	0.20	0.13	0.06	0.01	0.15
TA27-4	0.10	0.20	0.27	0.22	0.14	0.03	0.04	0.16
TA27-5	0.24	0.19	0.12	0.16	0.10	0.12	0.04	0.14
TA27-6	0.25	0.31	0.31	0.24	0.08	0.22	0.07	0.20
TA27-7	0.32	0.35	0.37	0.30	0.06	0.13	0.04	0.22
TA27-8	0.41	0.34	0.35	0.31	0.09	0.09	0.06	0.24
TA27-9	0.26	0.26	0.25	0.22	0.17	0.30	0.05	0.21
Average LVR	**0.23**	**0.25**	**0.25**	**0.23**	**0.22**	**0.22**	**0.24**	**0.23**
AS01	0.15	0.08	0.11	0.10	0.07	0.14	0.35	0.12
AS02	0.09	0.02	0.14	0.09	0.03	0.17	0.39	0.10
AS03	0.26	0.02	0.14	0.05	0.13	0.13	0.54	0.15
AS04	0.24	0.05	0.02	0.02	0.04	0.21	0.33	0.09
AS05	0.30	0.06	0.10	0.03	0.05	0.12	0.30	0.11
AS06	0.27	0.16	0.09	0.09	0.19	0.31	0.19	0.17
AS07	0.17	0.10	0.08	0.06	0.05	0.25	0.35	0.11
AS08	0.12	0.16	0.10	0.01	0.11	0.25	0.42	0.12
AS09	0.10	0.22	0.04	0.17	0.19	0.45	0.21	0.18
AS10	0.26	0.02	0.01	0.03	0.08	0.08	0.34	0.10
AS11	0.13	0.25	0.01	0.05	0.17	0.40	0.51	0.17
AS12	0.08	0.34	0.08	0.20	0.15	0.55	0.15	0.19
AS13	0.21	0.04	0.01	0.05	0.05	0.11	0.09	0.07
AS14	0.13	0.13	0.03	0.10	0.13	0.37	0.39	0.15
AS15	0.08	0.27	0.01	0.05	0.21	0.53	0.37	0.17
AS16	0.16	0.26	0.07	0.20	0.12	0.40	0.34	0.18
AS17	0.32	0.08	0.02	0.07	0.16	0.19	0.17	0.15
AS18	0.27	0.12	0.03	0.13	0.16	0.32	0.09	0.16
AS19	0.15	0.19	0.08	0.09	0.16	0.26	0.35	0.16
AS20	0.03	0.15	0.08	0.06	0.13	0.24	0.30	0.12
AS21	0.08	0.11	0.05	0.21	0.20	0.20	0.48	0.17
BS01	0.02	0.10	0.04	0.26	0.06	0.08	0.52	0.13
BS02	0.06	0.06	0.03	0.23	0.03	0.09	0.42	0.11
BS03	0.05	0.17	0.10	0.16	0.10	0.29	0.26	0.13

Annex I - Details of the Predicted Wind Velocity Ratio (VR_W)

	Proposed Annual							
Test Point	**N**	**NNE**	**NE**	**ENE**	**E**	**ESE**	**SW**	
Wind speed at infinity	**6.16**	**4.68**	**5.51**	**7.38**	**7.49**	**5.41**	**6.65**	**VR_w**
Wind probability	**0.121**	**0.083**	**0.088**	**0.151**	**0.234**	**0.049**	**0.049**	**0.775**
BS04	0.07	0.19	0.10	0.18	0.24	0.36	0.35	0.19
BS05	0.03	0.23	0.10	0.11	0.24	0.41	0.25	0.18
BS06	0.05	0.15	0.06	0.07	0.04	0.24	0.11	0.08
BS07	0.09	0.04	0.02	0.03	0.13	0.18	0.18	0.09
BS08	0.05	0.10	0.05	0.03	0.32	0.09	0.19	0.14
BS09	0.10	0.02	0.04	0.06	0.17	0.21	0.10	0.10
BS10	0.09	0.06	0.02	0.06	0.19	0.13	0.02	0.10
BS11	0.09	0.09	0.07	0.06	0.25	0.14	0.46	0.16
BS12	0.14	0.12	0.09	0.10	0.36	0.17	0.53	0.22
BS13	0.07	0.05	0.02	0.05	0.08	0.01	0.25	0.07
BS14	0.04	0.03	0.01	0.01	0.09	0.05	0.30	0.06
BS15	0.06	0.09	0.06	0.01	0.41	0.35	0.06	0.18
BS16	0.06	0.18	0.04	0.02	0.09	0.39	0.49	0.12
CS01	0.18	0.05	0.33	0.38	0.15	0.12	0.14	0.21
CS02	0.04	0.10	0.04	0.13	0.17	0.28	0.24	0.13
CS03	0.20	0.14	0.10	0.12	0.60	0.39	0.12	0.29
CS04	0.20	0.09	0.30	0.37	0.12	0.09	0.23	0.20
CS05	0.10	0.06	0.21	0.31	0.09	0.08	0.17	0.15
CS06	0.05	0.07	0.10	0.09	0.48	0.36	0.28	0.23
CS07	0.15	0.10	0.16	0.09	0.07	0.12	0.15	0.11
CS08	0.09	0.11	0.13	0.12	0.42	0.36	0.18	0.22
CS09	0.14	0.21	0.28	0.33	0.04	0.06	0.06	0.16
CS10	0.25	0.19	0.30	0.33	0.22	0.24	0.20	0.25
CS11	0.15	0.31	0.43	0.38	0.30	0.11	0.09	0.28
CS12	0.20	0.25	0.36	0.38	0.32	0.42	0.05	0.30
CS13	0.21	0.26	0.36	0.33	0.40	0.44	0.13	0.32
CS14	0.25	0.31	0.44	0.39	0.44	0.41	0.09	0.36
CS15	0.23	0.32	0.42	0.37	0.28	0.40	0.27	0.32
DS01	0.52	0.21	0.39	0.30	0.07	0.11	0.12	0.24
DS02	0.53	0.13	0.25	0.21	0.19	0.42	0.19	0.26
DS03	0.44	0.33	0.39	0.43	0.27	0.42	0.22	0.35
DS04	0.31	0.15	0.17	0.21	0.60	0.46	0.40	0.36
DS05	0.14	0.33	0.37	0.35	0.31	0.18	0.23	0.29
DS06	0.06	0.29	0.21	0.39	0.29	0.30	0.12	0.26
DS07	0.01	0.43	0.43	0.53	0.29	0.19	0.19	0.31
DS08	0.19	0.48	0.49	0.53	0.40	0.32	0.12	0.39
ES01	0.26	0.50	0.53	0.51	0.25	0.12	0.07	0.34
ES02	0.38	0.47	0.50	0.49	0.23	0.11	0.07	0.34
ES03	0.34	0.39	0.45	0.39	0.01	0.06	0.58	0.27
ES04	0.06	0.14	0.18	0.17	0.01	0.03	0.04	0.08
ES05	0.23	0.09	0.13	0.11	0.02	0.02	0.11	0.09
ES06	0.43	0.57	0.65	0.60	0.07	0.05	0.56	0.38
ES07	0.30	0.17	0.14	0.13	0.04	0.03	0.15	0.13
ES08	0.54	0.50	0.58	0.53	0.21	0.10	0.15	0.39
ES09	0.33	0.55	0.61	0.56	0.04	0.06	0.43	0.33
ES10	0.02	0.05	0.08	0.06	0.02	0.05	0.05	0.04
ES11	0.17	0.47	0.51	0.47	0.02	0.02	0.50	0.27
ES12	0.09	0.08	0.07	0.07	0.09	0.02	0.47	0.10
ES13	0.02	0.06	0.06	0.04	0.04	0.01	0.30	0.06
ES14	0.04	0.21	0.18	0.12	0.07	0.03	0.34	0.12
Average VR	**0.17**	**0.18**	**0.18**	**0.20**	**0.18**	**0.21**	**0.26**	**0.19**

Annex I - Details of the Predicted Wind Velocity Ratio (VR_W)

	Base Summer								
Test Point	**E**	**ESE**	**SE**	**S**	**SSW**	**SW**	**WSW**	**W**	
Wind speed at infinity	**6.17**	**5.55**	**4.92**	**5.65**	**5.47**	**7.06**	**7.66**	**6.15**	**VR_w**
Wind probability	**0.138**	**0.079**	**0.065**	**0.101**	**0.083**	**0.145**	**0.097**	**0.065**	**0.773**
AP01	0.09	0.37	0.36	0.23	0.17	0.07	0.17	0.41	0.20
AP02	0.09	0.39	0.37	0.11	0.11	0.07	0.22	0.37	0.18
AP03	0.09	0.40	0.38	0.17	0.17	0.18	0.32	0.42	0.24
AP04	0.05	0.38	0.36	0.29	0.24	0.32	0.47	0.57	0.31
AP05	0.20	0.29	0.31	0.27	0.23	0.28	0.24	0.50	0.28
AP06	0.15	0.26	0.30	0.26	0.26	0.26	0.14	0.37	0.24
AP07	0.04	0.21	0.26	0.21	0.35	0.39	0.11	0.16	0.22
AP08	0.07	0.17	0.20	0.20	0.27	0.33	0.18	0.16	0.20
AP09	0.12	0.04	0.10	0.17	0.28	0.34	0.24	0.26	0.20
AP10	0.25	0.08	0.04	0.12	0.19	0.28	0.16	0.33	0.19
AP11	0.18	0.08	0.10	0.05	0.11	0.18	0.09	0.08	0.12
AP12	0.05	0.10	0.09	0.08	0.07	0.07	0.05	0.20	0.08
AP13	0.18	0.11	0.11	0.21	0.13	0.08	0.05	0.23	0.14
AP14	0.14	0.18	0.12	0.24	0.17	0.10	0.15	0.15	0.15
AP15	0.12	0.20	0.14	0.27	0.29	0.30	0.28	0.08	0.22
AP16	0.04	0.20	0.12	0.17	0.28	0.34	0.30	0.16	0.21
AP17	0.09	0.24	0.19	0.14	0.21	0.27	0.32	0.17	0.20
AP18	0.09	0.21	0.17	0.07	0.24	0.31	0.36	0.19	0.21
AP19	0.12	0.20	0.17	0.07	0.23	0.32	0.37	0.20	0.21
AP20	0.16	0.24	0.20	0.04	0.20	0.31	0.37	0.22	0.22
AP21	0.24	0.34	0.29	0.14	0.16	0.30	0.39	0.23	0.26
AP22	0.25	0.39	0.32	0.24	0.13	0.27	0.37	0.18	0.27
AP23	0.25	0.41	0.34	0.22	0.16	0.29	0.37	0.21	0.28
AP24	0.27	0.44	0.36	0.19	0.12	0.31	0.30	0.34	0.28
AP25	0.28	0.46	0.38	0.27	0.08	0.22	0.11	0.58	0.28
AP26	0.16	0.31	0.22	0.33	0.14	0.22	0.29	0.50	0.26
AP27	0.17	0.23	0.16	0.25	0.19	0.31	0.31	0.40	0.25
AP28	0.26	0.33	0.25	0.29	0.31	0.36	0.35	0.36	0.31
AP29	0.19	0.36	0.27	0.31	0.32	0.26	0.28	0.35	0.28
AP30	0.06	0.36	0.26	0.30	0.28	0.16	0.15	0.40	0.22
AP31	0.09	0.30	0.26	0.29	0.22	0.10	0.20	0.45	0.21
BP01	0.13	0.08	0.14	0.05	0.03	0.08	0.07	0.10	0.09
BP02	0.05	0.24	0.24	0.27	0.16	0.09	0.06	0.12	0.14
BP03	0.08	0.14	0.13	0.28	0.20	0.24	0.21	0.07	0.18
BP04	0.01	0.15	0.14	0.27	0.19	0.12	0.05	0.17	0.13
BP05	0.08	0.16	0.15	0.23	0.30	0.23	0.16	0.23	0.19
BP06	0.17	0.12	0.10	0.16	0.36	0.28	0.23	0.09	0.20
BP07	0.16	0.06	0.01	0.10	0.35	0.26	0.20	0.05	0.16
BP08	0.25	0.03	0.03	0.05	0.32	0.23	0.16	0.18	0.17
BP09	0.28	0.28	0.26	0.21	0.32	0.23	0.09	0.22	0.24
BP10	0.17	0.34	0.32	0.25	0.22	0.15	0.14	0.24	0.21
BP11	0.27	0.35	0.33	0.27	0.07	0.04	0.14	0.18	0.19
BP12	0.27	0.29	0.27	0.25	0.10	0.06	0.13	0.15	0.18
BP13	0.19	0.16	0.15	0.16	0.28	0.22	0.20	0.06	0.18
BP14	0.16	0.21	0.16	0.21	0.15	0.27	0.23	0.10	0.19
BP15	0.17	0.14	0.11	0.29	0.10	0.06	0.12	0.10	0.14
BP16	0.21	0.15	0.18	0.29	0.48	0.43	0.39	0.14	0.30
BP17	0.12	0.17	0.16	0.15	0.38	0.36	0.31	0.13	0.23
BP18	0.08	0.27	0.25	0.09	0.30	0.28	0.21	0.12	0.20
BP19	0.16	0.33	0.31	0.17	0.35	0.30	0.23	0.16	0.25
BP20	0.09	0.27	0.27	0.17	0.37	0.32	0.26	0.21	0.24
BP21	0.07	0.32	0.31	0.03	0.26	0.21	0.19	0.27	0.19
BP22	0.04	0.37	0.34	0.15	0.13	0.10	0.12	0.34	0.17

Annex I - Details of the Predicted Wind Velocity Ratio (VR_W)

	Base Summer								
Test Point	**E**	**ESE**	**SE**	**S**	**SSW**	**SW**	**WSW**	**W**	
Wind speed at infinity	**6.17**	**5.55**	**4.92**	**5.65**	**5.47**	**7.06**	**7.66**	**6.15**	**VR_w**
Wind probability	**0.138**	**0.079**	**0.065**	**0.101**	**0.083**	**0.145**	**0.097**	**0.065**	**0.773**
BP23	0.04	0.44	0.39	0.36	0.15	0.05	0.11	0.31	0.20
BP24	0.17	0.41	0.37	0.24	0.04	0.04	0.06	0.09	0.16
BP25	0.16	0.42	0.38	0.24	0.05	0.05	0.09	0.09	0.17
BP26	0.17	0.42	0.38	0.23	0.06	0.07	0.08	0.10	0.17
BP27	0.11	0.33	0.29	0.22	0.13	0.21	0.24	0.23	0.21
BP28	0.02	0.10	0.07	0.06	0.14	0.16	0.15	0.07	0.10
BP29	0.13	0.14	0.11	0.16	0.19	0.24	0.25	0.09	0.17
BP30	0.18	0.07	0.09	0.28	0.31	0.34	0.32	0.22	0.24
BP31	0.22	0.10	0.12	0.31	0.36	0.36	0.32	0.29	0.27
BP32	0.27	0.10	0.10	0.29	0.34	0.32	0.33	0.23	0.26
BP33	0.33	0.06	0.07	0.28	0.29	0.20	0.27	0.17	0.22
CP01	0.32	0.37	0.33	0.17	0.28	0.22	0.18	0.22	0.26
CP02	0.12	0.35	0.34	0.20	0.31	0.25	0.23	0.04	0.22
CP03	0.22	0.27	0.31	0.20	0.32	0.25	0.21	0.04	0.23
CP04	0.10	0.09	0.24	0.18	0.33	0.24	0.18	0.07	0.18
CP05	0.21	0.17	0.17	0.15	0.31	0.27	0.16	0.06	0.20
CP06	0.13	0.19	0.15	0.10	0.26	0.28	0.12	0.08	0.17
CP07	0.30	0.13	0.13	0.09	0.23	0.29	0.13	0.09	0.19
CP08	0.18	0.23	0.22	0.14	0.26	0.33	0.13	0.04	0.20
CP09	0.33	0.16	0.17	0.13	0.23	0.32	0.04	0.07	0.20
CP10	0.42	0.35	0.35	0.11	0.23	0.30	0.10	0.10	0.25
CP11	0.37	0.35	0.33	0.03	0.19	0.26	0.15	0.10	0.23
CP12	0.30	0.30	0.30	0.11	0.22	0.26	0.16	0.10	0.22
CP13	0.36	0.31	0.30	0.13	0.27	0.27	0.16	0.10	0.25
CP14	0.31	0.25	0.24	0.14	0.27	0.20	0.20	0.11	0.22
CP15	0.12	0.12	0.13	0.16	0.25	0.16	0.23	0.14	0.16
CP16	0.22	0.12	0.09	0.15	0.19	0.13	0.25	0.14	0.17
CP17	0.19	0.28	0.23	0.06	0.14	0.07	0.15	0.13	0.15
CP18	0.90	0.48	0.43	0.09	0.12	0.15	0.25	0.29	0.35
CP19	0.81	0.34	0.31	0.11	0.10	0.11	0.23	0.32	0.31
CP20	0.67	0.30	0.29	0.07	0.06	0.08	0.15	0.32	0.25
CP21	0.62	0.27	0.22	0.15	0.16	0.16	0.18	0.25	0.27
CP22	0.55	0.19	0.10	0.07	0.17	0.13	0.25	0.29	0.23
CP23	0.53	0.18	0.06	0.12	0.13	0.23	0.30	0.28	0.25
CP24	0.65	0.22	0.19	0.06	0.21	0.29	0.32	0.26	0.30
CP25	0.67	0.25	0.24	0.03	0.24	0.29	0.30	0.23	0.31
CP26	0.67	0.26	0.26	0.06	0.26	0.28	0.29	0.23	0.31
CP27	0.69	0.24	0.27	0.09	0.24	0.27	0.30	0.22	0.31
CP28	0.78	0.26	0.28	0.07	0.18	0.20	0.25	0.20	0.30
CP29	0.82	0.25	0.27	0.36	0.23	0.21	0.23	0.17	0.35
CP30	0.67	0.21	0.19	0.29	0.11	0.06	0.13	0.09	0.24
CP31	0.17	0.04	0.08	0.25	0.15	0.16	0.12	0.07	0.14
CP32	0.32	0.07	0.06	0.25	0.08	0.14	0.17	0.10	0.17
CP33	0.41	0.16	0.19	0.21	0.08	0.12	0.18	0.17	0.20
CP34	0.44	0.27	0.26	0.16	0.08	0.12	0.18	0.21	0.22
DP01	0.42	0.34	0.30	0.16	0.06	0.05	0.24	0.05	0.21
DP02	0.45	0.35	0.31	0.17	0.09	0.07	0.26	0.10	0.23
DP03	0.20	0.30	0.27	0.11	0.16	0.16	0.19	0.14	0.19
DP04	0.24	0.05	0.04	0.04	0.26	0.27	0.09	0.19	0.16
DP05	0.31	0.06	0.06	0.05	0.22	0.20	0.04	0.22	0.16
DP06	0.21	0.09	0.07	0.07	0.20	0.17	0.08	0.21	0.14
DP07	0.68	0.20	0.14	0.09	0.23	0.19	0.13	0.23	0.26
DP08	0.77	0.42	0.34	0.03	0.26	0.21	0.18	0.24	0.32

Annex I - Details of the Predicted Wind Velocity Ratio (VR_W)

	Base Summer								
Test Point	**E**	**ESE**	**SE**	**S**	**SSW**	**SW**	**WSW**	**W**	
Wind speed at infinity	**6.17**	**5.55**	**4.92**	**5.65**	**5.47**	**7.06**	**7.66**	**6.15**	**VR_w**
Wind probability	**0.138**	**0.079**	**0.065**	**0.101**	**0.083**	**0.145**	**0.097**	**0.065**	**0.773**
DP09	0.59	0.44	0.40	0.08	0.25	0.15	0.17	0.09	0.28
DP10	0.46	0.45	0.45	0.11	0.08	0.03	0.14	0.06	0.22
DP11	0.38	0.43	0.45	0.11	0.05	0.06	0.12	0.08	0.20
DP12	0.38	0.38	0.39	0.11	0.16	0.14	0.12	0.09	0.22
DP13	0.43	0.36	0.35	0.12	0.20	0.16	0.08	0.08	0.23
DP14	0.49	0.36	0.35	0.13	0.19	0.07	0.07	0.07	0.22
DP15	0.55	0.37	0.36	0.14	0.13	0.10	0.12	0.06	0.24
DP16	0.54	0.32	0.35	0.12	0.10	0.11	0.11	0.05	0.23
DP17	0.49	0.26	0.33	0.10	0.11	0.09	0.09	0.04	0.20
DP18	0.54	0.19	0.26	0.09	0.13	0.10	0.10	0.03	0.20
DP19	0.72	0.11	0.13	0.06	0.17	0.06	0.06	0.06	0.20
DP20	0.74	0.18	0.19	0.04	0.16	0.05	0.05	0.07	0.21
DP21	0.77	0.30	0.29	0.04	0.09	0.04	0.11	0.04	0.23
DP22	0.79	0.41	0.38	0.09	0.36	0.29	0.24	0.15	0.36
DP23	0.73	0.40	0.37	0.09	0.28	0.20	0.23	0.26	0.33
DP24	0.71	0.47	0.43	0.09	0.29	0.22	0.24	0.13	0.34
DP25	0.90	0.64	0.60	0.07	0.24	0.14	0.20	0.11	0.39
DP26	0.90	0.58	0.54	0.06	0.22	0.14	0.19	0.08	0.35
DP27	0.83	0.53	0.49	0.07	0.15	0.09	0.20	0.05	0.32
DP28	0.75	0.47	0.42	0.08	0.10	0.08	0.21	0.02	0.28
DP29	0.68	0.41	0.37	0.11	0.09	0.08	0.21	0.02	0.26
DP30	0.55	0.39	0.35	0.17	0.02	0.06	0.26	0.04	0.24
EP01	0.31	0.13	0.13	0.07	0.09	0.10	0.19	0.49	0.18
EP02	0.22	0.09	0.13	0.06	0.06	0.07	0.12	0.41	0.14
EP03	0.12	0.02	0.05	0.03	0.03	0.03	0.05	0.14	0.06
EP04	0.09	0.07	0.07	0.05	0.33	0.36	0.35	0.15	0.20
EP05	0.06	0.01	0.07	0.06	0.29	0.30	0.37	0.45	0.20
EP06	0.05	0.04	0.05	0.05	0.12	0.11	0.09	0.11	0.08
EP07	0.02	0.04	0.04	0.07	0.07	0.19	0.13	0.10	0.09
EP08	0.03	0.07	0.04	0.10	0.19	0.38	0.43	0.10	0.19
EP09	0.01	0.06	0.02	0.09	0.19	0.38	0.42	0.18	0.19
EP10	0.01	0.04	0.03	0.05	0.14	0.34	0.37	0.05	0.15
EP11	0.03	0.02	0.03	0.04	0.11	0.31	0.32	0.06	0.13
EP12	0.05	0.05	0.04	0.09	0.10	0.28	0.26	0.10	0.13
EP13	0.07	0.08	0.05	0.13	0.08	0.26	0.25	0.13	0.14
EP14	0.08	0.09	0.06	0.14	0.10	0.24	0.24	0.14	0.15
EP15	0.07	0.09	0.08	0.14	0.23	0.31	0.41	0.12	0.19
EP16	0.06	0.09	0.07	0.10	0.30	0.42	0.30	0.14	0.21
EP17	0.06	0.09	0.08	0.06	0.48	0.55	0.54	0.43	0.29
EP18	0.06	0.04	0.07	0.05	0.36	0.44	0.43	0.46	0.24
EP19	0.05	0.06	0.07	0.04	0.33	0.41	0.39	0.42	0.23
EP20	0.05	0.04	0.06	0.08	0.46	0.51	0.45	0.39	0.26
EP21	0.05	0.01	0.04	0.04	0.42	0.43	0.40	0.34	0.22
EP22	0.04	0.05	0.04	0.07	0.39	0.39	0.37	0.26	0.21
EP23	0.02	0.08	0.05	0.06	0.51	0.53	0.50	0.23	0.26
EP24	0.07	0.10	0.05	0.06	0.51	0.52	0.48	0.22	0.27
EP25	0.05	0.12	0.04	0.05	0.48	0.49	0.48	0.22	0.25
EP26	0.04	0.11	0.03	0.05	0.38	0.36	0.36	0.20	0.20
EP27	0.07	0.08	0.05	0.06	0.46	0.48	0.49	0.15	0.24
EP28	0.29	0.15	0.06	0.03	0.58	0.60	0.72	0.40	0.38
EP29	0.31	0.17	0.04	0.04	0.61	0.64	0.73	0.48	0.40
EP30	0.32	0.15	0.03	0.01	0.60	0.62	0.71	0.45	0.38
EP31	0.31	0.13	0.07	0.02	0.53	0.56	0.67	0.43	0.36

Annex I - Details of the Predicted Wind Velocity Ratio (VR_W)

	Base Summer								
Test Point	**E**	**ESE**	**SE**	**S**	**SSW**	**SW**	**WSW**	**W**	
Wind speed at infinity	**6.17**	**5.55**	**4.92**	**5.65**	**5.47**	**7.06**	**7.66**	**6.15**	**VR_w**
Wind probability	**0.138**	**0.079**	**0.065**	**0.101**	**0.083**	**0.145**	**0.097**	**0.065**	**0.773**
EP32	0.32	0.12	0.12	0.05	0.35	0.38	0.60	0.45	0.31
Average SVR	**0.28**	**0.23**	**0.21**	**0.14**	**0.22**	**0.23**	**0.23**	**0.20**	**0.22**
TR1-1	0.44	0.30	0.26	0.10	0.18	0.37	0.46	0.53	0.34
TR1-2	0.38	0.09	0.17	0.06	0.15	0.07	0.09	0.58	0.19
TR1-3	0.42	0.32	0.26	0.22	0.20	0.35	0.43	0.59	0.35
TR1-4	0.42	0.28	0.25	0.09	0.16	0.19	0.24	0.59	0.27
TR1-5	0.31	0.16	0.13	0.11	0.09	0.14	0.11	0.47	0.19
TR1-6	0.41	0.25	0.21	0.18	0.11	0.36	0.54	0.42	0.32
TR1-7	0.40	0.17	0.18	0.16	0.12	0.09	0.24	0.59	0.23
TR1-8	0.26	0.33	0.30	0.13	0.05	0.12	0.20	0.51	0.22
TR1-9	0.43	0.28	0.26	0.15	0.07	0.22	0.44	0.40	0.28
TR1-10	0.40	0.25	0.18	0.07	0.33	0.28	0.13	0.60	0.28
TR1-11	0.20	0.03	0.03	0.08	0.07	0.07	0.20	0.38	0.13
TR1-12	0.42	0.13	0.09	0.20	0.14	0.29	0.34	0.39	0.27
TR1-13	0.37	0.08	0.06	0.20	0.13	0.16	0.28	0.59	0.24
TR1-14	0.21	0.02	0.02	0.13	0.08	0.03	0.12	0.36	0.12
TR1-15	0.37	0.11	0.15	0.30	0.25	0.25	0.35	0.40	0.28
TR1-16	0.34	0.08	0.11	0.21	0.17	0.13	0.19	0.58	0.22
TR1-17	0.27	0.07	0.09	0.09	0.08	0.05	0.07	0.39	0.13
TR1-18	0.39	0.17	0.21	0.21	0.19	0.10	0.26	0.41	0.24
TR1-19	0.37	0.17	0.23	0.20	0.20	0.16	0.22	0.42	0.25
TR1-20	0.31	0.02	0.09	0.09	0.04	0.06	0.07	0.39	0.13
TR1-21	0.29	0.23	0.17	0.31	0.22	0.32	0.29	0.35	0.28
TR1-22	0.31	0.20	0.20	0.14	0.13	0.16	0.14	0.42	0.21
TR1-23	0.30	0.04	0.05	0.03	0.07	0.03	0.04	0.31	0.11
TR1-24	0.37	0.25	0.23	0.18	0.19	0.21	0.19	0.43	0.25
TR1-25	0.28	0.07	0.08	0.10	0.09	0.07	0.11	0.29	0.14
TR1-26	0.36	0.24	0.23	0.18	0.27	0.26	0.17	0.43	0.27
TR1-27	0.28	0.09	0.19	0.05	0.04	0.03	0.04	0.27	0.12
TR1-28	0.33	0.19	0.20	0.23	0.28	0.28	0.18	0.42	0.27
TR1-29	0.22	0.12	0.13	0.07	0.09	0.07	0.04	0.17	0.11
TR1-30	0.27	0.10	0.13	0.24	0.26	0.27	0.20	0.41	0.24
TR1-31	0.12	0.09	0.10	0.05	0.11	0.09	0.07	0.14	0.10
TR1-32	0.15	0.02	0.10	0.18	0.24	0.21	0.15	0.35	0.18
TR1-33	0.04	0.18	0.20	0.15	0.10	0.07	0.13	0.19	0.12
TR1-34	0.15	0.25	0.18	0.37	0.20	0.21	0.14	0.28	0.22
TR1-35	0.07	0.14	0.07	0.16	0.14	0.13	0.07	0.13	0.11
TR1-36	0.16	0.04	0.03	0.09	0.05	0.06	0.06	0.24	0.09
TR1-37	0.13	0.06	0.05	0.11	0.04	0.08	0.06	0.20	0.09
TR1-38	0.22	0.02	0.02	0.16	0.11	0.07	0.07	0.23	0.12
TR1-39	0.47	0.16	0.19	0.17	0.12	0.10	0.11	0.31	0.21
TR1-40	0.16	0.19	0.15	0.12	0.13	0.10	0.02	0.21	0.13
TR1-41	0.56	0.16	0.20	0.05	0.11	0.11	0.13	0.31	0.22
TR1-42	0.33	0.13	0.19	0.07	0.13	0.07	0.10	0.25	0.16
TR1-43	0.26	0.19	0.20	0.21	0.13	0.03	0.20	0.27	0.18
TR1-44	0.64	0.25	0.28	0.23	0.12	0.05	0.23	0.24	0.27
TR1-45	0.29	0.30	0.32	0.24	0.10	0.02	0.21	0.05	0.18
TR1-46	0.37	0.04	0.06	0.04	0.04	0.04	0.20	0.05	0.12
TR2-1	0.32	0.41	0.35	0.20	0.18	0.31	0.42	0.47	0.32
TR2-2	0.43	0.33	0.32	0.08	0.18	0.25	0.39	0.41	0.29
TR2-3	0.45	0.35	0.33	0.18	0.18	0.29	0.35	0.52	0.32
TR2-4	0.47	0.39	0.35	0.09	0.14	0.27	0.31	0.48	0.30
TR2-5	0.29	0.27	0.24	0.06	0.16	0.26	0.31	0.43	0.24
TR2-6	0.14	0.15	0.12	0.05	0.07	0.14	0.15	0.32	0.13
TR2-7	0.35	0.25	0.25	0.02	0.08	0.05	0.11	0.04	0.14
TR2-8	0.42	0.28	0.27	0.03	0.21	0.20	0.21	0.15	0.22
TR2-9	0.44	0.27	0.25	0.01	0.29	0.27	0.28	0.20	0.26
TR2-10	0.39	0.23	0.22	0.07	0.31	0.30	0.32	0.25	0.27

Annex I - Details of the Predicted Wind Velocity Ratio (VR_W)

	Base Summer								
Test Point	**E**	**ESE**	**SE**	**S**	**SSW**	**SW**	**WSW**	**W**	
Wind speed at infinity	**6.17**	**5.55**	**4.92**	**5.65**	**5.47**	**7.06**	**7.66**	**6.15**	**VR_w**
Wind probability	**0.138**	**0.079**	**0.065**	**0.101**	**0.083**	**0.145**	**0.097**	**0.065**	**0.773**
TR2-11	0.41	0.17	0.17	0.12	0.40	0.39	0.40	0.29	0.31
TR2-12	0.44	0.21	0.18	0.15	0.41	0.40	0.40	0.31	0.32
TR2-13	0.43	0.25	0.21	0.25	0.40	0.37	0.34	0.30	0.33
TR2-14	0.44	0.26	0.24	0.31	0.45	0.40	0.35	0.26	0.35
TR2-15	0.36	0.25	0.26	0.24	0.48	0.42	0.35	0.23	0.33
TR2-16	0.37	0.22	0.22	0.07	0.37	0.27	0.20	0.18	0.24
TR2-17	0.39	0.29	0.29	0.25	0.58	0.50	0.38	0.25	0.38
TR3-1	0.22	0.12	0.06	0.12	0.21	0.14	0.23	0.34	0.18
TR3-2	0.27	0.13	0.10	0.13	0.15	0.02	0.05	0.48	0.15
TR3-3	0.36	0.15	0.11	0.06	0.10	0.03	0.27	0.40	0.18
TR3-4	0.35	0.12	0.14	0.04	0.39	0.40	0.58	0.41	0.32
TR3-5	0.34	0.09	0.03	0.03	0.65	0.64	0.64	0.38	0.38
TR3-6	0.28	0.15	0.06	0.04	0.51	0.48	0.51	0.25	0.31
TR3-7	0.02	0.09	0.06	0.02	0.47	0.43	0.43	0.29	0.23
TR3-8	0.05	0.09	0.07	0.10	0.52	0.57	0.51	0.42	0.30
TR3-9	0.10	0.09	0.11	0.03	0.62	0.68	0.53	0.22	0.32
TR3-10	0.11	0.04	0.07	0.13	0.48	0.51	0.34	0.23	0.26
TR3-11	0.43	0.26	0.24	0.09	0.44	0.48	0.37	0.43	0.35
TR3-12	0.43	0.26	0.25	0.27	0.46	0.53	0.50	0.51	0.41
TR3-13	0.26	0.21	0.20	0.36	0.37	0.42	0.36	0.45	0.33
TR3-14	0.02	0.11	0.09	0.35	0.40	0.45	0.33	0.37	0.27
TR3-15	0.09	0.05	0.05	0.46	0.39	0.38	0.39	0.27	0.27
TR3-16	0.06	0.05	0.04	0.36	0.25	0.23	0.26	0.40	0.20
TR4-1	0.11	0.42	0.39	0.34	0.24	0.26	0.24	0.44	0.28
TR4-2	0.09	0.44	0.39	0.14	0.08	0.10	0.13	0.40	0.19
TR4-3	0.10	0.40	0.38	0.06	0.15	0.19	0.29	0.30	0.21
TR4-4	0.20	0.29	0.28	0.24	0.19	0.22	0.10	0.22	0.21
TR4-5	0.08	0.26	0.29	0.27	0.32	0.29	0.13	0.13	0.21
TR4-6	0.05	0.16	0.20	0.24	0.25	0.27	0.22	0.08	0.19
TR4-7	0.19	0.05	0.16	0.20	0.26	0.33	0.24	0.19	0.21
TR5-1	0.32	0.22	0.28	0.29	0.22	0.31	0.24	0.35	0.28
TR5-2	0.04	0.26	0.24	0.26	0.26	0.11	0.09	0.08	0.16
TR5-3	0.04	0.13	0.11	0.24	0.06	0.21	0.18	0.04	0.13
TR5-4	0.11	0.13	0.12	0.22	0.26	0.17	0.12	0.18	0.16
TR5-5	0.29	0.11	0.11	0.08	0.35	0.28	0.23	0.07	0.21
TR5-6	0.30	0.14	0.16	0.07	0.32	0.24	0.18	0.15	0.21
TR6-1	0.24	0.12	0.14	0.17	0.34	0.25	0.15	0.21	0.21
TR6-2	0.30	0.23	0.24	0.27	0.31	0.18	0.16	0.11	0.23
TR6-3	0.26	0.22	0.24	0.30	0.28	0.25	0.20	0.09	0.24
TR6-4	0.16	0.15	0.16	0.20	0.15	0.12	0.14	0.13	0.15
TR6-5	0.29	0.10	0.11	0.10	0.33	0.31	0.38	0.21	0.24
TR7-1	0.12	0.13	0.12	0.08	0.05	0.05	0.06	0.03	0.08
TR7-2	0.10	0.15	0.14	0.11	0.16	0.13	0.04	0.02	0.11
TR7-3	0.09	0.13	0.09	0.12	0.23	0.18	0.05	0.13	0.13
TR8-1	0.20	0.09	0.07	0.32	0.43	0.41	0.41	0.15	0.28
TR8-2	0.16	0.22	0.17	0.31	0.29	0.24	0.26	0.06	0.22
TR8-3	0.12	0.19	0.21	0.48	0.34	0.30	0.35	0.04	0.26
TR9-1	0.23	0.37	0.35	0.23	0.24	0.30	0.34	0.04	0.26
TR9-2	0.25	0.30	0.31	0.19	0.22	0.32	0.38	0.03	0.26
TR9-3	0.19	0.29	0.32	0.13	0.15	0.28	0.36	0.06	0.23
TR9-4	0.15	0.23	0.24	0.16	0.14	0.28	0.20	0.08	0.19
TR10-1	0.52	0.63	0.62	0.04	0.12	0.12	0.18	0.05	0.28
TR10-2	0.67	0.48	0.48	0.22	0.11	0.09	0.15	0.06	0.29
TR10-3	0.29	0.26	0.24	0.07	0.07	0.03	0.05	0.07	0.13
TR10-4	0.37	0.46	0.42	0.17	0.12	0.05	0.07	0.05	0.21
TR10-5	0.71	0.10	0.14	0.19	0.13	0.12	0.22	0.08	0.25
TR10-6	0.63	0.68	0.68	0.18	0.17	0.16	0.05	0.05	0.32
TR10-7	0.42	0.50	0.55	0.28	0.09	0.04	0.21	0.08	0.26

Annex I - Details of the Predicted Wind Velocity Ratio (VR_W)

	Base Summer								
Test Point	**E**	**ESE**	**SE**	**S**	**SSW**	**SW**	**WSW**	**W**	
Wind speed at infinity	**6.17**	**5.55**	**4.92**	**5.65**	**5.47**	**7.06**	**7.66**	**6.15**	**VR_w**
Wind probability	**0.138**	**0.079**	**0.065**	**0.101**	**0.083**	**0.145**	**0.097**	**0.065**	**0.773**
TR10-8	0.62	0.41	0.36	0.11	0.15	0.24	0.25	0.13	0.30
TR10-9	0.94	0.40	0.32	0.13	0.18	0.16	0.17	0.26	0.35
TR10-10	0.12	0.24	0.21	0.06	0.16	0.18	0.11	0.26	0.16
TR11-1	0.11	0.11	0.06	0.24	0.43	0.43	0.38	0.16	0.26
TR11-2	0.20	0.05	0.07	0.33	0.46	0.47	0.41	0.06	0.28
TR11-3	0.28	0.28	0.16	0.34	0.33	0.36	0.28	0.11	0.28
TR12-1	0.27	0.10	0.11	0.19	0.12	0.10	0.06	0.12	0.14
TR12-2	0.16	0.16	0.16	0.26	0.27	0.21	0.13	0.27	0.20
TR12-3	0.23	0.15	0.14	0.29	0.26	0.20	0.17	0.26	0.21
TR12-4	0.10	0.17	0.13	0.24	0.27	0.31	0.31	0.10	0.21
TR12-5	0.01	0.15	0.09	0.11	0.17	0.22	0.19	0.11	0.13
TR13-1	0.21	0.31	0.23	0.36	0.35	0.41	0.37	0.08	0.30
TR13-2	0.21	0.29	0.23	0.33	0.29	0.35	0.34	0.09	0.28
TR13-3	0.11	0.29	0.23	0.37	0.30	0.35	0.37	0.12	0.27
TR13-4	0.15	0.25	0.22	0.36	0.35	0.34	0.34	0.17	0.28
TR14-1	0.18	0.23	0.21	0.13	0.09	0.02	0.21	0.24	0.15
TR14-2	0.25	0.28	0.24	0.25	0.11	0.09	0.21	0.25	0.20
TR14-3	0.19	0.23	0.23	0.18	0.25	0.32	0.26	0.03	0.22
TR14-4	0.12	0.15	0.16	0.22	0.47	0.20	0.09	0.05	0.18
TR14-5	0.17	0.24	0.25	0.14	0.18	0.15	0.21	0.06	0.17
TR14-6	0.08	0.24	0.23	0.04	0.28	0.36	0.34	0.05	0.21
TR15-1	0.24	0.31	0.26	0.40	0.35	0.30	0.36	0.15	0.30
TR15-2	0.12	0.22	0.19	0.31	0.32	0.29	0.37	0.16	0.25
TR15-3	0.19	0.15	0.13	0.33	0.43	0.40	0.51	0.20	0.31
TR16-1	0.30	0.11	0.08	0.22	0.34	0.34	0.35	0.24	0.26
TR16-2	0.43	0.12	0.08	0.24	0.31	0.33	0.34	0.23	0.28
TR16-3	0.40	0.11	0.12	0.23	0.33	0.28	0.28	0.19	0.26
TR16-4	0.29	0.21	0.27	0.17	0.11	0.10	0.12	0.03	0.16
TR17-1	0.11	0.30	0.23	0.40	0.33	0.31	0.18	0.06	0.24
TR17-2	0.10	0.29	0.22	0.40	0.37	0.35	0.17	0.03	0.25
TR17-3	0.04	0.30	0.21	0.34	0.36	0.35	0.38	0.06	0.26
TR17-4	0.13	0.36	0.25	0.31	0.32	0.31	0.40	0.14	0.28
TR17-5	0.10	0.30	0.21	0.22	0.26	0.16	0.36	0.18	0.21
TR18-1	0.11	0.24	0.16	0.20	0.13	0.20	0.35	0.21	0.20
TR18-2	0.25	0.14	0.09	0.28	0.09	0.11	0.19	0.17	0.17
TR18-3	0.20	0.12	0.08	0.20	0.34	0.29	0.22	0.06	0.20
TR18-4	0.07	0.09	0.05	0.20	0.20	0.20	0.23	0.22	0.16
TR18-5	0.21	0.18	0.11	0.17	0.28	0.28	0.26	0.23	0.22
TR19-1	0.11	0.27	0.19	0.21	0.09	0.05	0.07	0.10	0.13
TR19-2	0.06	0.28	0.22	0.18	0.12	0.07	0.23	0.06	0.14
TR19-3	0.21	0.31	0.25	0.20	0.05	0.09	0.25	0.02	0.17
TR19-4	0.23	0.33	0.29	0.20	0.05	0.09	0.19	0.12	0.18
TR20-1	0.38	0.38	0.34	0.28	0.28	0.27	0.29	0.13	0.30
TR20-2	0.49	0.17	0.17	0.21	0.09	0.10	0.13	0.22	0.21
TR20-3	0.25	0.12	0.03	0.31	0.11	0.16	0.12	0.06	0.16
TR20-4	0.23	0.03	0.06	0.25	0.40	0.37	0.32	0.18	0.25
TR20-5	0.23	0.09	0.05	0.19	0.32	0.27	0.23	0.16	0.21
TR20-6	0.10	0.03	0.04	0.23	0.36	0.31	0.27	0.23	0.20
TR21-1	0.26	0.40	0.33	0.14	0.08	0.02	0.16	0.07	0.17
TR21-2	0.23	0.44	0.37	0.09	0.12	0.07	0.05	0.05	0.16
TR21-3	0.70	0.30	0.27	0.12	0.13	0.14	0.07	0.30	0.27
TR21-4	0.10	0.17	0.15	0.13	0.11	0.14	0.18	0.17	0.14
TR22-1	0.34	0.33	0.30	0.15	0.15	0.08	0.29	0.15	0.22
TR22-2	0.12	0.03	0.02	0.16	0.11	0.16	0.35	0.15	0.14
TR22-3	0.09	0.08	0.06	0.10	0.15	0.15	0.30	0.09	0.13
TR22-4	0.77	0.50	0.45	0.07	0.20	0.11	0.18	0.24	0.32
TR23-1	0.79	0.27	0.27	0.18	0.49	0.48	0.31	0.44	0.43
TR23-2	0.33	0.19	0.16	0.12	0.48	0.30	0.09	0.32	0.25

Annex I - Details of the Predicted Wind Velocity Ratio (VR_W)

	Base Summer								
Test Point	**E**	**ESE**	**SE**	**S**	**SSW**	**SW**	**WSW**	**W**	
Wind speed at infinity	**6.17**	**5.55**	**4.92**	**5.65**	**5.47**	**7.06**	**7.66**	**6.15**	VR_w
Wind probability	**0.138**	**0.079**	**0.065**	**0.101**	**0.083**	**0.145**	**0.097**	**0.065**	**0.773**
TR23-3	0.11	0.03	0.04	0.12	0.39	0.18	0.11	0.20	0.14
TR24-1	0.18	0.07	0.11	0.05	0.29	0.36	0.39	0.31	0.23
TR24-2	0.18	0.05	0.13	0.04	0.27	0.31	0.26	0.16	0.19
TR24-3	0.18	0.05	0.13	0.06	0.28	0.35	0.23	0.06	0.19
TR24-4	0.11	0.07	0.05	0.13	0.28	0.41	0.30	0.23	0.21
TR24-5	0.07	0.07	0.04	0.07	0.33	0.46	0.40	0.32	0.23
TR24-6	0.03	0.07	0.02	0.10	0.36	0.47	0.53	0.08	0.23
TR24-7	0.03	0.04	0.03	0.08	0.31	0.44	0.49	0.15	0.21
TR24-8	0.07	0.11	0.07	0.15	0.29	0.44	0.45	0.21	0.24
TR24-9	0.05	0.08	0.07	0.06	0.32	0.42	0.45	0.49	0.24
TR25-1	0.03	0.05	0.04	0.02	0.07	0.08	0.07	0.07	0.05
TR25-2	0.04	0.07	0.03	0.11	0.13	0.05	0.03	0.08	0.06
TR25-3	0.05	0.09	0.05	0.13	0.14	0.10	0.09	0.19	0.10
TR25-4	0.06	0.08	0.06	0.08	0.08	0.06	0.08	0.20	0.08
TR25-5	0.11	0.08	0.08	0.09	0.12	0.03	0.11	0.19	0.09
TR26-1	0.06	0.08	0.07	0.12	0.07	0.25	0.24	0.36	0.15
TR26-2	0.06	0.06	0.11	0.05	0.11	0.04	0.18	0.48	0.11
TR26-3	0.06	0.15	0.09	0.10	0.14	0.08	0.10	0.45	0.12
TR26-4	0.22	0.21	0.17	0.15	0.15	0.13	0.14	0.35	0.18
TR26-5	0.10	0.11	0.10	0.06	0.12	0.06	0.11	0.34	0.11
TR26-6	0.17	0.12	0.09	0.15	0.18	0.17	0.20	0.32	0.17
TR26-7	0.22	0.06	0.08	0.05	0.14	0.04	0.09	0.30	0.11
TR26-8	0.22	0.20	0.13	0.16	0.15	0.22	0.11	0.27	0.18
TR26-9	0.24	0.09	0.10	0.12	0.11	0.08	0.09	0.23	0.13
TR26-10	0.14	0.06	0.07	0.13	0.14	0.14	0.10	0.13	0.11
TR26-11	0.04	0.14	0.07	0.12	0.13	0.08	0.07	0.12	0.09
TR27-1	0.10	0.25	0.16	0.21	0.18	0.12	0.05	0.04	0.14
TR27-2	0.04	0.27	0.17	0.21	0.15	0.12	0.04	0.03	0.12
TR27-3	0.06	0.26	0.16	0.16	0.19	0.16	0.04	0.12	0.14
TR27-4	0.12	0.42	0.32	0.26	0.33	0.28	0.10	0.09	0.23
TR28-1	0.12	0.14	0.09	0.23	0.19	0.22	0.25	0.07	0.17
TR28-2	0.14	0.17	0.13	0.24	0.21	0.22	0.27	0.02	0.19
TR28-3	0.11	0.15	0.12	0.10	0.09	0.09	0.24	0.03	0.12
TR28-4	0.12	0.14	0.11	0.06	0.06	0.06	0.11	0.04	0.09
TR29-1	0.12	0.17	0.04	0.18	0.15	0.19	0.10	0.14	0.14
TR29-2	0.10	0.24	0.13	0.19	0.17	0.21	0.11	0.07	0.16
TR29-3	0.04	0.27	0.16	0.19	0.15	0.23	0.12	0.29	0.17
TR29-4	0.06	0.31	0.20	0.22	0.17	0.26	0.14	0.06	0.18
TR30-1	0.13	0.21	0.13	0.19	0.17	0.25	0.16	0.07	0.17
TR30-2	0.17	0.23	0.15	0.19	0.17	0.25	0.16	0.09	0.18
TR30-3	0.15	0.20	0.14	0.17	0.16	0.22	0.19	0.02	0.17
TA1-1	0.38	0.16	0.19	0.41	0.48	0.47	0.39	0.46	0.38
TA1-2	0.42	0.06	0.12	0.51	0.51	0.58	0.60	0.50	0.44
TA1-3	0.34	0.40	0.24	0.47	0.58	0.59	0.61	0.53	0.48
TA1-4	0.19	0.37	0.29	0.42	0.56	0.59	0.61	0.55	0.45
TA1-5	0.16	0.34	0.35	0.40	0.56	0.57	0.59	0.53	0.43
TA1-6	0.08	0.33	0.16	0.43	0.34	0.33	0.48	0.48	0.32
TA1-7	0.05	0.30	0.21	0.23	0.33	0.52	0.54	0.54	0.33
TA1-8	0.06	0.32	0.26	0.28	0.54	0.56	0.58	0.55	0.38
TA1-9	0.02	0.05	0.06	0.11	0.49	0.53	0.53	0.48	0.29
TA1-10	0.15	0.36	0.33	0.38	0.47	0.50	0.50	0.48	0.39
TA1-11	0.27	0.30	0.27	0.39	0.32	0.32	0.32	0.36	0.32
TA1-12	0.29	0.36	0.32	0.31	0.23	0.27	0.35	0.48	0.31
TA1-13	0.37	0.37	0.34	0.20	0.25	0.34	0.39	0.53	0.34
TA1-14	0.38	0.38	0.36	0.15	0.14	0.37	0.40	0.52	0.34
TA1-15	0.26	0.40	0.36	0.08	0.22	0.38	0.44	0.39	0.31
TA2-1	0.50	0.31	0.28	0.24	0.40	0.47	0.49	0.54	0.42
TA2-2	0.48	0.31	0.28	0.18	0.23	0.33	0.48	0.53	0.35

Annex I - Details of the Predicted Wind Velocity Ratio (VR_W)

	Base Summer								
Test Point	**E**	**ESE**	**SE**	**S**	**SSW**	**SW**	**WSW**	**W**	
Wind speed at infinity	**6.17**	**5.55**	**4.92**	**5.65**	**5.47**	**7.06**	**7.66**	**6.15**	VR_w
Wind probability	**0.138**	**0.079**	**0.065**	**0.101**	**0.083**	**0.145**	**0.097**	**0.065**	**0.773**
TA2-3	0.48	0.30	0.28	0.14	0.15	0.16	0.36	0.52	0.29
TA2-4	0.49	0.31	0.28	0.32	0.19	0.17	0.12	0.06	0.26
TA2-5	0.34	0.29	0.27	0.13	0.12	0.10	0.14	0.60	0.23
TA2-6	0.33	0.21	0.18	0.05	0.20	0.20	0.21	0.58	0.24
TA2-7	0.51	0.30	0.29	0.31	0.41	0.40	0.32	0.18	0.36
TA3-1	0.52	0.42	0.37	0.09	0.29	0.30	0.29	0.41	0.34
TA3-2	0.51	0.43	0.37	0.04	0.30	0.31	0.31	0.44	0.34
TA3-3	0.49	0.42	0.36	0.14	0.27	0.32	0.32	0.45	0.34
TA3-4	0.48	0.42	0.36	0.13	0.26	0.34	0.37	0.47	0.35
TA3-5	0.44	0.35	0.31	0.07	0.20	0.30	0.37	0.42	0.31
TA3-6	0.38	0.30	0.26	0.07	0.26	0.24	0.17	0.28	0.24
TA3-7	0.46	0.36	0.30	0.09	0.23	0.22	0.16	0.08	0.25
TA3-8	0.24	0.16	0.15	0.21	0.14	0.21	0.26	0.15	0.20
TA3-9	0.05	0.06	0.06	0.06	0.09	0.10	0.14	0.08	0.08
TA3-10	0.48	0.38	0.32	0.39	0.22	0.34	0.43	0.34	0.37
TA3-11	0.23	0.20	0.19	0.05	0.17	0.24	0.26	0.44	0.22
TA3-12	0.13	0.07	0.06	0.26	0.21	0.10	0.11	0.09	0.13
TA3-13	0.47	0.30	0.27	0.09	0.14	0.23	0.31	0.42	0.28
TA3-14	0.31	0.28	0.24	0.20	0.04	0.09	0.15	0.21	0.19
TA3-15	0.13	0.10	0.09	0.11	0.09	0.12	0.09	0.07	0.11
TA3-16	0.65	0.59	0.49	0.16	0.38	0.46	0.40	0.37	0.45
TA3-17	0.42	0.32	0.27	0.21	0.30	0.40	0.41	0.24	0.34
TA4-1	0.49	0.27	0.22	0.34	0.26	0.29	0.23	0.21	0.31
TA4-2	0.54	0.27	0.20	0.14	0.15	0.13	0.13	0.16	0.23
TA4-3	0.55	0.24	0.16	0.23	0.21	0.17	0.14	0.17	0.25
TA4-4	0.42	0.16	0.16	0.15	0.22	0.18	0.13	0.12	0.21
TA4-5	0.29	0.12	0.16	0.07	0.17	0.18	0.21	0.15	0.18
TA4-6	0.30	0.17	0.15	0.06	0.27	0.29	0.27	0.28	0.23
TA4-7	0.38	0.28	0.25	0.07	0.30	0.30	0.30	0.29	0.28
TA4-8	0.46	0.31	0.30	0.03	0.29	0.30	0.34	0.26	0.29
TA4-9	0.49	0.32	0.31	0.04	0.30	0.32	0.36	0.25	0.31
TA4-10	0.49	0.27	0.26	0.07	0.27	0.24	0.25	0.35	0.28
TA4-11	0.42	0.44	0.33	0.04	0.21	0.24	0.24	0.22	0.27
TA4-12	0.36	0.31	0.25	0.20	0.32	0.28	0.21	0.05	0.26
TA4-13	0.25	0.23	0.18	0.06	0.26	0.27	0.28	0.20	0.22
TA4-14	0.28	0.25	0.21	0.09	0.21	0.22	0.25	0.24	0.22
TA4-15	0.31	0.20	0.20	0.02	0.28	0.26	0.24	0.24	0.22
TA4-16	0.39	0.26	0.25	0.10	0.20	0.18	0.16	0.22	0.22
TA4-17	0.42	0.20	0.19	0.08	0.18	0.15	0.15	0.16	0.20
TA4-18	0.34	0.20	0.17	0.17	0.28	0.28	0.30	0.22	0.26
TA4-19	0.10	0.16	0.11	0.01	0.23	0.20	0.21	0.15	0.15
TA4-20	0.12	0.16	0.11	0.02	0.08	0.07	0.07	0.13	0.09
TA4-21	0.32	0.15	0.08	0.06	0.13	0.13	0.14	0.18	0.16
TA4-22	0.37	0.06	0.11	0.15	0.17	0.14	0.15	0.20	0.18
TA4-23	0.34	0.12	0.18	0.28	0.21	0.19	0.21	0.28	0.23
TA4-24	0.25	0.13	0.06	0.26	0.14	0.14	0.15	0.23	0.18
TA4-25	0.28	0.15	0.03	0.32	0.35	0.32	0.30	0.21	0.26
TA4-26	0.09	0.27	0.43	0.32	0.30	0.29	0.27	0.22	0.26
TA4-27	0.11	0.12	0.11	0.18	0.21	0.18	0.18	0.19	0.16
TA4-28	0.27	0.17	0.09	0.09	0.17	0.14	0.15	0.27	0.17
TA4-29	0.10	0.21	0.12	0.06	0.10	0.10	0.15	0.25	0.13
TA4-30	0.21	0.20	0.13	0.10	0.19	0.20	0.25	0.26	0.19
TA4-31	0.24	0.20	0.17	0.06	0.32	0.29	0.29	0.23	0.23
TA4-32	0.33	0.19	0.16	0.14	0.21	0.20	0.19	0.17	0.21
TA4-33	0.35	0.12	0.10	0.14	0.24	0.25	0.26	0.21	0.23
TA4-34	0.39	0.22	0.17	0.14	0.08	0.06	0.09	0.06	0.16
TA4-35	0.32	0.39	0.33	0.12	0.25	0.27	0.30	0.25	0.28
TA4-36	0.07	0.11	0.21	0.31	0.27	0.26	0.26	0.17	0.21

Annex I - Details of the Predicted Wind Velocity Ratio (VR_W)

	Base Summer								
Test Point	**E**	**ESE**	**SE**	**S**	**SSW**	**SW**	**WSW**	**W**	
Wind speed at infinity	**6.17**	**5.55**	**4.92**	**5.65**	**5.47**	**7.06**	**7.66**	**6.15**	**VR_w**
Wind probability	**0.138**	**0.079**	**0.065**	**0.101**	**0.083**	**0.145**	**0.097**	**0.065**	**0.773**
TA4-37	0.33	0.35	0.32	0.06	0.28	0.27	0.26	0.35	0.27
TA4-38	0.29	0.26	0.23	0.04	0.30	0.27	0.26	0.32	0.25
TA4-39	0.29	0.20	0.20	0.14	0.35	0.34	0.31	0.32	0.27
TA4-40	0.27	0.19	0.14	0.10	0.30	0.34	0.33	0.32	0.26
TA4-41	0.26	0.21	0.05	0.08	0.22	0.21	0.15	0.25	0.18
TA4-42	0.16	0.20	0.12	0.33	0.27	0.20	0.26	0.19	0.22
TA5-1	0.76	0.57	0.58	0.39	0.21	0.24	0.26	0.11	0.40
TA5-2	0.76	0.57	0.56	0.34	0.19	0.17	0.21	0.09	0.37
TA5-3	0.75	0.51	0.44	0.30	0.12	0.10	0.21	0.13	0.33
TA5-4	0.76	0.41	0.45	0.12	0.03	0.26	0.32	0.27	0.35
TA5-5	0.73	0.41	0.37	0.12	0.30	0.41	0.38	0.36	0.41
TA5-6	0.77	0.39	0.36	0.08	0.32	0.31	0.15	0.31	0.36
TA5-7	0.78	0.40	0.42	0.24	0.14	0.22	0.16	0.24	0.34
TA5-8	0.77	0.57	0.54	0.32	0.18	0.18	0.17	0.16	0.37
TA5-9	0.78	0.58	0.58	0.37	0.25	0.20	0.18	0.13	0.39
TA5-10	0.78	0.58	0.59	0.34	0.25	0.19	0.13	0.18	0.39
TA5-11	0.80	0.54	0.47	0.28	0.23	0.17	0.07	0.24	0.36
TA5-12	0.80	0.43	0.45	0.14	0.27	0.20	0.02	0.32	0.34
TA5-13	0.15	0.10	0.12	0.07	0.37	0.25	0.09	0.25	0.17
TA6-1	0.11	0.25	0.36	0.34	0.06	0.17	0.24	0.07	0.19
TA6-2	0.72	0.53	0.55	0.34	0.11	0.25	0.14	0.05	0.35
TA6-3	0.71	0.53	0.54	0.31	0.18	0.15	0.09	0.17	0.34
TA6-4	0.66	0.48	0.49	0.25	0.06	0.25	0.23	0.02	0.32
TA6-5	0.66	0.49	0.48	0.20	0.18	0.19	0.16	0.21	0.33
TA6-6	0.68	0.53	0.51	0.26	0.15	0.06	0.11	0.13	0.30
TA6-7	0.62	0.49	0.43	0.19	0.14	0.05	0.11	0.06	0.27
TA6-8	0.59	0.50	0.44	0.15	0.22	0.15	0.12	0.17	0.29
TA7-1	0.15	0.06	0.09	0.04	0.10	0.17	0.21	0.43	0.15
TA7-2	0.14	0.08	0.07	0.08	0.10	0.06	0.02	0.11	0.08
TA7-3	0.11	0.25	0.18	0.20	0.20	0.18	0.09	0.15	0.16
TA7-4	0.11	0.26	0.30	0.17	0.19	0.26	0.32	0.12	0.21
TA8-1	0.05	0.07	0.06	0.17	0.10	0.06	0.07	0.10	0.08
TA8-2	0.07	0.07	0.06	0.17	0.18	0.12	0.07	0.02	0.10
TA8-3	0.02	0.04	0.03	0.13	0.17	0.12	0.05	0.07	0.08
TA8-4	0.03	0.13	0.12	0.25	0.27	0.27	0.26	0.07	0.18
TA8-5	0.07	0.01	0.01	0.05	0.05	0.05	0.05	0.08	0.05
TA8-6	0.11	0.16	0.13	0.18	0.24	0.22	0.10	0.04	0.15
TA8-7	0.15	0.05	0.05	0.21	0.28	0.28	0.27	0.06	0.18
TA8-8	0.10	0.19	0.16	0.25	0.32	0.32	0.31	0.07	0.22
TA8-9	0.30	0.13	0.11	0.19	0.15	0.14	0.16	0.10	0.17
TA8-10	0.36	0.08	0.07	0.32	0.26	0.27	0.31	0.11	0.25
TA8-11	0.13	0.18	0.14	0.23	0.29	0.30	0.29	0.07	0.21
TA8-12	0.06	0.10	0.09	0.11	0.24	0.23	0.21	0.04	0.14
TA8-13	0.11	0.14	0.08	0.18	0.14	0.16	0.16	0.06	0.13
TA9-1	0.22	0.14	0.13	0.12	0.25	0.13	0.05	0.05	0.14
TA9-2	0.14	0.07	0.06	0.06	0.08	0.06	0.09	0.05	0.08
TA9-3	0.10	0.07	0.07	0.11	0.08	0.13	0.08	0.01	0.09
TA10-1	0.08	0.01	0.02	0.07	0.01	0.04	0.04	0.05	0.05
TA10-2	0.06	0.03	0.03	0.14	0.16	0.13	0.12	0.06	0.10
TA10-3	0.06	0.01	0.05	0.13	0.19	0.16	0.05	0.02	0.09
TA11-1	0.05	0.09	0.04	0.05	0.16	0.13	0.05	0.04	0.08
TA11-2	0.08	0.06	0.06	0.04	0.07	0.06	0.05	0.07	0.06
TA11-3	0.20	0.14	0.10	0.11	0.32	0.25	0.20	0.03	0.18
TA11-4	0.21	0.11	0.06	0.11	0.30	0.19	0.26	0.05	0.17
TA11-5	0.19	0.08	0.12	0.38	0.34	0.29	0.04	0.01	0.20
TA11-6	0.09	0.16	0.11	0.33	0.14	0.31	0.39	0.10	0.22
TA12-1	0.07	0.10	0.10	0.07	0.08	0.04	0.05	0.02	0.07
TA12-2	0.05	0.14	0.09	0.05	0.07	0.07	0.04	0.03	0.07

Annex I - Details of the Predicted Wind Velocity Ratio (VR_W)

	Base Summer								
Test Point	**E**	**ESE**	**SE**	**S**	**SSW**	**SW**	**WSW**	**W**	
Wind speed at infinity	**6.17**	**5.55**	**4.92**	**5.65**	**5.47**	**7.06**	**7.66**	**6.15**	**VR_w**
Wind probability	**0.138**	**0.079**	**0.065**	**0.101**	**0.083**	**0.145**	**0.097**	**0.065**	**0.773**
TA12-3	0.12	0.15	0.16	0.06	0.08	0.03	0.12	0.03	0.09
TA12-4	0.11	0.11	0.13	0.12	0.07	0.05	0.06	0.02	0.08
TA12-5	0.33	0.30	0.24	0.22	0.07	0.03	0.12	0.03	0.17
TA12-6	0.30	0.23	0.22	0.21	0.23	0.17	0.17	0.04	0.21
TA12-7	0.18	0.12	0.18	0.10	0.18	0.13	0.10	0.03	0.13
TA12-8	0.10	0.26	0.25	0.22	0.02	0.03	0.14	0.05	0.12
TA12-9	0.28	0.30	0.30	0.22	0.03	0.03	0.23	0.02	0.17
TA13-1	0.41	0.10	0.12	0.08	0.17	0.14	0.10	0.07	0.16
TA13-2	0.49	0.11	0.14	0.13	0.18	0.13	0.26	0.11	0.21
TA13-3	0.30	0.45	0.43	0.22	0.18	0.16	0.18	0.12	0.25
TA13-4	0.49	0.08	0.07	0.07	0.11	0.10	0.09	0.15	0.16
TA13-5	0.14	0.46	0.39	0.16	0.08	0.16	0.15	0.12	0.19
TA13-6	0.75	0.15	0.11	0.17	0.07	0.17	0.25	0.09	0.26
TA13-7	0.93	0.71	0.68	0.22	0.16	0.13	0.12	0.08	0.39
TA13-8	0.83	0.34	0.31	0.07	0.08	0.09	0.03	0.16	0.26
TA14-1	0.31	0.13	0.10	0.18	0.24	0.27	0.34	0.19	0.24
TA14-2	0.40	0.10	0.08	0.12	0.18	0.21	0.31	0.20	0.22
TA14-3	0.43	0.09	0.07	0.13	0.05	0.08	0.11	0.09	0.15
TA14-4	0.34	0.21	0.27	0.12	0.32	0.27	0.25	0.17	0.25
TA14-5	0.05	0.08	0.07	0.06	0.23	0.21	0.23	0.13	0.13
TA14-6	0.06	0.14	0.20	0.09	0.21	0.24	0.23	0.18	0.16
TA15-1	0.06	0.12	0.14	0.03	0.25	0.27	0.30	0.05	0.16
TA15-2	0.05	0.10	0.07	0.07	0.24	0.24	0.27	0.21	0.16
TA15-3	0.02	0.16	0.16	0.07	0.25	0.28	0.29	0.12	0.17
TA15-4	0.06	0.06	0.06	0.11	0.19	0.22	0.23	0.10	0.13
TA15-5	0.07	0.07	0.05	0.11	0.22	0.18	0.19	0.25	0.14
TA15-6	0.32	0.09	0.09	0.15	0.24	0.25	0.26	0.17	0.21
TA16-1	0.23	0.17	0.10	0.35	0.43	0.47	0.50	0.26	0.33
TA16-2	0.06	0.17	0.11	0.31	0.33	0.36	0.38	0.28	0.25
TA16-3	0.25	0.10	0.04	0.31	0.22	0.17	0.16	0.13	0.18
TA16-4	0.22	0.09	0.05	0.13	0.15	0.14	0.16	0.07	0.14
TA16-5	0.63	0.16	0.13	0.35	0.17	0.14	0.14	0.14	0.26
TA16-6	0.20	0.12	0.10	0.20	0.22	0.20	0.20	0.16	0.18
TA16-7	0.35	0.20	0.16	0.10	0.47	0.45	0.44	0.20	0.31
TA16-8	0.63	0.20	0.22	0.38	0.54	0.50	0.47	0.24	0.43
TA16-9	0.54	0.16	0.23	0.34	0.51	0.47	0.43	0.24	0.39
TA16-10	0.09	0.25	0.19	0.21	0.44	0.39	0.33	0.25	0.27
TA16-11	0.26	0.32	0.26	0.24	0.36	0.34	0.29	0.22	0.29
TA17-1	0.24	0.15	0.25	0.35	0.57	0.53	0.37	0.23	0.35
TA17-2	0.18	0.19	0.24	0.30	0.52	0.48	0.35	0.34	0.33
TA17-3	0.58	0.21	0.23	0.24	0.52	0.42	0.31	0.38	0.38
TA17-4	0.89	0.33	0.26	0.20	0.50	0.46	0.36	0.36	0.46
TA17-5	0.27	0.08	0.06	0.05	0.08	0.11	0.08	0.16	0.12
TA17-6	0.37	0.09	0.09	0.04	0.04	0.06	0.07	0.25	0.13
TA17-7	0.45	0.08	0.07	0.04	0.32	0.25	0.21	0.33	0.24
TA17-8	0.60	0.30	0.25	0.04	0.22	0.14	0.10	0.26	0.25
TA18-1	0.48	0.19	0.12	0.17	0.65	0.65	0.66	0.54	0.46
TA18-2	0.43	0.17	0.12	0.06	0.58	0.61	0.65	0.53	0.41
TA18-3	0.40	0.14	0.06	0.12	0.35	0.24	0.43	0.52	0.29
TA18-4	0.40	0.16	0.12	0.07	0.38	0.32	0.47	0.52	0.31
TA18-5	0.45	0.19	0.14	0.10	0.60	0.62	0.66	0.54	0.43
TA18-6	0.47	0.20	0.14	0.20	0.65	0.65	0.65	0.54	0.46
TA18-7	0.46	0.19	0.15	0.17	0.67	0.67	0.67	0.52	0.46
TA18-8	0.43	0.18	0.16	0.09	0.53	0.54	0.63	0.52	0.40
TA18-9	0.41	0.18	0.14	0.02	0.41	0.42	0.46	0.50	0.33
TA18-10	0.35	0.13	0.16	0.02	0.20	0.22	0.22	0.19	0.20
TA18-11	0.44	0.21	0.08	0.36	0.66	0.65	0.65	0.52	0.47
TA18-12	0.35	0.20	0.08	0.24	0.63	0.62	0.61	0.47	0.42

Annex I - Details of the Predicted Wind Velocity Ratio (VR_W)

	Base Summer								
Test Point	**E**	**ESE**	**SE**	**S**	**SSW**	**SW**	**WSW**	**W**	
Wind speed at infinity	**6.17**	**5.55**	**4.92**	**5.65**	**5.47**	**7.06**	**7.66**	**6.15**	VR_w
Wind probability	**0.138**	**0.079**	**0.065**	**0.101**	**0.083**	**0.145**	**0.097**	**0.065**	**0.773**
TA18-13	0.22	0.21	0.09	0.20	0.60	0.58	0.57	0.44	0.38
TA18-14	0.06	0.18	0.09	0.06	0.52	0.50	0.50	0.37	0.29
TA19-1	0.16	0.07	0.04	0.10	0.16	0.27	0.34	0.13	0.17
TA19-2	0.17	0.01	0.02	0.14	0.08	0.11	0.16	0.10	0.11
TA19-3	0.05	0.08	0.02	0.08	0.06	0.24	0.29	0.14	0.13
TA19-4	0.12	0.04	0.07	0.12	0.13	0.33	0.38	0.19	0.19
TA19-5	0.19	0.02	0.05	0.08	0.03	0.08	0.09	0.12	0.09
TA19-6	0.15	0.08	0.06	0.08	0.07	0.25	0.24	0.15	0.15
TA19-7	0.05	0.06	0.02	0.08	0.06	0.22	0.16	0.35	0.12
TA19-8	0.05	0.03	0.02	0.03	0.07	0.09	0.10	0.05	0.06
TA19-9	0.05	0.07	0.03	0.09	0.12	0.32	0.29	0.15	0.15
TA19-10	0.02	0.05	0.04	0.07	0.19	0.16	0.20	0.26	0.12
TA19-11	0.03	0.02	0.02	0.08	0.25	0.27	0.32	0.28	0.16
TA19-12	0.05	0.07	0.08	0.02	0.37	0.41	0.43	0.26	0.22
TA19-13	0.03	0.05	0.08	0.02	0.12	0.15	0.20	0.13	0.10
TA19-14	0.17	0.08	0.11	0.08	0.10	0.13	0.12	0.28	0.13
TA19-15	0.28	0.12	0.11	0.11	0.07	0.09	0.08	0.48	0.16
TA19-16	0.29	0.13	0.13	0.08	0.22	0.22	0.18	0.50	0.22
TA20-1	0.03	0.03	0.02	0.03	0.08	0.08	0.07	0.12	0.06
TA20-2	0.03	0.01	0.02	0.02	0.04	0.05	0.04	0.19	0.05
TA20-3	0.03	0.03	0.02	0.04	0.07	0.10	0.12	0.15	0.07
TA20-4	0.02	0.07	0.04	0.08	0.19	0.26	0.34	0.38	0.17
TA21-1	0.26	0.09	0.09	0.03	0.07	0.03	0.06	0.13	0.10
TA21-2	0.04	0.03	0.05	0.04	0.04	0.05	0.04	0.17	0.05
TA21-3	0.04	0.07	0.07	0.12	0.03	0.05	0.06	0.08	0.06
TA21-4	0.13	0.07	0.10	0.07	0.15	0.13	0.10	0.20	0.12
TA21-5	0.17	0.09	0.12	0.02	0.10	0.10	0.08	0.30	0.12
TA21-6	0.26	0.13	0.14	0.06	0.09	0.10	0.07	0.30	0.14
TA21-7	0.08	0.04	0.09	0.01	0.05	0.03	0.02	0.16	0.06
TA21-8	0.15	0.04	0.10	0.02	0.06	0.03	0.05	0.20	0.08
TA21-9	0.10	0.05	0.09	0.03	0.03	0.03	0.04	0.16	0.06
TA21-10	0.21	0.09	0.10	0.07	0.12	0.05	0.08	0.25	0.12
TA21-11	0.05	0.07	0.07	0.04	0.04	0.03	0.02	0.04	0.04
TA21-12	0.07	0.04	0.07	0.08	0.02	0.02	0.03	0.14	0.06
TA21-13	0.03	0.01	0.02	0.05	0.04	0.05	0.03	0.10	0.04
TA21-14	0.07	0.03	0.02	0.02	0.03	0.02	0.02	0.14	0.04
TA21-15	0.21	0.20	0.15	0.19	0.17	0.17	0.16	0.22	0.18
TA21-16	0.19	0.10	0.09	0.02	0.07	0.04	0.06	0.29	0.10
TA21-17	0.05	0.22	0.17	0.19	0.18	0.17	0.17	0.28	0.17
TA21-18	0.07	0.19	0.15	0.16	0.15	0.13	0.05	0.17	0.13
TA21-19	0.06	0.02	0.02	0.05	0.13	0.06	0.13	0.17	0.08
TA22-1	0.02	0.15	0.11	0.05	0.12	0.06	0.06	0.23	0.09
TA22-2	0.09	0.10	0.07	0.02	0.05	0.04	0.06	0.23	0.08
TA22-3	0.11	0.09	0.05	0.03	0.08	0.02	0.07	0.18	0.07
TA22-4	0.17	0.22	0.17	0.16	0.08	0.13	0.06	0.12	0.14
TA22-5	0.13	0.18	0.13	0.08	0.04	0.04	0.04	0.16	0.09
TA23-1	0.04	0.10	0.04	0.12	0.12	0.18	0.17	0.08	0.11
TA23-2	0.09	0.12	0.07	0.16	0.07	0.38	0.39	0.32	0.21
TA23-3	0.03	0.12	0.08	0.18	0.07	0.09	0.10	0.25	0.11
TA23-4	0.11	0.06	0.08	0.01	0.27	0.46	0.43	0.40	0.24
TA23-5	0.10	0.16	0.12	0.16	0.09	0.09	0.12	0.31	0.13
TA23-6	0.03	0.23	0.16	0.23	0.12	0.13	0.14	0.37	0.16
TA23-7	0.13	0.02	0.03	0.04	0.35	0.51	0.42	0.06	0.22
TA23-8	0.20	0.12	0.08	0.11	0.06	0.04	0.11	0.18	0.11
TA23-9	0.10	0.11	0.06	0.07	0.32	0.43	0.41	0.43	0.24
TA23-10	0.04	0.18	0.12	0.07	0.10	0.07	0.05	0.36	0.11
TA23-11	0.16	0.10	0.10	0.06	0.10	0.16	0.11	0.40	0.14
TA23-12	0.18	0.06	0.06	0.07	0.04	0.11	0.11	0.24	0.11

Annex I - Details of the Predicted Wind Velocity Ratio (VR_W)

	Base Summer								
Test Point	**E**	**ESE**	**SE**	**S**	**SSW**	**SW**	**WSW**	**W**	
Wind speed at infinity	**6.17**	**5.55**	**4.92**	**5.65**	**5.47**	**7.06**	**7.66**	**6.15**	VR_w
Wind probability	**0.138**	**0.079**	**0.065**	**0.101**	**0.083**	**0.145**	**0.097**	**0.065**	**0.773**
TA23-13	0.20	0.01	0.03	0.04	0.09	0.11	0.06	0.16	0.09
TA24-1	0.15	0.13	0.11	0.08	0.07	0.08	0.05	0.33	0.12
TA24-2	0.15	0.12	0.12	0.13	0.12	0.12	0.10	0.16	0.13
TA24-3	0.17	0.16	0.13	0.11	0.11	0.09	0.11	0.12	0.12
TA24-4	0.13	0.07	0.09	0.18	0.13	0.24	0.17	0.04	0.14
TA24-5	0.23	0.21	0.20	0.09	0.03	0.03	0.02	0.17	0.12
TA24-6	0.16	0.20	0.18	0.22	0.02	0.03	0.02	0.07	0.11
TA24-7	0.05	0.07	0.02	0.26	0.13	0.05	0.10	0.22	0.11
TA24-8	0.04	0.04	0.06	0.28	0.15	0.02	0.05	0.21	0.10
TA24-9	0.13	0.16	0.13	0.08	0.04	0.05	0.07	0.02	0.08
TA25-1	0.06	0.06	0.04	0.02	0.17	0.04	0.06	0.07	0.07
TA25-2	0.17	0.14	0.13	0.01	0.01	0.01	0.01	0.03	0.07
TA25-3	0.17	0.05	0.07	0.03	0.06	0.04	0.07	0.05	0.08
TA25-4	0.18	0.02	0.08	0.06	0.17	0.07	0.13	0.02	0.10
TA25-5	0.05	0.03	0.02	0.14	0.12	0.16	0.07	0.04	0.09
TA25-6	0.29	0.20	0.18	0.19	0.18	0.17	0.22	0.04	0.20
TA25-7	0.29	0.11	0.13	0.08	0.09	0.07	0.06	0.02	0.12
TA25-8	0.32	0.22	0.20	0.13	0.17	0.12	0.19	0.04	0.19
TA25-9	0.10	0.06	0.05	0.13	0.08	0.11	0.13	0.06	0.10
TA26-1	0.15	0.07	0.09	0.06	0.02	0.07	0.05	0.07	0.08
TA26-2	0.12	0.26	0.21	0.10	0.06	0.10	0.14	0.16	0.13
TA26-3	0.16	0.09	0.08	0.07	0.05	0.07	0.04	0.16	0.09
TA26-4	0.20	0.17	0.16	0.15	0.13	0.12	0.05	0.17	0.14
TA26-5	0.16	0.17	0.12	0.02	0.02	0.01	0.06	0.11	0.08
TA27-1	0.12	0.24	0.15	0.10	0.08	0.16	0.14	0.05	0.13
TA27-2	0.03	0.25	0.16	0.12	0.15	0.15	0.15	0.07	0.13
TA27-3	0.16	0.05	0.05	0.03	0.03	0.02	0.03	0.07	0.06
TA27-4	0.16	0.03	0.05	0.02	0.11	0.04	0.04	0.07	0.07
TA27-5	0.07	0.12	0.09	0.04	0.11	0.07	0.06	0.04	0.07
TA27-6	0.11	0.20	0.12	0.11	0.08	0.09	0.13	0.04	0.11
TA27-7	0.10	0.11	0.05	0.05	0.08	0.07	0.04	0.02	0.07
TA27-8	0.08	0.07	0.04	0.09	0.03	0.03	0.10	0.07	0.06
TA27-9	0.17	0.27	0.21	0.06	0.04	0.05	0.14	0.03	0.12
Average LVR	**0.26**	**0.20**	**0.18**	**0.15**	**0.21**	**0.22**	**0.22**	**0.21**	**0.21**
AS01	0.09	0.22	0.19	0.24	0.23	0.12	0.08	0.38	0.17
AS02	0.18	0.10	0.09	0.10	0.18	0.18	0.08	0.23	0.15
AS03	0.25	0.21	0.17	0.13	0.37	0.37	0.39	0.29	0.28
AS04	0.03	0.35	0.36	0.18	0.10	0.20	0.22	0.45	0.21
AS05	0.03	0.06	0.05	0.20	0.19	0.24	0.34	0.19	0.16
AS06	0.21	0.28	0.29	0.15	0.14	0.18	0.41	0.63	0.26
AS07	0.24	0.07	0.07	0.20	0.14	0.08	0.07	0.04	0.12
AS08	0.24	0.10	0.04	0.24	0.22	0.11	0.13	0.17	0.16
AS09	0.30	0.32	0.27	0.14	0.21	0.23	0.17	0.16	0.23
AS10	0.12	0.21	0.25	0.20	0.23	0.29	0.34	0.62	0.27
AS11	0.07	0.07	0.11	0.06	0.33	0.32	0.39	0.13	0.19
AS12	0.23	0.39	0.30	0.25	0.10	0.27	0.22	0.07	0.23
AS13	0.09	0.16	0.17	0.08	0.25	0.29	0.23	0.47	0.21
AS14	0.15	0.18	0.11	0.15	0.14	0.16	0.11	0.19	0.15
AS15	0.11	0.12	0.06	0.07	0.24	0.19	0.27	0.14	0.15
AS16	0.15	0.25	0.17	0.09	0.23	0.30	0.29	0.13	0.21
AS17	0.12	0.13	0.08	0.09	0.27	0.35	0.27	0.43	0.22
AS18	0.14	0.05	0.05	0.08	0.23	0.30	0.04	0.39	0.16
AS19	0.07	0.17	0.10	0.06	0.15	0.17	0.24	0.12	0.14
AS20	0.17	0.21	0.14	0.28	0.25	0.22	0.19	0.04	0.20
AS21	0.09	0.13	0.08	0.20	0.31	0.38	0.36	0.19	0.23
BS01	0.13	0.17	0.11	0.08	0.26	0.39	0.35	0.15	0.22
BS02	0.05	0.10	0.03	0.12	0.17	0.28	0.24	0.05	0.14
BS03	0.07	0.10	0.10	0.17	0.37	0.32	0.29	0.16	0.20

Annex I - Details of the Predicted Wind Velocity Ratio (VR_W)

	Base Summer								
Test Point	**E**	**ESE**	**SE**	**S**	**SSW**	**SW**	**WSW**	**W**	
Wind speed at infinity	**6.17**	**5.55**	**4.92**	**5.65**	**5.47**	**7.06**	**7.66**	**6.15**	**VR_w**
Wind probability	**0.138**	**0.079**	**0.065**	**0.101**	**0.083**	**0.145**	**0.097**	**0.065**	**0.773**
BS04	0.09	0.17	0.19	0.15	0.44	0.39	0.35	0.33	0.26
BS05	0.20	0.13	0.16	0.20	0.41	0.39	0.36	0.36	0.28
BS06	0.19	0.15	0.08	0.32	0.14	0.12	0.17	0.31	0.18
BS07	0.05	0.15	0.14	0.24	0.24	0.14	0.12	0.20	0.15
BS08	0.22	0.17	0.15	0.06	0.17	0.21	0.23	0.25	0.18
BS09	0.06	0.18	0.17	0.22	0.28	0.22	0.10	0.28	0.18
BS10	0.11	0.04	0.03	0.14	0.22	0.13	0.05	0.30	0.12
BS11	0.06	0.16	0.12	0.14	0.31	0.25	0.19	0.01	0.16
BS12	0.25	0.28	0.24	0.20	0.20	0.30	0.26	0.10	0.24
BS13	0.24	0.22	0.18	0.03	0.04	0.03	0.04	0.06	0.10
BS14	0.22	0.22	0.20	0.04	0.10	0.10	0.07	0.19	0.14
BS15	0.17	0.12	0.13	0.08	0.24	0.19	0.20	0.21	0.17
BS16	0.18	0.26	0.24	0.16	0.17	0.11	0.06	0.04	0.15
CS01	0.20	0.30	0.29	0.23	0.20	0.21	0.23	0.15	0.22
CS02	0.24	0.03	0.02	0.17	0.08	0.11	0.15	0.14	0.13
CS03	0.14	0.07	0.04	0.24	0.18	0.10	0.04	0.05	0.11
CS04	0.15	0.19	0.20	0.21	0.23	0.18	0.13	0.04	0.17
CS05	0.14	0.09	0.11	0.17	0.21	0.12	0.07	0.08	0.13
CS06	0.24	0.11	0.07	0.15	0.03	0.04	0.05	0.05	0.10
CS07	0.24	0.16	0.06	0.07	0.12	0.12	0.18	0.11	0.14
CS08	0.23	0.18	0.14	0.19	0.19	0.27	0.29	0.14	0.22
CS09	0.12	0.19	0.20	0.12	0.31	0.22	0.04	0.02	0.16
CS10	0.22	0.13	0.17	0.16	0.21	0.23	0.17	0.19	0.19
CS11	0.21	0.05	0.05	0.08	0.30	0.27	0.06	0.07	0.15
CS12	0.31	0.12	0.12	0.06	0.23	0.16	0.03	0.06	0.15
CS13	0.26	0.35	0.32	0.14	0.07	0.05	0.05	0.05	0.16
CS14	0.17	0.38	0.32	0.14	0.07	0.02	0.03	0.05	0.13
CS15	0.07	0.43	0.37	0.11	0.09	0.04	0.06	0.03	0.13
DS01	0.23	0.35	0.31	0.14	0.14	0.14	0.23	0.10	0.20
DS02	0.35	0.29	0.27	0.11	0.20	0.15	0.22	0.07	0.21
DS03	0.13	0.16	0.14	0.10	0.23	0.13	0.30	0.08	0.16
DS04	0.43	0.41	0.37	0.12	0.27	0.24	0.34	0.13	0.29
DS05	0.10	0.15	0.17	0.03	0.06	0.06	0.07	0.05	0.08
DS06	0.21	0.23	0.30	0.07	0.16	0.14	0.11	0.06	0.16
DS07	0.26	0.23	0.31	0.09	0.14	0.08	0.07	0.02	0.15
DS08	0.45	0.30	0.34	0.12	0.17	0.04	0.06	0.07	0.19
ES01	0.29	0.13	0.09	0.07	0.12	0.11	0.06	0.48	0.16
ES02	0.28	0.13	0.04	0.04	0.11	0.11	0.12	0.44	0.15
ES03	0.01	0.09	0.02	0.03	0.50	0.54	0.61	0.46	0.29
ES04	0.01	0.01	0.01	0.02	0.07	0.04	0.03	0.04	0.03
ES05	0.03	0.02	0.02	0.03	0.15	0.08	0.16	0.25	0.08
ES06	0.05	0.08	0.02	0.08	0.48	0.51	0.61	0.58	0.30
ES07	0.04	0.03	0.03	0.06	0.11	0.12	0.06	0.24	0.08
ES08	0.27	0.12	0.05	0.04	0.10	0.11	0.32	0.42	0.18
ES09	0.04	0.09	0.06	0.04	0.41	0.44	0.51	0.40	0.25
ES10	0.02	0.03	0.02	0.02	0.08	0.05	0.04	0.07	0.04
ES11	0.02	0.09	0.04	0.05	0.48	0.50	0.50	0.22	0.25
ES12	0.08	0.05	0.02	0.07	0.44	0.46	0.47	0.24	0.24
ES13	0.04	0.04	0.02	0.02	0.24	0.26	0.39	0.43	0.17
ES14	0.06	0.03	0.05	0.08	0.33	0.35	0.29	0.33	0.19
Average VR	**0.16**	**0.17**	**0.14**	**0.12**	**0.21**	**0.21**	**0.20**	**0.20**	**0.18**

Annex I - Details of the Predicted Wind Velocity Ratio (VR_W)

	Proposed Summer								
Test Point	**E**	**ESE**	**SE**	**S**	**SSW**	**SW**	**WSW**	**W**	
Wind speed at infinity	**6.17**	**5.55**	**4.92**	**5.65**	**5.47**	**7.06**	**7.66**	**6.15**	**VR_w**
Wind probability	**0.138**	**0.079**	**0.065**	**0.101**	**0.083**	**0.145**	**0.097**	**0.065**	**0.773**
AP01	0.12	0.12	0.03	0.38	0.35	0.25	0.21	0.06	0.20
AP02	0.17	0.17	0.18	0.17	0.33	0.29	0.30	0.12	0.22
AP03	0.20	0.29	0.22	0.10	0.31	0.45	0.48	0.31	0.30
AP04	0.26	0.34	0.26	0.13	0.33	0.51	0.55	0.55	0.37
AP05	0.09	0.27	0.15	0.38	0.31	0.43	0.43	0.55	0.32
AP06	0.15	0.27	0.17	0.15	0.26	0.36	0.35	0.42	0.26
AP07	0.17	0.10	0.10	0.15	0.14	0.27	0.25	0.21	0.18
AP08	0.19	0.10	0.11	0.05	0.11	0.25	0.25	0.21	0.17
AP09	0.18	0.18	0.17	0.19	0.11	0.21	0.26	0.30	0.20
AP10	0.10	0.31	0.28	0.33	0.09	0.07	0.14	0.31	0.18
AP11	0.14	0.36	0.33	0.31	0.05	0.09	0.11	0.27	0.19
AP12	0.13	0.27	0.27	0.27	0.08	0.09	0.11	0.04	0.15
AP13	0.17	0.18	0.14	0.38	0.22	0.10	0.04	0.03	0.16
AP14	0.19	0.39	0.32	0.38	0.32	0.20	0.25	0.04	0.26
AP15	0.16	0.36	0.30	0.40	0.44	0.42	0.36	0.09	0.32
AP16	0.14	0.23	0.20	0.31	0.37	0.41	0.42	0.09	0.28
AP17	0.10	0.25	0.23	0.21	0.29	0.30	0.30	0.22	0.23
AP18	0.16	0.18	0.19	0.19	0.32	0.34	0.35	0.25	0.25
AP19	0.22	0.23	0.22	0.14	0.29	0.33	0.35	0.26	0.26
AP20	0.22	0.34	0.30	0.06	0.22	0.27	0.32	0.31	0.25
AP21	0.24	0.47	0.40	0.17	0.14	0.19	0.30	0.34	0.26
AP22	0.22	0.54	0.46	0.27	0.02	0.06	0.25	0.34	0.24
AP23	0.20	0.57	0.48	0.27	0.08	0.02	0.22	0.36	0.24
AP24	0.23	0.63	0.52	0.26	0.07	0.12	0.32	0.45	0.29
AP25	0.23	0.64	0.51	0.37	0.03	0.26	0.51	0.63	0.37
AP26	0.06	0.32	0.22	0.51	0.12	0.38	0.51	0.52	0.32
AP27	0.05	0.18	0.12	0.51	0.25	0.38	0.41	0.36	0.28
AP28	0.14	0.26	0.18	0.55	0.39	0.47	0.46	0.31	0.35
AP29	0.12	0.24	0.16	0.54	0.43	0.46	0.42	0.20	0.33
AP30	0.10	0.24	0.16	0.47	0.37	0.34	0.28	0.15	0.27
AP31	0.08	0.16	0.05	0.42	0.32	0.26	0.19	0.09	0.20
BP01	0.04	0.02	0.02	0.08	0.09	0.04	0.03	0.10	0.05
BP02	0.07	0.04	0.03	0.29	0.34	0.33	0.04	0.08	0.17
BP03	0.23	0.09	0.07	0.18	0.29	0.22	0.18	0.06	0.18
BP04	0.32	0.18	0.14	0.26	0.28	0.22	0.32	0.16	0.25
BP05	0.35	0.05	0.04	0.30	0.29	0.09	0.39	0.22	0.22
BP06	0.38	0.17	0.14	0.26	0.32	0.40	0.39	0.22	0.31
BP07	0.38	0.14	0.11	0.23	0.38	0.40	0.41	0.27	0.31
BP08	0.41	0.08	0.04	0.13	0.07	0.09	0.10	0.03	0.14
BP09	0.52	0.50	0.44	0.33	0.12	0.04	0.35	0.09	0.29
BP10	0.47	0.52	0.46	0.32	0.19	0.07	0.10	0.03	0.27
BP11	0.30	0.43	0.37	0.27	0.23	0.02	0.07	0.02	0.20
BP12	0.17	0.35	0.30	0.25	0.20	0.05	0.04	0.01	0.16
BP13	0.32	0.41	0.36	0.15	0.21	0.04	0.06	0.10	0.19
BP14	0.17	0.21	0.18	0.07	0.19	0.14	0.05	0.05	0.13
BP15	0.47	0.26	0.24	0.33	0.23	0.18	0.18	0.05	0.26
BP16	0.49	0.29	0.27	0.23	0.41	0.43	0.42	0.08	0.35
BP17	0.35	0.34	0.31	0.12	0.26	0.32	0.29	0.21	0.28
BP18	0.31	0.35	0.32	0.04	0.33	0.37	0.33	0.09	0.28
BP19	0.30	0.42	0.39	0.19	0.18	0.25	0.20	0.13	0.26
BP20	0.29	0.51	0.46	0.34	0.04	0.11	0.09	0.26	0.24
BP21	0.31	0.53	0.49	0.32	0.05	0.03	0.08	0.15	0.23
BP22	0.24	0.46	0.43	0.22	0.05	0.06	0.04	0.13	0.19

Annex I - Details of the Predicted Wind Velocity Ratio (VR_W)

	Proposed Summer								
Test Point	**E**	**ESE**	**SE**	**S**	**SSW**	**SW**	**WSW**	**W**	
Wind speed at infinity	**6.17**	**5.55**	**4.92**	**5.65**	**5.47**	**7.06**	**7.66**	**6.15**	**VR_w**
Wind probability	**0.138**	**0.079**	**0.065**	**0.101**	**0.083**	**0.145**	**0.097**	**0.065**	**0.773**
BP23	0.18	0.36	0.34	0.17	0.22	0.09	0.04	0.13	0.18
BP24	0.21	0.40	0.38	0.06	0.20	0.06	0.07	0.06	0.16
BP25	0.17	0.27	0.25	0.07	0.17	0.05	0.12	0.04	0.13
BP26	0.17	0.29	0.26	0.09	0.16	0.07	0.16	0.11	0.15
BP27	0.14	0.39	0.34	0.11	0.21	0.24	0.24	0.20	0.22
BP28	0.06	0.23	0.18	0.21	0.22	0.21	0.20	0.07	0.17
BP29	0.15	0.31	0.25	0.28	0.28	0.30	0.30	0.21	0.26
BP30	0.19	0.31	0.26	0.44	0.48	0.46	0.38	0.22	0.35
BP31	0.16	0.39	0.32	0.52	0.56	0.50	0.40	0.28	0.39
BP32	0.08	0.28	0.27	0.53	0.55	0.48	0.37	0.32	0.36
BP33	0.16	0.34	0.31	0.50	0.52	0.43	0.30	0.19	0.34
CP01	0.19	0.24	0.14	0.15	0.25	0.19	0.20	0.15	0.19
CP02	0.19	0.07	0.18	0.14	0.25	0.18	0.19	0.16	0.17
CP03	0.17	0.05	0.19	0.19	0.26	0.21	0.22	0.13	0.18
CP04	0.11	0.13	0.03	0.18	0.25	0.20	0.20	0.09	0.16
CP05	0.18	0.10	0.19	0.10	0.23	0.17	0.17	0.08	0.16
CP06	0.33	0.29	0.35	0.23	0.21	0.22	0.20	0.10	0.24
CP07	0.12	0.14	0.04	0.21	0.29	0.27	0.26	0.08	0.19
CP08	0.22	0.05	0.03	0.03	0.21	0.10	0.10	0.05	0.11
CP09	0.37	0.19	0.20	0.05	0.19	0.04	0.07	0.03	0.15
CP10	0.39	0.40	0.39	0.12	0.24	0.13	0.12	0.06	0.23
CP11	0.27	0.35	0.33	0.16	0.21	0.20	0.20	0.10	0.23
CP12	0.25	0.35	0.33	0.19	0.20	0.22	0.23	0.12	0.24
CP13	0.42	0.39	0.37	0.21	0.16	0.22	0.21	0.14	0.27
CP14	0.49	0.29	0.29	0.21	0.18	0.21	0.24	0.15	0.27
CP15	0.25	0.20	0.21	0.25	0.27	0.31	0.32	0.20	0.26
CP16	0.26	0.05	0.05	0.18	0.26	0.30	0.29	0.21	0.22
CP17	0.27	0.26	0.22	0.07	0.11	0.13	0.12	0.10	0.16
CP18	0.83	0.45	0.41	0.21	0.33	0.32	0.30	0.27	0.41
CP19	0.62	0.33	0.30	0.24	0.34	0.35	0.33	0.29	0.37
CP20	0.42	0.23	0.24	0.26	0.35	0.38	0.36	0.31	0.33
CP21	0.39	0.31	0.30	0.26	0.34	0.36	0.33	0.29	0.33
CP22	0.42	0.26	0.27	0.30	0.36	0.39	0.36	0.30	0.35
CP23	0.58	0.29	0.32	0.26	0.32	0.34	0.31	0.27	0.36
CP24	0.62	0.21	0.27	0.21	0.31	0.29	0.26	0.26	0.32
CP25	0.61	0.18	0.25	0.23	0.30	0.29	0.26	0.26	0.32
CP26	0.68	0.28	0.29	0.26	0.30	0.28	0.25	0.25	0.34
CP27	0.76	0.36	0.34	0.27	0.30	0.26	0.23	0.22	0.37
CP28	0.78	0.37	0.33	0.30	0.22	0.19	0.17	0.19	0.34
CP29	0.75	0.34	0.30	0.32	0.17	0.18	0.18	0.18	0.33
CP30	0.74	0.36	0.29	0.31	0.09	0.08	0.07	0.15	0.28
CP31	0.67	0.38	0.25	0.30	0.16	0.13	0.11	0.07	0.28
CP32	0.57	0.32	0.13	0.27	0.15	0.14	0.12	0.08	0.24
CP33	0.09	0.25	0.05	0.19	0.14	0.15	0.14	0.13	0.14
CP34	0.18	0.24	0.07	0.16	0.07	0.10	0.11	0.15	0.14
DP01	0.41	0.44	0.44	0.11	0.21	0.15	0.17	0.06	0.25
DP02	0.44	0.33	0.31	0.15	0.24	0.14	0.17	0.06	0.24
DP03	0.18	0.06	0.05	0.15	0.23	0.09	0.12	0.03	0.12
DP04	0.13	0.14	0.13	0.14	0.21	0.04	0.09	0.02	0.11
DP05	0.10	0.15	0.15	0.08	0.22	0.08	0.12	0.03	0.11
DP06	0.27	0.10	0.11	0.04	0.24	0.13	0.08	0.06	0.14
DP07	0.75	0.06	0.06	0.07	0.30	0.13	0.07	0.10	0.23
DP08	0.86	0.45	0.38	0.12	0.29	0.18	0.10	0.11	0.34

Annex I - Details of the Predicted Wind Velocity Ratio (VR_W)

	Proposed Summer								
Test Point	**E**	**ESE**	**SE**	**S**	**SSW**	**SW**	**WSW**	**W**	
Wind speed at infinity	**6.17**	**5.55**	**4.92**	**5.65**	**5.47**	**7.06**	**7.66**	**6.15**	**VR_w**
Wind probability	**0.138**	**0.079**	**0.065**	**0.101**	**0.083**	**0.145**	**0.097**	**0.065**	**0.773**
DP09	0.69	0.52	0.50	0.11	0.03	0.19	0.09	0.03	0.29
DP10	0.43	0.48	0.50	0.06	0.03	0.16	0.06	0.05	0.22
DP11	0.33	0.37	0.39	0.07	0.11	0.08	0.11	0.04	0.18
DP12	0.42	0.35	0.36	0.08	0.09	0.14	0.21	0.03	0.21
DP13	0.47	0.36	0.36	0.09	0.07	0.15	0.17	0.04	0.22
DP14	0.51	0.36	0.37	0.11	0.07	0.10	0.14	0.04	0.22
DP15	0.55	0.37	0.37	0.12	0.13	0.17	0.23	0.03	0.26
DP16	0.55	0.32	0.36	0.11	0.23	0.24	0.25	0.03	0.28
DP17	0.51	0.25	0.33	0.10	0.25	0.26	0.26	0.03	0.27
DP18	0.53	0.20	0.28	0.10	0.26	0.28	0.27	0.04	0.27
DP19	0.67	0.20	0.23	0.11	0.28	0.30	0.29	0.06	0.30
DP20	0.80	0.29	0.28	0.12	0.37	0.37	0.34	0.11	0.37
DP21	0.81	0.39	0.37	0.13	0.43	0.41	0.37	0.14	0.41
DP22	0.72	0.41	0.37	0.09	0.35	0.33	0.29	0.12	0.36
DP23	0.68	0.38	0.34	0.16	0.29	0.25	0.24	0.22	0.33
DP24	0.48	0.35	0.29	0.07	0.30	0.23	0.21	0.11	0.27
DP25	0.83	0.45	0.39	0.07	0.23	0.21	0.20	0.11	0.34
DP26	0.82	0.47	0.43	0.07	0.10	0.13	0.13	0.06	0.29
DP27	0.71	0.50	0.46	0.07	0.09	0.08	0.08	0.02	0.26
DP28	0.79	0.52	0.49	0.10	0.04	0.09	0.10	0.01	0.29
DP29	0.74	0.49	0.47	0.14	0.08	0.17	0.17	0.04	0.30
DP30	0.59	0.51	0.50	0.15	0.08	0.20	0.22	0.07	0.30
EP01	0.32	0.15	0.12	0.07	0.09	0.10	0.34	0.52	0.21
EP02	0.23	0.04	0.12	0.07	0.07	0.08	0.15	0.43	0.14
EP03	0.07	0.01	0.03	0.02	0.03	0.03	0.06	0.16	0.05
EP04	0.03	0.04	0.03	0.04	0.30	0.31	0.31	0.15	0.16
EP05	0.02	0.01	0.04	0.02	0.32	0.33	0.42	0.47	0.20
EP06	0.06	0.06	0.03	0.07	0.10	0.09	0.09	0.06	0.08
EP07	0.02	0.04	0.02	0.11	0.11	0.24	0.18	0.04	0.11
EP08	0.04	0.06	0.04	0.11	0.29	0.41	0.48	0.12	0.21
EP09	0.01	0.07	0.03	0.11	0.29	0.41	0.50	0.16	0.20
EP10	0.03	0.06	0.03	0.04	0.24	0.36	0.44	0.05	0.17
EP11	0.03	0.04	0.04	0.06	0.21	0.33	0.38	0.08	0.15
EP12	0.04	0.05	0.05	0.11	0.17	0.31	0.32	0.05	0.15
EP13	0.06	0.06	0.04	0.14	0.14	0.28	0.28	0.14	0.15
EP14	0.08	0.09	0.07	0.14	0.12	0.26	0.27	0.10	0.15
EP15	0.08	0.07	0.06	0.09	0.27	0.34	0.45	0.17	0.20
EP16	0.08	0.07	0.06	0.05	0.26	0.40	0.30	0.14	0.19
EP17	0.08	0.06	0.06	0.04	0.47	0.54	0.53	0.43	0.29
EP18	0.09	0.04	0.04	0.05	0.37	0.45	0.42	0.47	0.24
EP19	0.08	0.04	0.05	0.07	0.33	0.42	0.40	0.42	0.23
EP20	0.08	0.04	0.06	0.09	0.43	0.47	0.42	0.38	0.26
EP21	0.08	0.02	0.06	0.07	0.37	0.39	0.36	0.34	0.22
EP22	0.07	0.07	0.07	0.06	0.35	0.36	0.34	0.26	0.21
EP23	0.05	0.05	0.06	0.06	0.48	0.50	0.47	0.23	0.25
EP24	0.09	0.04	0.06	0.05	0.47	0.48	0.44	0.21	0.25
EP25	0.02	0.01	0.04	0.04	0.45	0.45	0.45	0.20	0.23
EP26	0.03	0.04	0.03	0.04	0.36	0.35	0.35	0.19	0.19
EP27	0.02	0.07	0.05	0.06	0.48	0.49	0.52	0.16	0.25
EP28	0.27	0.14	0.06	0.08	0.61	0.62	0.76	0.42	0.39
EP29	0.31	0.18	0.04	0.08	0.63	0.64	0.76	0.49	0.42
EP30	0.32	0.18	0.04	0.09	0.61	0.62	0.73	0.47	0.41
EP31	0.32	0.17	0.07	0.07	0.55	0.56	0.70	0.46	0.38

Annex I - Details of the Predicted Wind Velocity Ratio (VR_W)

	Proposed Summer								
Test Point	**E**	**ESE**	**SE**	**S**	**SSW**	**SW**	**WSW**	**W**	
Wind speed at infinity	**6.17**	**5.55**	**4.92**	**5.65**	**5.47**	**7.06**	**7.66**	**6.15**	VR_w
Wind probability	**0.138**	**0.079**	**0.065**	**0.101**	**0.083**	**0.145**	**0.097**	**0.065**	**0.773**
EP32	0.33	0.16	0.12	0.03	0.40	0.41	0.65	0.47	0.33
Average SVR	**0.30**	**0.25**	**0.22**	**0.18**	**0.25**	**0.25**	**0.26**	**0.18**	**0.24**
TR1-1	0.46	0.18	0.22	0.38	0.25	0.38	0.47	0.54	0.37
TR1-2	0.36	0.13	0.20	0.29	0.07	0.10	0.08	0.60	0.22
TR1-3	0.48	0.21	0.20	0.31	0.25	0.39	0.46	0.60	0.37
TR1-4	0.42	0.20	0.18	0.27	0.29	0.11	0.33	0.60	0.29
TR1-5	0.24	0.12	0.10	0.14	0.23	0.10	0.12	0.47	0.18
TR1-6	0.47	0.18	0.17	0.33	0.16	0.26	0.56	0.43	0.33
TR1-7	0.39	0.16	0.16	0.19	0.21	0.33	0.34	0.60	0.30
TR1-8	0.17	0.20	0.21	0.35	0.04	0.24	0.09	0.51	0.22
TR1-9	0.49	0.20	0.18	0.17	0.15	0.17	0.48	0.41	0.29
TR1-10	0.35	0.27	0.21	0.26	0.14	0.24	0.38	0.61	0.30
TR1-11	0.10	0.08	0.05	0.04	0.15	0.26	0.10	0.34	0.14
TR1-12	0.50	0.21	0.10	0.15	0.11	0.18	0.42	0.40	0.27
TR1-13	0.32	0.14	0.10	0.11	0.19	0.20	0.39	0.59	0.25
TR1-14	0.14	0.04	0.10	0.08	0.16	0.21	0.16	0.32	0.15
TR1-15	0.45	0.16	0.16	0.33	0.22	0.15	0.44	0.41	0.29
TR1-16	0.30	0.09	0.10	0.16	0.18	0.18	0.38	0.59	0.24
TR1-17	0.24	0.06	0.06	0.07	0.10	0.14	0.13	0.34	0.14
TR1-18	0.48	0.24	0.23	0.29	0.18	0.11	0.40	0.42	0.29
TR1-19	0.48	0.24	0.21	0.26	0.23	0.20	0.40	0.44	0.31
TR1-20	0.31	0.03	0.03	0.04	0.12	0.17	0.24	0.35	0.17
TR1-21	0.25	0.40	0.33	0.32	0.04	0.11	0.11	0.32	0.22
TR1-22	0.44	0.19	0.18	0.17	0.25	0.23	0.39	0.43	0.29
TR1-23	0.20	0.07	0.05	0.02	0.08	0.10	0.03	0.30	0.11
TR1-24	0.49	0.27	0.24	0.19	0.24	0.17	0.37	0.44	0.30
TR1-25	0.22	0.08	0.07	0.09	0.10	0.05	0.08	0.28	0.12
TR1-26	0.49	0.27	0.24	0.17	0.23	0.15	0.35	0.43	0.29
TR1-27	0.22	0.09	0.14	0.07	0.03	0.03	0.05	0.28	0.11
TR1-28	0.47	0.22	0.21	0.22	0.21	0.16	0.33	0.41	0.28
TR1-29	0.12	0.13	0.13	0.07	0.07	0.07	0.02	0.21	0.10
TR1-30	0.40	0.12	0.14	0.23	0.19	0.17	0.31	0.39	0.25
TR1-31	0.03	0.09	0.10	0.06	0.11	0.08	0.09	0.18	0.08
TR1-32	0.44	0.04	0.10	0.16	0.14	0.13	0.19	0.34	0.20
TR1-33	0.13	0.18	0.21	0.14	0.09	0.09	0.17	0.22	0.14
TR1-34	0.49	0.25	0.20	0.37	0.31	0.30	0.06	0.29	0.30
TR1-35	0.13	0.14	0.06	0.13	0.12	0.10	0.05	0.16	0.11
TR1-36	0.55	0.06	0.03	0.09	0.05	0.05	0.06	0.25	0.16
TR1-37	0.46	0.06	0.05	0.10	0.04	0.06	0.08	0.21	0.15
TR1-38	0.56	0.02	0.03	0.15	0.09	0.07	0.10	0.23	0.18
TR1-39	0.66	0.12	0.16	0.16	0.12	0.07	0.05	0.30	0.22
TR1-40	0.52	0.17	0.15	0.10	0.12	0.04	0.05	0.21	0.18
TR1-41	0.59	0.17	0.27	0.05	0.16	0.08	0.07	0.29	0.22
TR1-42	0.63	0.14	0.20	0.09	0.14	0.08	0.08	0.23	0.21
TR1-43	0.57	0.29	0.32	0.17	0.10	0.03	0.26	0.23	0.25
TR1-44	0.49	0.37	0.37	0.19	0.12	0.11	0.20	0.25	0.26
TR1-45	0.25	0.37	0.34	0.21	0.07	0.03	0.22	0.06	0.19
TR1-46	0.23	0.20	0.23	0.05	0.05	0.05	0.16	0.04	0.12
TR2-1	0.26	0.53	0.46	0.26	0.06	0.23	0.31	0.51	0.31
TR2-2	0.40	0.41	0.37	0.24	0.12	0.14	0.30	0.42	0.29
TR2-3	0.42	0.40	0.35	0.23	0.12	0.23	0.32	0.58	0.32
TR2-4	0.45	0.39	0.34	0.12	0.13	0.25	0.34	0.44	0.30
TR2-5	0.30	0.21	0.19	0.09	0.20	0.29	0.35	0.38	0.25
TR2-6	0.13	0.12	0.10	0.12	0.13	0.19	0.27	0.21	0.16
TR2-7	0.36	0.19	0.19	0.07	0.12	0.09	0.07	0.03	0.15
TR2-8	0.37	0.21	0.20	0.07	0.26	0.24	0.24	0.13	0.23
TR2-9	0.38	0.21	0.20	0.05	0.32	0.29	0.27	0.18	0.25
TR2-10	0.35	0.19	0.19	0.06	0.32	0.31	0.32	0.20	0.26

Annex I - Details of the Predicted Wind Velocity Ratio (VR_W)

	Proposed Summer								
Test Point	**E**	**ESE**	**SE**	**S**	**SSW**	**SW**	**WSW**	**W**	
Wind speed at infinity	**6.17**	**5.55**	**4.92**	**5.65**	**5.47**	**7.06**	**7.66**	**6.15**	VR_w
Wind probability	**0.138**	**0.079**	**0.065**	**0.101**	**0.083**	**0.145**	**0.097**	**0.065**	**0.773**
TR2-11	0.38	0.15	0.15	0.14	0.42	0.39	0.39	0.24	0.30
TR2-12	0.44	0.19	0.17	0.15	0.42	0.39	0.38	0.23	0.32
TR2-13	0.44	0.24	0.21	0.25	0.40	0.36	0.31	0.21	0.32
TR2-14	0.44	0.25	0.23	0.31	0.44	0.39	0.32	0.20	0.34
TR2-15	0.37	0.24	0.25	0.24	0.47	0.41	0.33	0.19	0.33
TR2-16	0.37	0.21	0.22	0.07	0.37	0.26	0.18	0.16	0.24
TR2-17	0.40	0.29	0.28	0.25	0.58	0.48	0.36	0.25	0.38
TR3-1	0.22	0.12	0.05	0.13	0.07	0.24	0.24	0.44	0.19
TR3-2	0.27	0.14	0.08	0.09	0.03	0.06	0.05	0.53	0.15
TR3-3	0.36	0.16	0.09	0.04	0.03	0.05	0.30	0.43	0.18
TR3-4	0.36	0.13	0.13	0.03	0.41	0.41	0.60	0.44	0.33
TR3-5	0.35	0.13	0.03	0.13	0.62	0.60	0.62	0.38	0.39
TR3-6	0.24	0.15	0.06	0.10	0.51	0.48	0.52	0.24	0.31
TR3-7	0.06	0.04	0.09	0.07	0.43	0.40	0.41	0.28	0.23
TR3-8	0.06	0.04	0.08	0.08	0.49	0.55	0.49	0.41	0.28
TR3-9	0.03	0.16	0.11	0.07	0.58	0.65	0.54	0.21	0.31
TR3-10	0.09	0.19	0.08	0.13	0.43	0.49	0.38	0.23	0.26
TR3-11	0.47	0.11	0.16	0.29	0.37	0.47	0.42	0.43	0.36
TR3-12	0.42	0.09	0.22	0.28	0.41	0.51	0.54	0.53	0.39
TR3-13	0.32	0.09	0.19	0.12	0.32	0.38	0.41	0.47	0.30
TR3-14	0.05	0.10	0.14	0.15	0.48	0.44	0.44	0.39	0.27
TR3-15	0.06	0.06	0.04	0.44	0.51	0.43	0.41	0.28	0.29
TR3-16	0.07	0.04	0.14	0.16	0.22	0.23	0.25	0.42	0.18
TR4-1	0.08	0.14	0.06	0.43	0.34	0.27	0.29	0.33	0.24
TR4-2	0.18	0.09	0.04	0.22	0.25	0.17	0.13	0.27	0.17
TR4-3	0.24	0.10	0.23	0.22	0.34	0.35	0.33	0.27	0.27
TR4-4	0.12	0.19	0.21	0.18	0.14	0.21	0.14	0.26	0.18
TR4-5	0.20	0.24	0.25	0.09	0.30	0.10	0.12	0.17	0.17
TR4-6	0.17	0.27	0.28	0.07	0.18	0.12	0.12	0.11	0.16
TR4-7	0.14	0.18	0.19	0.15	0.07	0.13	0.18	0.20	0.15
TR5-1	0.22	0.36	0.32	0.33	0.39	0.37	0.29	0.24	0.32
TR5-2	0.20	0.17	0.08	0.30	0.30	0.30	0.20	0.11	0.22
TR5-3	0.30	0.33	0.24	0.20	0.25	0.27	0.27	0.05	0.25
TR5-4	0.39	0.35	0.28	0.28	0.25	0.07	0.32	0.18	0.26
TR5-5	0.43	0.38	0.37	0.19	0.39	0.33	0.31	0.15	0.33
TR5-6	0.47	0.51	0.47	0.10	0.37	0.41	0.41	0.24	0.38
TR6-1	0.41	0.43	0.38	0.26	0.19	0.33	0.44	0.20	0.34
TR6-2	0.18	0.12	0.12	0.25	0.09	0.14	0.34	0.12	0.18
TR6-3	0.19	0.16	0.17	0.30	0.07	0.13	0.26	0.07	0.17
TR6-4	0.13	0.18	0.21	0.21	0.28	0.07	0.07	0.05	0.14
TR6-5	0.15	0.14	0.15	0.08	0.41	0.35	0.31	0.07	0.22
TR7-1	0.07	0.05	0.06	0.09	0.08	0.05	0.08	0.01	0.06
TR7-2	0.06	0.10	0.10	0.12	0.12	0.09	0.05	0.01	0.08
TR7-3	0.05	0.08	0.08	0.11	0.20	0.14	0.05	0.12	0.10
TR8-1	0.15	0.04	0.06	0.31	0.44	0.41	0.41	0.11	0.26
TR8-2	0.13	0.22	0.16	0.31	0.28	0.24	0.26	0.04	0.21
TR8-3	0.24	0.21	0.15	0.47	0.32	0.30	0.35	0.04	0.28
TR9-1	0.26	0.11	0.18	0.23	0.19	0.23	0.28	0.15	0.21
TR9-2	0.30	0.13	0.20	0.19	0.26	0.28	0.33	0.13	0.24
TR9-3	0.14	0.14	0.08	0.21	0.32	0.29	0.29	0.11	0.21
TR9-4	0.09	0.13	0.14	0.04	0.35	0.17	0.11	0.04	0.13
TR10-1	0.53	0.64	0.64	0.04	0.13	0.07	0.05	0.04	0.25
TR10-2	0.68	0.49	0.47	0.24	0.14	0.07	0.12	0.10	0.29
TR10-3	0.30	0.24	0.22	0.08	0.08	0.03	0.07	0.06	0.13
TR10-4	0.38	0.38	0.34	0.18	0.09	0.07	0.05	0.12	0.20
TR10-5	0.72	0.11	0.14	0.19	0.11	0.09	0.13	0.04	0.22
TR10-6	0.62	0.69	0.70	0.10	0.15	0.16	0.07	0.02	0.31
TR10-7	0.42	0.51	0.56	0.16	0.04	0.11	0.06	0.08	0.23

Annex I - Details of the Predicted Wind Velocity Ratio (VR_W)

	Proposed Summer								
Test Point	**E**	**ESE**	**SE**	**S**	**SSW**	**SW**	**WSW**	**W**	
Wind speed at infinity	**6.17**	**5.55**	**4.92**	**5.65**	**5.47**	**7.06**	**7.66**	**6.15**	**VR_w**
Wind probability	**0.138**	**0.079**	**0.065**	**0.101**	**0.083**	**0.145**	**0.097**	**0.065**	**0.773**
TR10-8	0.62	0.42	0.37	0.14	0.16	0.11	0.08	0.18	0.27
TR10-9	0.93	0.36	0.24	0.11	0.22	0.19	0.13	0.17	0.33
TR10-10	0.50	0.11	0.11	0.13	0.21	0.03	0.04	0.13	0.17
TR11-1	0.06	0.29	0.24	0.37	0.18	0.15	0.08	0.10	0.17
TR11-2	0.18	0.31	0.26	0.39	0.25	0.10	0.21	0.10	0.22
TR11-3	0.24	0.35	0.29	0.38	0.29	0.13	0.25	0.08	0.25
TR12-1	0.05	0.39	0.35	0.45	0.38	0.08	0.03	0.34	0.23
TR12-2	0.18	0.26	0.28	0.49	0.45	0.21	0.08	0.03	0.25
TR12-3	0.22	0.46	0.39	0.47	0.45	0.29	0.26	0.04	0.32
TR12-4	0.16	0.42	0.34	0.38	0.40	0.42	0.39	0.04	0.32
TR12-5	0.10	0.26	0.21	0.22	0.23	0.26	0.28	0.05	0.21
TR13-1	0.30	0.50	0.42	0.37	0.10	0.01	0.05	0.08	0.21
TR13-2	0.29	0.46	0.39	0.34	0.09	0.03	0.11	0.07	0.21
TR13-3	0.27	0.48	0.42	0.37	0.11	0.13	0.10	0.08	0.24
TR13-4	0.32	0.47	0.41	0.36	0.27	0.08	0.08	0.08	0.25
TR14-1	0.46	0.42	0.37	0.32	0.07	0.07	0.05	0.06	0.23
TR14-2	0.32	0.37	0.32	0.37	0.05	0.12	0.02	0.03	0.20
TR14-3	0.36	0.28	0.23	0.24	0.20	0.24	0.04	0.03	0.22
TR14-4	0.37	0.11	0.10	0.34	0.60	0.55	0.53	0.03	0.37
TR14-5	0.28	0.09	0.10	0.14	0.34	0.27	0.28	0.10	0.22
TR14-6	0.15	0.11	0.10	0.07	0.36	0.44	0.47	0.04	0.24
TR15-1	0.23	0.34	0.30	0.38	0.44	0.36	0.31	0.03	0.31
TR15-2	0.10	0.28	0.25	0.30	0.40	0.34	0.31	0.02	0.26
TR15-3	0.09	0.25	0.24	0.32	0.48	0.43	0.40	0.03	0.29
TR16-1	0.20	0.16	0.19	0.22	0.43	0.37	0.34	0.01	0.26
TR16-2	0.30	0.15	0.18	0.25	0.42	0.38	0.38	0.14	0.29
TR16-3	0.26	0.10	0.06	0.24	0.39	0.33	0.30	0.11	0.24
TR16-4	0.14	0.17	0.25	0.15	0.13	0.10	0.10	0.08	0.13
TR17-1	0.10	0.29	0.25	0.40	0.35	0.33	0.12	0.12	0.25
TR17-2	0.03	0.28	0.23	0.40	0.38	0.35	0.16	0.07	0.24
TR17-3	0.15	0.29	0.21	0.34	0.36	0.32	0.38	0.16	0.28
TR17-4	0.04	0.35	0.25	0.31	0.30	0.27	0.39	0.21	0.26
TR17-5	0.08	0.29	0.22	0.21	0.24	0.14	0.39	0.24	0.22
TR18-1	0.09	0.23	0.16	0.19	0.11	0.19	0.35	0.24	0.20
TR18-2	0.20	0.13	0.09	0.28	0.10	0.11	0.20	0.17	0.17
TR18-3	0.05	0.09	0.06	0.20	0.36	0.35	0.32	0.16	0.21
TR18-4	0.09	0.06	0.04	0.22	0.19	0.17	0.20	0.07	0.14
TR18-5	0.21	0.17	0.12	0.17	0.30	0.29	0.28	0.11	0.22
TR19-1	0.12	0.30	0.12	0.21	0.10	0.04	0.11	0.11	0.13
TR19-2	0.11	0.28	0.16	0.18	0.05	0.06	0.25	0.05	0.14
TR19-3	0.24	0.32	0.18	0.20	0.03	0.13	0.26	0.03	0.18
TR19-4	0.25	0.29	0.09	0.21	0.07	0.08	0.21	0.10	0.17
TR20-1	0.15	0.29	0.09	0.26	0.25	0.24	0.27	0.07	0.21
TR20-2	0.30	0.24	0.07	0.22	0.09	0.09	0.09	0.14	0.16
TR20-3	0.61	0.34	0.21	0.33	0.12	0.11	0.10	0.02	0.25
TR20-4	0.20	0.12	0.11	0.24	0.39	0.36	0.31	0.19	0.25
TR20-5	0.22	0.11	0.05	0.18	0.32	0.27	0.22	0.15	0.20
TR20-6	0.10	0.05	0.04	0.23	0.37	0.31	0.27	0.19	0.20
TR21-1	0.21	0.35	0.30	0.14	0.11	0.04	0.15	0.07	0.16
TR21-2	0.21	0.38	0.34	0.13	0.14	0.03	0.03	0.05	0.15
TR21-3	0.84	0.22	0.22	0.12	0.12	0.23	0.10	0.29	0.30
TR21-4	0.09	0.22	0.24	0.11	0.23	0.08	0.11	0.08	0.13
TR22-1	0.34	0.35	0.37	0.18	0.14	0.19	0.22	0.16	0.24
TR22-2	0.05	0.21	0.25	0.22	0.29	0.36	0.37	0.18	0.24
TR22-3	0.08	0.16	0.15	0.17	0.30	0.35	0.33	0.12	0.21
TR22-4	0.73	0.51	0.46	0.17	0.27	0.26	0.24	0.23	0.37
TR23-1	0.78	0.26	0.25	0.22	0.50	0.47	0.32	0.37	0.43
TR23-2	0.36	0.18	0.15	0.10	0.45	0.29	0.08	0.27	0.25

Annex I - Details of the Predicted Wind Velocity Ratio (VR_W)

	Proposed Summer								
Test Point	**E**	**ESE**	**SE**	**S**	**SSW**	**SW**	**WSW**	**W**	
Wind speed at infinity	**6.17**	**5.55**	**4.92**	**5.65**	**5.47**	**7.06**	**7.66**	**6.15**	**VR_w**
Wind probability	**0.138**	**0.079**	**0.065**	**0.101**	**0.083**	**0.145**	**0.097**	**0.065**	**0.773**
TR23-3	0.09	0.03	0.04	0.10	0.36	0.18	0.11	0.16	0.14
TR24-1	0.18	0.06	0.12	0.04	0.38	0.34	0.35	0.25	0.22
TR24-2	0.17	0.10	0.13	0.04	0.32	0.27	0.25	0.09	0.18
TR24-3	0.17	0.07	0.13	0.06	0.33	0.35	0.17	0.07	0.18
TR24-4	0.11	0.08	0.06	0.06	0.33	0.42	0.13	0.17	0.19
TR24-5	0.07	0.06	0.05	0.09	0.37	0.48	0.20	0.36	0.22
TR24-6	0.03	0.07	0.03	0.08	0.38	0.49	0.43	0.22	0.23
TR24-7	0.04	0.02	0.05	0.10	0.35	0.46	0.52	0.22	0.24
TR24-8	0.08	0.09	0.08	0.13	0.30	0.44	0.48	0.32	0.25
TR24-9	0.08	0.06	0.06	0.06	0.37	0.45	0.47	0.50	0.26
TR25-1	0.03	0.05	0.02	0.09	0.06	0.05	0.07	0.16	0.06
TR25-2	0.05	0.06	0.03	0.13	0.12	0.05	0.02	0.19	0.07
TR25-3	0.05	0.08	0.05	0.14	0.13	0.11	0.08	0.29	0.11
TR25-4	0.06	0.08	0.07	0.11	0.04	0.07	0.07	0.18	0.08
TR25-5	0.11	0.09	0.07	0.13	0.04	0.08	0.07	0.16	0.09
TR26-1	0.03	0.07	0.04	0.09	0.04	0.26	0.24	0.40	0.14
TR26-2	0.08	0.12	0.09	0.06	0.04	0.05	0.28	0.53	0.13
TR26-3	0.06	0.10	0.06	0.14	0.02	0.11	0.08	0.50	0.12
TR26-4	0.22	0.20	0.16	0.08	0.12	0.13	0.10	0.31	0.16
TR26-5	0.05	0.11	0.10	0.07	0.13	0.17	0.08	0.38	0.13
TR26-6	0.14	0.12	0.10	0.13	0.12	0.10	0.13	0.34	0.14
TR26-7	0.18	0.07	0.08	0.05	0.17	0.16	0.10	0.33	0.14
TR26-8	0.21	0.20	0.15	0.13	0.09	0.10	0.07	0.31	0.15
TR26-9	0.25	0.09	0.11	0.10	0.08	0.08	0.07	0.24	0.13
TR26-10	0.15	0.05	0.08	0.11	0.13	0.09	0.08	0.10	0.10
TR26-11	0.05	0.18	0.09	0.10	0.09	0.07	0.04	0.08	0.08
TR27-1	0.09	0.19	0.12	0.25	0.03	0.03	0.04	0.07	0.10
TR27-2	0.08	0.19	0.12	0.26	0.04	0.05	0.07	0.03	0.10
TR27-3	0.08	0.17	0.11	0.22	0.11	0.06	0.05	0.15	0.11
TR27-4	0.15	0.32	0.25	0.35	0.10	0.11	0.03	0.06	0.17
TR28-1	0.14	0.14	0.10	0.21	0.16	0.17	0.16	0.07	0.15
TR28-2	0.17	0.16	0.13	0.23	0.18	0.14	0.16	0.01	0.16
TR28-3	0.12	0.15	0.12	0.18	0.07	0.10	0.16	0.02	0.12
TR28-4	0.12	0.13	0.11	0.10	0.07	0.05	0.11	0.05	0.09
TR29-1	0.11	0.17	0.03	0.14	0.13	0.09	0.08	0.10	0.11
TR29-2	0.06	0.24	0.13	0.15	0.13	0.09	0.09	0.08	0.11
TR29-3	0.03	0.26	0.16	0.15	0.09	0.07	0.06	0.20	0.11
TR29-4	0.05	0.30	0.21	0.18	0.13	0.10	0.08	0.04	0.13
TR30-1	0.18	0.20	0.15	0.17	0.12	0.11	0.11	0.07	0.14
TR30-2	0.22	0.23	0.18	0.16	0.14	0.14	0.12	0.06	0.16
TR30-3	0.20	0.22	0.16	0.16	0.09	0.07	0.06	0.03	0.12
TA1-1	0.39	0.21	0.18	0.15	0.52	0.50	0.43	0.47	0.37
TA1-2	0.42	0.27	0.13	0.53	0.51	0.54	0.61	0.50	0.46
TA1-3	0.38	0.20	0.08	0.45	0.59	0.60	0.61	0.51	0.45
TA1-4	0.31	0.23	0.03	0.41	0.57	0.59	0.60	0.53	0.43
TA1-5	0.27	0.15	0.06	0.39	0.57	0.57	0.59	0.51	0.40
TA1-6	0.16	0.16	0.11	0.46	0.38	0.36	0.41	0.47	0.31
TA1-7	0.03	0.24	0.09	0.25	0.37	0.42	0.52	0.49	0.29
TA1-8	0.13	0.23	0.16	0.24	0.54	0.55	0.57	0.52	0.37
TA1-9	0.04	0.22	0.14	0.16	0.50	0.51	0.52	0.44	0.31
TA1-10	0.06	0.41	0.40	0.40	0.47	0.48	0.49	0.46	0.38
TA1-11	0.03	0.34	0.34	0.39	0.32	0.31	0.29	0.34	0.28
TA1-12	0.02	0.48	0.41	0.31	0.21	0.24	0.31	0.45	0.27
TA1-13	0.25	0.44	0.42	0.21	0.20	0.32	0.34	0.50	0.32
TA1-14	0.29	0.48	0.44	0.19	0.06	0.30	0.34	0.49	0.31
TA1-15	0.22	0.57	0.50	0.23	0.11	0.32	0.34	0.27	0.30
TA2-1	0.48	0.36	0.32	0.28	0.37	0.44	0.46	0.53	0.41
TA2-2	0.46	0.33	0.31	0.17	0.20	0.33	0.47	0.52	0.35

Annex I - Details of the Predicted Wind Velocity Ratio (VR_W)

	Proposed Summer								
Test Point	**E**	**ESE**	**SE**	**S**	**SSW**	**SW**	**WSW**	**W**	
Wind speed at infinity	**6.17**	**5.55**	**4.92**	**5.65**	**5.47**	**7.06**	**7.66**	**6.15**	VR_w
Wind probability	**0.138**	**0.079**	**0.065**	**0.101**	**0.083**	**0.145**	**0.097**	**0.065**	**0.773**
TA2-3	0.47	0.33	0.32	0.16	0.12	0.22	0.43	0.52	0.32
TA2-4	0.49	0.36	0.30	0.29	0.15	0.12	0.10	0.12	0.25
TA2-5	0.33	0.27	0.24	0.10	0.12	0.13	0.19	0.61	0.23
TA2-6	0.32	0.18	0.16	0.07	0.19	0.21	0.23	0.60	0.24
TA2-7	0.51	0.36	0.31	0.29	0.39	0.35	0.24	0.21	0.35
TA3-1	0.49	0.39	0.35	0.12	0.29	0.31	0.39	0.40	0.34
TA3-2	0.46	0.42	0.37	0.08	0.32	0.34	0.38	0.45	0.35
TA3-3	0.44	0.43	0.39	0.08	0.30	0.33	0.36	0.43	0.34
TA3-4	0.46	0.47	0.41	0.14	0.25	0.33	0.37	0.43	0.36
TA3-5	0.46	0.39	0.34	0.08	0.20	0.30	0.38	0.42	0.32
TA3-6	0.39	0.31	0.27	0.11	0.25	0.21	0.15	0.29	0.25
TA3-7	0.48	0.41	0.34	0.10	0.23	0.20	0.15	0.13	0.26
TA3-8	0.23	0.18	0.16	0.19	0.14	0.20	0.26	0.14	0.20
TA3-9	0.05	0.06	0.07	0.06	0.11	0.12	0.09	0.12	0.08
TA3-10	0.48	0.40	0.33	0.37	0.21	0.34	0.41	0.36	0.37
TA3-11	0.23	0.17	0.16	0.04	0.18	0.24	0.26	0.44	0.21
TA3-12	0.14	0.08	0.06	0.27	0.20	0.07	0.14	0.10	0.13
TA3-13	0.46	0.31	0.27	0.09	0.16	0.24	0.29	0.41	0.28
TA3-14	0.33	0.27	0.24	0.20	0.02	0.10	0.18	0.23	0.19
TA3-15	0.11	0.08	0.07	0.10	0.10	0.14	0.09	0.08	0.10
TA3-16	0.65	0.56	0.47	0.15	0.39	0.44	0.33	0.39	0.43
TA3-17	0.43	0.24	0.20	0.19	0.34	0.38	0.34	0.28	0.32
TA4-1	0.49	0.26	0.23	0.33	0.26	0.29	0.24	0.20	0.31
TA4-2	0.55	0.26	0.21	0.14	0.14	0.12	0.12	0.14	0.22
TA4-3	0.55	0.23	0.17	0.22	0.20	0.16	0.13	0.20	0.25
TA4-4	0.40	0.15	0.15	0.15	0.21	0.16	0.11	0.09	0.19
TA4-5	0.28	0.10	0.15	0.06	0.19	0.18	0.21	0.15	0.17
TA4-6	0.30	0.16	0.13	0.10	0.29	0.29	0.27	0.25	0.23
TA4-7	0.36	0.26	0.22	0.05	0.33	0.31	0.30	0.27	0.27
TA4-8	0.42	0.27	0.26	0.05	0.33	0.33	0.37	0.25	0.30
TA4-9	0.45	0.27	0.27	0.05	0.34	0.34	0.36	0.22	0.30
TA4-10	0.49	0.27	0.25	0.06	0.28	0.27	0.32	0.36	0.29
TA4-11	0.44	0.41	0.30	0.03	0.24	0.25	0.25	0.25	0.28
TA4-12	0.39	0.32	0.25	0.20	0.30	0.24	0.17	0.06	0.25
TA4-13	0.21	0.21	0.16	0.07	0.28	0.27	0.27	0.21	0.22
TA4-14	0.35	0.24	0.20	0.11	0.24	0.26	0.28	0.27	0.25
TA4-15	0.37	0.22	0.20	0.01	0.30	0.26	0.25	0.24	0.24
TA4-16	0.36	0.24	0.22	0.09	0.21	0.18	0.15	0.18	0.21
TA4-17	0.38	0.18	0.17	0.09	0.20	0.16	0.17	0.10	0.19
TA4-18	0.31	0.19	0.15	0.17	0.30	0.29	0.30	0.19	0.25
TA4-19	0.08	0.16	0.10	0.01	0.24	0.21	0.22	0.15	0.15
TA4-20	0.11	0.15	0.09	0.02	0.07	0.06	0.06	0.09	0.08
TA4-21	0.32	0.14	0.07	0.06	0.14	0.13	0.15	0.19	0.16
TA4-22	0.36	0.06	0.10	0.17	0.17	0.13	0.13	0.21	0.18
TA4-23	0.33	0.12	0.17	0.28	0.21	0.18	0.19	0.26	0.22
TA4-24	0.24	0.13	0.05	0.25	0.14	0.13	0.14	0.21	0.17
TA4-25	0.29	0.16	0.03	0.32	0.35	0.31	0.31	0.20	0.26
TA4-26	0.09	0.25	0.41	0.32	0.30	0.28	0.28	0.21	0.26
TA4-27	0.10	0.10	0.10	0.18	0.21	0.18	0.16	0.17	0.15
TA4-28	0.26	0.16	0.09	0.08	0.17	0.14	0.14	0.25	0.16
TA4-29	0.12	0.19	0.11	0.06	0.12	0.12	0.15	0.25	0.13
TA4-30	0.19	0.18	0.12	0.10	0.20	0.20	0.24	0.26	0.19
TA4-31	0.22	0.18	0.15	0.06	0.33	0.30	0.29	0.24	0.23
TA4-32	0.31	0.16	0.14	0.15	0.24	0.23	0.22	0.19	0.22
TA4-33	0.33	0.11	0.09	0.15	0.26	0.26	0.27	0.24	0.23
TA4-34	0.38	0.21	0.16	0.14	0.09	0.07	0.11	0.10	0.17
TA4-35	0.31	0.38	0.32	0.13	0.27	0.28	0.29	0.26	0.28
TA4-36	0.07	0.11	0.20	0.32	0.27	0.26	0.26	0.17	0.21

Annex I - Details of the Predicted Wind Velocity Ratio (VR_W)

	Proposed Summer								
Test Point	**E**	**ESE**	**SE**	**S**	**SSW**	**SW**	**WSW**	**W**	
Wind speed at infinity	**6.17**	**5.55**	**4.92**	**5.65**	**5.47**	**7.06**	**7.66**	**6.15**	VR_w
Wind probability	**0.138**	**0.079**	**0.065**	**0.101**	**0.083**	**0.145**	**0.097**	**0.065**	**0.773**
TA4-37	0.32	0.33	0.30	0.05	0.29	0.27	0.27	0.33	0.27
TA4-38	0.28	0.24	0.22	0.02	0.30	0.27	0.26	0.30	0.24
TA4-39	0.28	0.19	0.19	0.13	0.35	0.34	0.31	0.30	0.27
TA4-40	0.27	0.19	0.13	0.09	0.31	0.34	0.32	0.31	0.25
TA4-41	0.25	0.21	0.05	0.07	0.22	0.20	0.13	0.24	0.18
TA4-42	0.16	0.20	0.12	0.33	0.28	0.20	0.28	0.18	0.22
TA5-1	0.75	0.57	0.59	0.39	0.18	0.18	0.24	0.08	0.38
TA5-2	0.74	0.56	0.56	0.35	0.29	0.28	0.19	0.05	0.39
TA5-3	0.73	0.51	0.43	0.28	0.29	0.18	0.14	0.08	0.34
TA5-4	0.74	0.41	0.45	0.16	0.15	0.16	0.33	0.25	0.34
TA5-5	0.72	0.41	0.37	0.21	0.40	0.40	0.38	0.30	0.42
TA5-6	0.76	0.39	0.36	0.07	0.34	0.30	0.18	0.26	0.35
TA5-7	0.77	0.40	0.42	0.24	0.22	0.23	0.20	0.22	0.35
TA5-8	0.76	0.57	0.54	0.31	0.24	0.16	0.18	0.13	0.37
TA5-9	0.76	0.58	0.59	0.37	0.31	0.22	0.18	0.09	0.40
TA5-10	0.77	0.58	0.59	0.34	0.26	0.19	0.14	0.15	0.38
TA5-11	0.79	0.54	0.47	0.27	0.26	0.20	0.09	0.23	0.37
TA5-12	0.79	0.42	0.45	0.13	0.29	0.20	0.03	0.28	0.34
TA5-13	0.17	0.09	0.11	0.06	0.36	0.25	0.09	0.20	0.17
TA6-1	0.12	0.25	0.38	0.28	0.05	0.05	0.14	0.07	0.15
TA6-2	0.71	0.54	0.56	0.30	0.05	0.08	0.14	0.07	0.31
TA6-3	0.69	0.53	0.55	0.26	0.15	0.10	0.11	0.18	0.32
TA6-4	0.65	0.49	0.50	0.17	0.03	0.07	0.05	0.06	0.26
TA6-5	0.65	0.50	0.48	0.12	0.18	0.14	0.04	0.23	0.29
TA6-6	0.66	0.53	0.51	0.20	0.18	0.11	0.09	0.09	0.30
TA6-7	0.61	0.49	0.42	0.15	0.10	0.08	0.18	0.06	0.27
TA6-8	0.59	0.51	0.44	0.05	0.22	0.17	0.07	0.09	0.27
TA7-1	0.24	0.05	0.13	0.22	0.06	0.12	0.19	0.44	0.18
TA7-2	0.13	0.08	0.04	0.10	0.06	0.03	0.01	0.13	0.07
TA7-3	0.09	0.04	0.06	0.21	0.04	0.09	0.08	0.12	0.09
TA7-4	0.19	0.07	0.12	0.17	0.04	0.03	0.07	0.06	0.10
TA8-1	0.05	0.04	0.04	0.04	0.11	0.07	0.07	0.06	0.06
TA8-2	0.12	0.01	0.04	0.15	0.13	0.03	0.04	0.03	0.07
TA8-3	0.07	0.03	0.02	0.09	0.09	0.05	0.04	0.05	0.06
TA8-4	0.06	0.16	0.12	0.19	0.28	0.24	0.03	0.05	0.14
TA8-5	0.08	0.07	0.07	0.06	0.05	0.06	0.07	0.02	0.06
TA8-6	0.09	0.36	0.32	0.14	0.24	0.24	0.26	0.09	0.21
TA8-7	0.17	0.15	0.13	0.09	0.37	0.35	0.33	0.08	0.22
TA8-8	0.12	0.04	0.04	0.26	0.36	0.37	0.36	0.03	0.22
TA8-9	0.07	0.26	0.23	0.16	0.23	0.17	0.10	0.11	0.16
TA8-10	0.33	0.06	0.05	0.16	0.27	0.28	0.28	0.08	0.21
TA8-11	0.18	0.35	0.32	0.20	0.35	0.27	0.27	0.04	0.25
TA8-12	0.11	0.31	0.29	0.13	0.37	0.30	0.22	0.08	0.22
TA8-13	0.09	0.51	0.46	0.24	0.18	0.19	0.18	0.11	0.23
TA9-1	0.20	0.12	0.11	0.11	0.07	0.06	0.06	0.13	0.11
TA9-2	0.15	0.09	0.08	0.06	0.03	0.11	0.06	0.09	0.09
TA9-3	0.10	0.05	0.05	0.08	0.05	0.06	0.04	0.09	0.07
TA10-1	0.01	0.02	0.02	0.06	0.08	0.06	0.04	0.10	0.05
TA10-2	0.02	0.02	0.01	0.14	0.17	0.14	0.04	0.07	0.08
TA10-3	0.11	0.05	0.05	0.12	0.24	0.15	0.04	0.03	0.11
TA11-1	0.11	0.10	0.08	0.06	0.24	0.16	0.07	0.06	0.11
TA11-2	0.05	0.06	0.04	0.07	0.19	0.09	0.04	0.11	0.08
TA11-3	0.10	0.23	0.17	0.10	0.26	0.17	0.14	0.03	0.15
TA11-4	0.11	0.08	0.09	0.11	0.27	0.14	0.26	0.08	0.14
TA11-5	0.11	0.13	0.08	0.38	0.32	0.27	0.08	0.07	0.19
TA11-6	0.17	0.16	0.13	0.32	0.18	0.30	0.39	0.12	0.23
TA12-1	0.02	0.10	0.11	0.04	0.08	0.08	0.06	0.04	0.06
TA12-2	0.03	0.19	0.05	0.05	0.11	0.11	0.07	0.06	0.08

Annex I - Details of the Predicted Wind Velocity Ratio (VR_W)

	Proposed Summer								
Test Point	**E**	**ESE**	**SE**	**S**	**SSW**	**SW**	**WSW**	**W**	
Wind speed at infinity	**6.17**	**5.55**	**4.92**	**5.65**	**5.47**	**7.06**	**7.66**	**6.15**	**VR_w**
Wind probability	**0.138**	**0.079**	**0.065**	**0.101**	**0.083**	**0.145**	**0.097**	**0.065**	**0.773**
TA12-3	0.07	0.15	0.16	0.06	0.03	0.08	0.14	0.08	0.09
TA12-4	0.07	0.03	0.07	0.08	0.06	0.05	0.02	0.04	0.05
TA12-5	0.20	0.27	0.32	0.24	0.04	0.13	0.18	0.02	0.17
TA12-6	0.22	0.11	0.19	0.22	0.23	0.16	0.16	0.06	0.17
TA12-7	0.23	0.18	0.23	0.07	0.07	0.04	0.03	0.11	0.12
TA12-8	0.19	0.10	0.09	0.21	0.21	0.27	0.29	0.08	0.20
TA12-9	0.04	0.18	0.15	0.22	0.18	0.33	0.36	0.08	0.20
TA13-1	0.41	0.05	0.04	0.06	0.18	0.06	0.05	0.09	0.14
TA13-2	0.50	0.10	0.13	0.04	0.18	0.12	0.25	0.13	0.20
TA13-3	0.28	0.51	0.46	0.19	0.17	0.05	0.22	0.15	0.24
TA13-4	0.47	0.17	0.15	0.07	0.09	0.15	0.21	0.21	0.21
TA13-5	0.15	0.34	0.32	0.15	0.12	0.15	0.17	0.10	0.18
TA13-6	0.78	0.19	0.14	0.21	0.08	0.16	0.16	0.09	0.27
TA13-7	0.92	0.72	0.68	0.12	0.12	0.14	0.07	0.07	0.37
TA13-8	0.84	0.42	0.35	0.08	0.05	0.11	0.11	0.25	0.30
TA14-1	0.25	0.18	0.19	0.19	0.34	0.29	0.28	0.10	0.24
TA14-2	0.29	0.14	0.15	0.11	0.21	0.17	0.14	0.09	0.17
TA14-3	0.28	0.15	0.18	0.09	0.08	0.08	0.07	0.04	0.13
TA14-4	0.12	0.11	0.19	0.16	0.35	0.28	0.26	0.02	0.19
TA14-5	0.05	0.04	0.05	0.11	0.25	0.24	0.24	0.08	0.14
TA14-6	0.14	0.06	0.11	0.11	0.31	0.28	0.24	0.02	0.17
TA15-1	0.17	0.03	0.04	0.04	0.17	0.21	0.22	0.03	0.13
TA15-2	0.09	0.08	0.04	0.07	0.19	0.15	0.05	0.08	0.10
TA15-3	0.06	0.13	0.14	0.07	0.27	0.28	0.27	0.04	0.16
TA15-4	0.03	0.05	0.05	0.12	0.23	0.25	0.25	0.07	0.14
TA15-5	0.03	0.06	0.07	0.12	0.20	0.17	0.17	0.05	0.11
TA15-6	0.16	0.07	0.10	0.14	0.27	0.26	0.26	0.13	0.18
TA16-1	0.16	0.18	0.14	0.35	0.45	0.49	0.50	0.27	0.33
TA16-2	0.12	0.17	0.13	0.31	0.34	0.36	0.37	0.20	0.26
TA16-3	0.29	0.15	0.10	0.32	0.22	0.16	0.14	0.12	0.20
TA16-4	0.19	0.23	0.14	0.15	0.15	0.14	0.16	0.06	0.16
TA16-5	0.73	0.30	0.20	0.36	0.17	0.15	0.14	0.05	0.29
TA16-6	0.26	0.07	0.11	0.20	0.22	0.19	0.19	0.16	0.19
TA16-7	0.34	0.19	0.17	0.10	0.47	0.44	0.41	0.25	0.31
TA16-8	0.61	0.23	0.25	0.38	0.54	0.49	0.44	0.27	0.43
TA16-9	0.49	0.22	0.27	0.34	0.50	0.46	0.41	0.25	0.39
TA16-10	0.11	0.24	0.18	0.21	0.44	0.38	0.32	0.24	0.26
TA16-11	0.28	0.31	0.24	0.24	0.36	0.34	0.29	0.20	0.29
TA17-1	0.14	0.20	0.27	0.30	0.55	0.53	0.40	0.21	0.33
TA17-2	0.21	0.20	0.25	0.30	0.54	0.50	0.40	0.30	0.34
TA17-3	0.75	0.23	0.22	0.27	0.55	0.47	0.35	0.34	0.42
TA17-4	0.91	0.32	0.25	0.24	0.48	0.45	0.36	0.31	0.45
TA17-5	0.27	0.09	0.06	0.04	0.10	0.12	0.09	0.14	0.12
TA17-6	0.34	0.08	0.09	0.04	0.06	0.08	0.09	0.19	0.13
TA17-7	0.45	0.07	0.07	0.03	0.33	0.27	0.23	0.31	0.23
TA17-8	0.60	0.30	0.25	0.05	0.22	0.15	0.11	0.25	0.25
TA18-1	0.48	0.19	0.12	0.25	0.66	0.65	0.67	0.55	0.47
TA18-2	0.43	0.17	0.10	0.09	0.58	0.59	0.64	0.54	0.42
TA18-3	0.40	0.14	0.04	0.07	0.30	0.17	0.43	0.54	0.26
TA18-4	0.40	0.17	0.10	0.03	0.33	0.26	0.47	0.54	0.29
TA18-5	0.45	0.19	0.13	0.15	0.60	0.61	0.66	0.55	0.44
TA18-6	0.48	0.20	0.14	0.28	0.66	0.65	0.66	0.54	0.48
TA18-7	0.47	0.19	0.16	0.25	0.68	0.67	0.67	0.53	0.48
TA18-8	0.44	0.19	0.15	0.16	0.53	0.53	0.62	0.53	0.41
TA18-9	0.42	0.19	0.13	0.02	0.40	0.40	0.45	0.52	0.33
TA18-10	0.37	0.12	0.16	0.04	0.21	0.22	0.24	0.20	0.21
TA18-11	0.45	0.19	0.13	0.28	0.66	0.65	0.65	0.51	0.46
TA18-12	0.37	0.18	0.13	0.23	0.64	0.61	0.61	0.46	0.42

Annex I - Details of the Predicted Wind Velocity Ratio (VR_W)

	Proposed Summer								
Test Point	**E**	**ESE**	**SE**	**S**	**SSW**	**SW**	**WSW**	**W**	
Wind speed at infinity	**6.17**	**5.55**	**4.92**	**5.65**	**5.47**	**7.06**	**7.66**	**6.15**	**VR_w**
Wind probability	**0.138**	**0.079**	**0.065**	**0.101**	**0.083**	**0.145**	**0.097**	**0.065**	**0.773**
TA18-13	0.24	0.19	0.12	0.19	0.60	0.57	0.56	0.42	0.37
TA18-14	0.06	0.17	0.12	0.16	0.52	0.50	0.50	0.35	0.30
TA19-1	0.16	0.07	0.04	0.09	0.22	0.37	0.29	0.03	0.18
TA19-2	0.17	0.02	0.03	0.13	0.05	0.23	0.16	0.09	0.13
TA19-3	0.05	0.07	0.04	0.06	0.17	0.33	0.21	0.06	0.14
TA19-4	0.11	0.04	0.08	0.11	0.23	0.41	0.29	0.15	0.20
TA19-5	0.19	0.02	0.05	0.07	0.05	0.17	0.07	0.10	0.10
TA19-6	0.15	0.08	0.07	0.04	0.14	0.35	0.24	0.14	0.17
TA19-7	0.05	0.05	0.03	0.12	0.09	0.30	0.10	0.38	0.14
TA19-8	0.05	0.02	0.01	0.04	0.09	0.10	0.13	0.08	0.07
TA19-9	0.06	0.06	0.04	0.12	0.18	0.37	0.30	0.16	0.18
TA19-10	0.03	0.04	0.05	0.10	0.17	0.18	0.19	0.34	0.13
TA19-11	0.05	0.03	0.04	0.11	0.27	0.29	0.35	0.31	0.18
TA19-12	0.02	0.04	0.08	0.07	0.37	0.40	0.43	0.27	0.22
TA19-13	0.04	0.04	0.06	0.08	0.10	0.15	0.18	0.16	0.10
TA19-14	0.16	0.06	0.09	0.08	0.09	0.11	0.09	0.32	0.12
TA19-15	0.28	0.13	0.09	0.09	0.10	0.09	0.07	0.51	0.16
TA19-16	0.30	0.13	0.11	0.08	0.24	0.24	0.20	0.53	0.23
TA20-1	0.03	0.03	0.01	0.04	0.08	0.04	0.07	0.10	0.05
TA20-2	0.03	0.02	0.02	0.02	0.05	0.03	0.06	0.29	0.06
TA20-3	0.03	0.04	0.03	0.06	0.10	0.13	0.18	0.16	0.09
TA20-4	0.04	0.06	0.05	0.06	0.24	0.30	0.38	0.40	0.19
TA21-1	0.26	0.10	0.10	0.02	0.09	0.03	0.06	0.11	0.10
TA21-2	0.04	0.04	0.06	0.09	0.06	0.05	0.10	0.11	0.07
TA21-3	0.04	0.07	0.07	0.03	0.01	0.03	0.13	0.15	0.06
TA21-4	0.14	0.07	0.11	0.07	0.21	0.11	0.19	0.15	0.13
TA21-5	0.18	0.08	0.13	0.03	0.10	0.13	0.07	0.21	0.12
TA21-6	0.25	0.12	0.14	0.02	0.10	0.13	0.07	0.21	0.13
TA21-7	0.08	0.03	0.09	0.02	0.05	0.03	0.02	0.11	0.05
TA21-8	0.15	0.04	0.11	0.02	0.08	0.06	0.05	0.15	0.08
TA21-9	0.10	0.05	0.09	0.03	0.02	0.02	0.03	0.13	0.06
TA21-10	0.20	0.09	0.10	0.07	0.13	0.08	0.10	0.14	0.12
TA21-11	0.04	0.07	0.07	0.02	0.04	0.01	0.08	0.01	0.04
TA21-12	0.08	0.05	0.04	0.04	0.04	0.04	0.12	0.10	0.06
TA21-13	0.04	0.01	0.01	0.06	0.05	0.04	0.09	0.12	0.05
TA21-14	0.08	0.03	0.04	0.02	0.02	0.04	0.07	0.07	0.05
TA21-15	0.23	0.18	0.13	0.17	0.05	0.08	0.10	0.14	0.14
TA21-16	0.20	0.10	0.09	0.01	0.12	0.06	0.08	0.21	0.11
TA21-17	0.11	0.20	0.15	0.16	0.10	0.11	0.04	0.13	0.12
TA21-18	0.08	0.18	0.14	0.10	0.14	0.11	0.01	0.02	0.10
TA21-19	0.06	0.02	0.02	0.06	0.11	0.10	0.11	0.15	0.08
TA22-1	0.08	0.14	0.10	0.05	0.10	0.04	0.05	0.16	0.08
TA22-2	0.10	0.10	0.07	0.02	0.05	0.04	0.03	0.18	0.07
TA22-3	0.10	0.08	0.05	0.02	0.08	0.06	0.05	0.13	0.07
TA22-4	0.19	0.22	0.17	0.14	0.09	0.07	0.08	0.09	0.13
TA22-5	0.15	0.18	0.13	0.06	0.03	0.03	0.03	0.16	0.09
TA23-1	0.01	0.05	0.02	0.09	0.13	0.18	0.18	0.08	0.10
TA23-2	0.03	0.09	0.05	0.13	0.05	0.36	0.43	0.32	0.19
TA23-3	0.03	0.10	0.06	0.12	0.10	0.08	0.03	0.24	0.09
TA23-4	0.08	0.05	0.09	0.05	0.27	0.45	0.45	0.40	0.24
TA23-5	0.08	0.13	0.09	0.16	0.16	0.10	0.10	0.32	0.13
TA23-6	0.02	0.18	0.12	0.22	0.04	0.13	0.03	0.38	0.13
TA23-7	0.11	0.02	0.06	0.10	0.35	0.50	0.44	0.06	0.23
TA23-8	0.20	0.10	0.04	0.13	0.15	0.11	0.10	0.24	0.13
TA23-9	0.09	0.07	0.05	0.11	0.30	0.42	0.41	0.40	0.24
TA23-10	0.06	0.11	0.10	0.11	0.12	0.06	0.05	0.39	0.11
TA23-11	0.12	0.04	0.08	0.10	0.12	0.16	0.12	0.37	0.13
TA23-12	0.17	0.05	0.04	0.12	0.05	0.09	0.14	0.23	0.11

Annex I - Details of the Predicted Wind Velocity Ratio (VR_W)

	Proposed Summer								
Test Point	**E**	**ESE**	**SE**	**S**	**SSW**	**SW**	**WSW**	**W**	
Wind speed at infinity	**6.17**	**5.55**	**4.92**	**5.65**	**5.47**	**7.06**	**7.66**	**6.15**	VR_w
Wind probability	**0.138**	**0.079**	**0.065**	**0.101**	**0.083**	**0.145**	**0.097**	**0.065**	**0.773**
TA23-13	0.19	0.01	0.02	0.10	0.08	0.12	0.09	0.12	0.10
TA24-1	0.18	0.12	0.09	0.06	0.05	0.09	0.04	0.27	0.11
TA24-2	0.17	0.11	0.10	0.08	0.09	0.10	0.06	0.13	0.11
TA24-3	0.19	0.15	0.12	0.04	0.08	0.13	0.08	0.11	0.12
TA24-4	0.14	0.07	0.08	0.07	0.08	0.07	0.06	0.04	0.08
TA24-5	0.25	0.20	0.18	0.12	0.06	0.05	0.13	0.12	0.14
TA24-6	0.18	0.20	0.16	0.18	0.04	0.08	0.19	0.04	0.14
TA24-7	0.07	0.04	0.02	0.24	0.10	0.14	0.05	0.18	0.11
TA24-8	0.04	0.05	0.05	0.20	0.08	0.07	0.09	0.16	0.09
TA24-9	0.14	0.15	0.11	0.04	0.08	0.17	0.08	0.06	0.11
TA25-1	0.07	0.06	0.06	0.07	0.16	0.20	0.13	0.07	0.10
TA25-2	0.19	0.15	0.14	0.03	0.16	0.05	0.05	0.03	0.10
TA25-3	0.19	0.04	0.07	0.02	0.14	0.07	0.05	0.03	0.08
TA25-4	0.20	0.02	0.11	0.06	0.23	0.12	0.14	0.05	0.12
TA25-5	0.05	0.02	0.02	0.03	0.08	0.04	0.10	0.02	0.05
TA25-6	0.36	0.20	0.19	0.18	0.21	0.06	0.11	0.03	0.17
TA25-7	0.35	0.09	0.12	0.05	0.13	0.07	0.06	0.05	0.13
TA25-8	0.40	0.23	0.22	0.14	0.23	0.17	0.18	0.02	0.21
TA25-9	0.12	0.14	0.07	0.09	0.09	0.16	0.12	0.08	0.11
TA26-1	0.16	0.07	0.10	0.06	0.10	0.06	0.06	0.04	0.08
TA26-2	0.12	0.26	0.22	0.08	0.10	0.11	0.05	0.17	0.13
TA26-3	0.15	0.09	0.05	0.07	0.10	0.11	0.05	0.18	0.10
TA26-4	0.22	0.16	0.17	0.13	0.06	0.02	0.04	0.16	0.11
TA26-5	0.17	0.16	0.11	0.02	0.05	0.06	0.03	0.13	0.09
TA27-1	0.17	0.27	0.16	0.08	0.08	0.05	0.12	0.03	0.12
TA27-2	0.08	0.27	0.17	0.10	0.14	0.08	0.12	0.06	0.12
TA27-3	0.15	0.06	0.06	0.03	0.02	0.01	0.02	0.07	0.06
TA27-4	0.17	0.03	0.03	0.03	0.10	0.04	0.06	0.05	0.07
TA27-5	0.12	0.12	0.08	0.03	0.08	0.04	0.04	0.10	0.07
TA27-6	0.10	0.22	0.14	0.10	0.06	0.06	0.10	0.03	0.10
TA27-7	0.08	0.12	0.06	0.05	0.08	0.04	0.07	0.03	0.06
TA27-8	0.11	0.09	0.05	0.09	0.02	0.06	0.20	0.03	0.09
TA27-9	0.21	0.29	0.22	0.04	0.04	0.05	0.14	0.06	0.13
Average LVR	**0.27**	**0.21**	**0.19**	**0.17**	**0.22**	**0.22**	**0.23**	**0.20**	**0.22**
AS01	0.09	0.13	0.10	0.43	0.40	0.33	0.30	0.14	0.25
AS02	0.04	0.16	0.11	0.15	0.43	0.37	0.36	0.24	0.23
AS03	0.16	0.13	0.12	0.42	0.48	0.51	0.47	0.26	0.33
AS04	0.05	0.20	0.08	0.02	0.10	0.31	0.48	0.34	0.20
AS05	0.06	0.11	0.12	0.10	0.20	0.28	0.28	0.22	0.17
AS06	0.23	0.31	0.27	0.40	0.20	0.18	0.36	0.54	0.29
AS07	0.06	0.25	0.22	0.32	0.32	0.33	0.31	0.06	0.24
AS08	0.13	0.24	0.20	0.32	0.34	0.39	0.43	0.03	0.27
AS09	0.23	0.44	0.36	0.20	0.20	0.20	0.26	0.05	0.24
AS10	0.09	0.08	0.05	0.12	0.11	0.32	0.44	0.59	0.22
AS11	0.21	0.39	0.32	0.20	0.43	0.48	0.49	0.20	0.34
AS12	0.18	0.54	0.45	0.26	0.07	0.14	0.28	0.17	0.24
AS13	0.06	0.11	0.04	0.10	0.10	0.08	0.21	0.41	0.13
AS14	0.16	0.36	0.32	0.24	0.35	0.37	0.39	0.03	0.28
AS15	0.25	0.52	0.43	0.03	0.12	0.35	0.37	0.20	0.28
AS16	0.15	0.39	0.33	0.07	0.23	0.32	0.34	0.09	0.24
AS17	0.20	0.18	0.18	0.10	0.03	0.16	0.25	0.47	0.19
AS18	0.19	0.31	0.29	0.06	0.07	0.09	0.13	0.43	0.18
AS19	0.19	0.25	0.20	0.14	0.16	0.33	0.37	0.05	0.23
AS20	0.16	0.23	0.20	0.38	0.37	0.29	0.24	0.13	0.25
AS21	0.24	0.19	0.16	0.25	0.38	0.45	0.46	0.06	0.30
BS01	0.08	0.08	0.05	0.18	0.34	0.49	0.51	0.08	0.25
BS02	0.04	0.09	0.07	0.24	0.28	0.40	0.43	0.12	0.22
BS03	0.12	0.28	0.25	0.22	0.18	0.24	0.30	0.03	0.20

Annex I - Details of the Predicted Wind Velocity Ratio (VR_W)

	Proposed Summer								
Test Point	**E**	**ESE**	**SE**	**S**	**SSW**	**SW**	**WSW**	**W**	
Wind speed at infinity	**6.17**	**5.55**	**4.92**	**5.65**	**5.47**	**7.06**	**7.66**	**6.15**	VR_w
Wind probability	**0.138**	**0.079**	**0.065**	**0.101**	**0.083**	**0.145**	**0.097**	**0.065**	**0.773**
BS04	0.29	0.35	0.31	0.30	0.31	0.33	0.37	0.06	0.30
BS05	0.29	0.40	0.34	0.32	0.31	0.24	0.23	0.10	0.28
BS06	0.05	0.23	0.22	0.17	0.13	0.10	0.10	0.08	0.12
BS07	0.16	0.17	0.11	0.24	0.24	0.17	0.27	0.10	0.19
BS08	0.38	0.09	0.08	0.17	0.18	0.18	0.14	0.12	0.19
BS09	0.21	0.20	0.22	0.27	0.20	0.09	0.42	0.24	0.22
BS10	0.23	0.12	0.04	0.20	0.09	0.02	0.40	0.27	0.17
BS11	0.31	0.14	0.11	0.20	0.22	0.43	0.40	0.24	0.28
BS12	0.44	0.16	0.14	0.06	0.45	0.50	0.50	0.27	0.34
BS13	0.10	0.01	0.02	0.32	0.18	0.23	0.24	0.14	0.17
BS14	0.10	0.05	0.04	0.40	0.08	0.28	0.25	0.06	0.18
BS15	0.50	0.34	0.29	0.10	0.11	0.06	0.04	0.13	0.20
BS16	0.11	0.38	0.35	0.37	0.45	0.46	0.44	0.12	0.34
CS01	0.18	0.12	0.14	0.16	0.12	0.13	0.14	0.17	0.15
CS02	0.21	0.27	0.10	0.17	0.24	0.23	0.21	0.06	0.20
CS03	0.73	0.38	0.30	0.30	0.15	0.11	0.08	0.13	0.29
CS04	0.15	0.09	0.17	0.19	0.24	0.22	0.21	0.10	0.18
CS05	0.11	0.08	0.07	0.15	0.20	0.16	0.16	0.05	0.13
CS06	0.58	0.35	0.33	0.20	0.28	0.27	0.25	0.21	0.32
CS07	0.09	0.11	0.24	0.11	0.07	0.14	0.11	0.02	0.11
CS08	0.51	0.35	0.39	0.20	0.10	0.17	0.15	0.03	0.25
CS09	0.05	0.06	0.06	0.04	0.03	0.06	0.06	0.03	0.05
CS10	0.27	0.23	0.20	0.12	0.15	0.19	0.19	0.26	0.20
CS11	0.36	0.11	0.13	0.06	0.13	0.08	0.09	0.03	0.14
CS12	0.38	0.41	0.42	0.09	0.04	0.05	0.06	0.03	0.18
CS13	0.49	0.42	0.39	0.16	0.14	0.13	0.12	0.01	0.24
CS14	0.54	0.40	0.35	0.17	0.05	0.08	0.07	0.03	0.22
CS15	0.35	0.39	0.34	0.17	0.21	0.26	0.25	0.24	0.27
DS01	0.08	0.11	0.09	0.17	0.17	0.11	0.14	0.06	0.12
DS02	0.23	0.41	0.40	0.17	0.14	0.18	0.20	0.03	0.22
DS03	0.32	0.41	0.39	0.12	0.03	0.21	0.22	0.03	0.22
DS04	0.73	0.45	0.41	0.13	0.35	0.38	0.36	0.14	0.39
DS05	0.38	0.17	0.24	0.09	0.17	0.22	0.26	0.06	0.21
DS06	0.35	0.29	0.38	0.03	0.09	0.11	0.07	0.05	0.17
DS07	0.35	0.18	0.29	0.09	0.13	0.18	0.23	0.03	0.20
DS08	0.48	0.31	0.36	0.11	0.08	0.11	0.19	0.02	0.22
ES01	0.31	0.12	0.09	0.07	0.06	0.06	0.23	0.50	0.17
ES02	0.28	0.11	0.04	0.05	0.07	0.07	0.28	0.45	0.16
ES03	0.02	0.06	0.03	0.06	0.50	0.55	0.61	0.49	0.29
ES04	0.01	0.03	0.01	0.03	0.01	0.04	0.03	0.01	0.02
ES05	0.02	0.02	0.05	0.03	0.12	0.11	0.03	0.27	0.07
ES06	0.08	0.05	0.02	0.11	0.50	0.52	0.64	0.59	0.32
ES07	0.05	0.03	0.04	0.09	0.13	0.14	0.09	0.27	0.10
ES08	0.25	0.09	0.06	0.07	0.15	0.14	0.40	0.44	0.20
ES09	0.05	0.06	0.04	0.04	0.39	0.41	0.48	0.38	0.23
ES10	0.02	0.04	0.04	0.02	0.02	0.04	0.06	0.06	0.04
ES11	0.03	0.02	0.03	0.02	0.45	0.47	0.46	0.20	0.22
ES12	0.10	0.02	0.03	0.04	0.42	0.45	0.41	0.24	0.23
ES13	0.05	0.01	0.01	0.07	0.25	0.28	0.41	0.47	0.19
ES14	0.09	0.03	0.02	0.05	0.29	0.32	0.26	0.34	0.18
Average VR	**0.21**	**0.21**	**0.19**	**0.16**	**0.21**	**0.24**	**0.28**	**0.18**	**0.21**

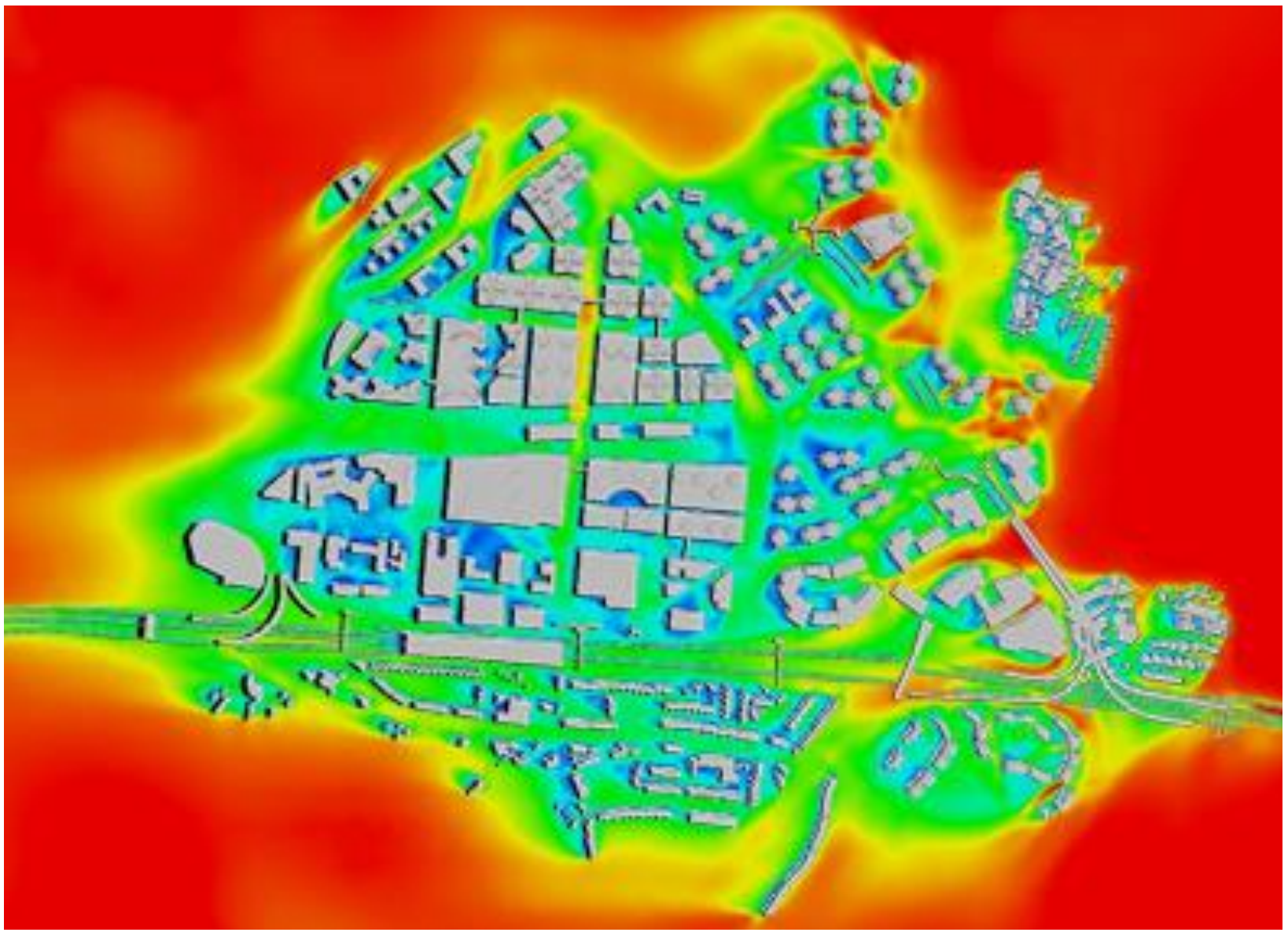
Annex II

Wind Velocity Ratio Contour Plots

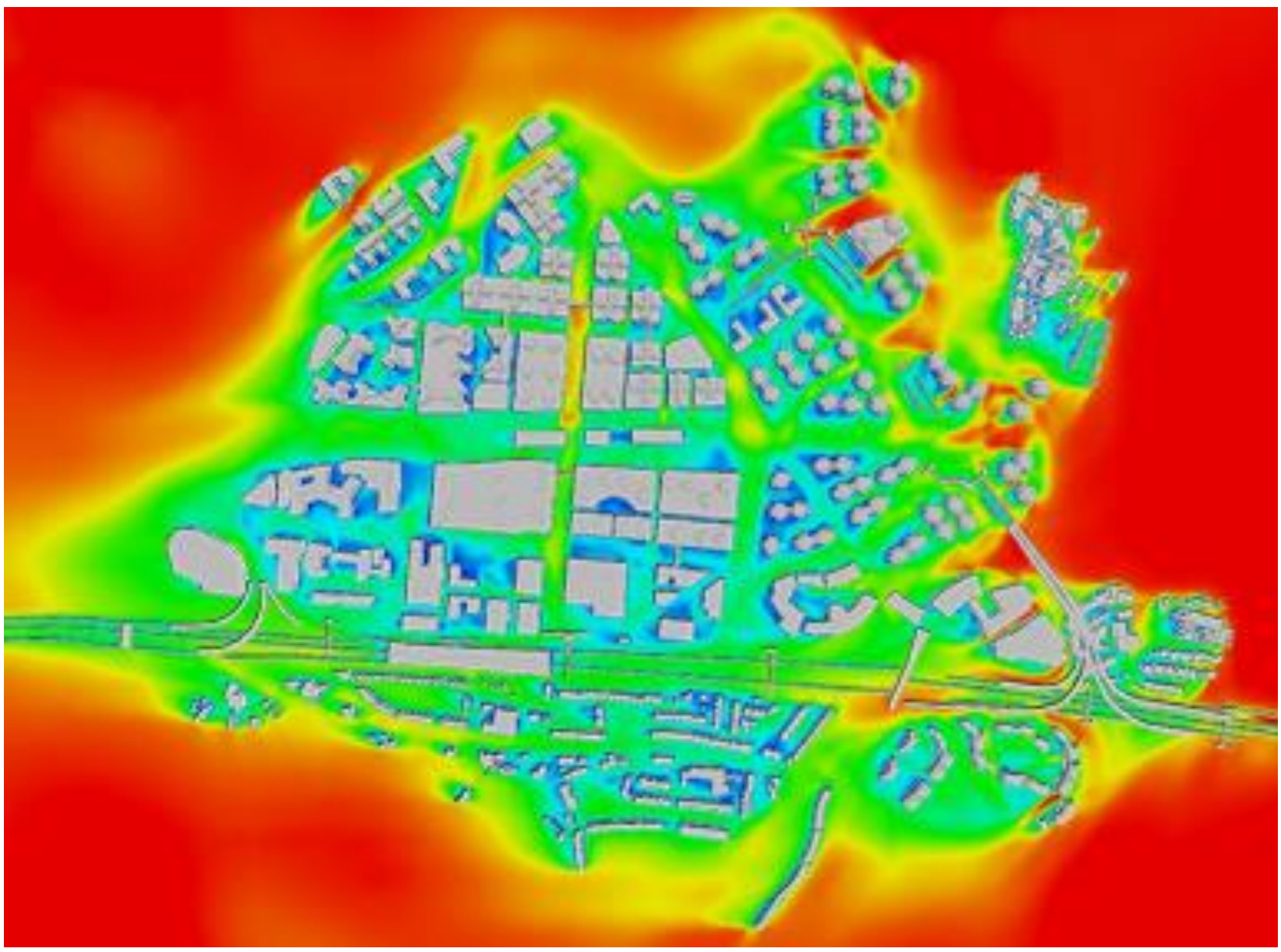
Annex II – Wind Velocity Ratio Contour Plots

Annual Frequency Weighted Average Contour Plot at 2mAG

Base Scenario



Proposed Scenario

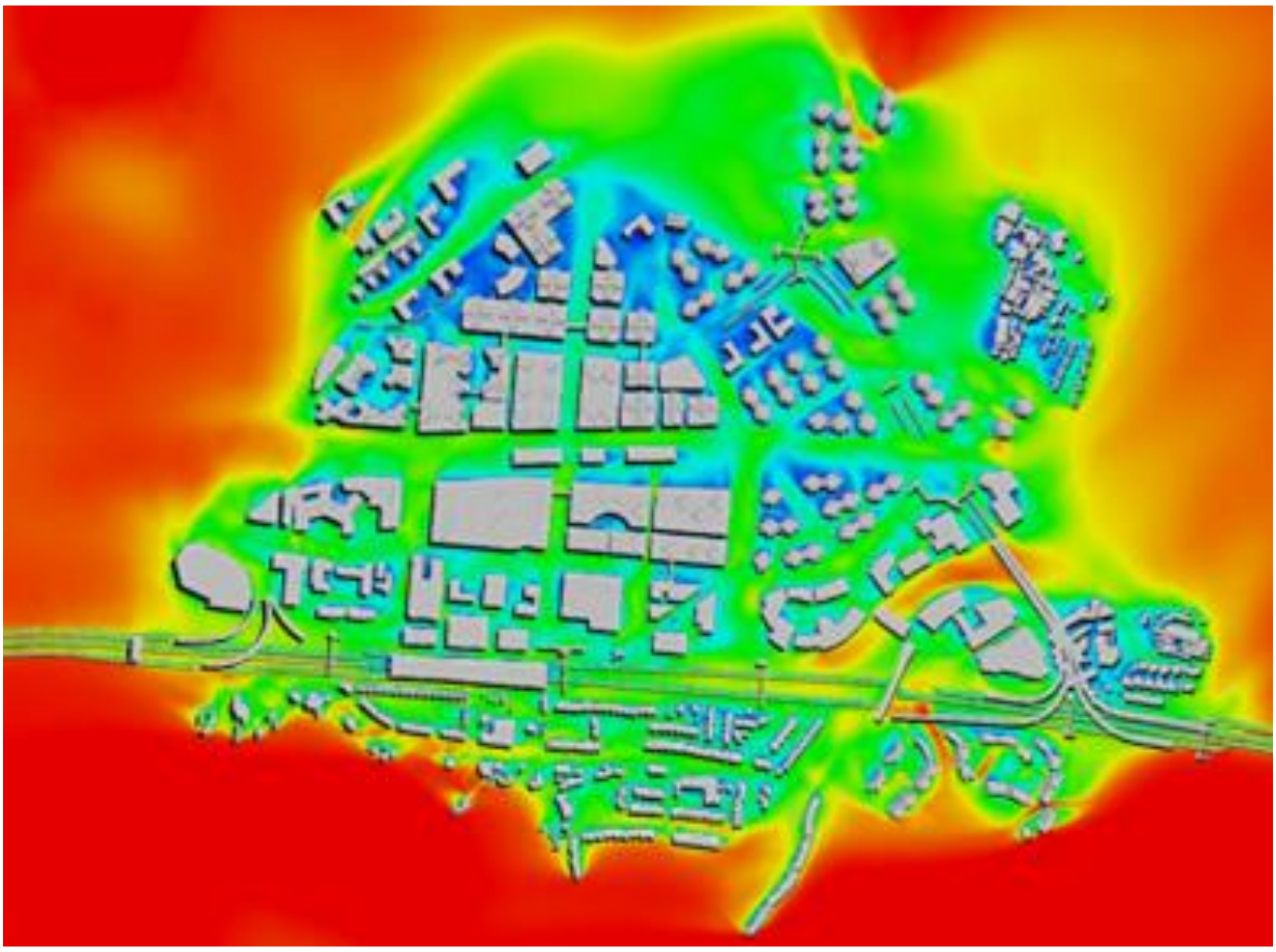




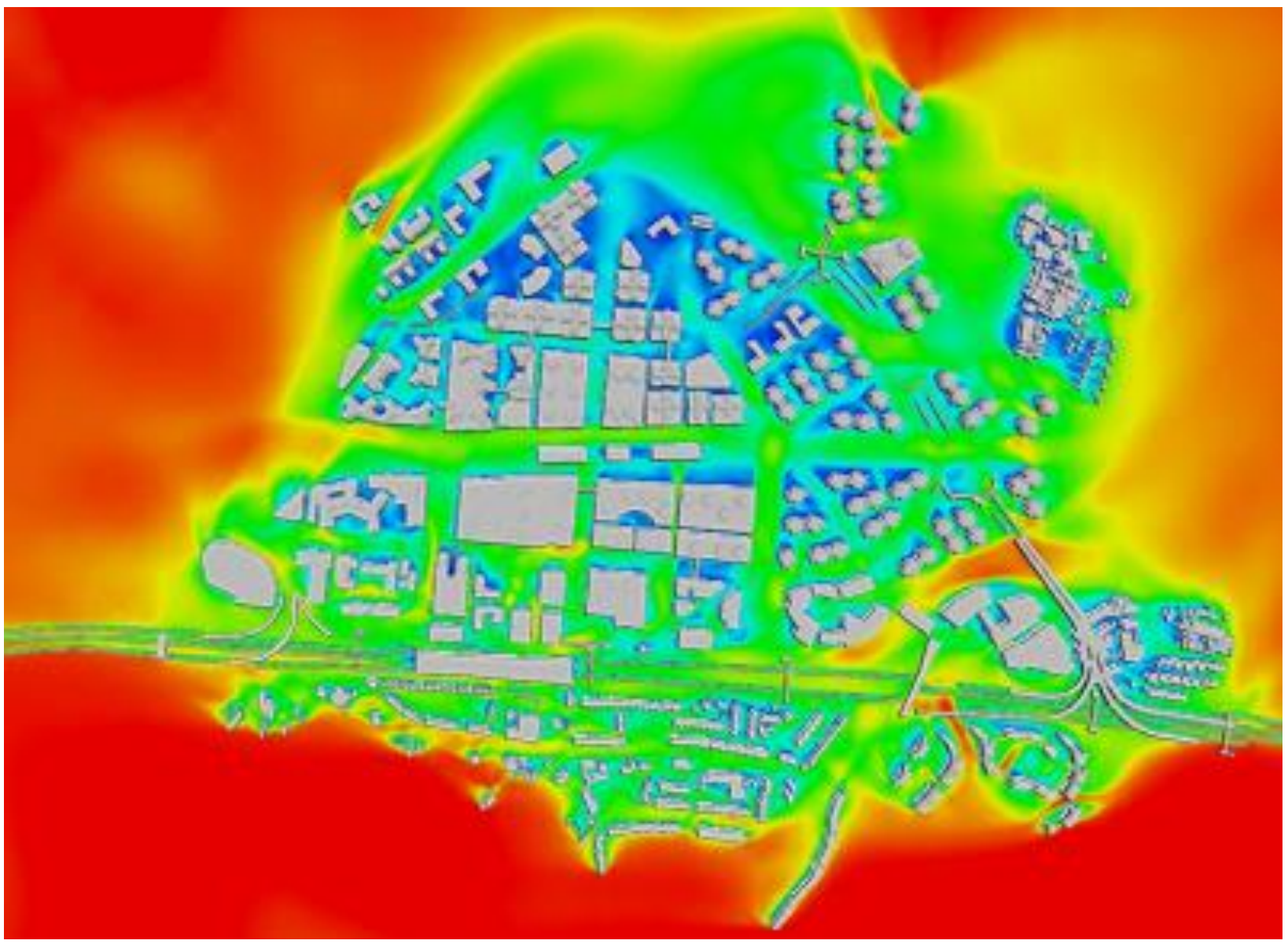
Annex II – Wind Velocity Ratio Contour Plots

Summer Frequency Weighted Average Contour Plot at 2mAG

Base Scenario



Proposed Scenario

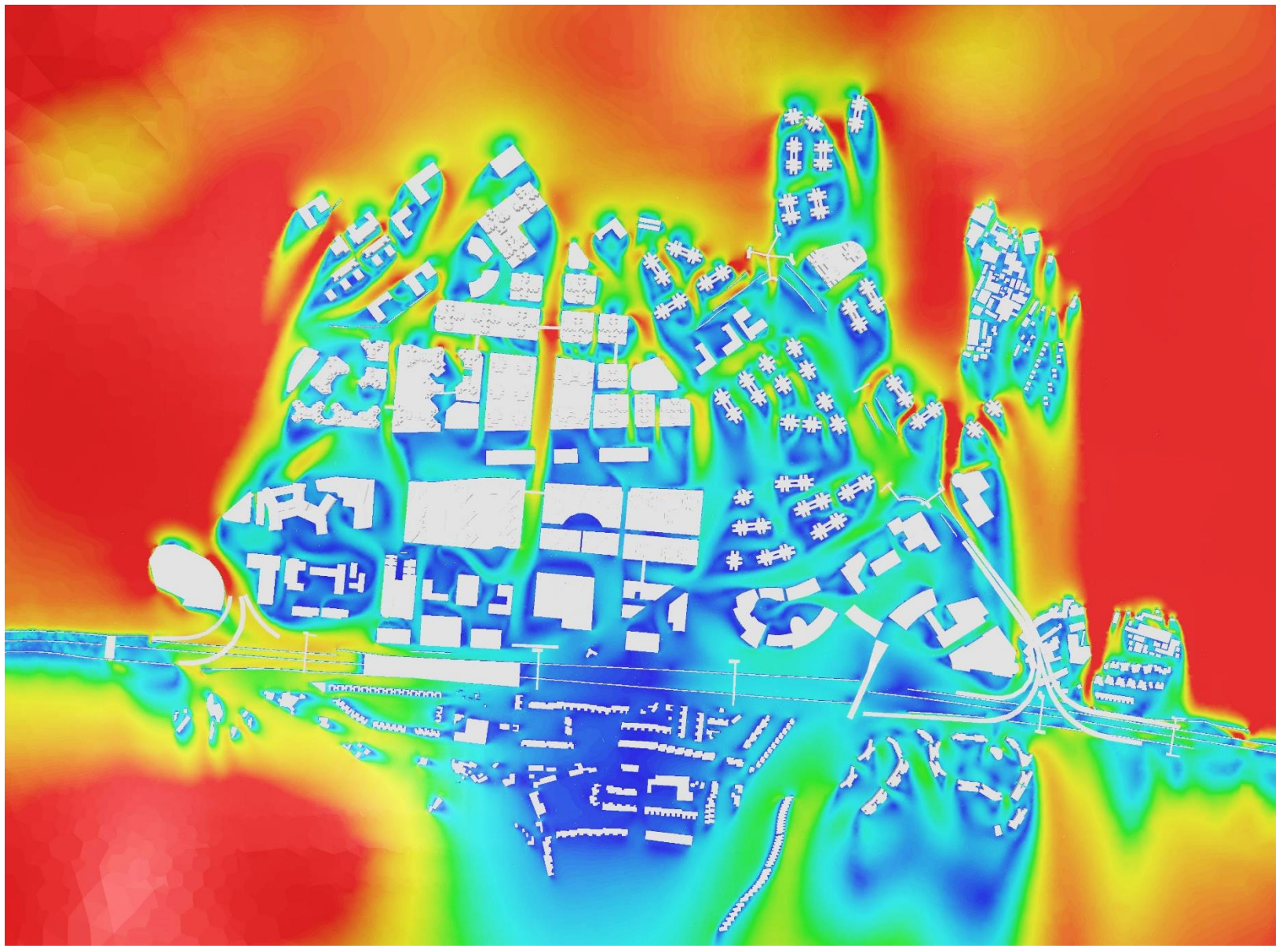




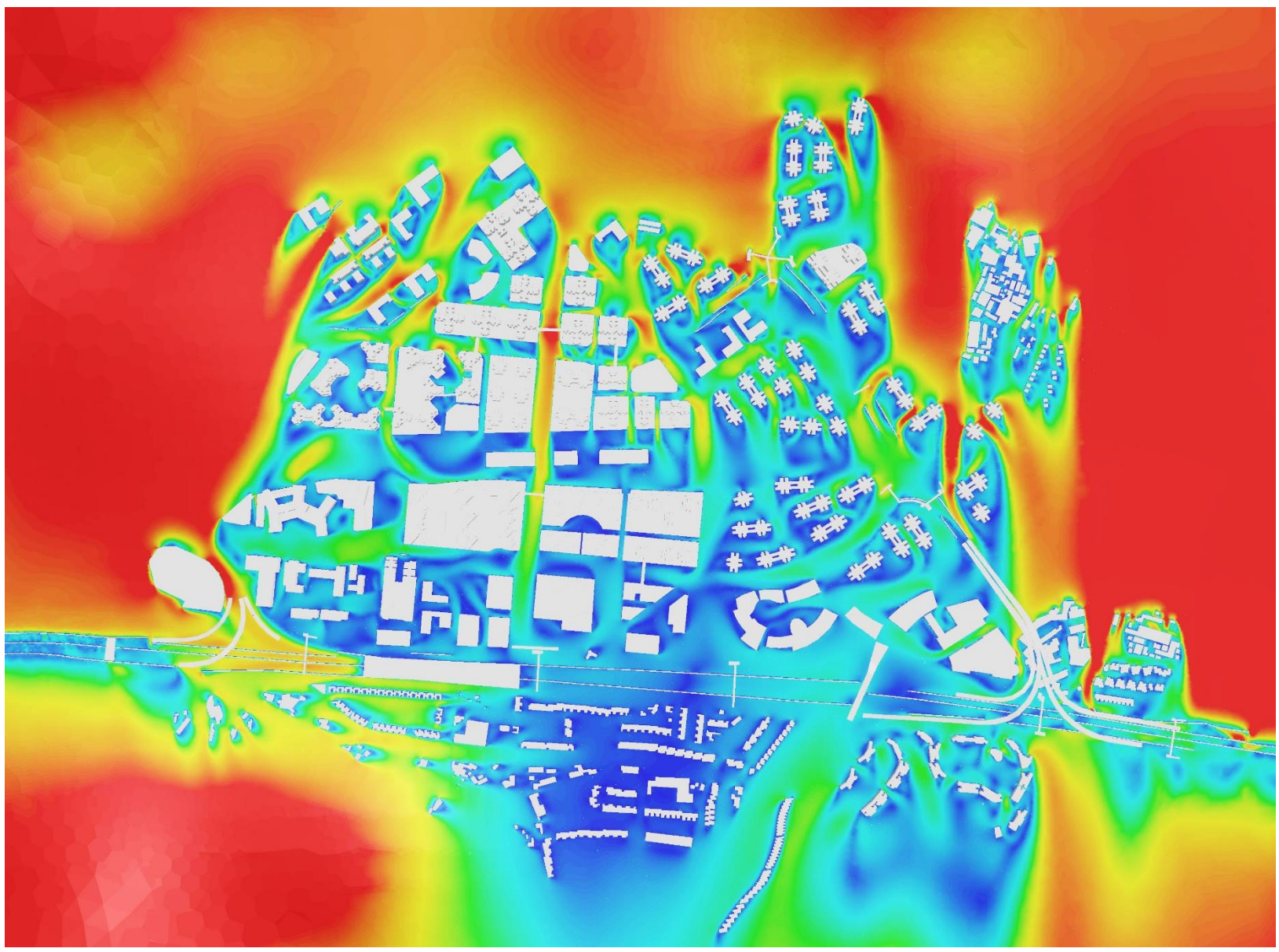
Annex II – Wind Velocity Ratio Contour Plots

Annual N at 2mAG

Base Scenario



Proposed Scenario

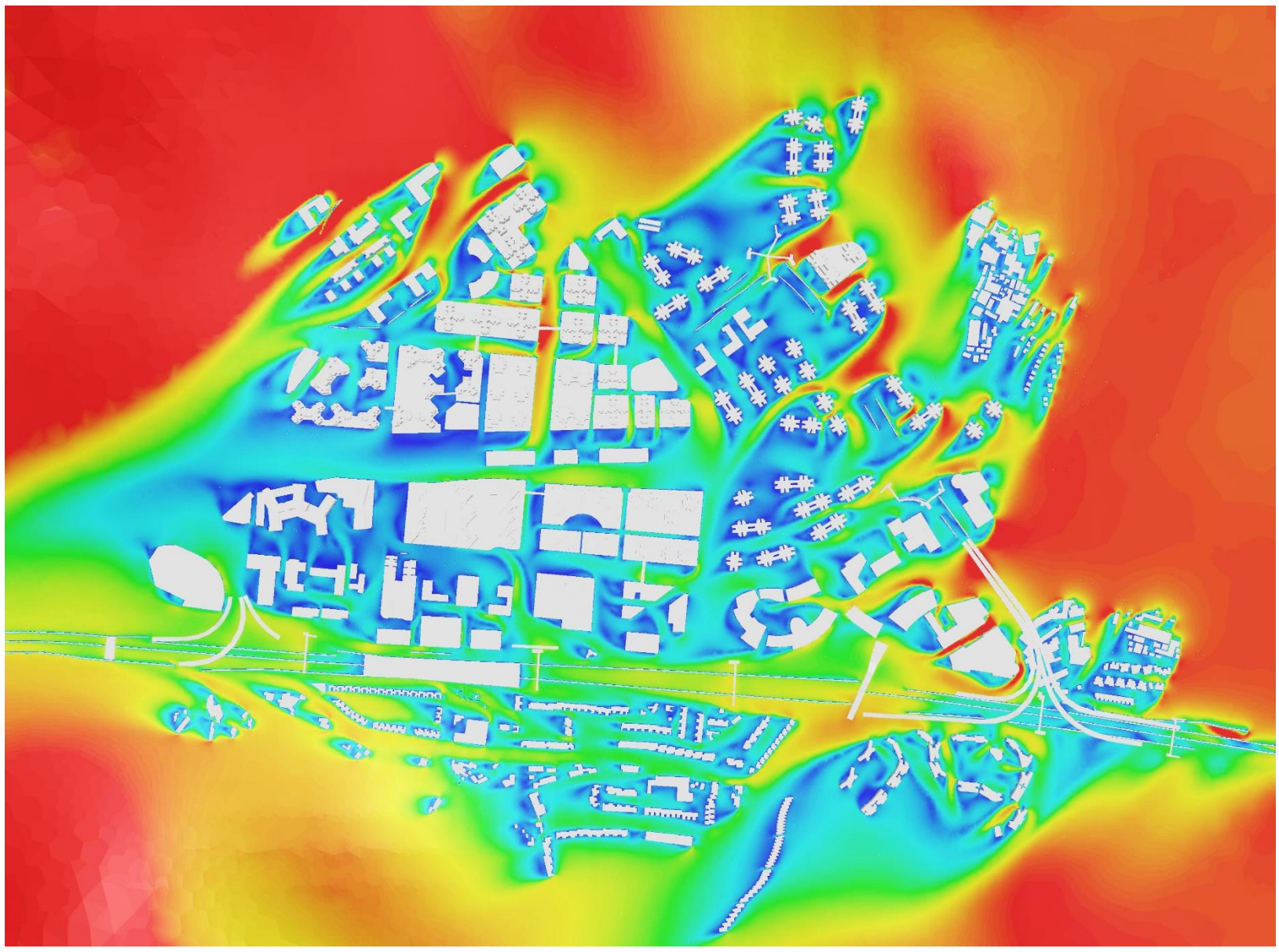




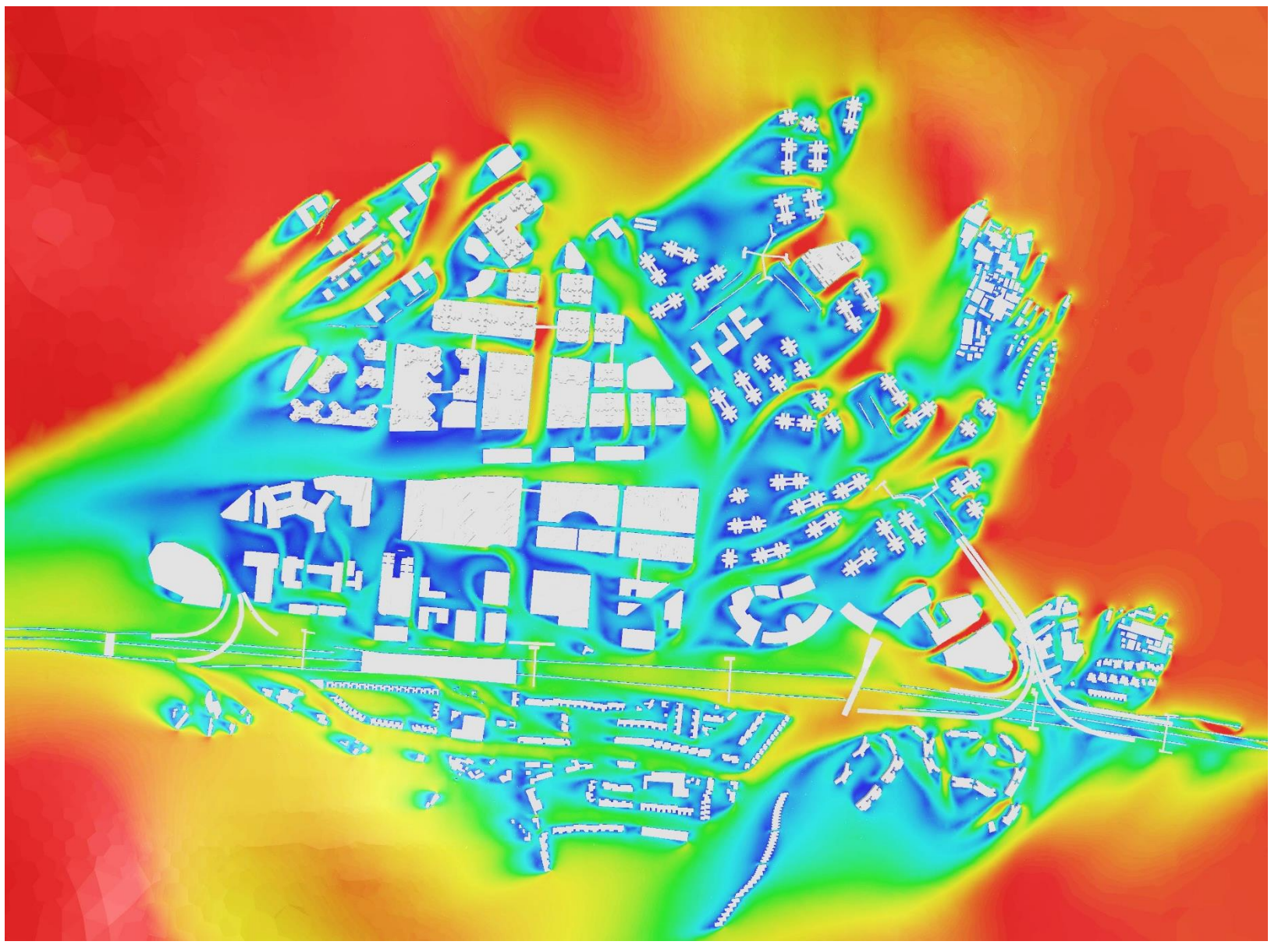
Annex II – Wind Velocity Ratio Contour Plots

Annual NNE at 2mAG

Base Scenario



Proposed Scenario

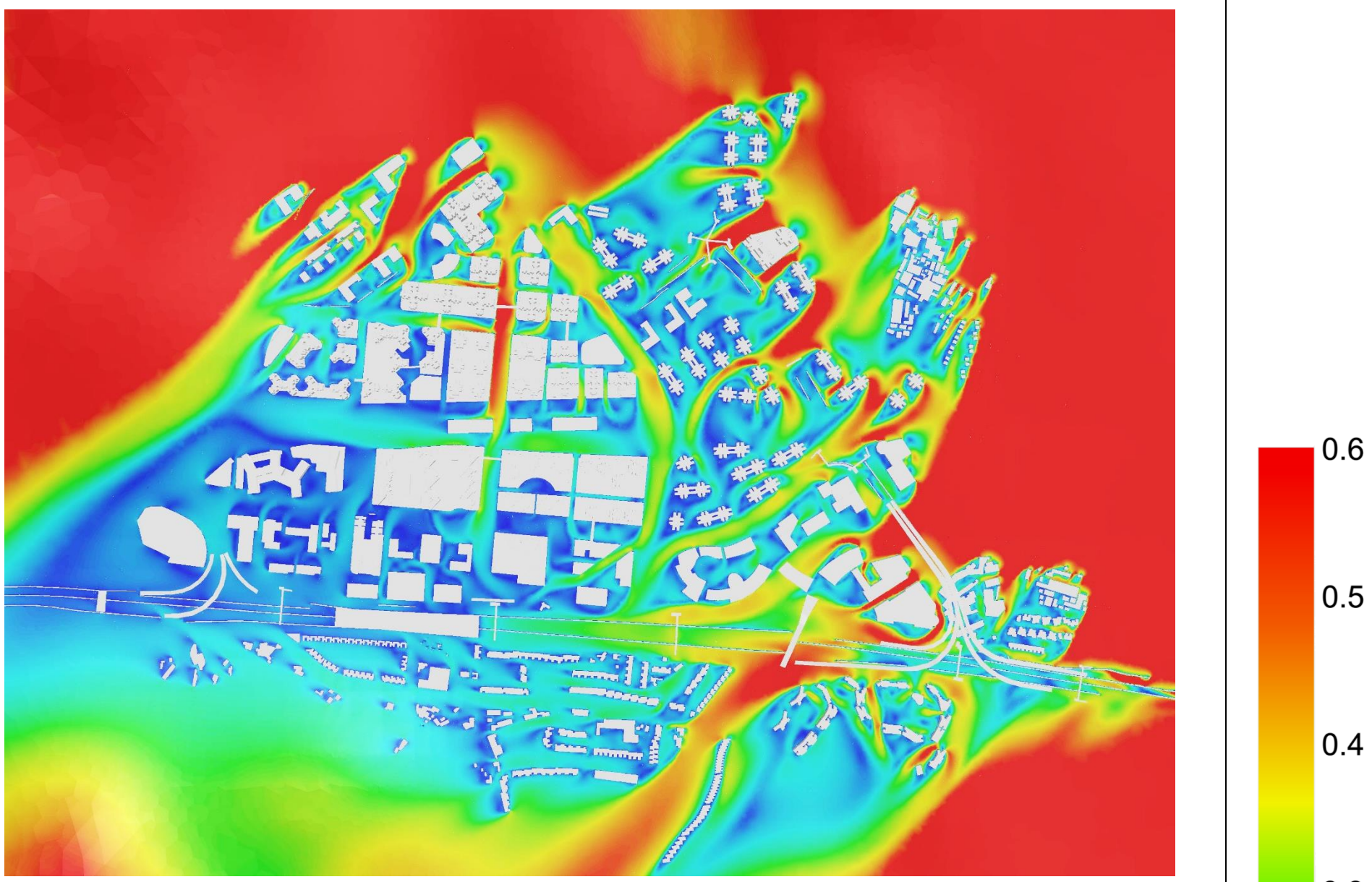




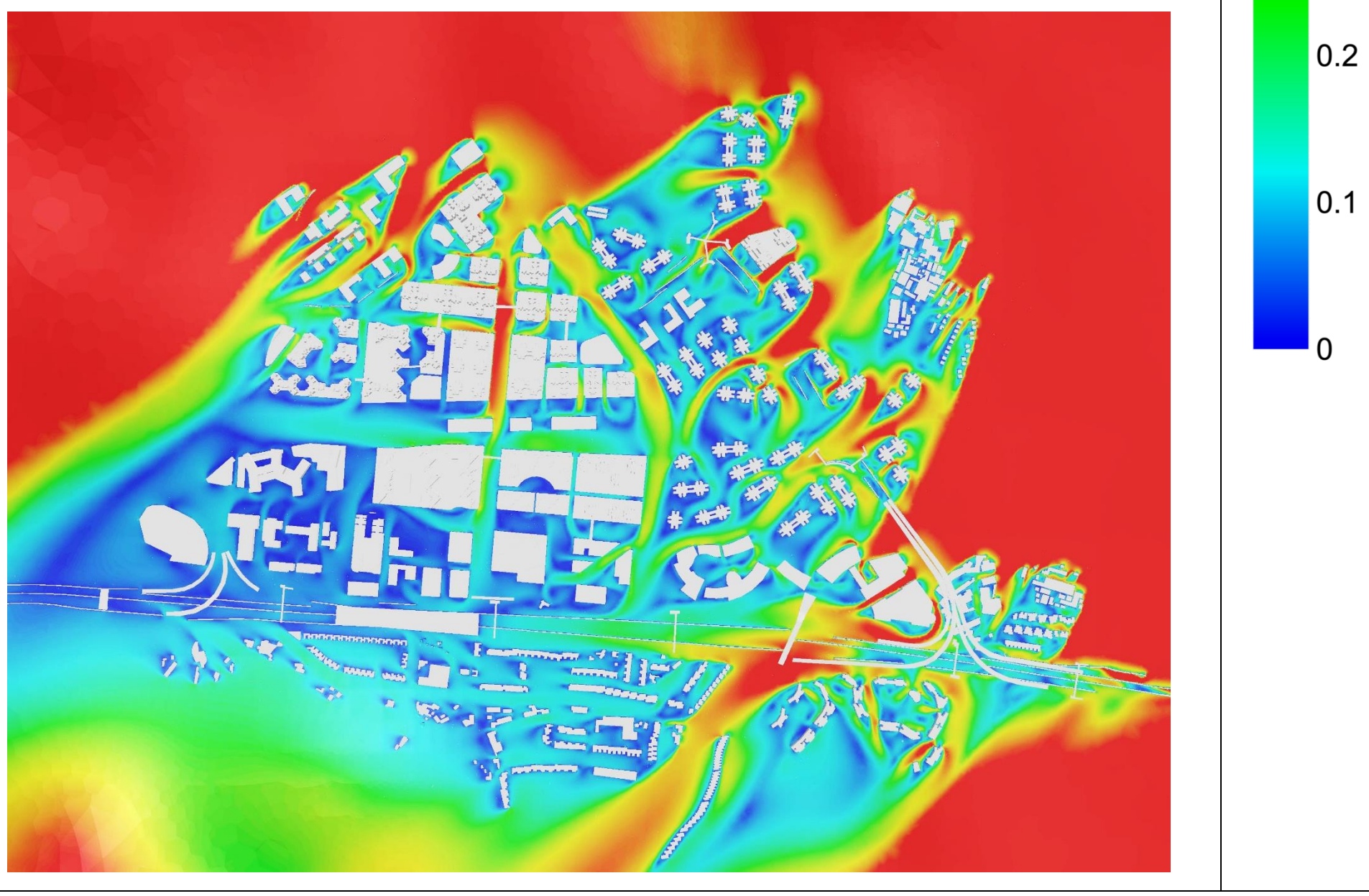
Annex II – Wind Velocity Ratio Contour Plots

Annual NE at 2mAG

Base Scenario



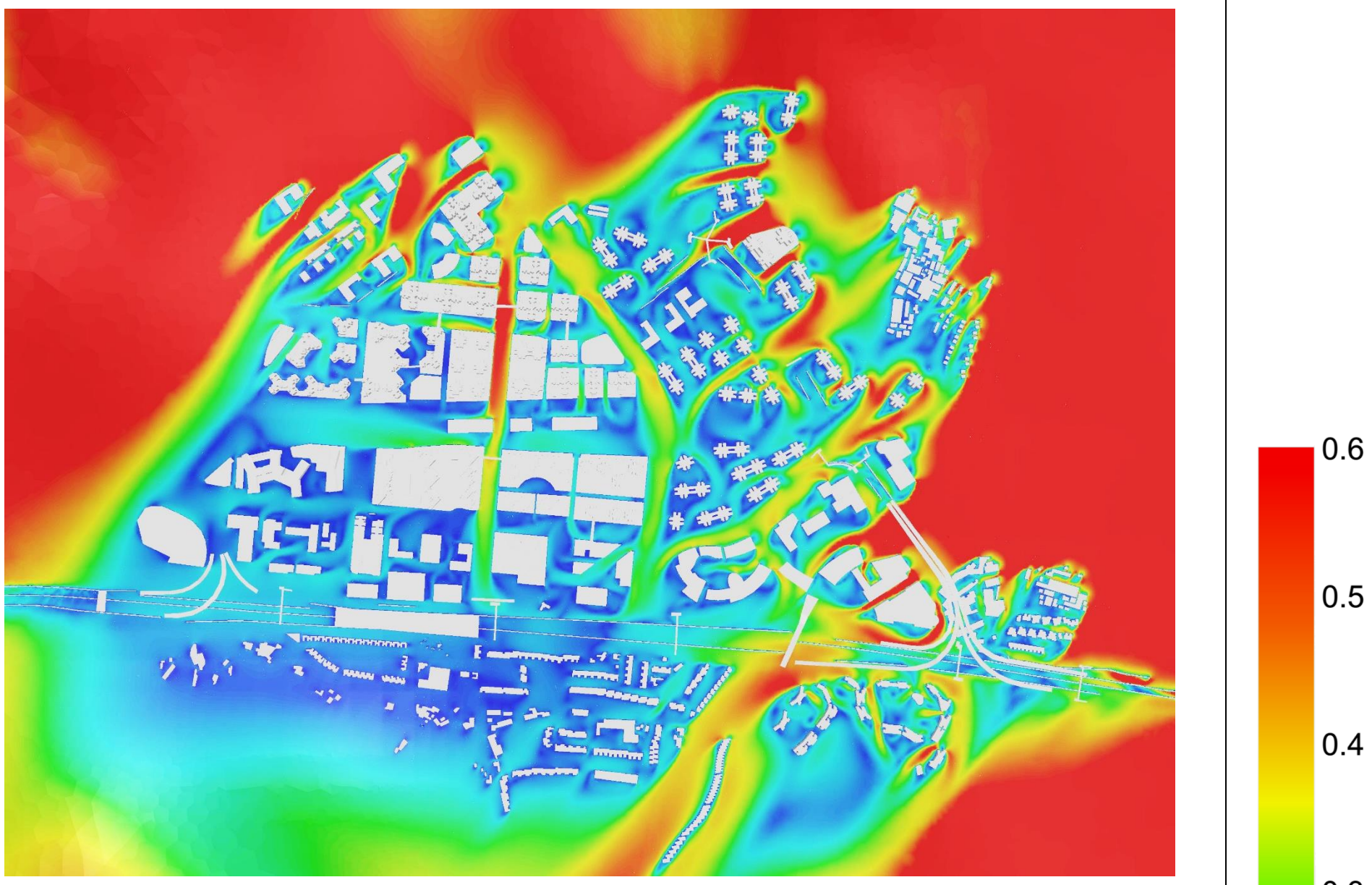
Proposed Scenario



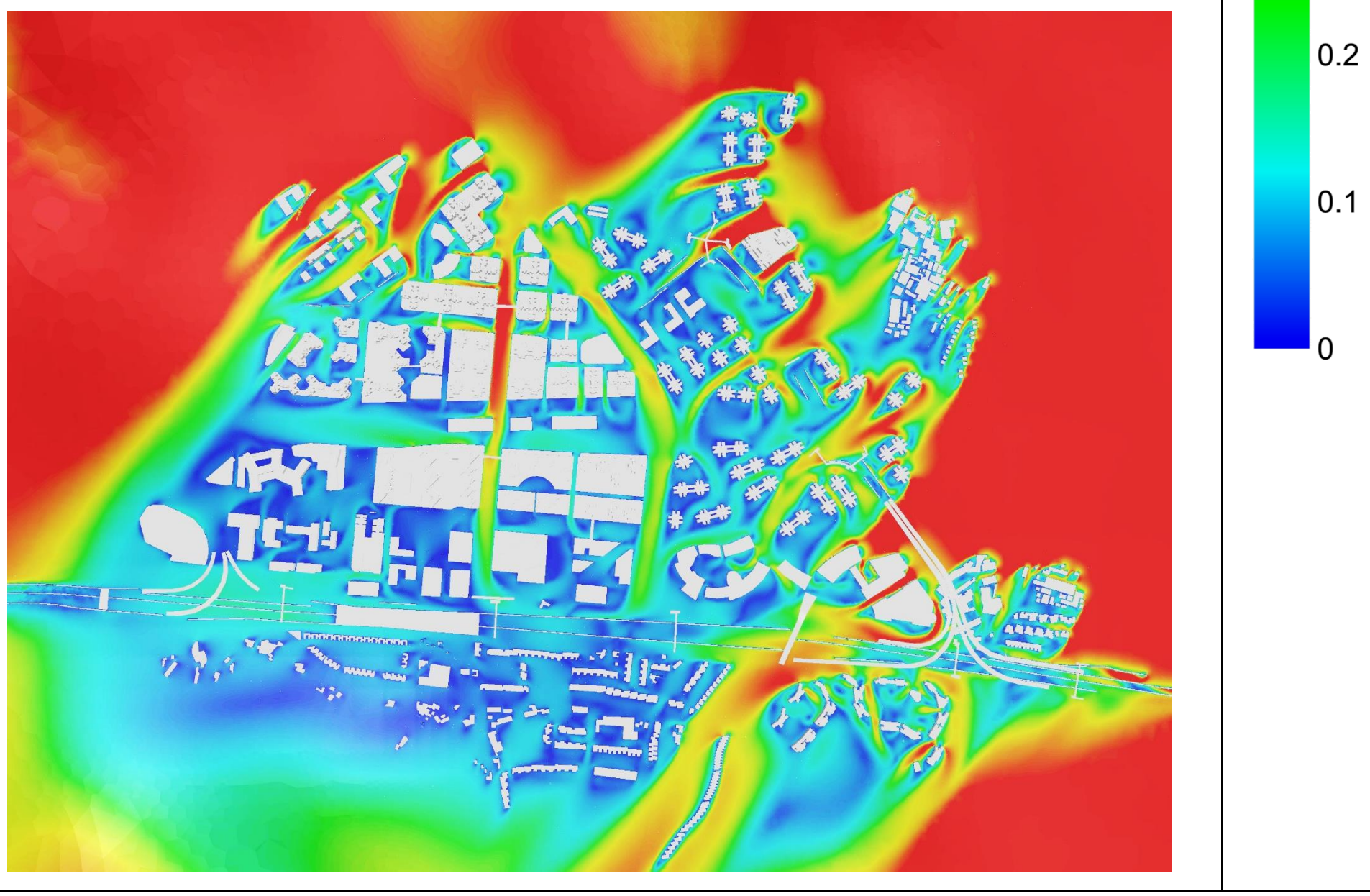
Annex II – Wind Velocity Ratio Contour Plots

Annual ENE at 2mAG

Base Scenario



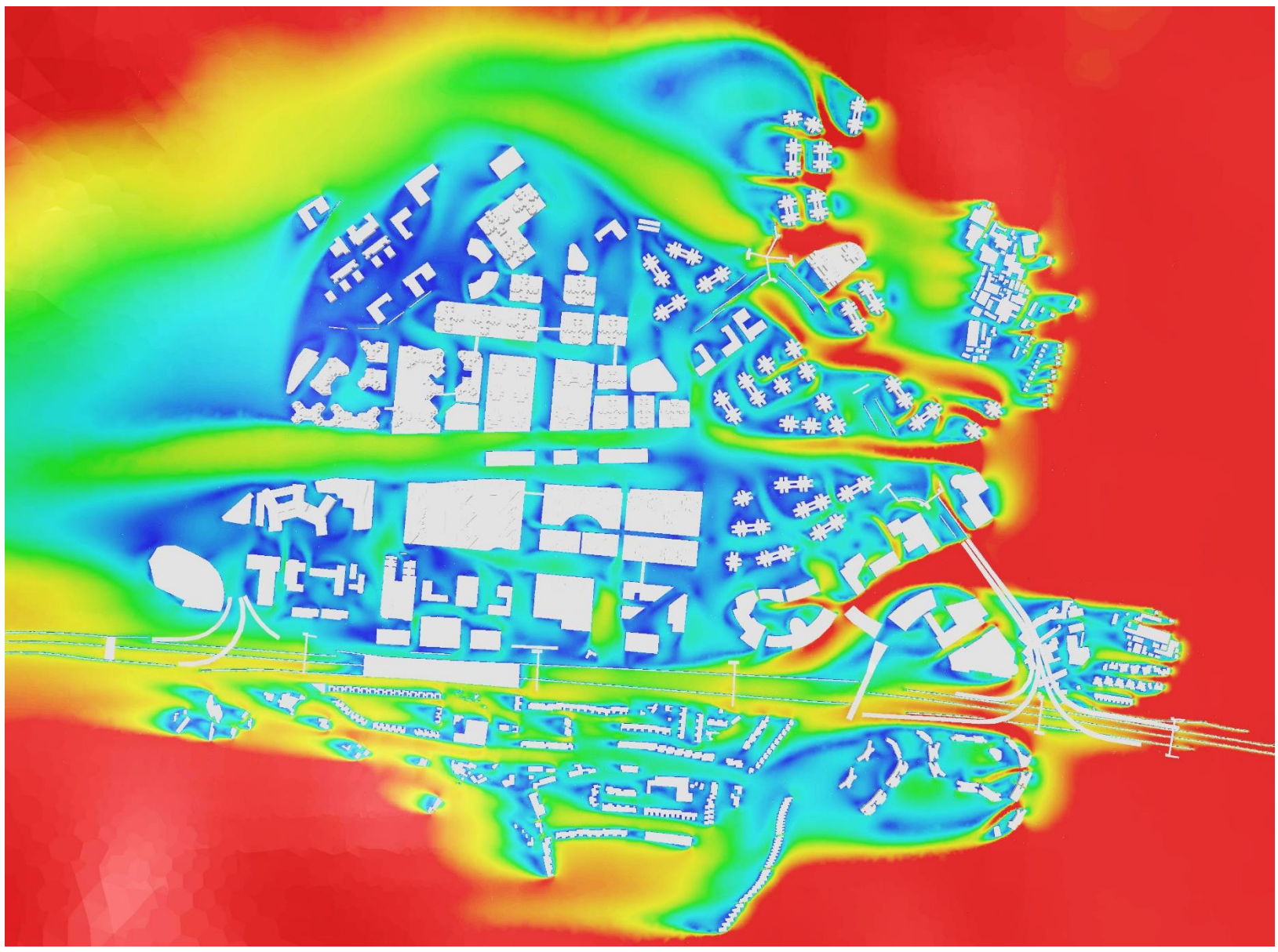
Proposed Scenario



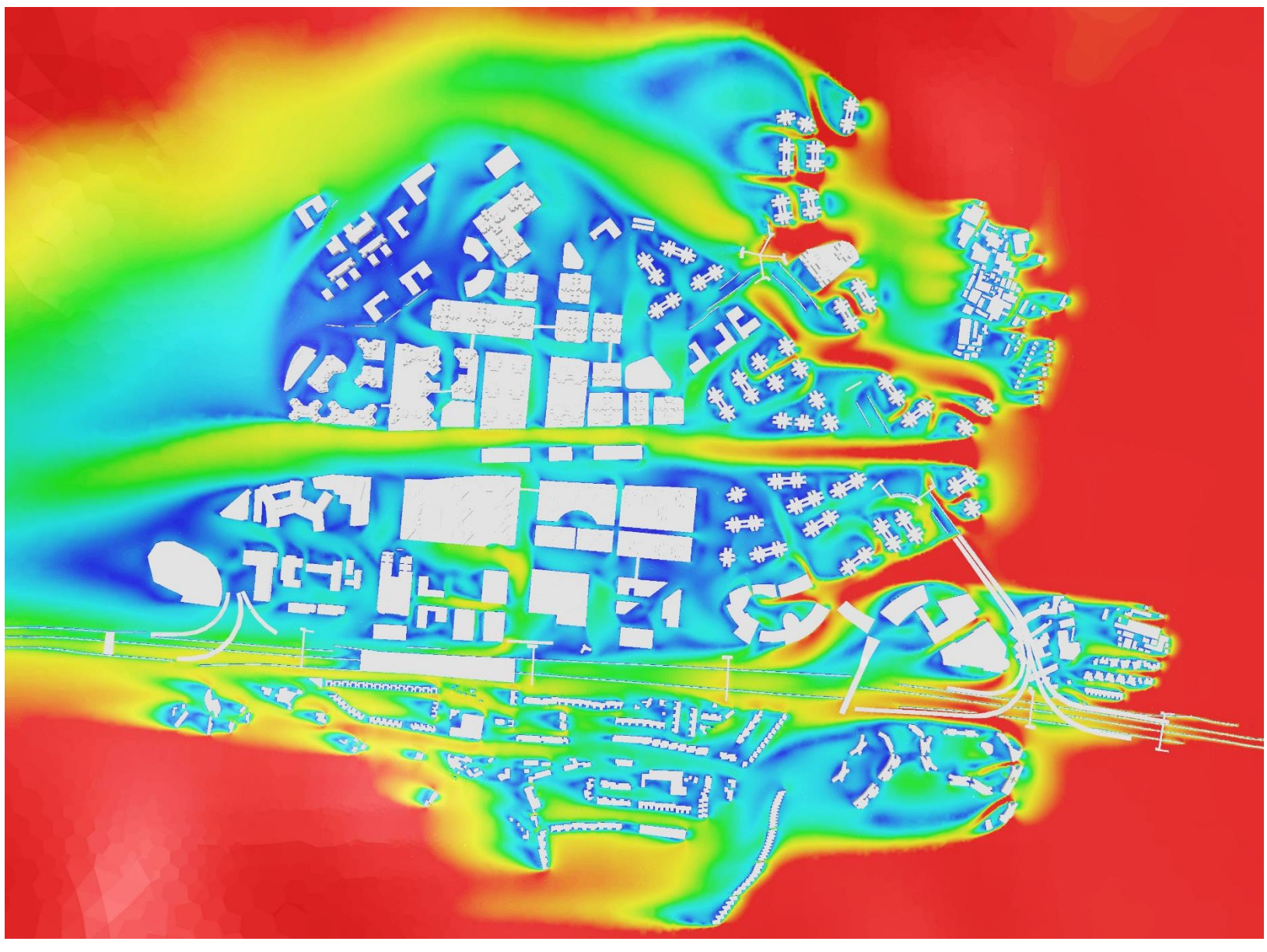
Annex II – Wind Velocity Ratio Contour Plots

Annual E at 2mAG

Base Scenario



Proposed Scenario

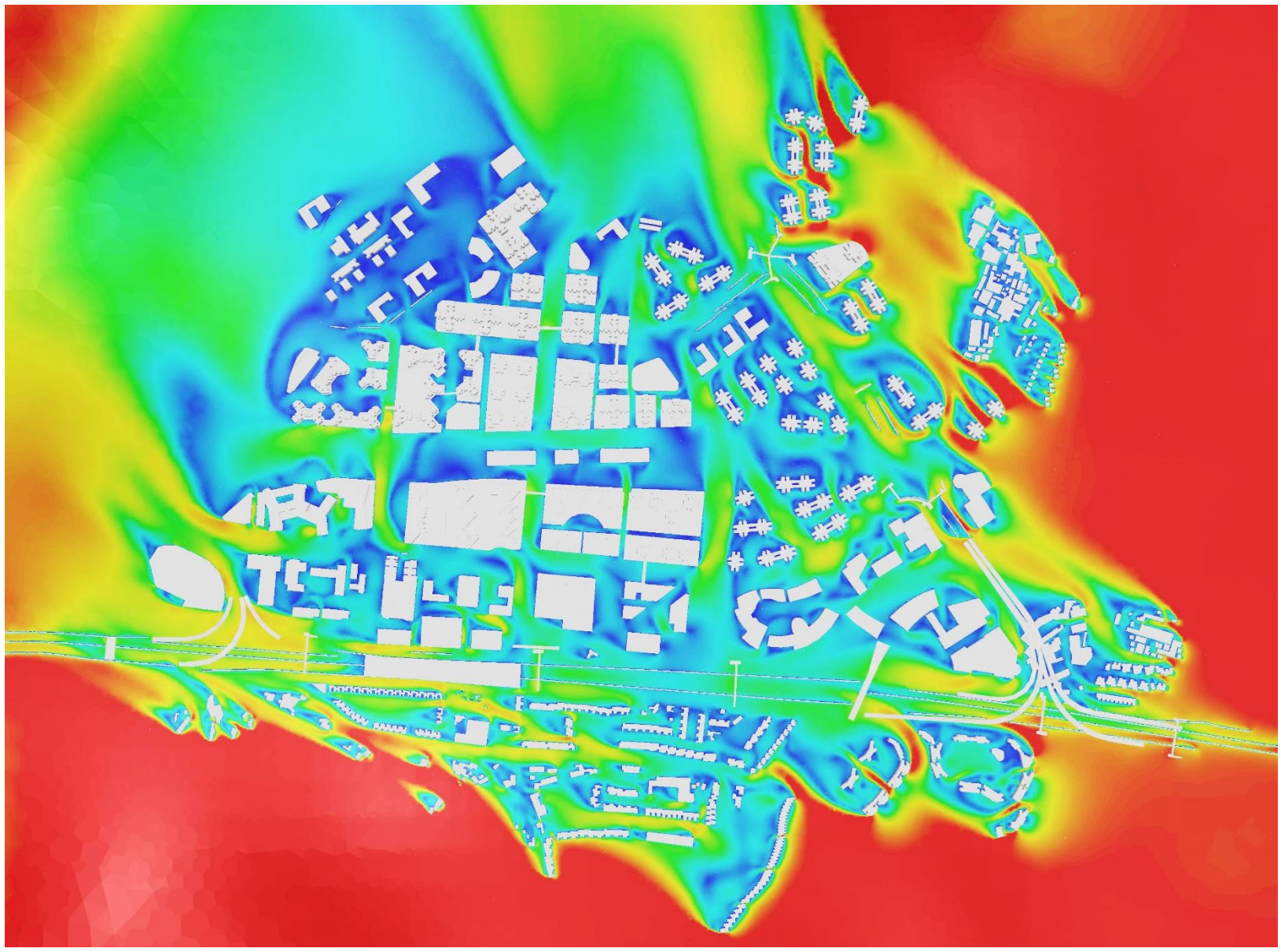




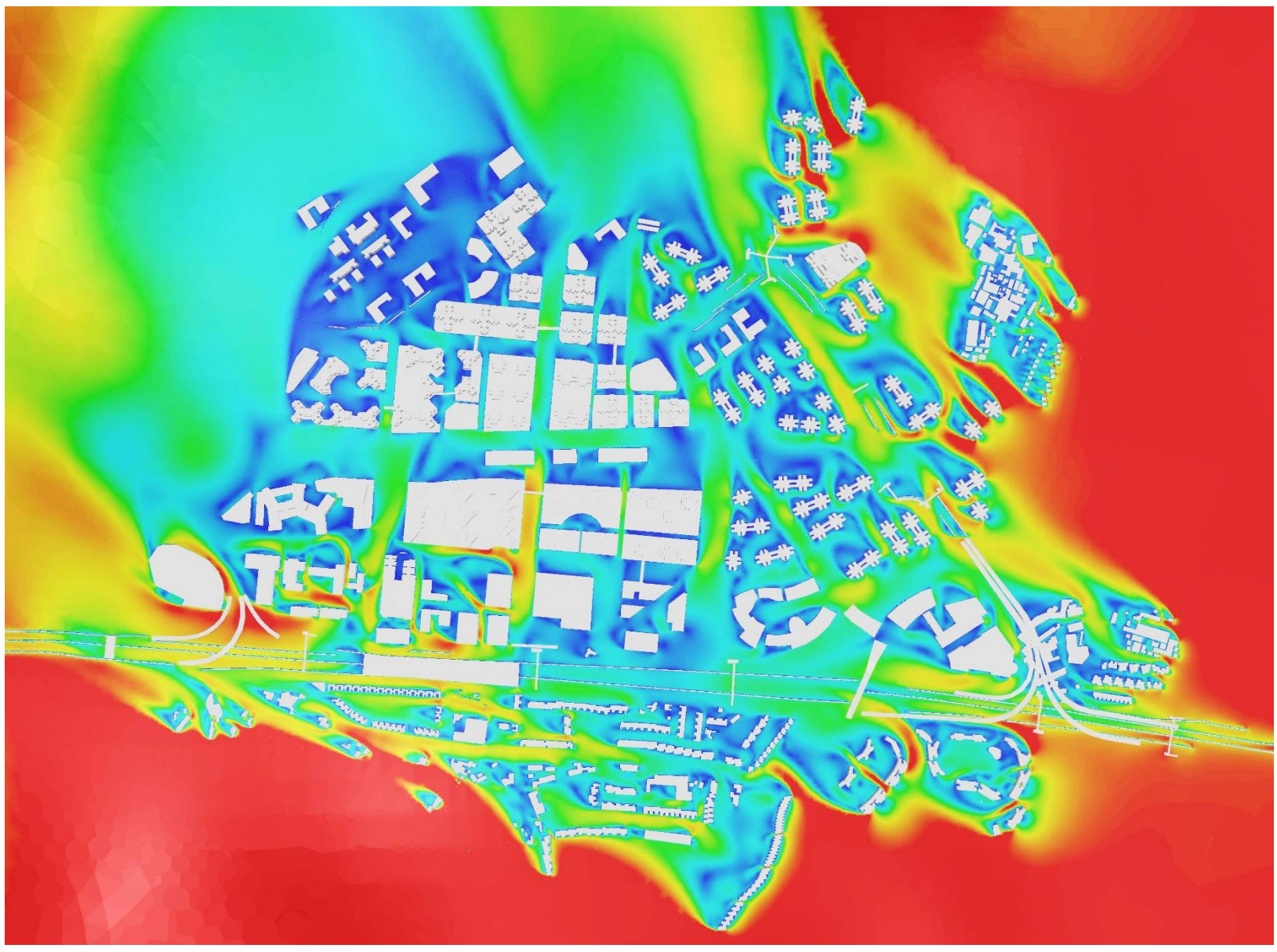
Annex II – Wind Velocity Ratio Contour Plots

Annual ESE at 2mAG

Base Scenario



Proposed Scenario

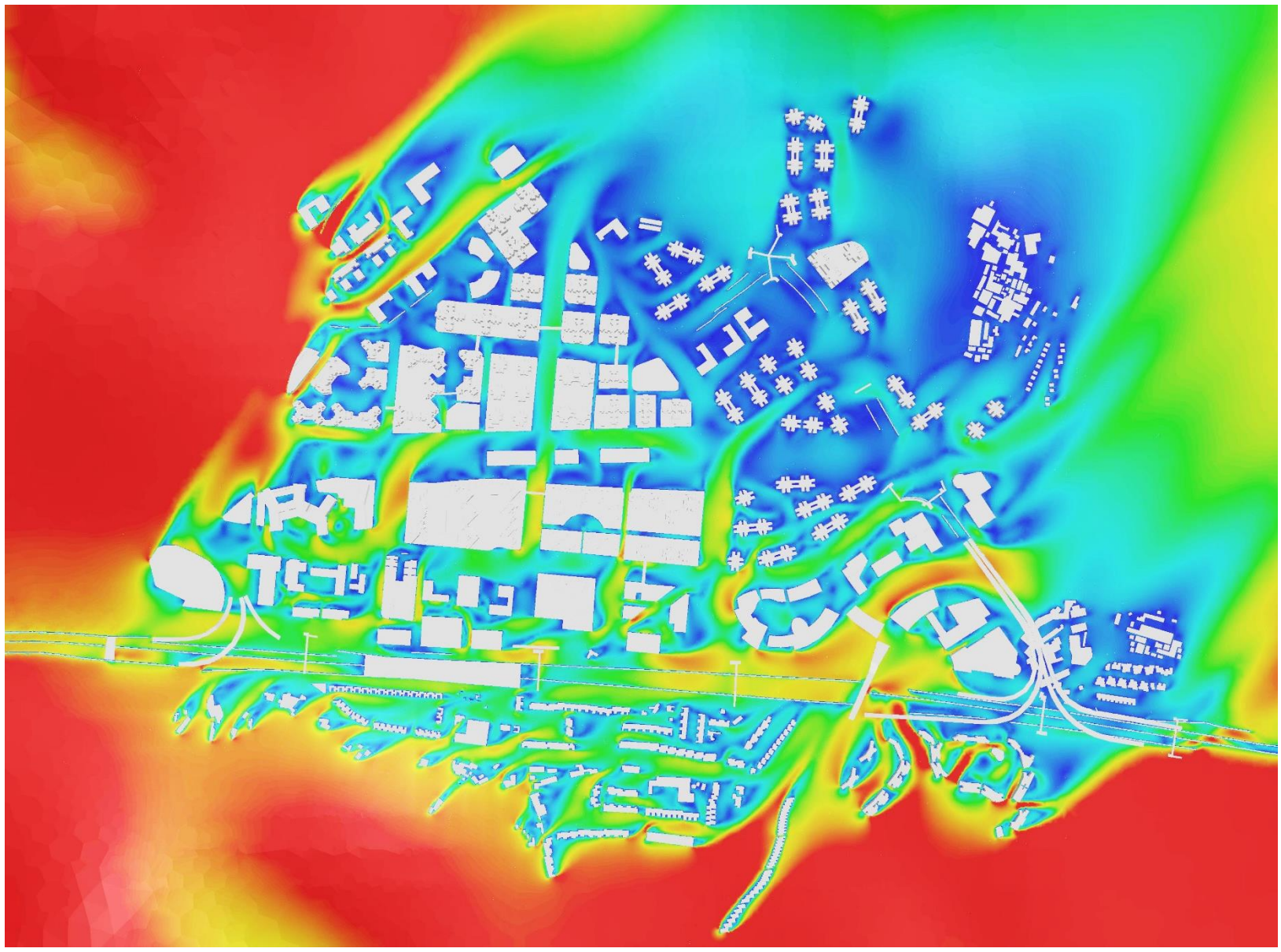




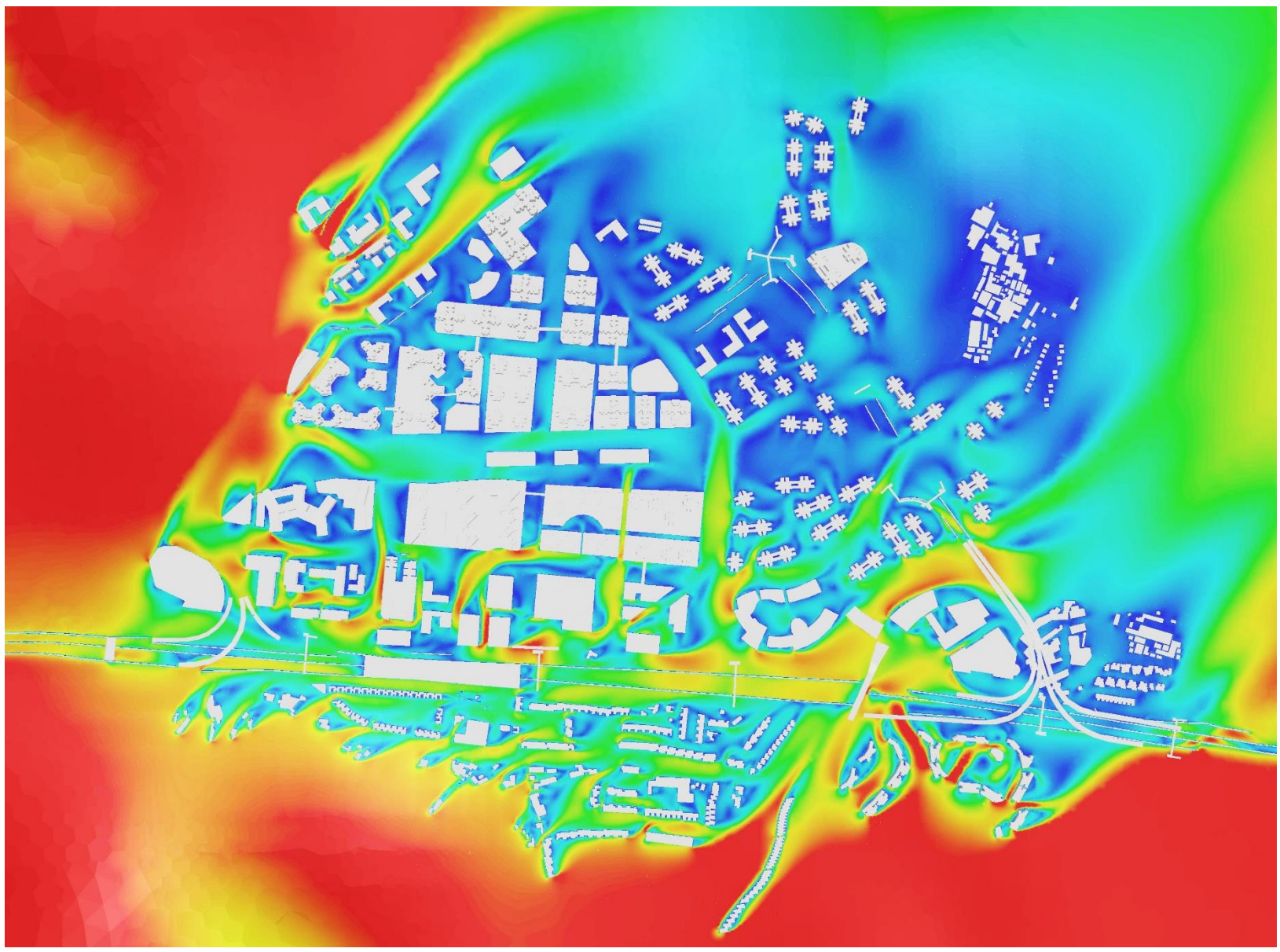
Annex II – Wind Velocity Ratio Contour Plots

Annual SW at 2mAG

Base Scenario



Proposed Scenario

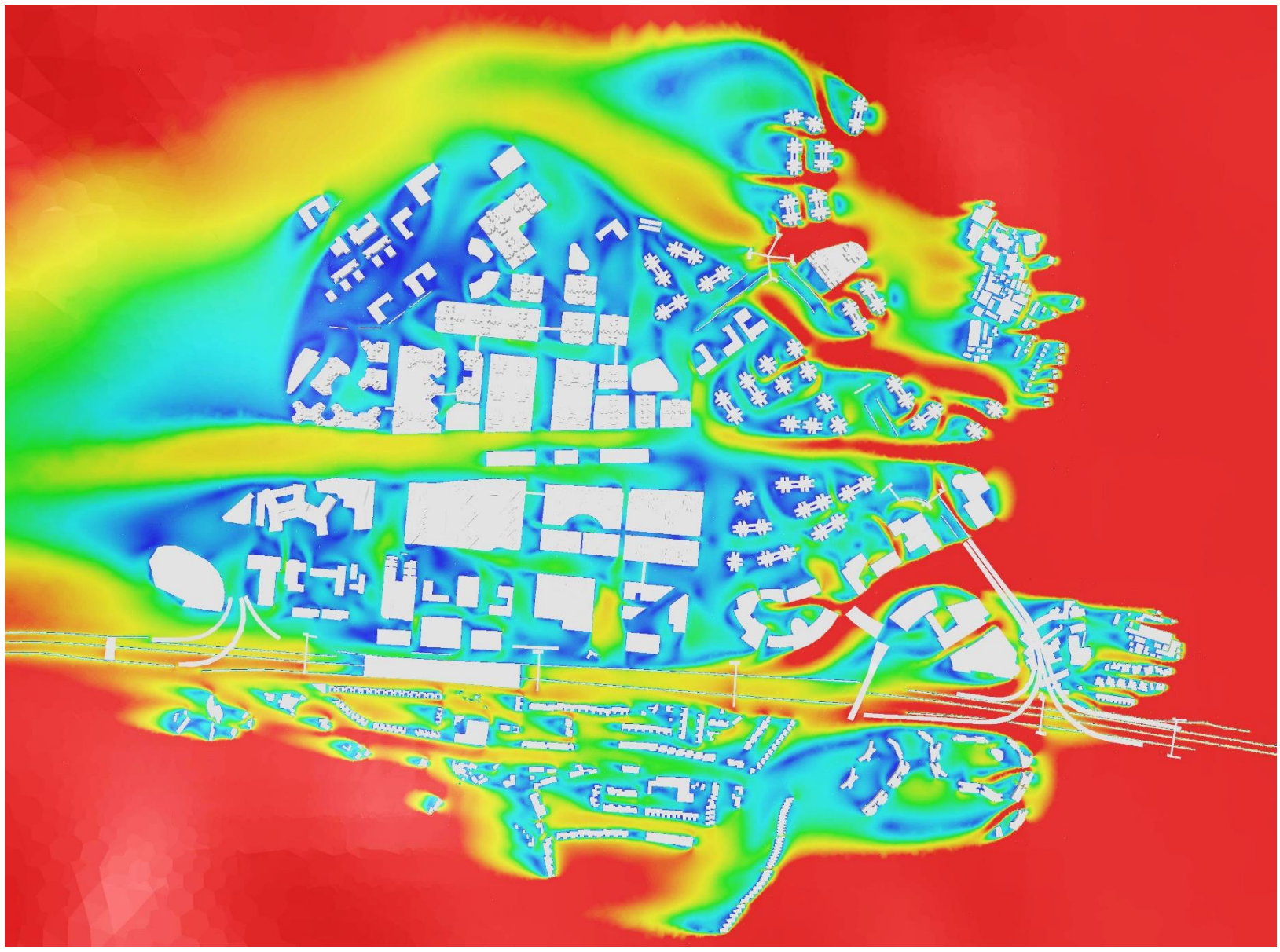




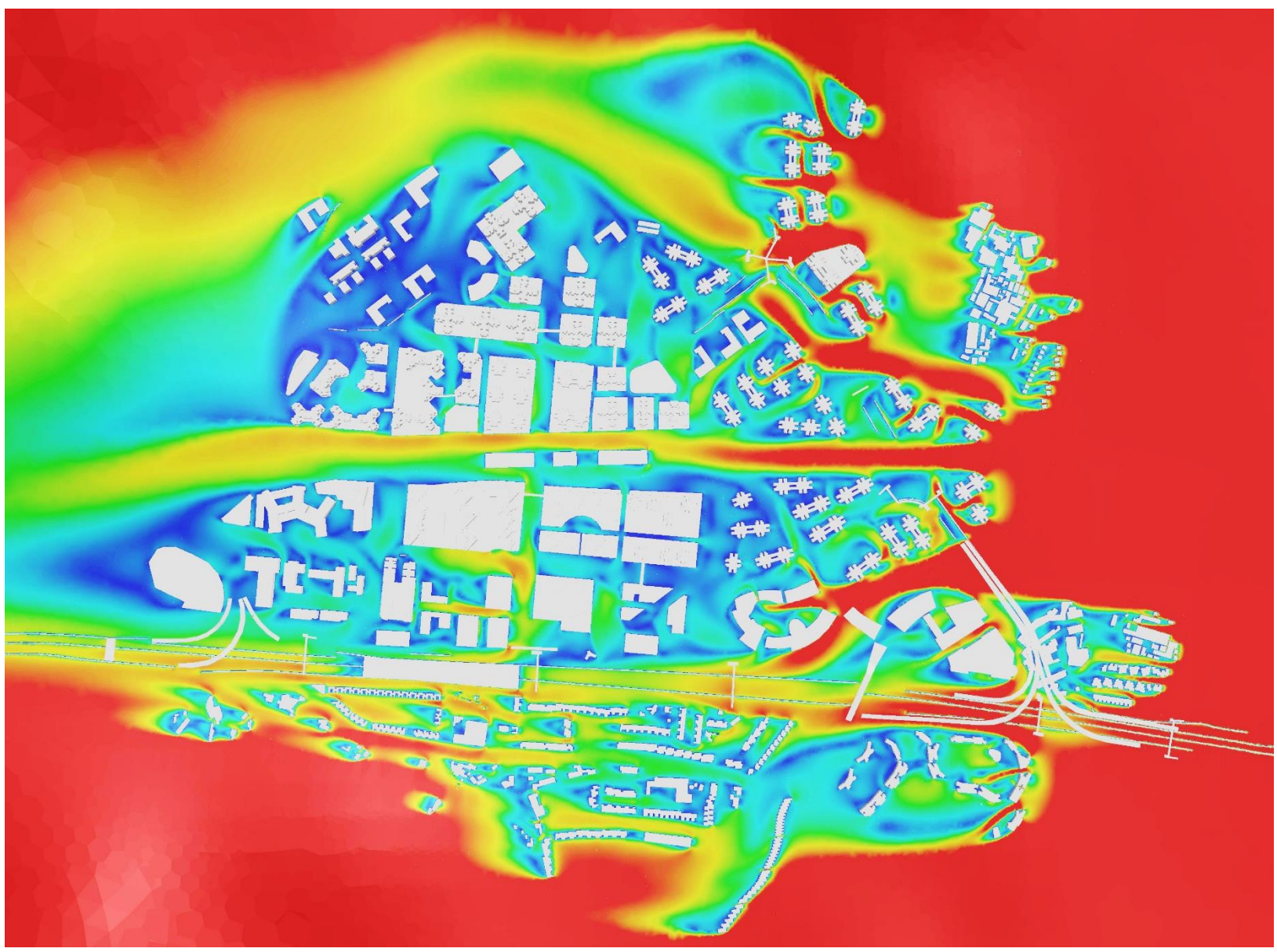
Annex II – Wind Velocity Ratio Contour Plots

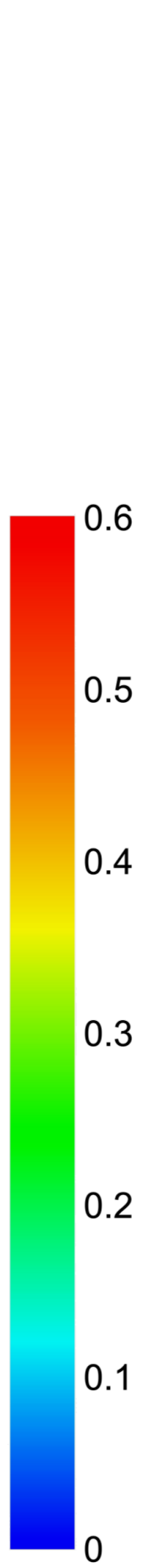
Summer E at 2mAG

Base Scenario



Proposed Scenario

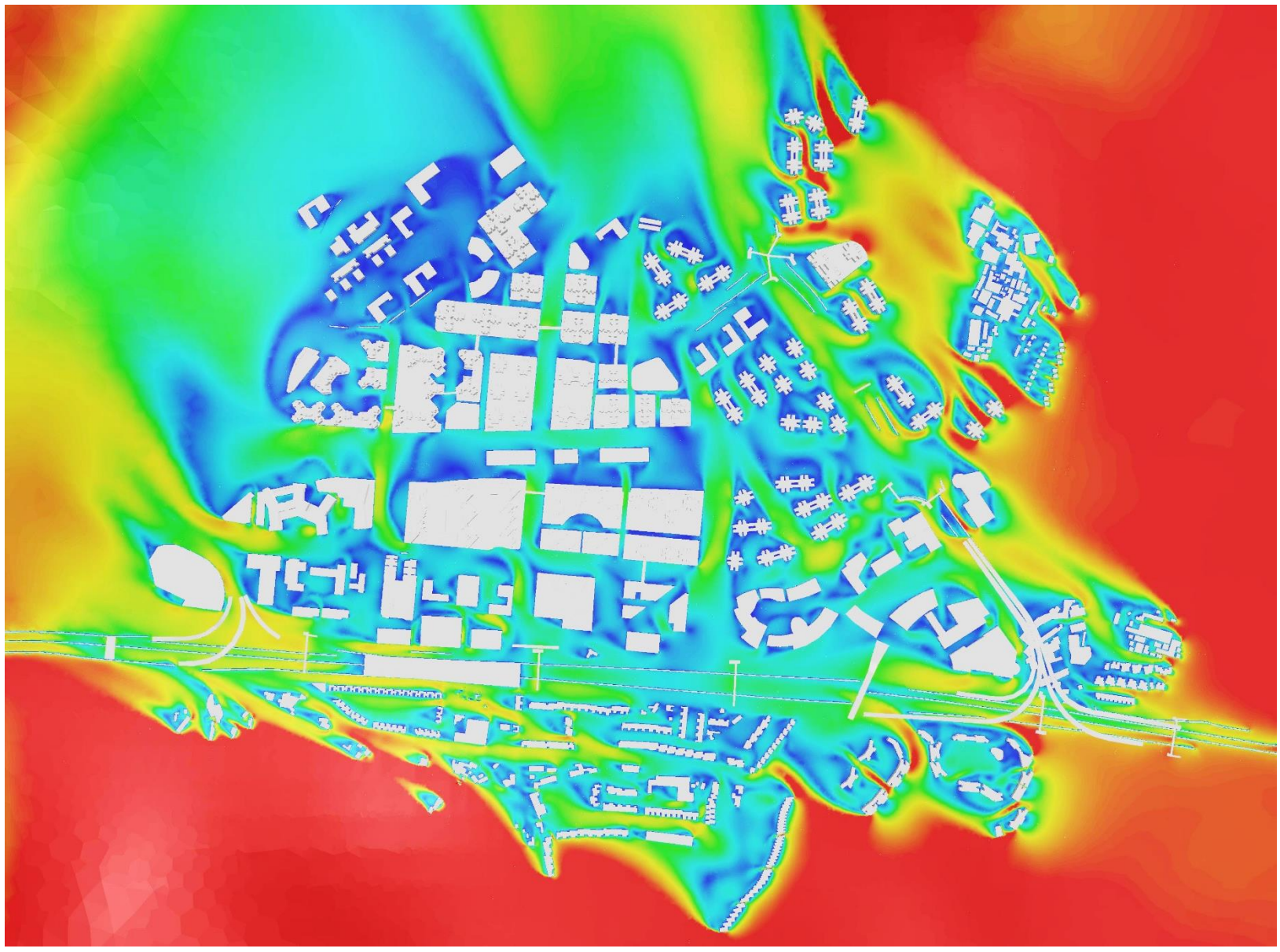




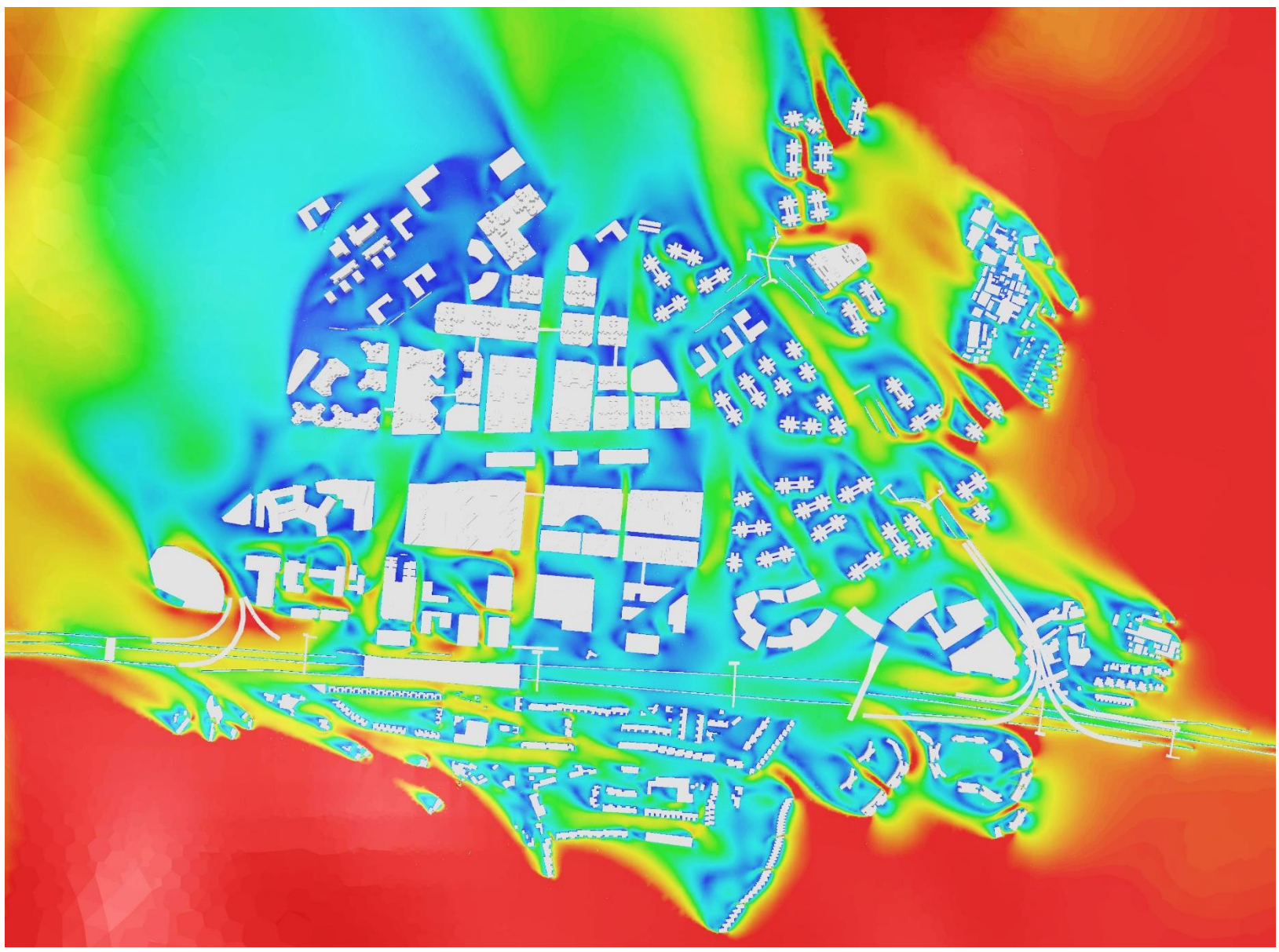
Annex II – Wind Velocity Ratio Contour Plots

Summer ESE at 2mAG

Base Scenario



Proposed Scenario

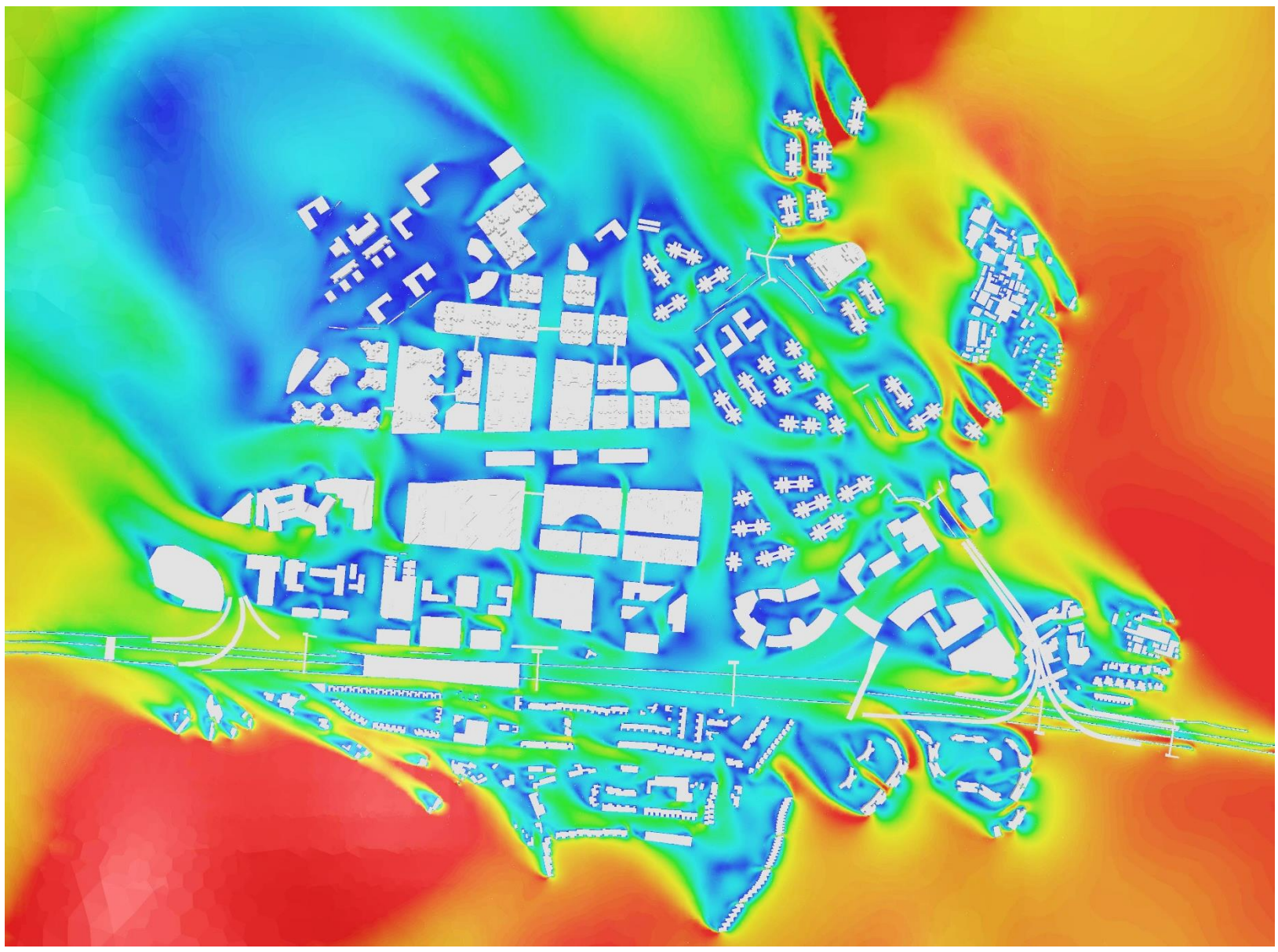




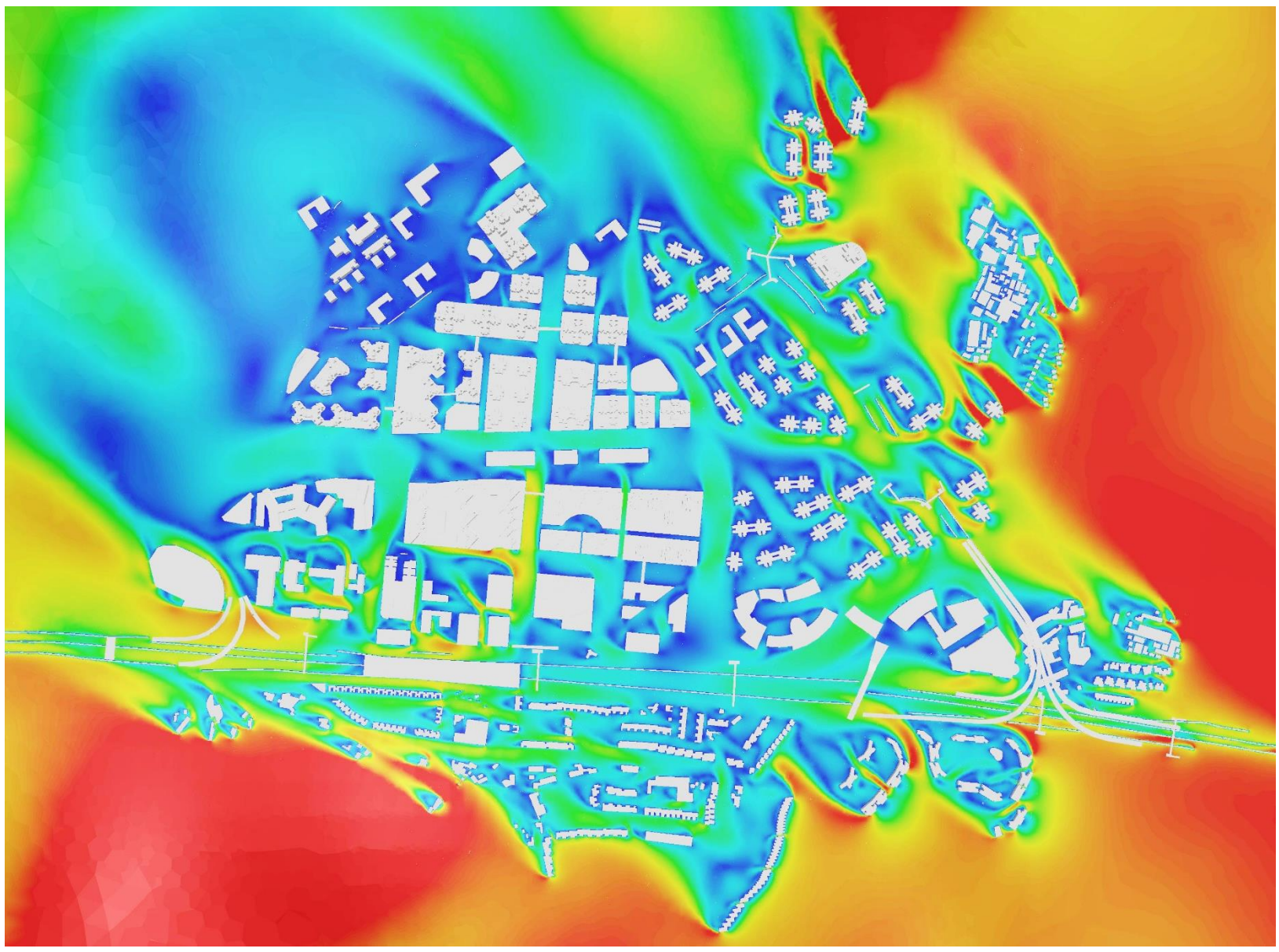
Annex II – Wind Velocity Ratio Contour Plots

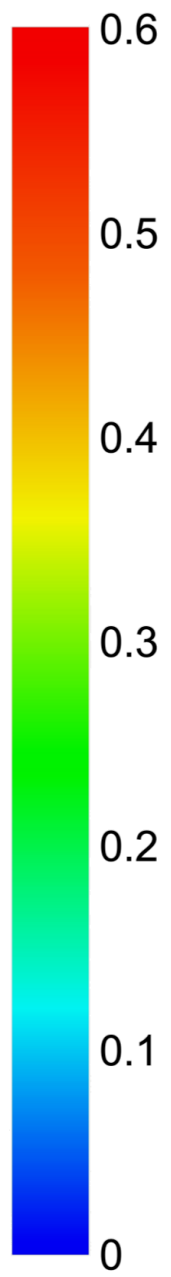
Summer SE at 2mAG

Base Scenario



Proposed Scenario

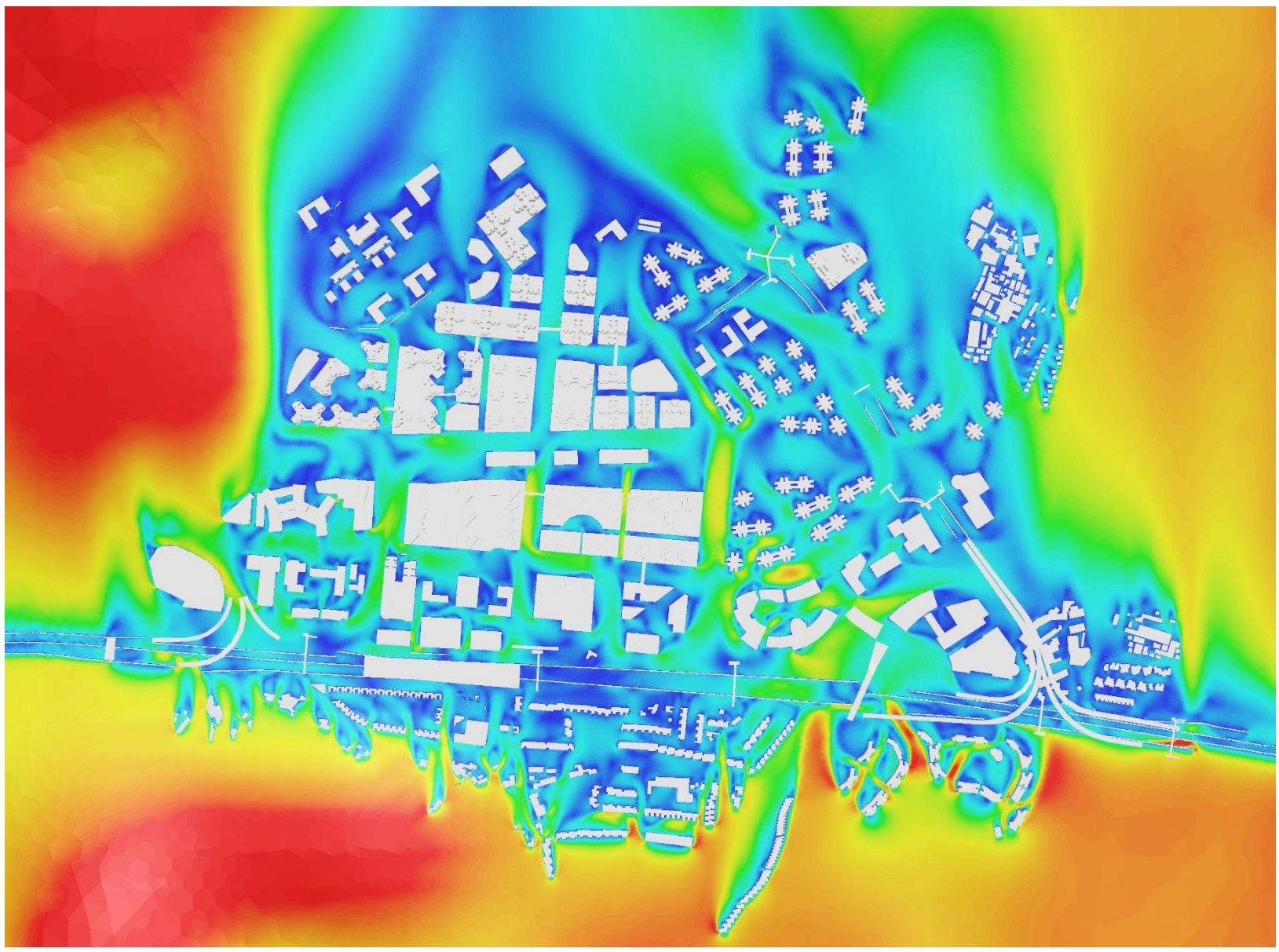




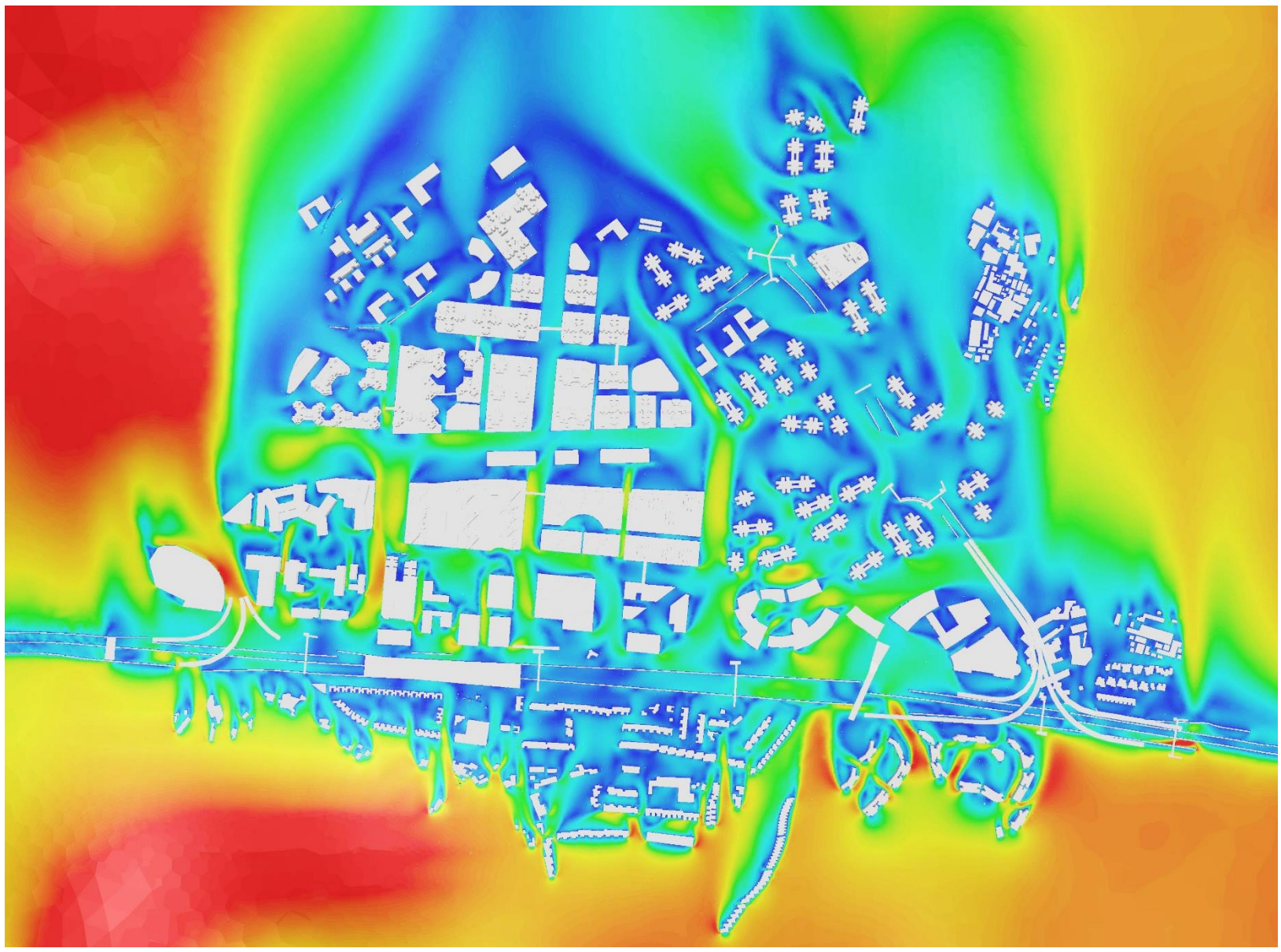
Annex II – Wind Velocity Ratio Contour Plots

Summer S at 2mAG

Base Scenario



Proposed Scenario

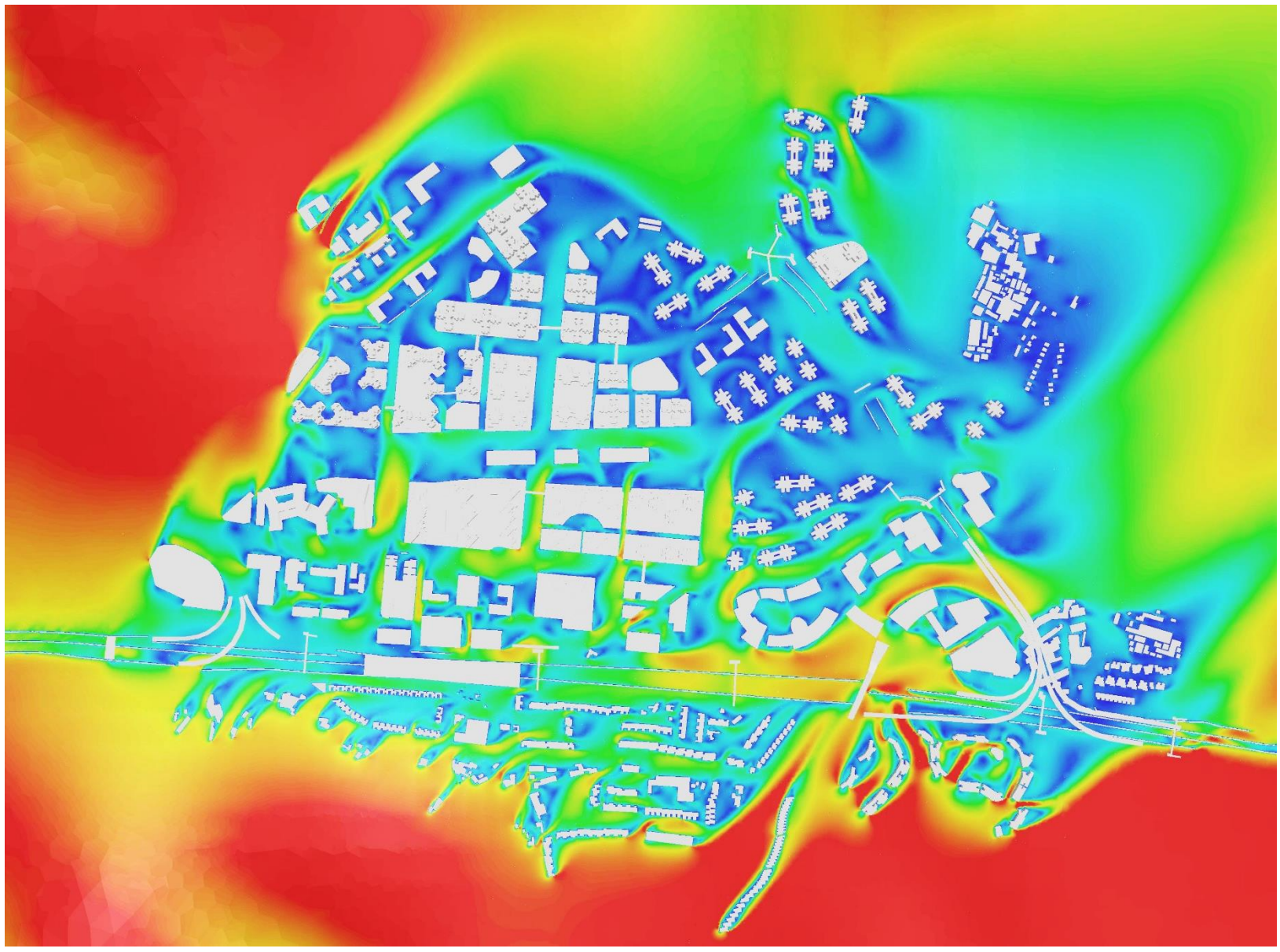




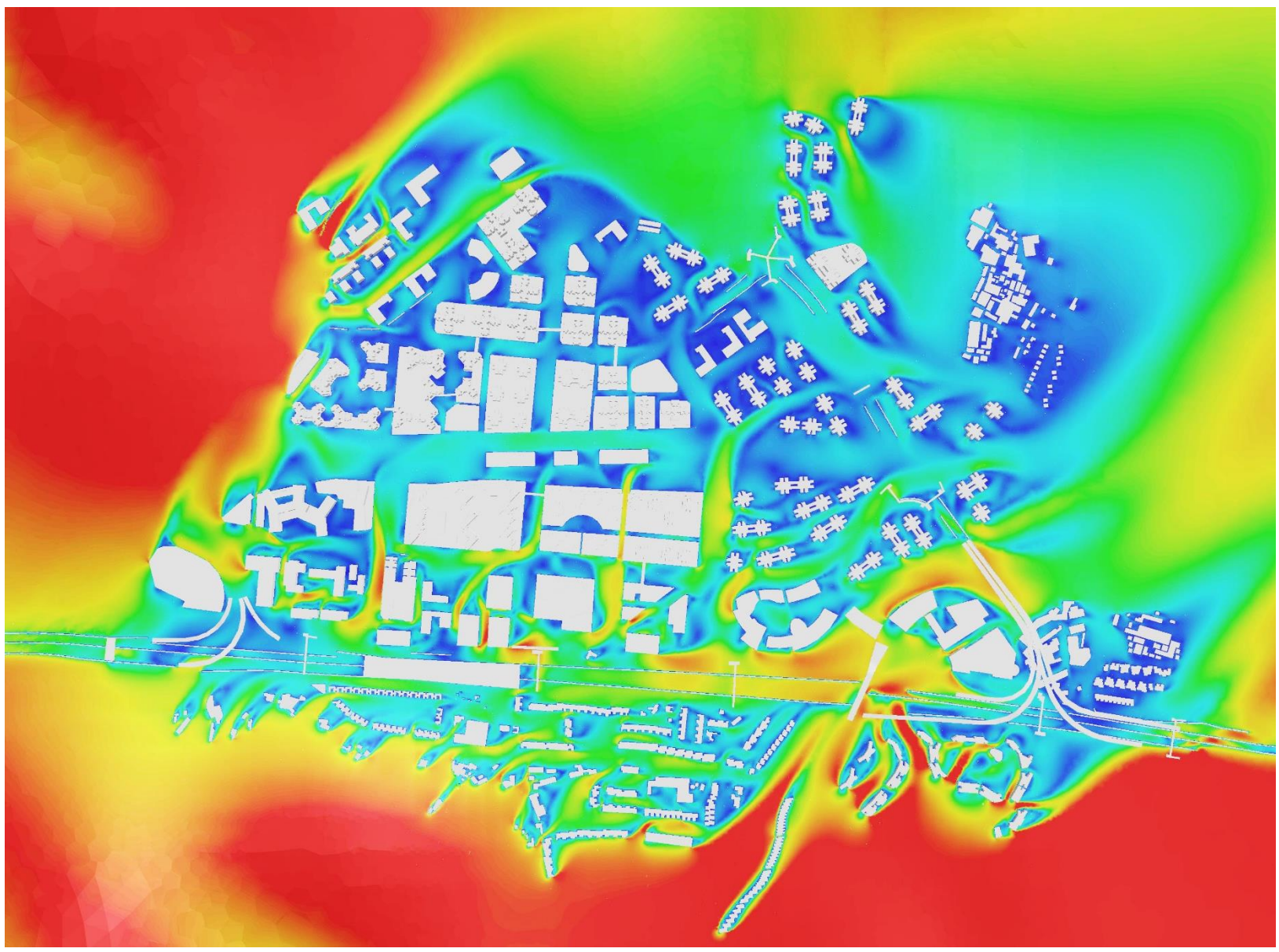
Annex II – Wind Velocity Ratio Contour Plots

Summer SSW at 2mAG

Base Scenario



Proposed Scenario

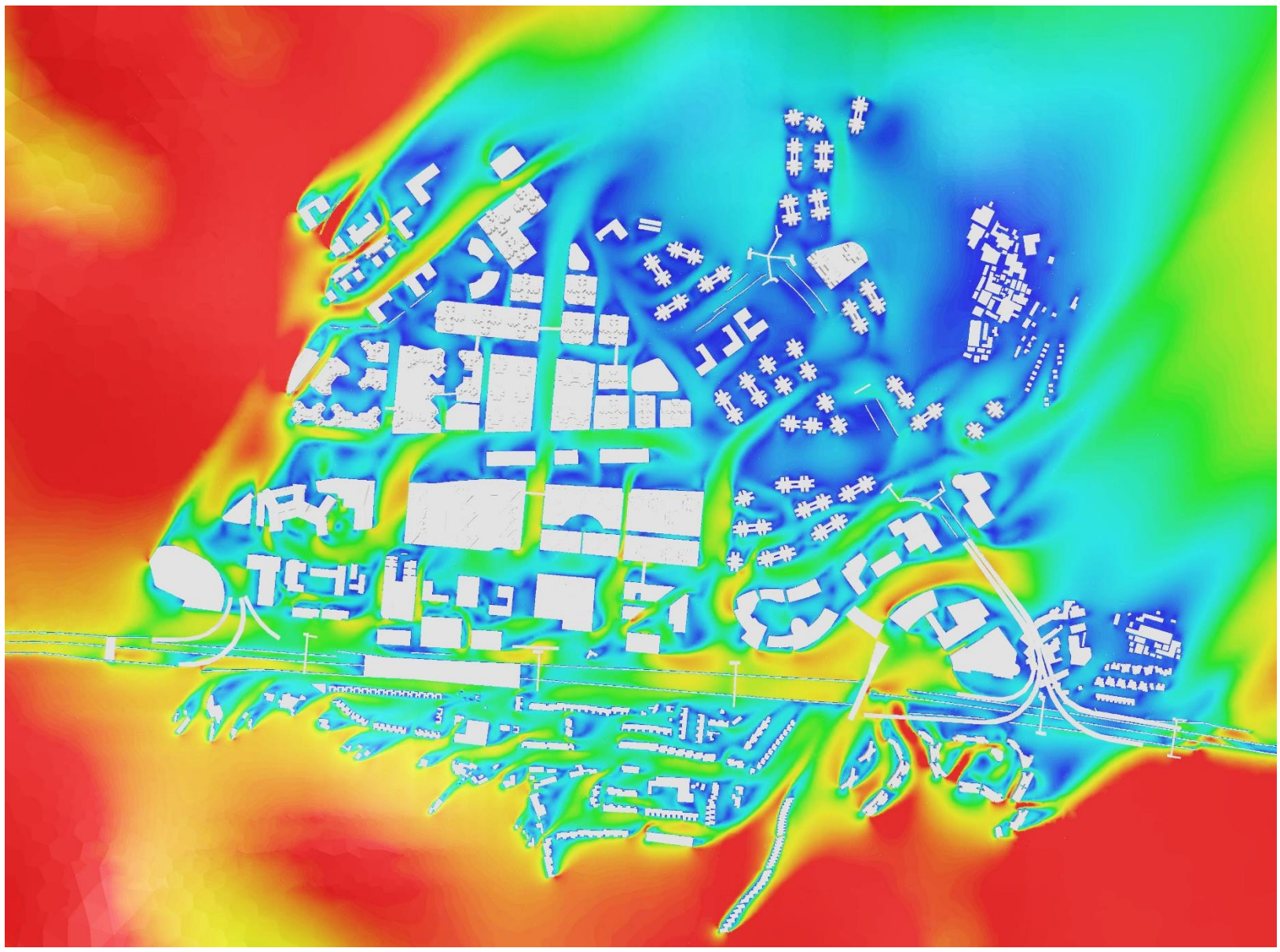




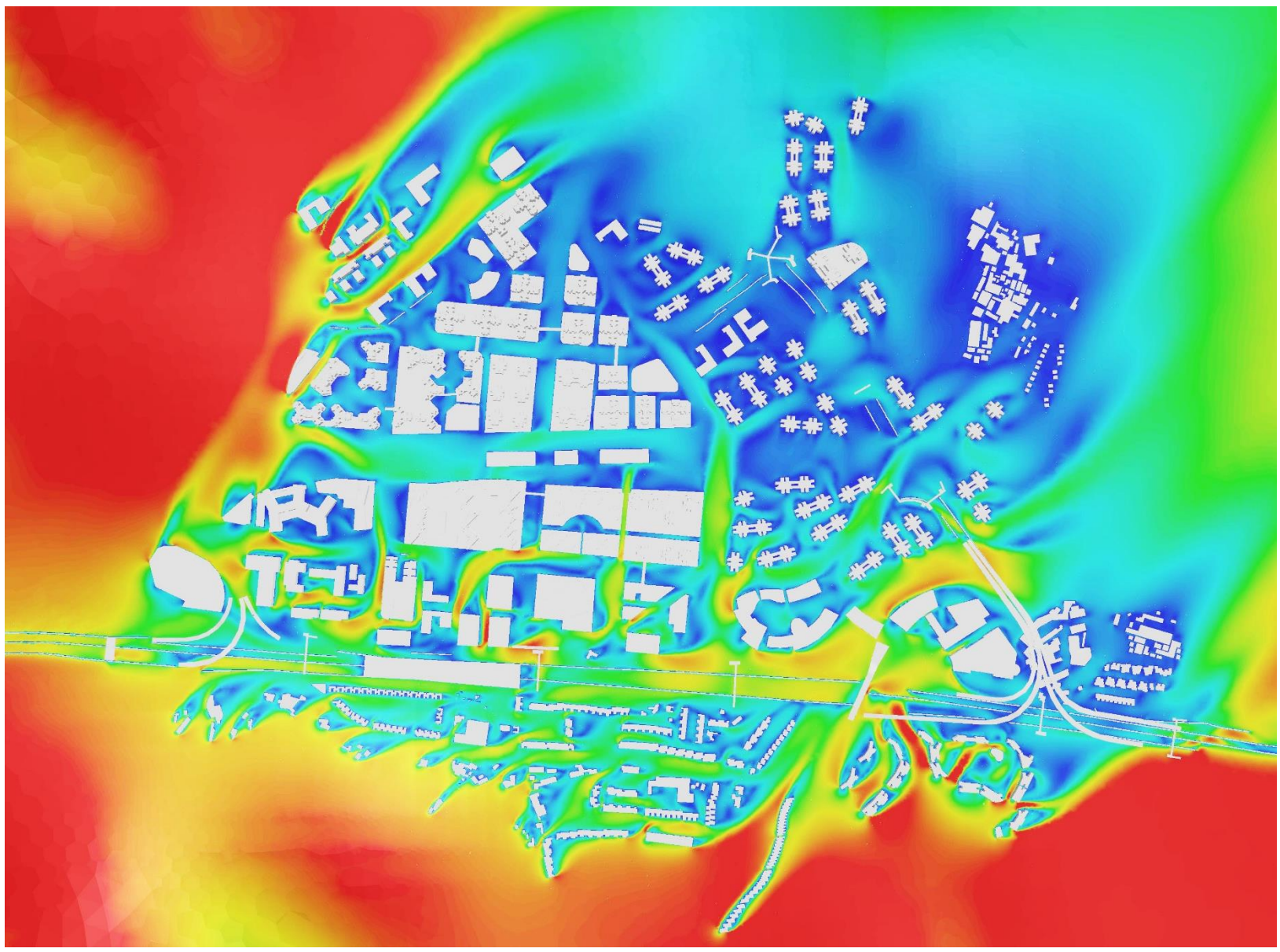
Annex II – Wind Velocity Ratio Contour Plots

Summer SW at 2mAG

Base Scenario



Proposed Scenario

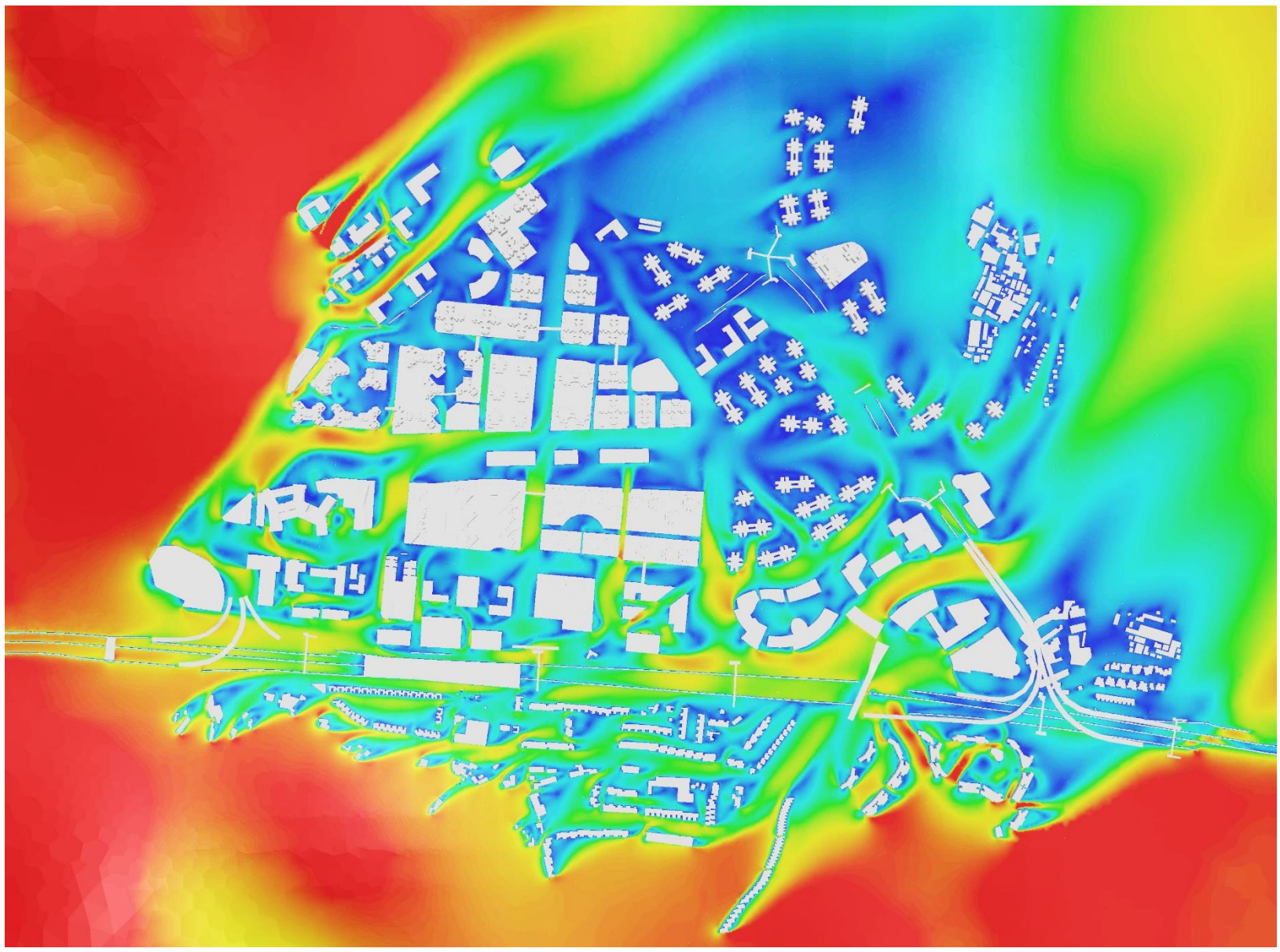




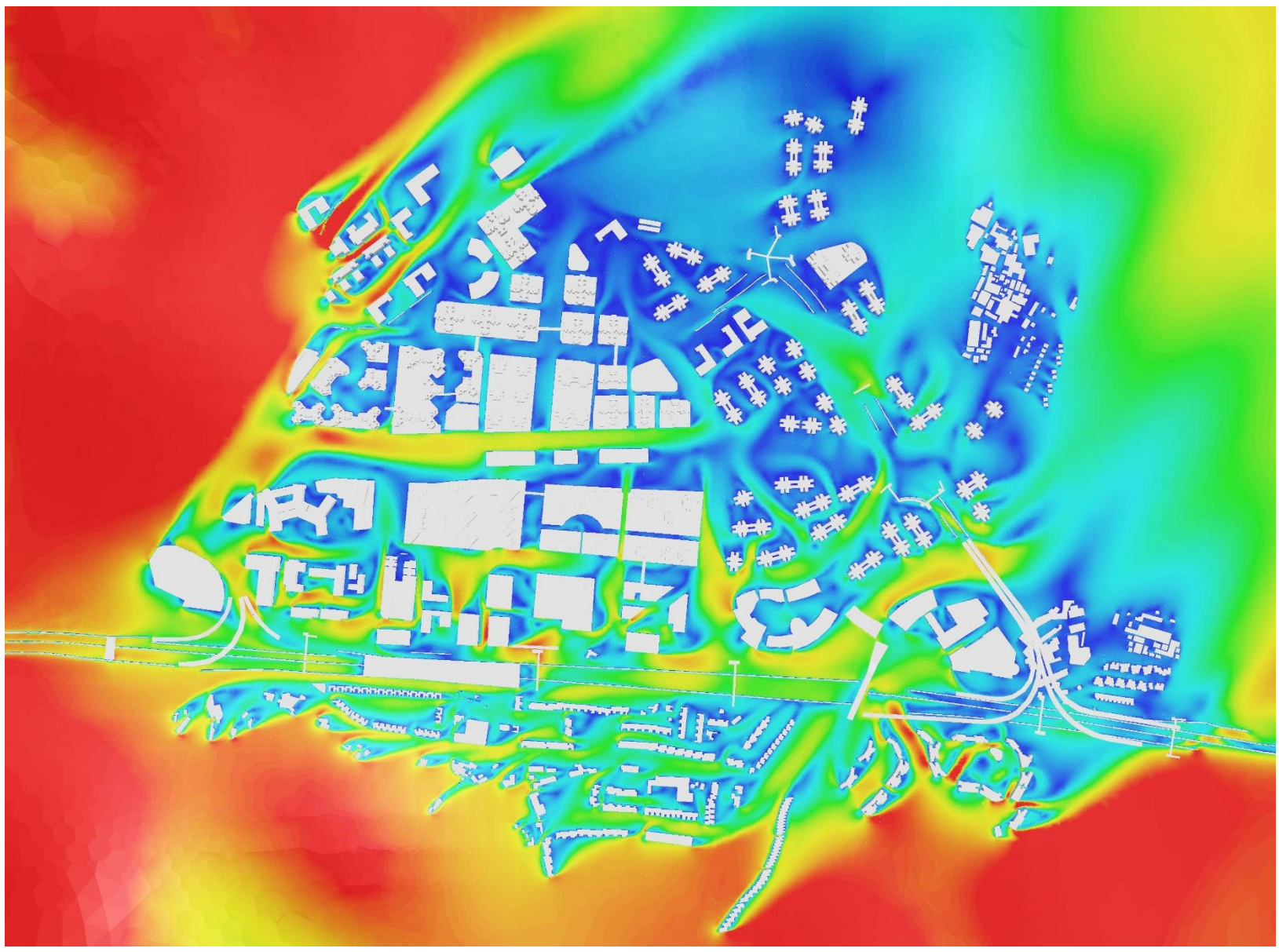
Annex II – Wind Velocity Ratio Contour Plots

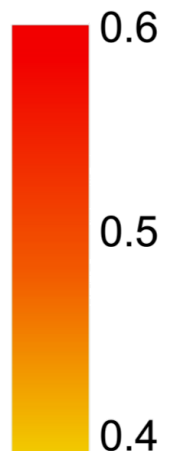
Summer WSW at 2mAG

Base Scenario



Proposed Scenario

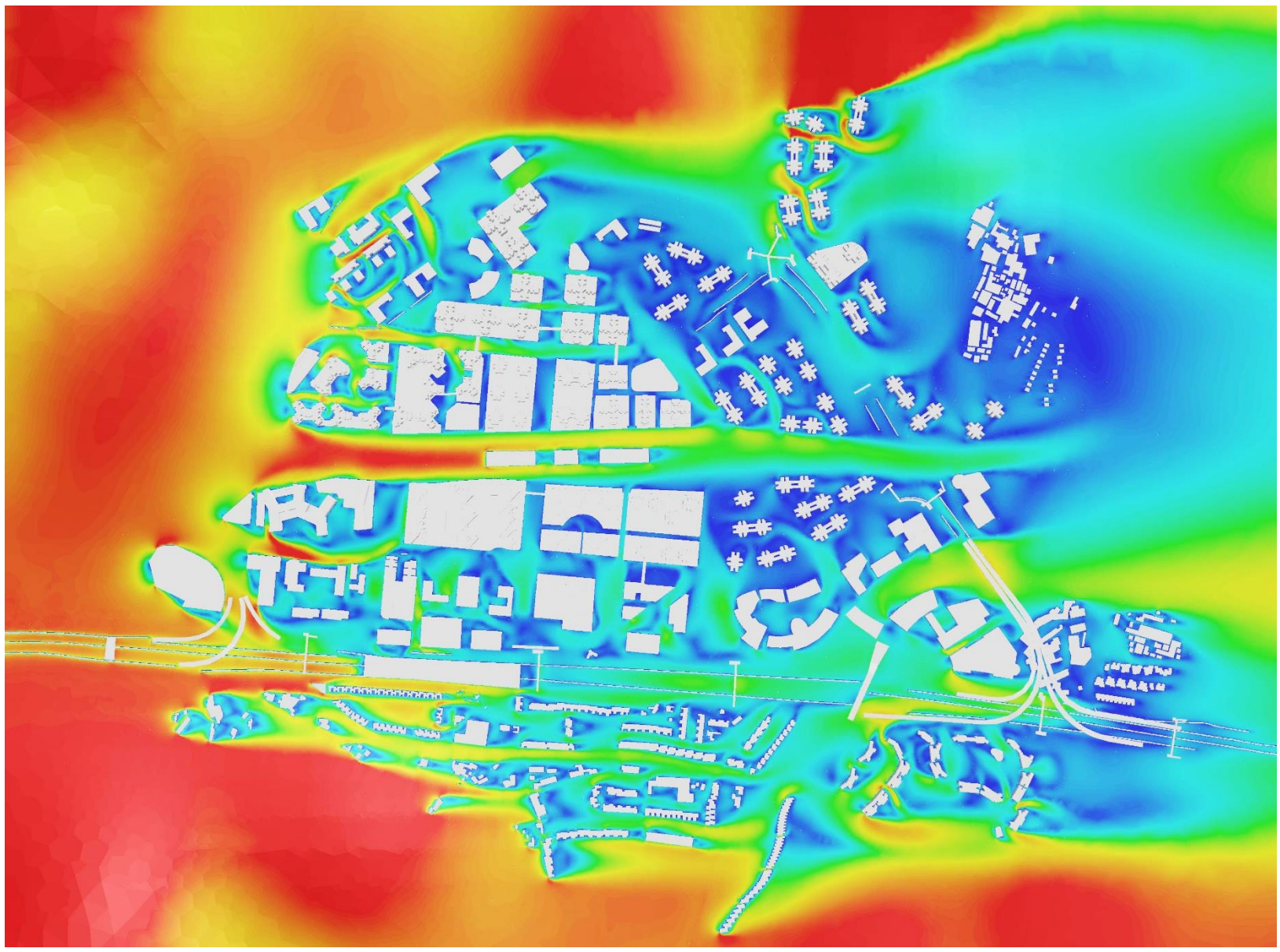




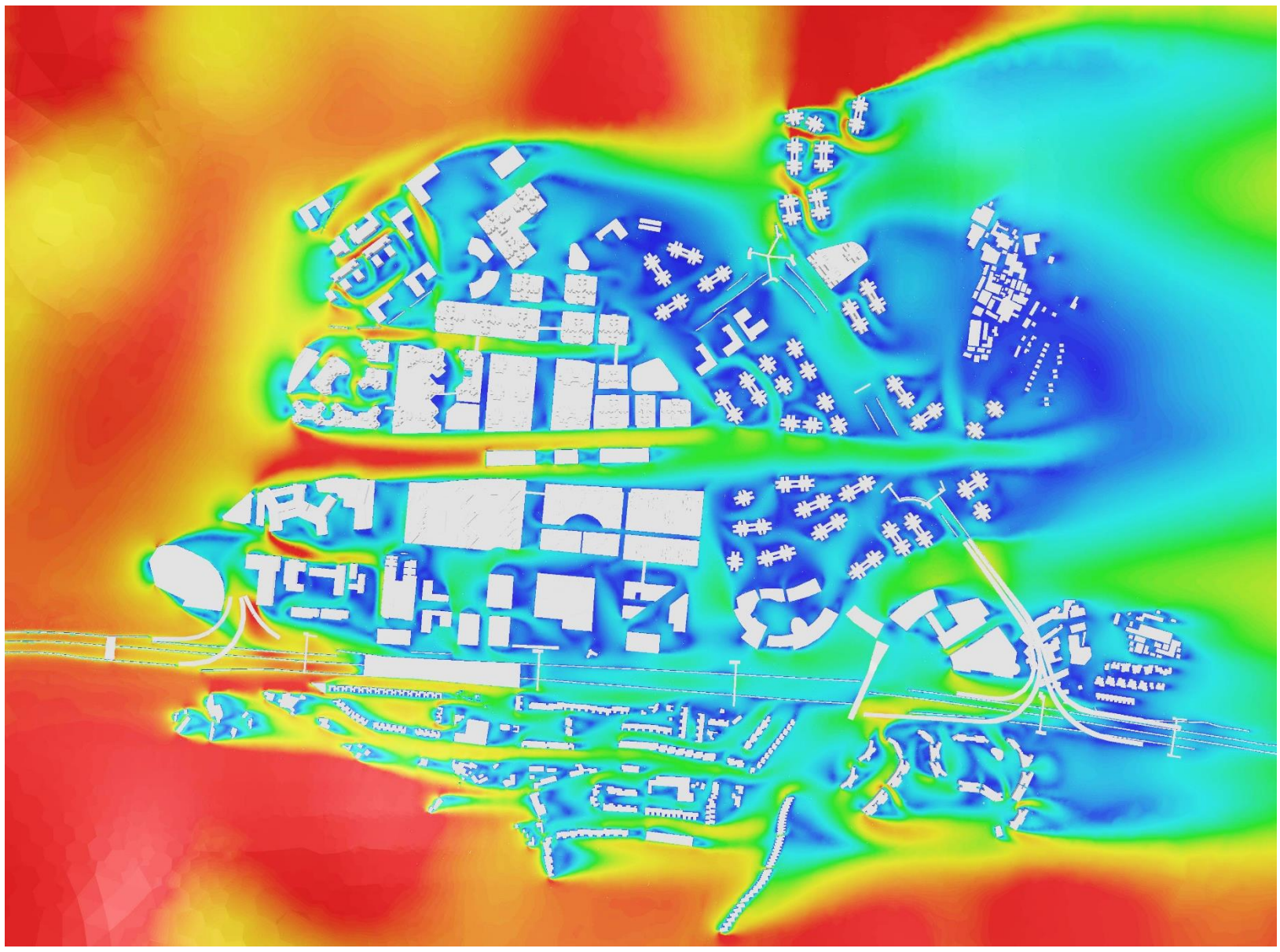
Annex II – Wind Velocity Ratio Contour Plots

Summer W at 2mAG

Base Scenario



Proposed Scenario





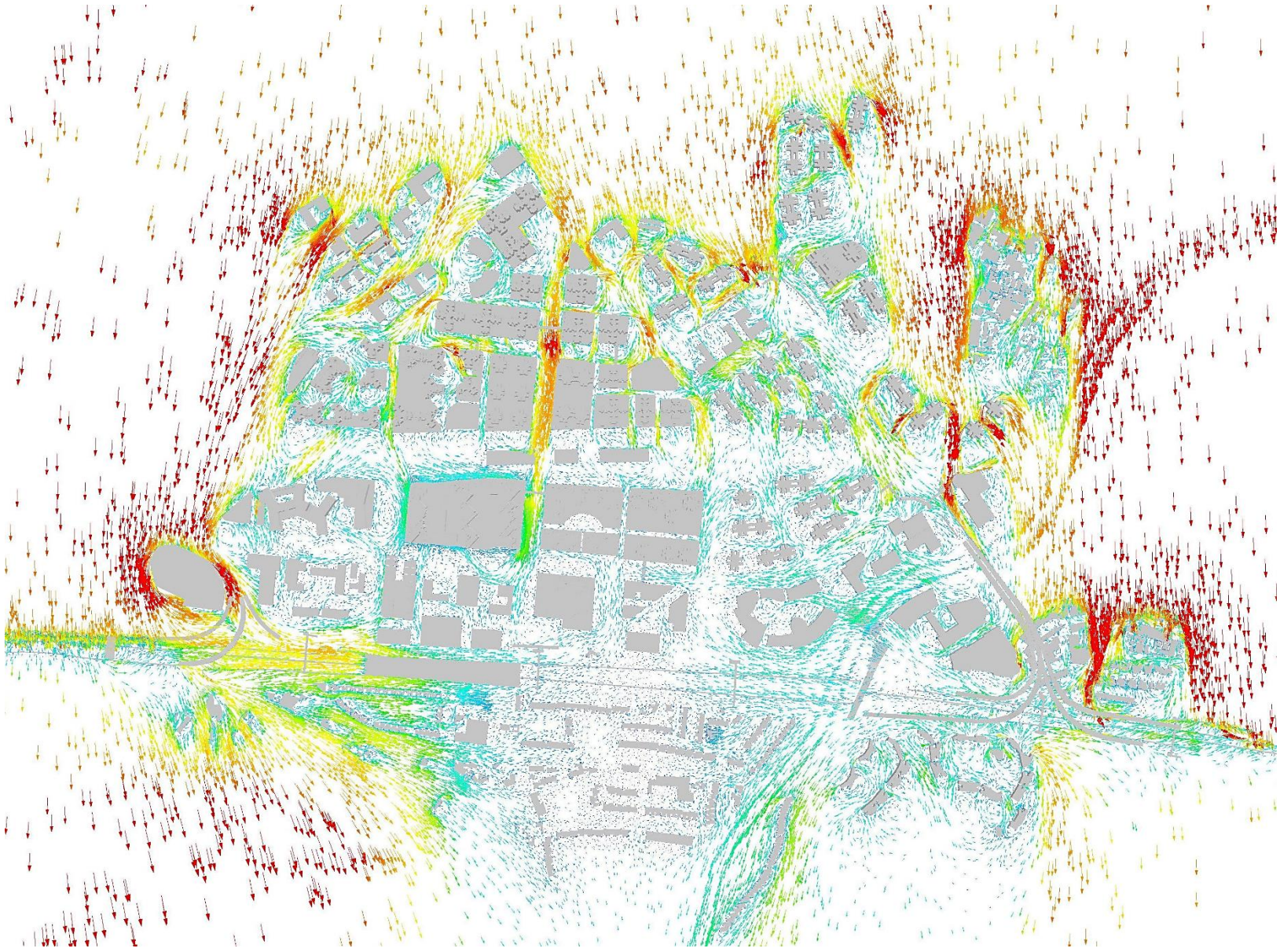
Annex III

Wind Velocity Ratio Vector Plots

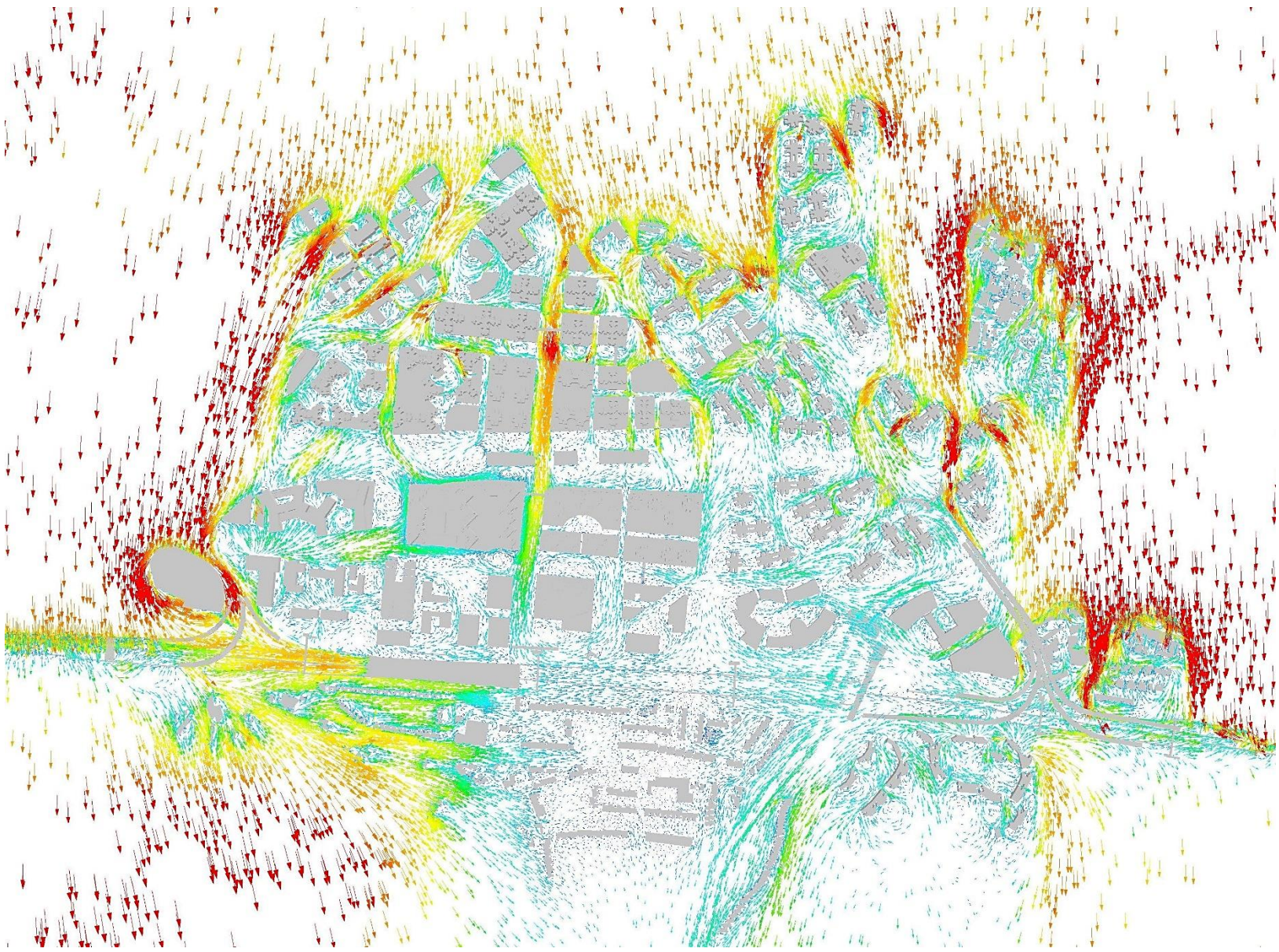
Annex III – Wind Velocity Ratio Vector Plots

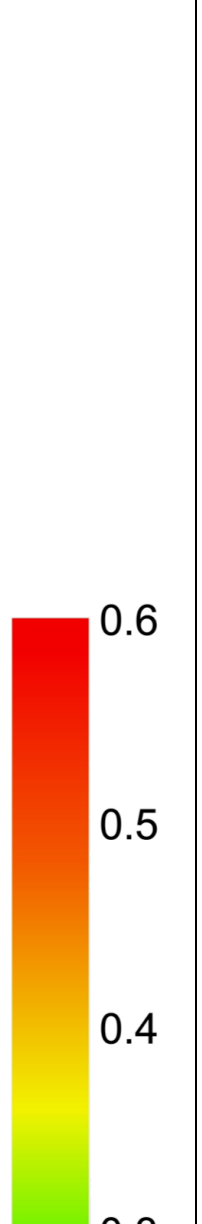
Annual N at 2mAG

Base Scenario



Proposed Scenario

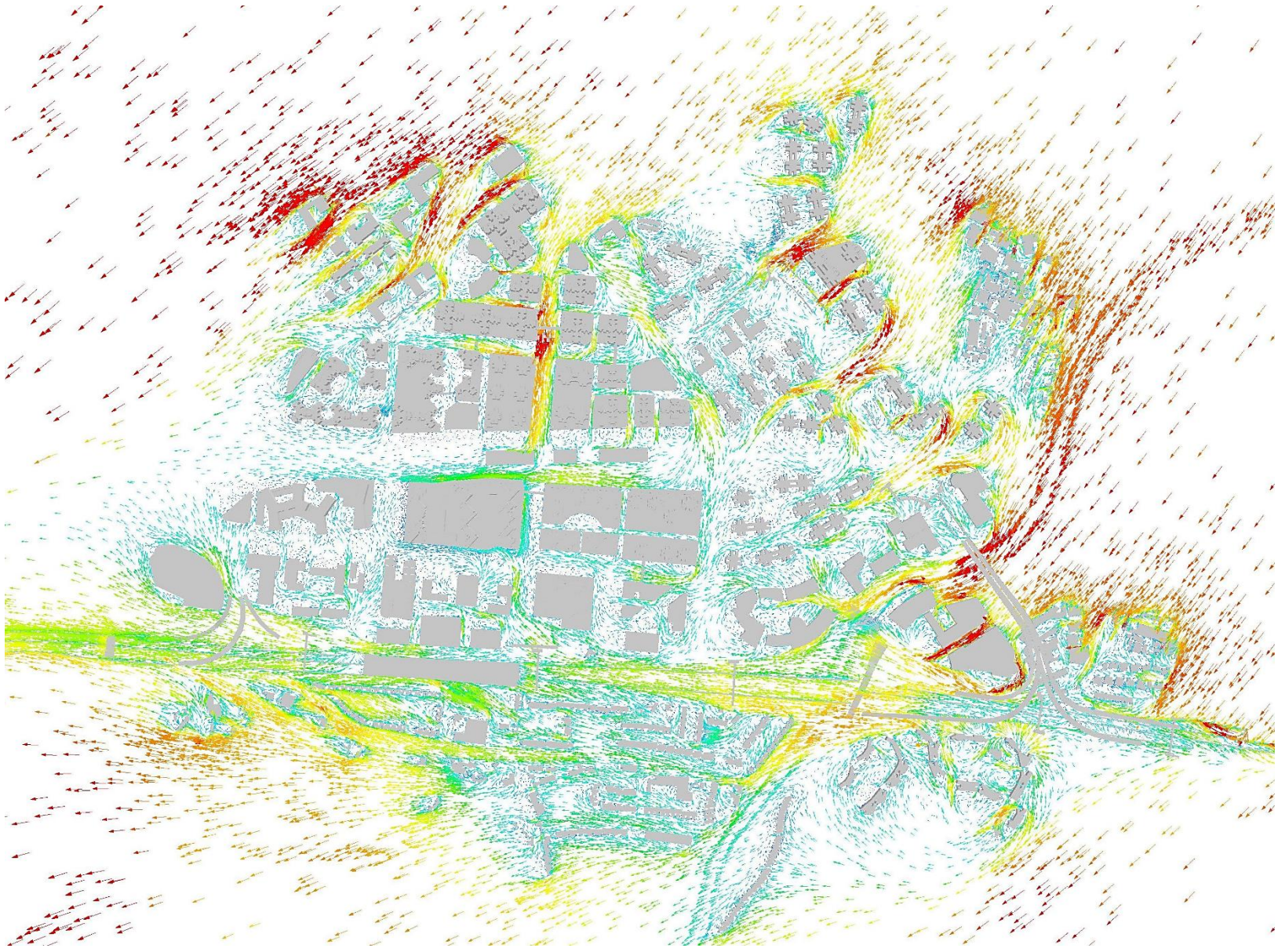




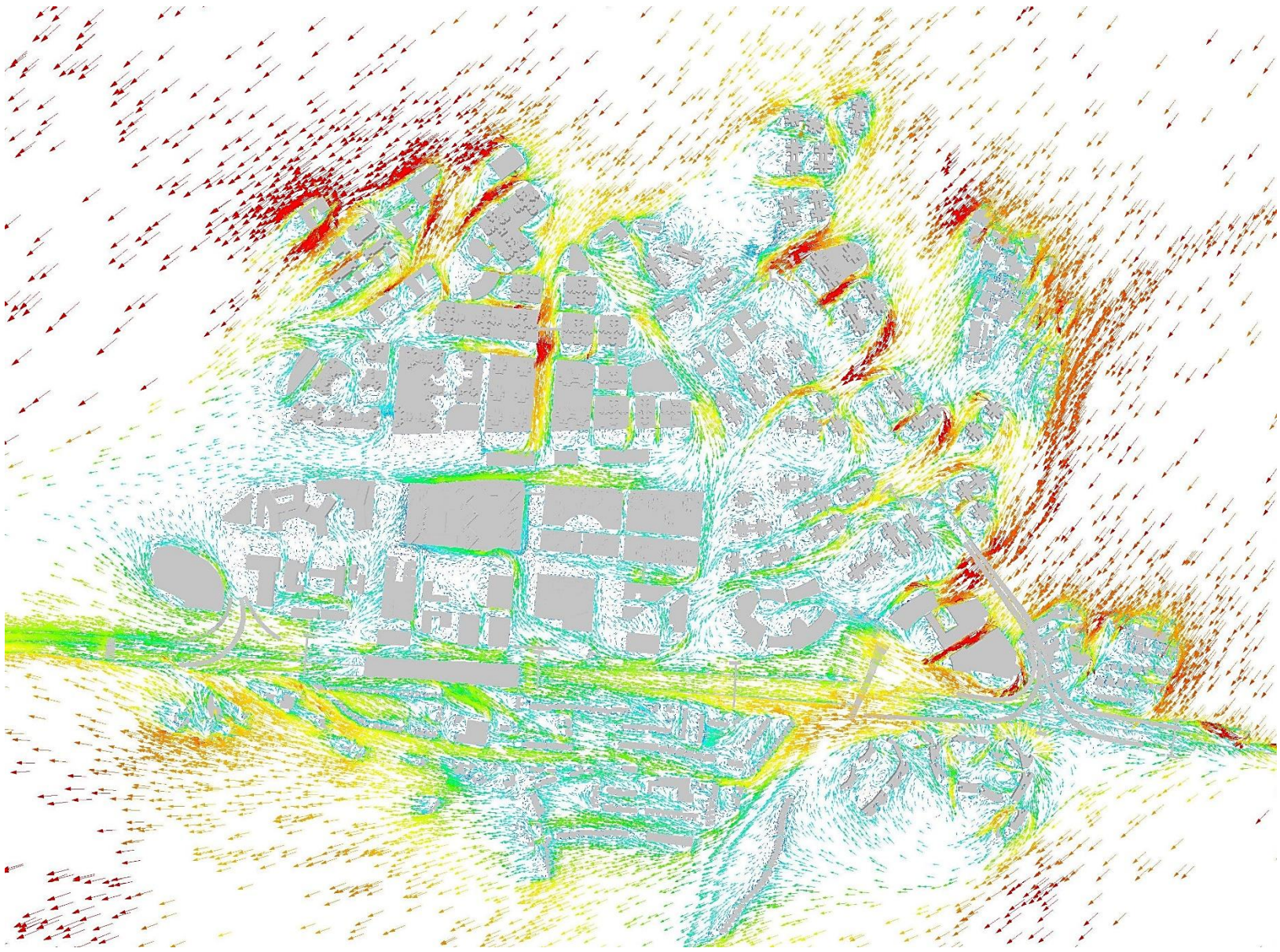
Annex III – Wind Velocity Ratio Vector Plots

Annual NNE at 2mAG

Base Scenario



Proposed Scenario

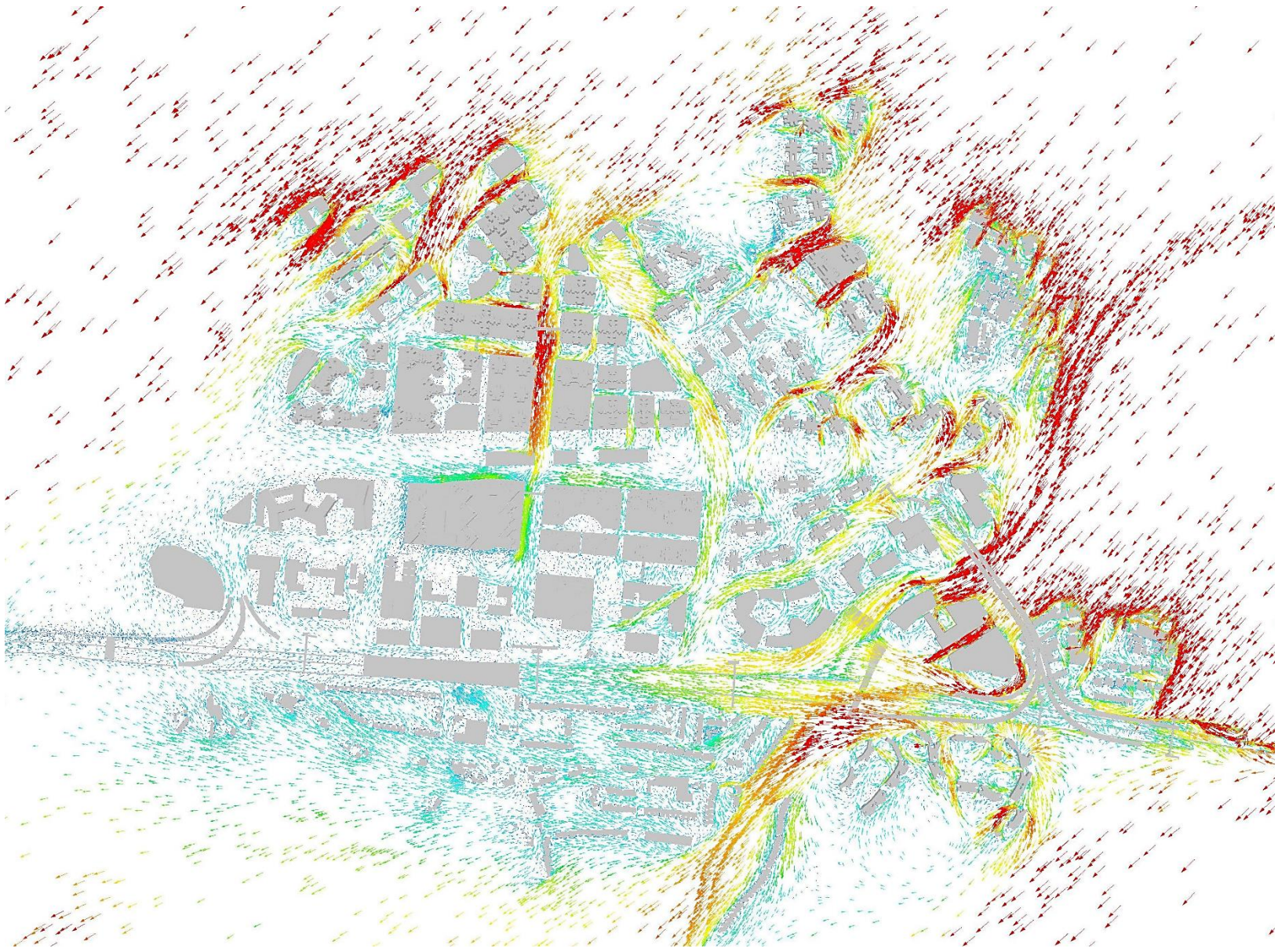




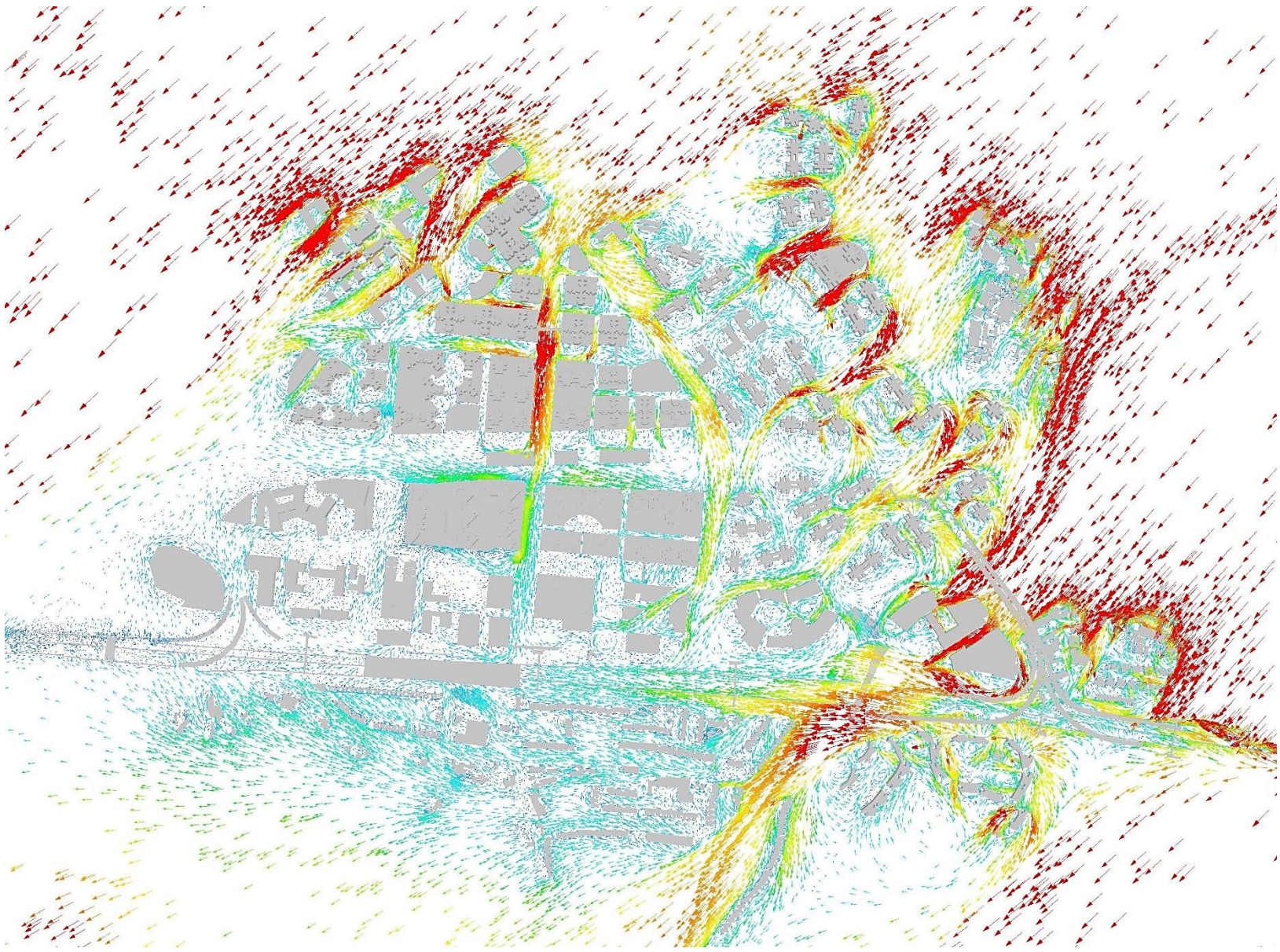
Annex III – Wind Velocity Ratio Vector Plots

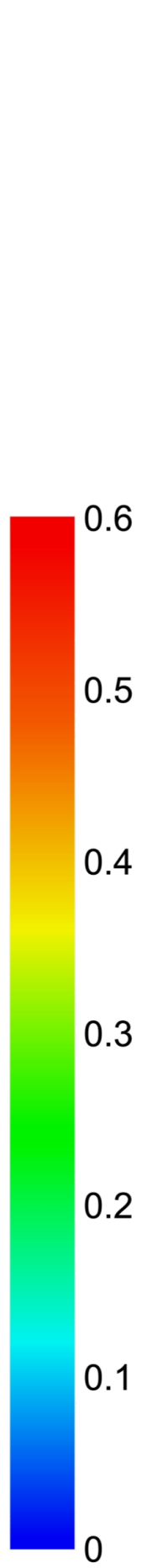
Annual NE at 2mAG

Base Scenario



Proposed Scenario

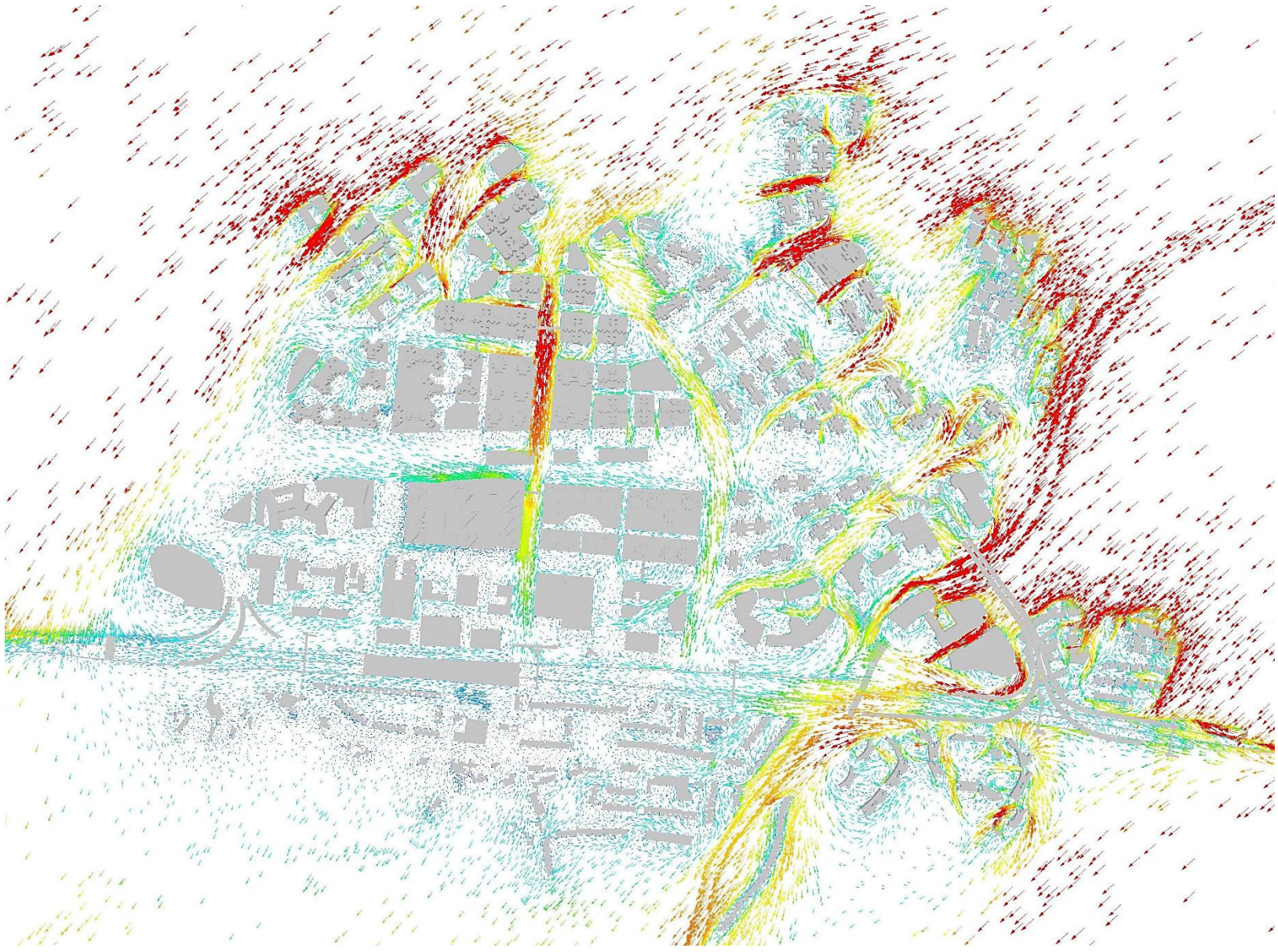




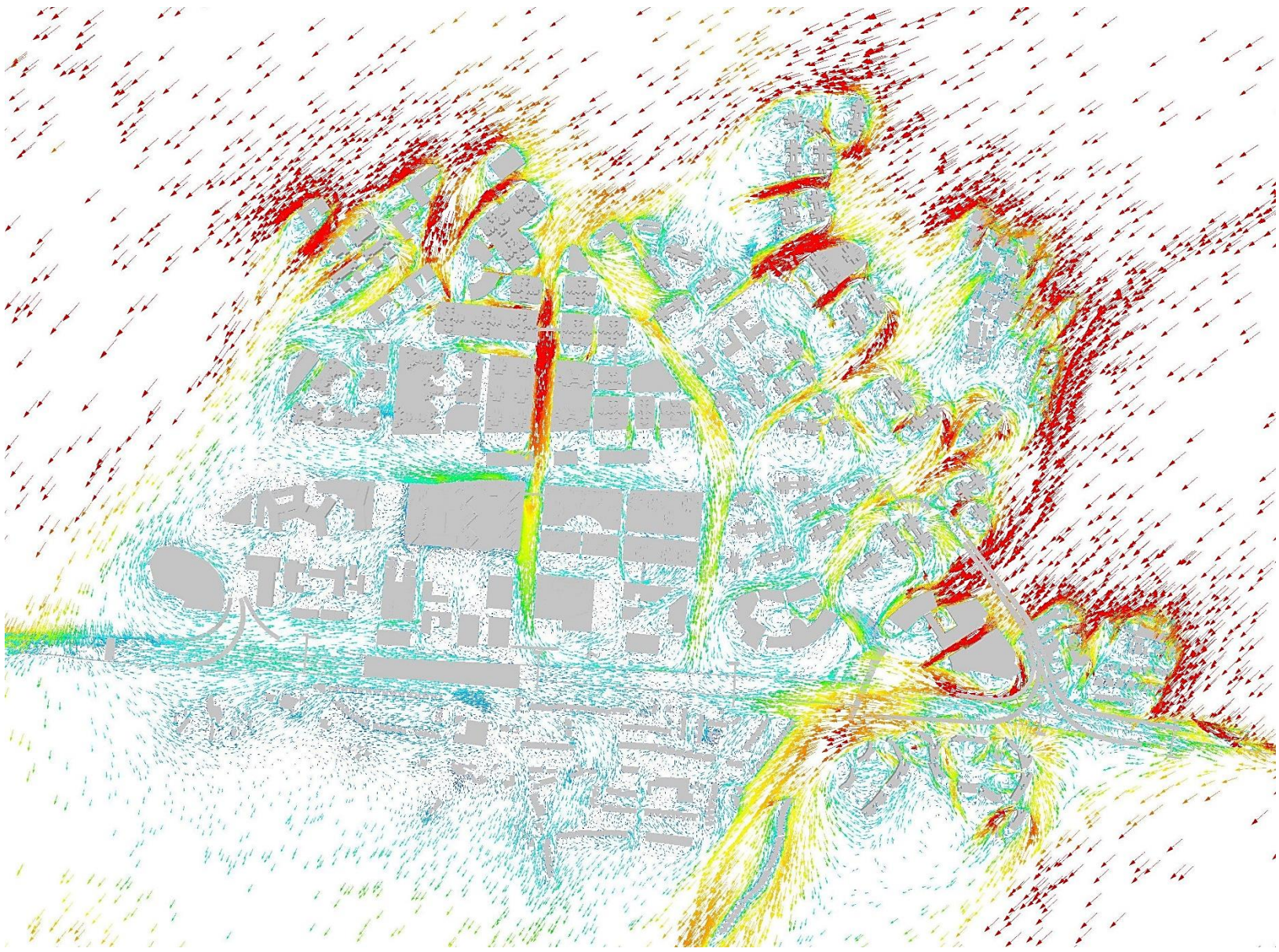
Annex III – Wind Velocity Ratio Vector Plots

Annual ENE at 2mAG

Base Scenario



Proposed Scenario

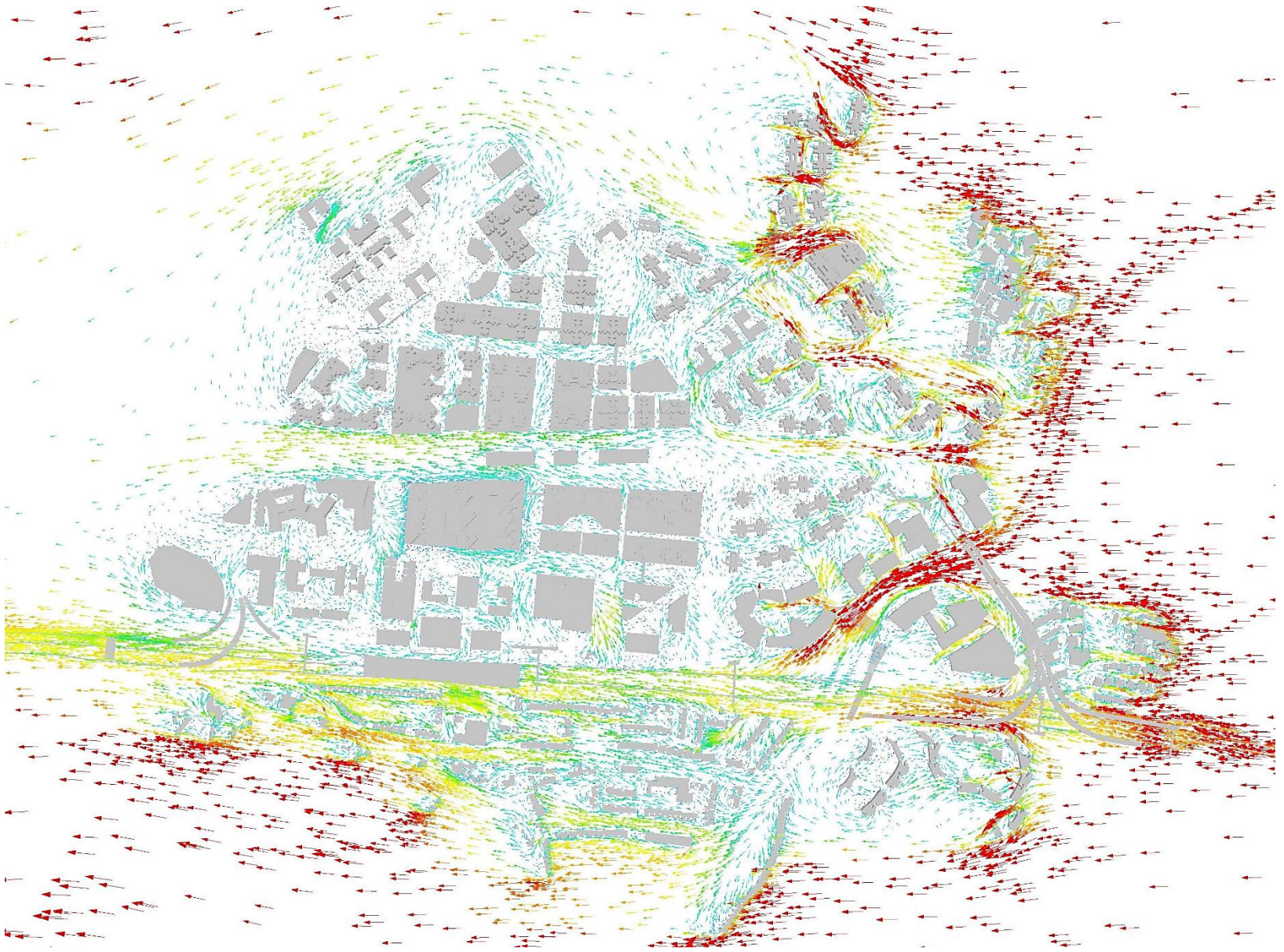




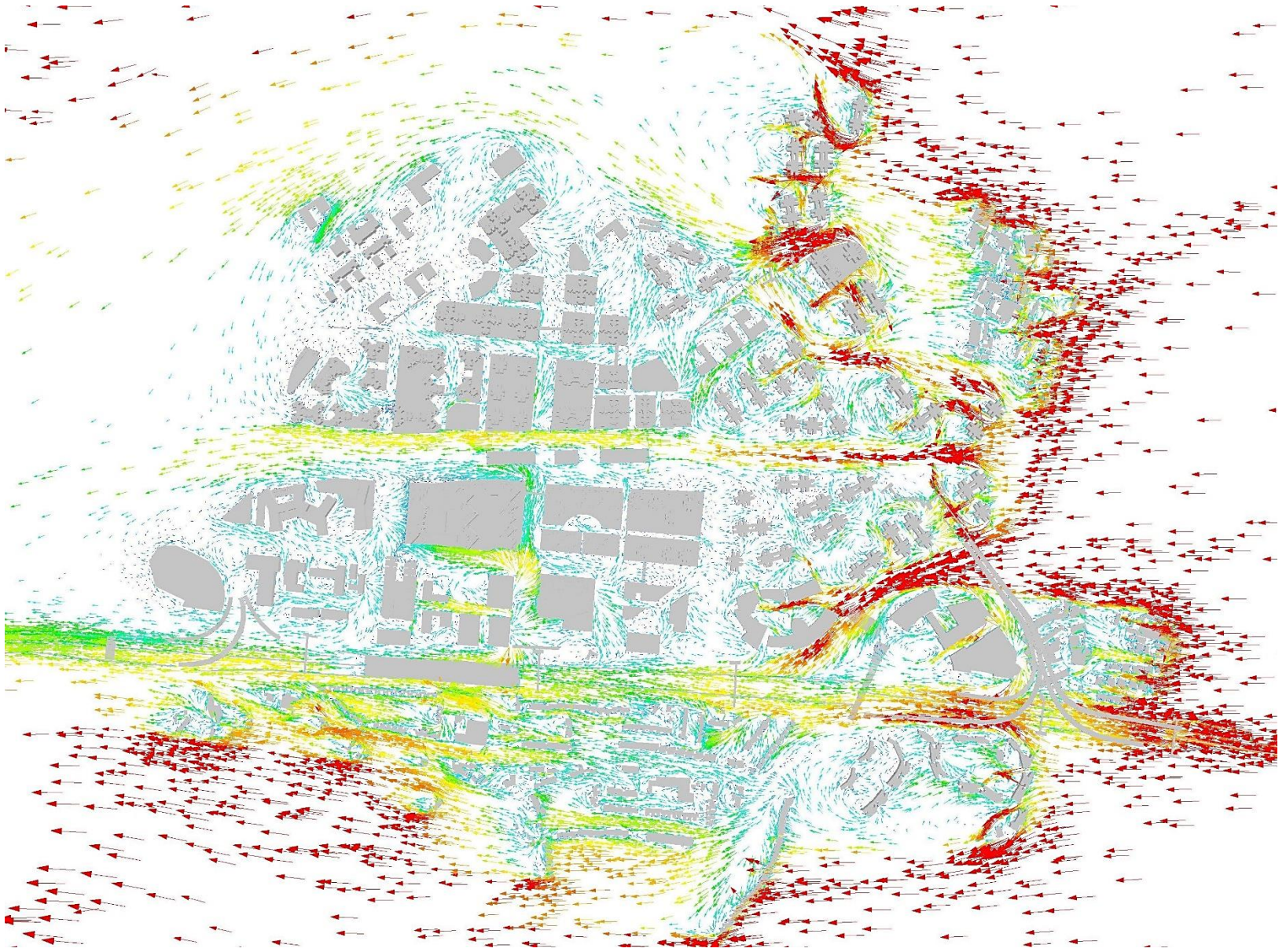
Annex III – Wind Velocity Ratio Vector Plots

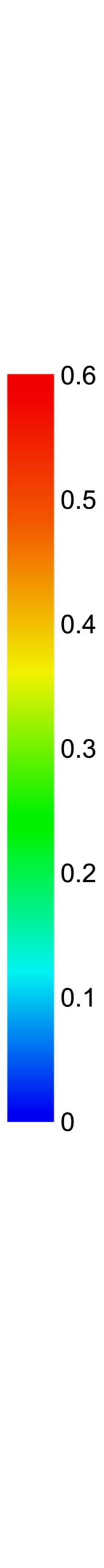
Annual E at 2mAG

Base Scenario



Proposed Scenario

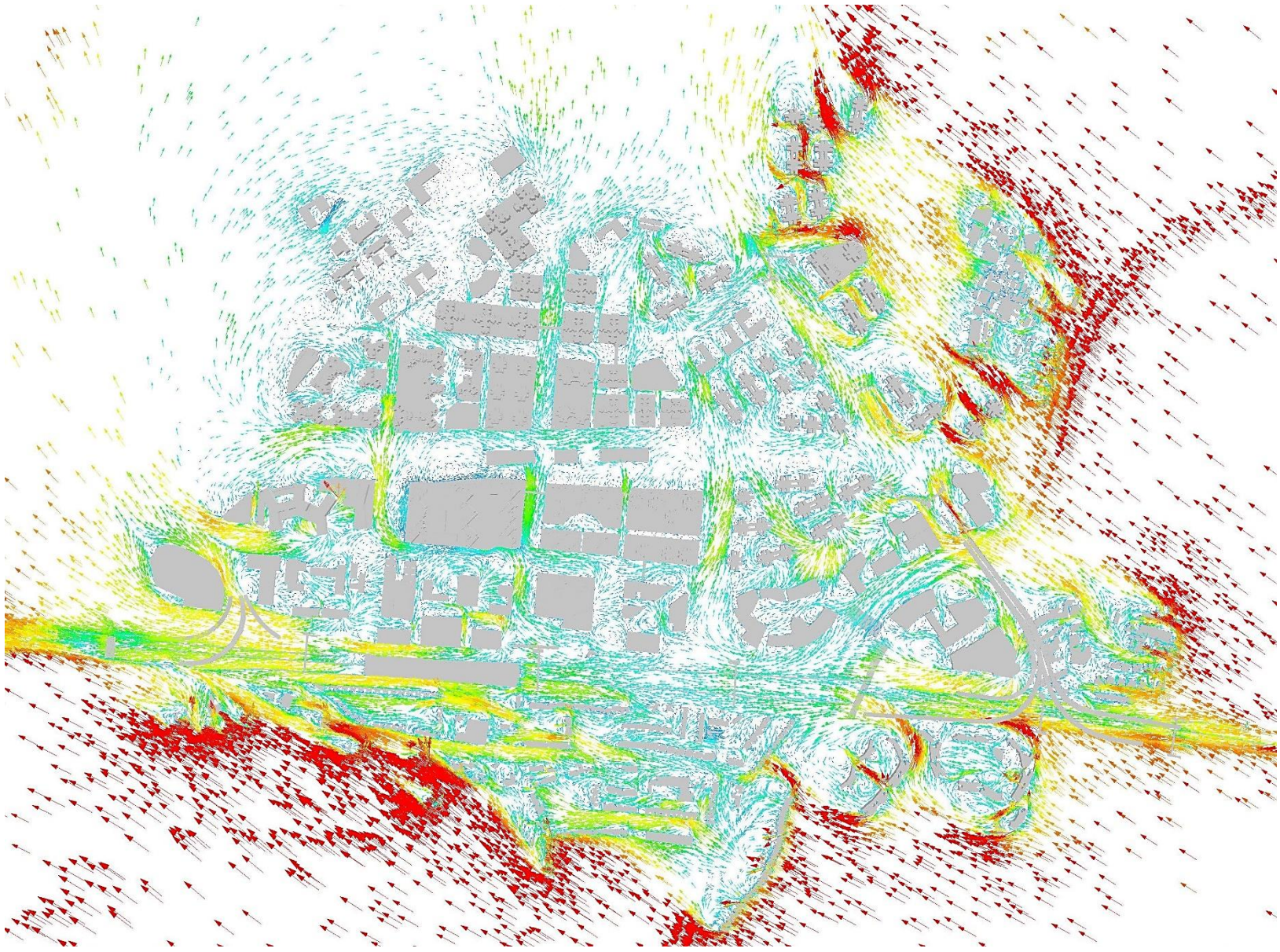




Annex III – Wind Velocity Ratio Vector Plots

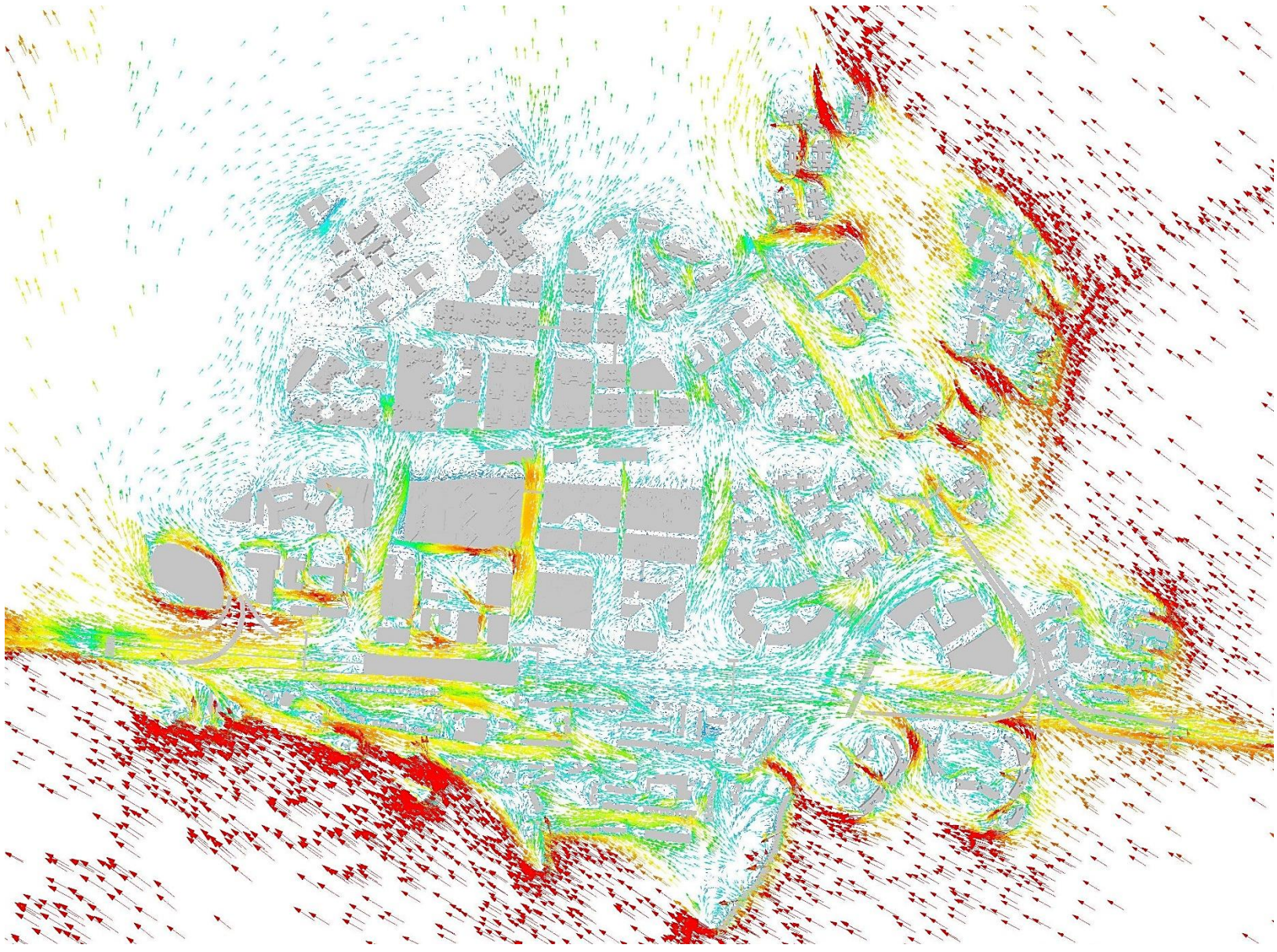
Annual ESE at 2mAG

Base Scenario





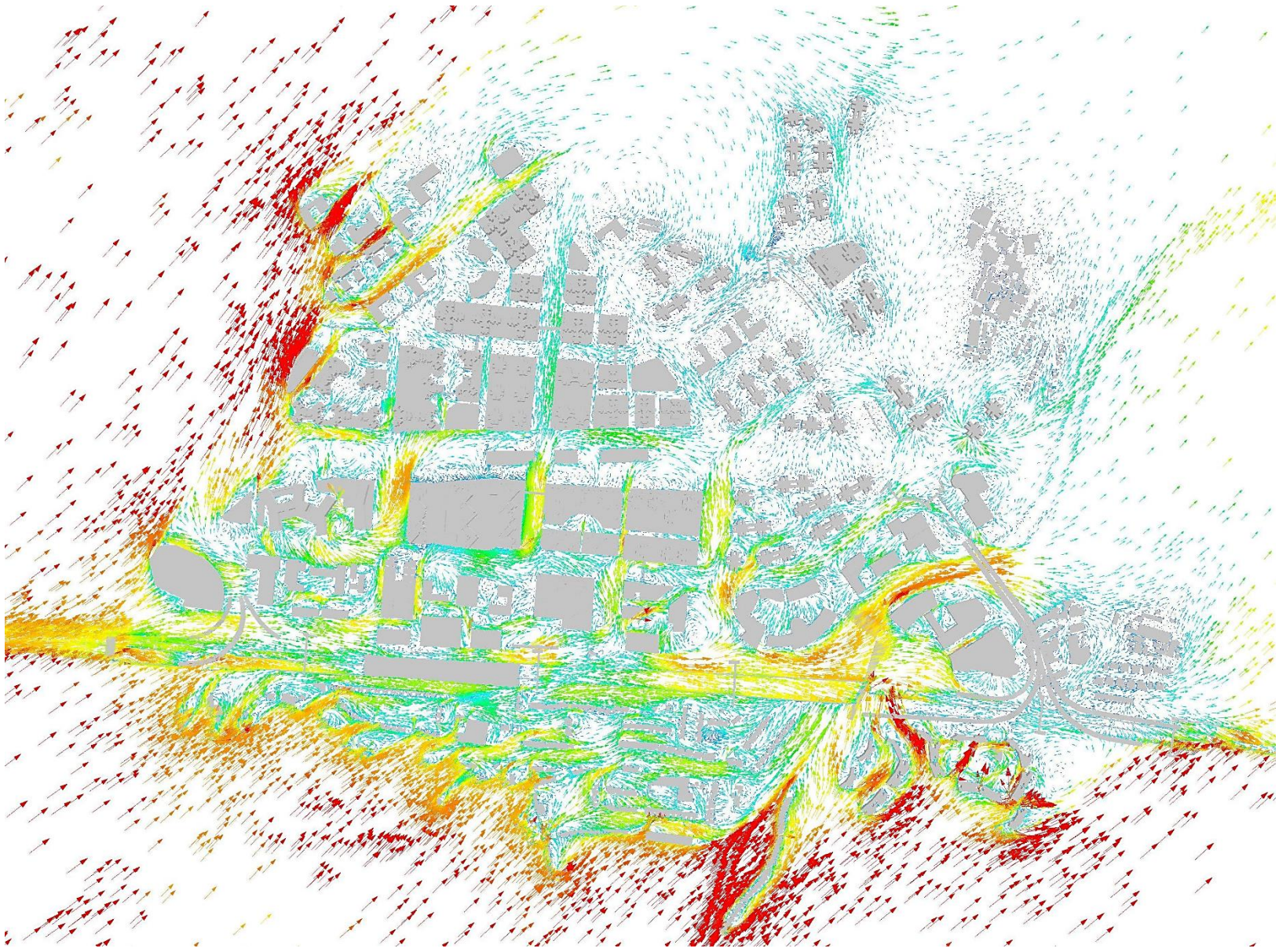
Proposed Scenario



Annex III – Wind Velocity Ratio Vector Plots

Annual SW at 2mAG

Base Scenario



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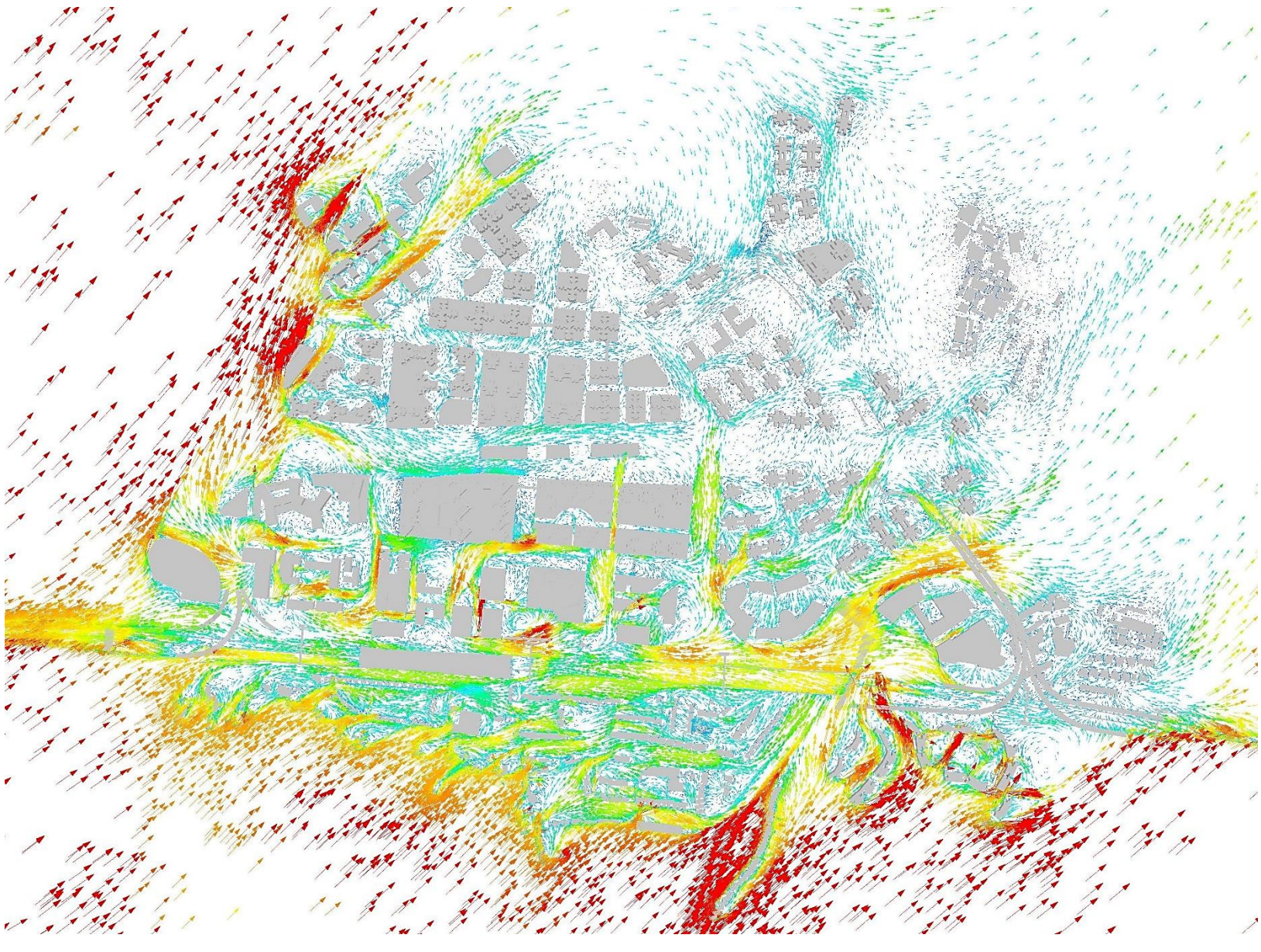
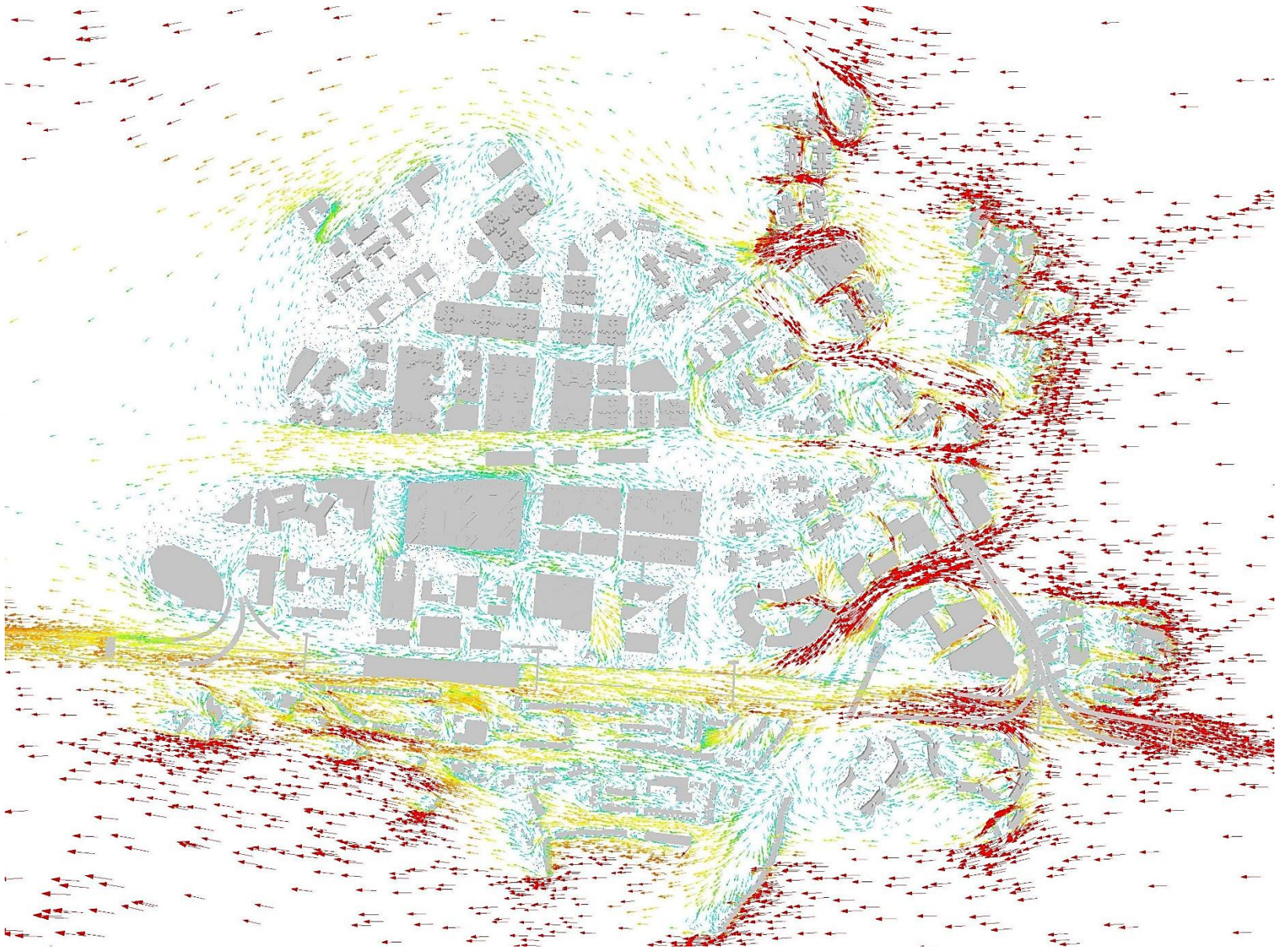


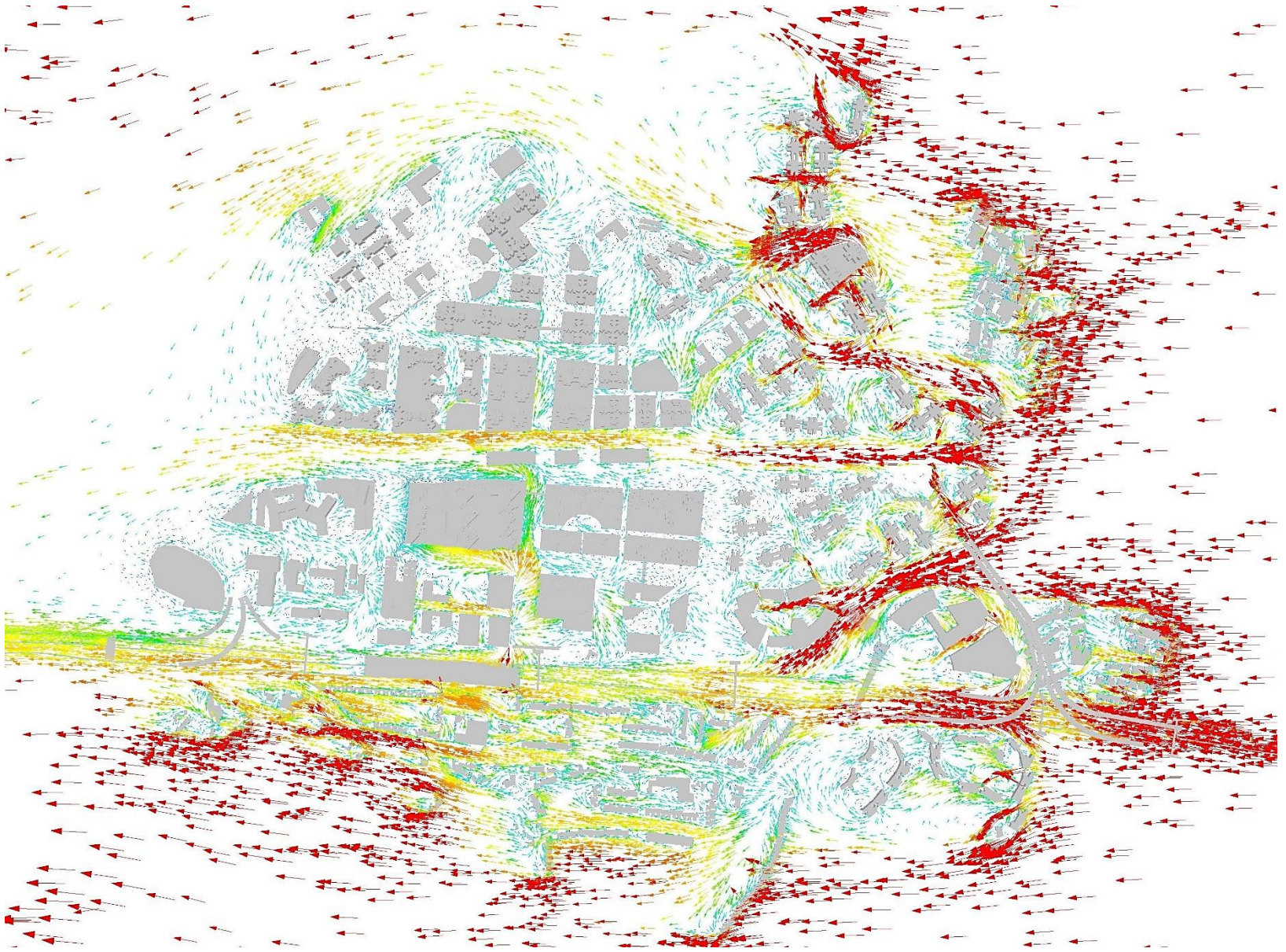
Annex III – Wind Velocity Ratio Vector Plots

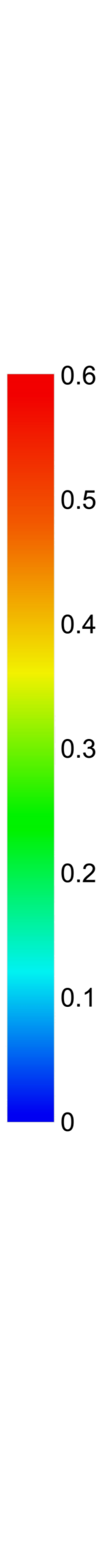
Summer E at 2mAG

Base Scenario



Proposed Scenario

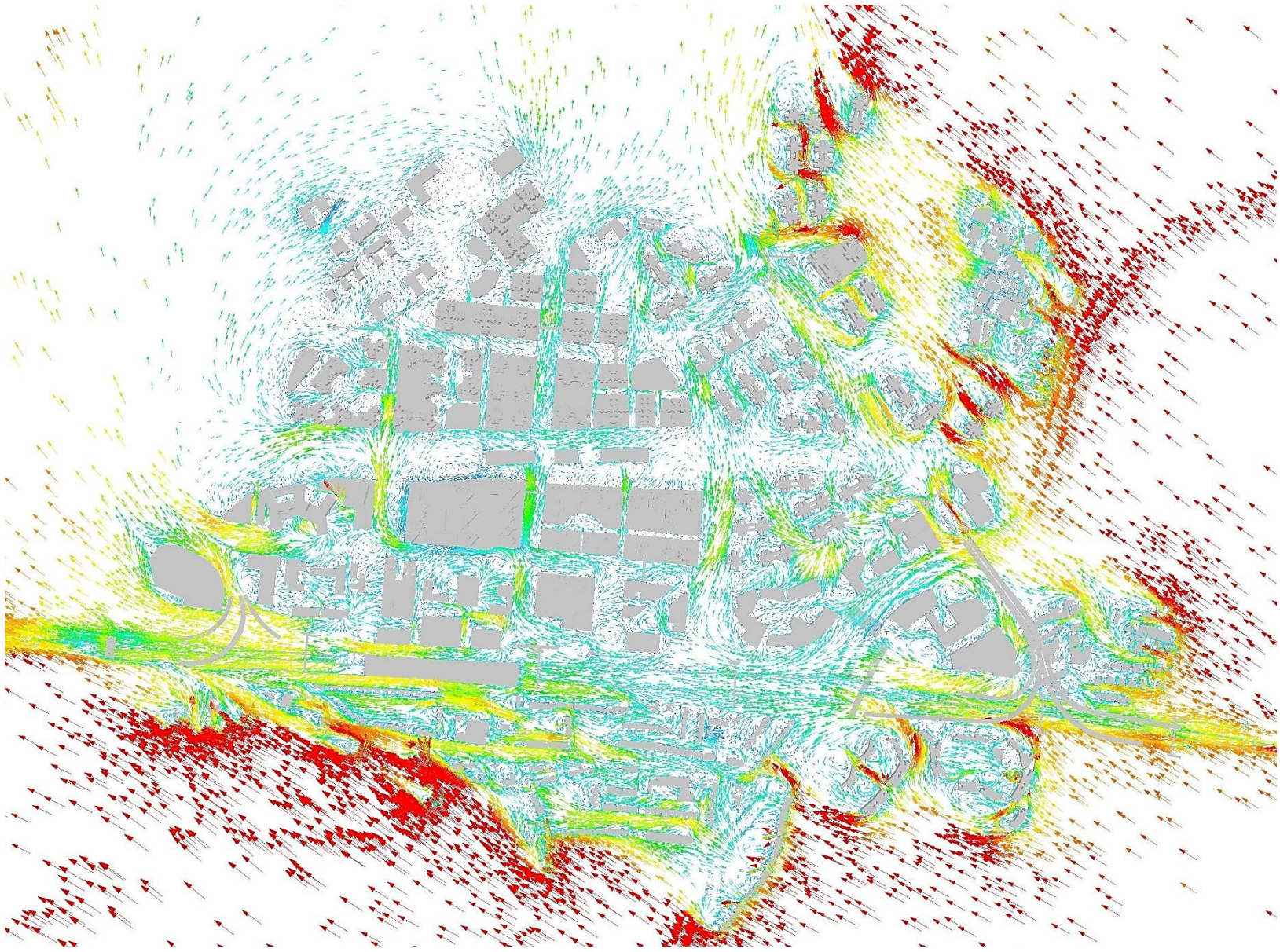




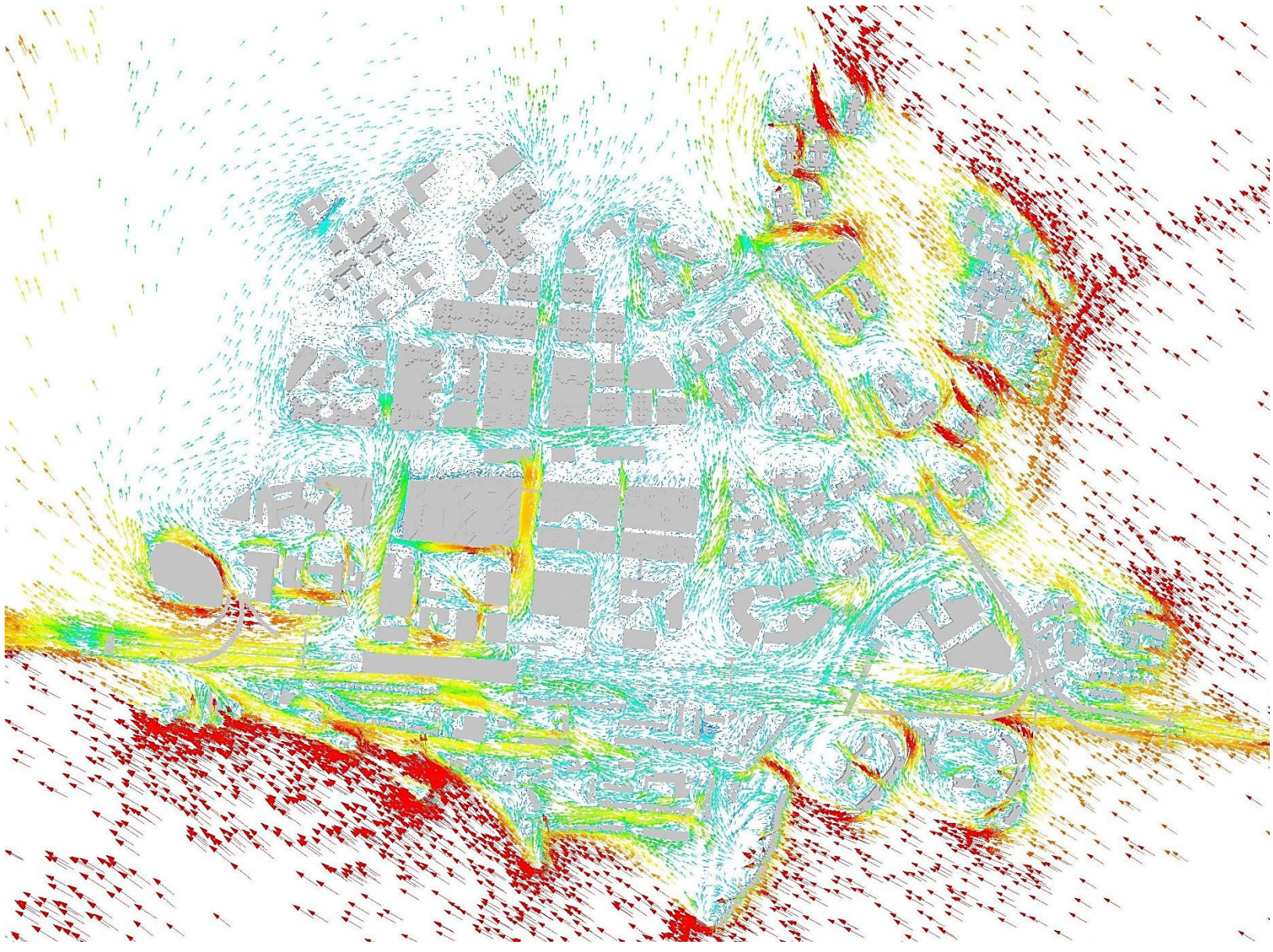
Annex III – Wind Velocity Ratio Vector Plots

Summer ESE at 2mAG

Base Scenario



Proposed Scenario

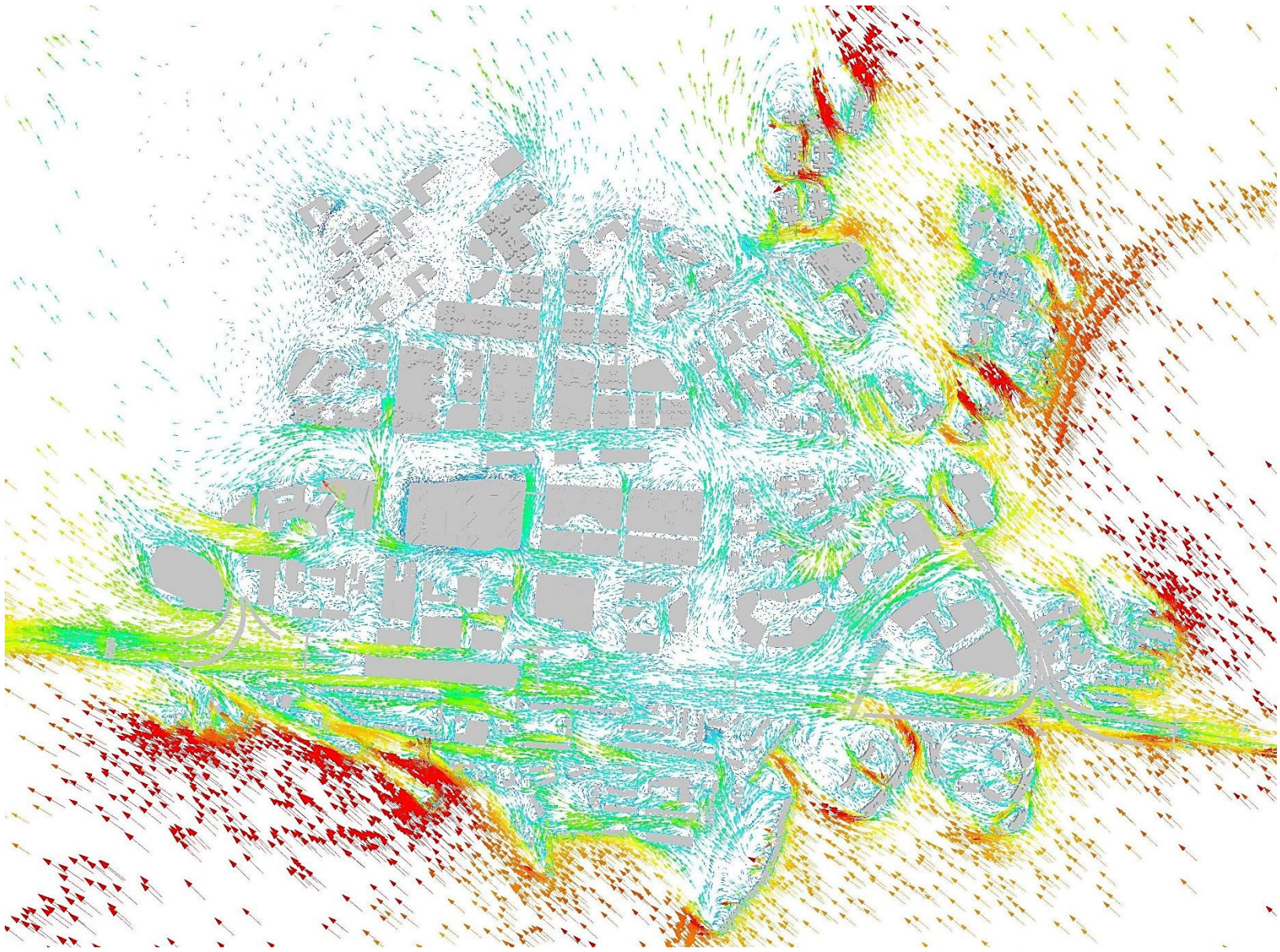




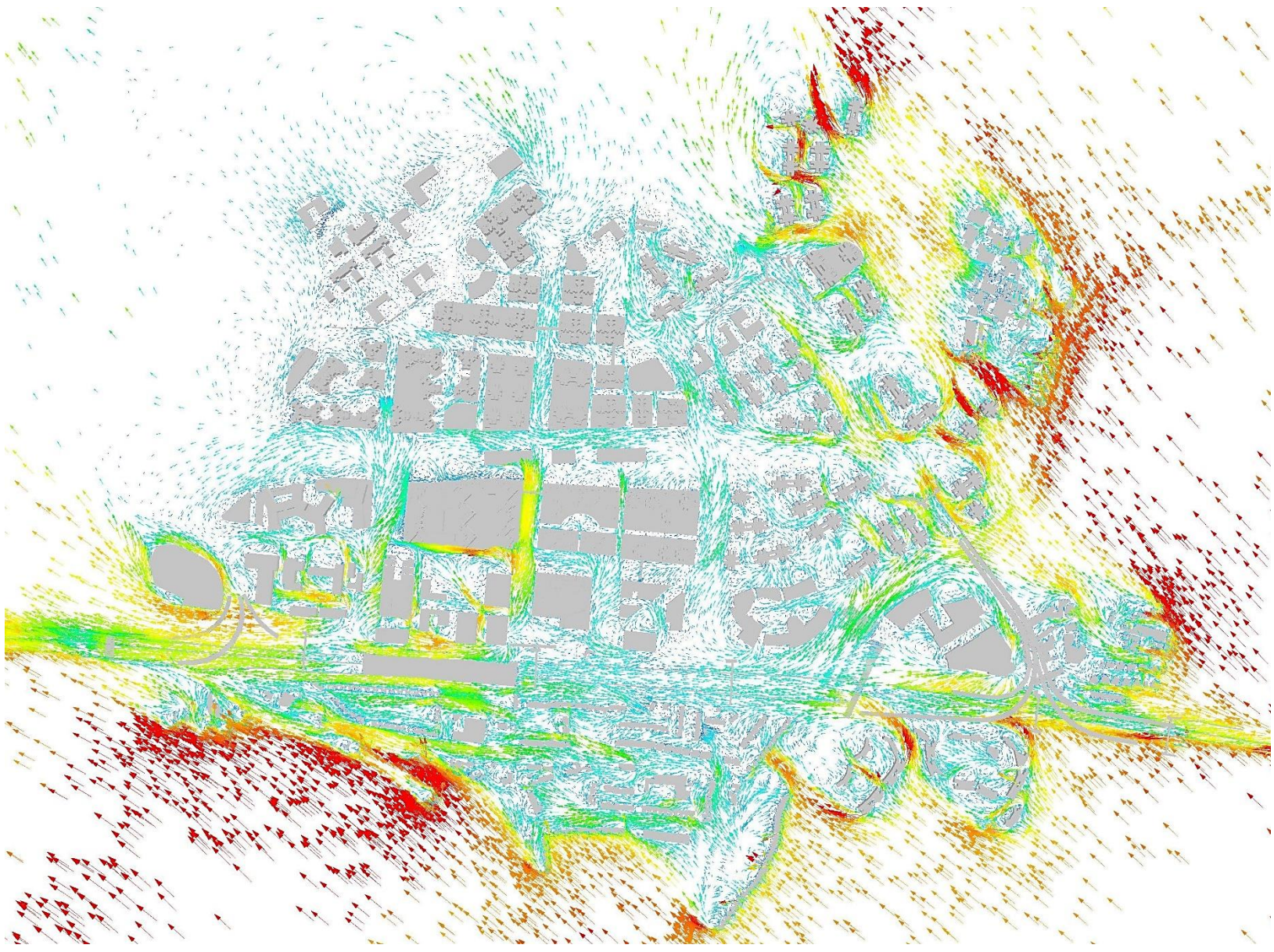
Annex III – Wind Velocity Ratio Vector Plots

Summer SE at 2mAG

Base Scenario



Proposed Scenario

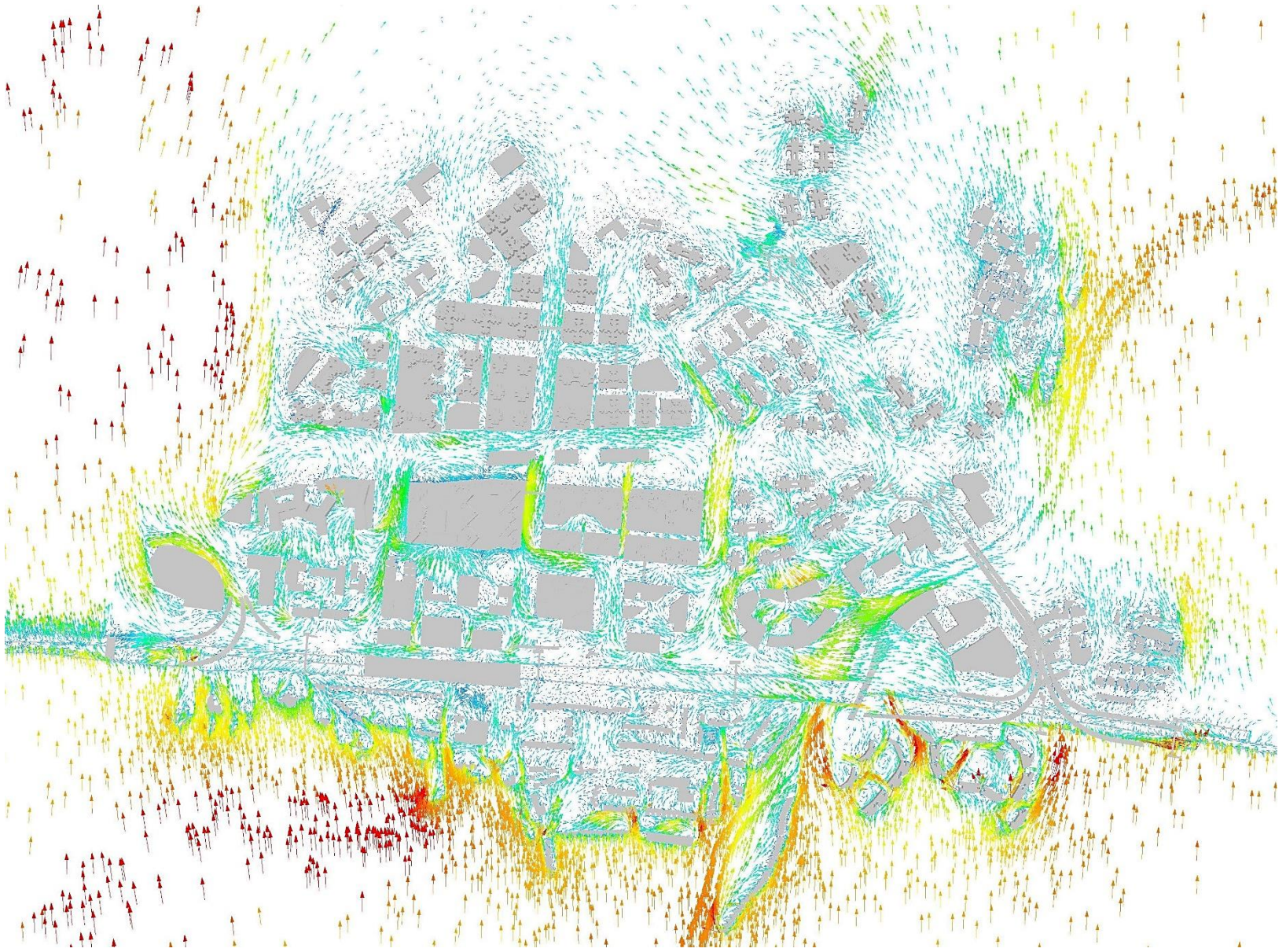




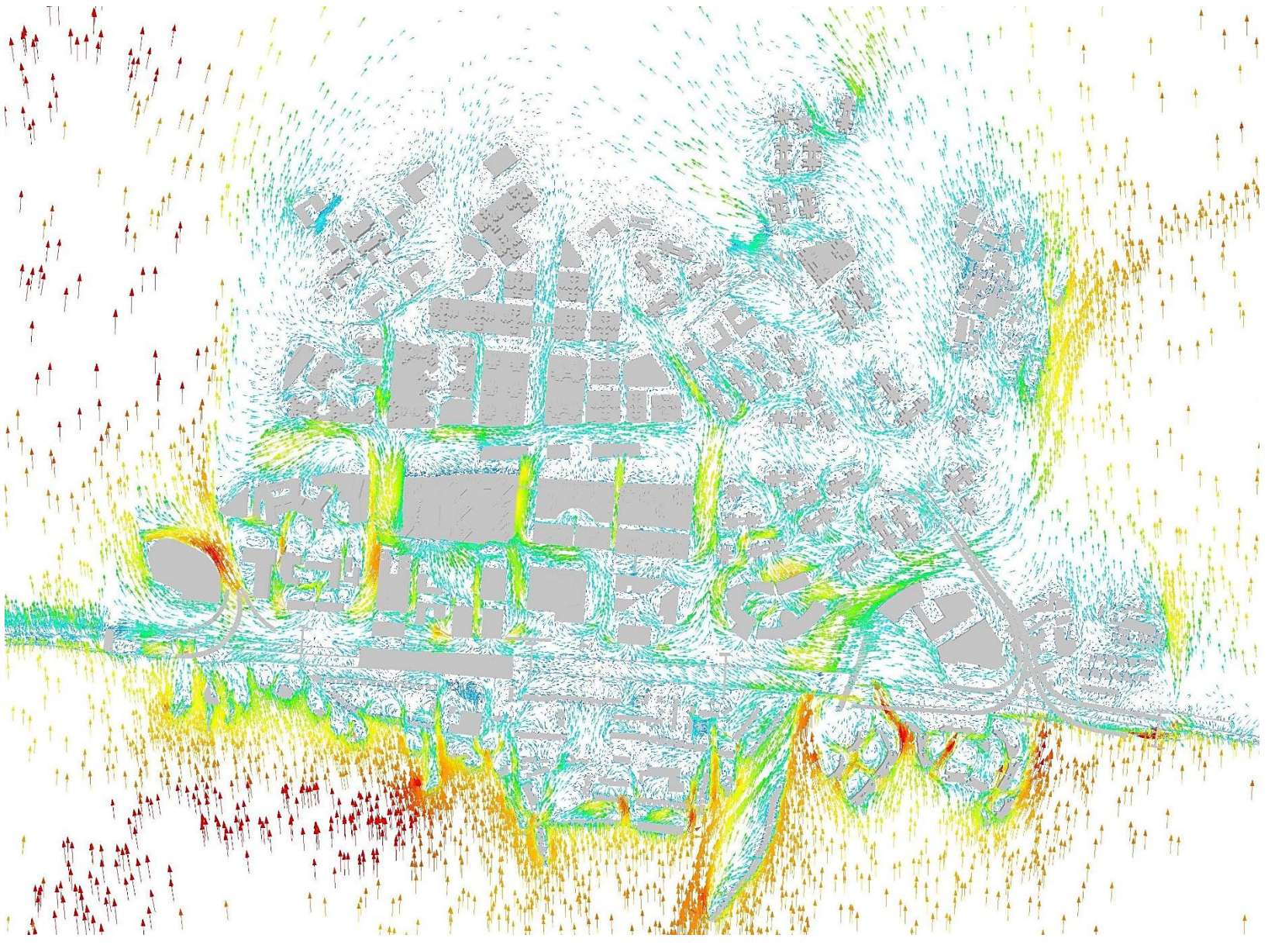
Annex III – Wind Velocity Ratio Vector Plots

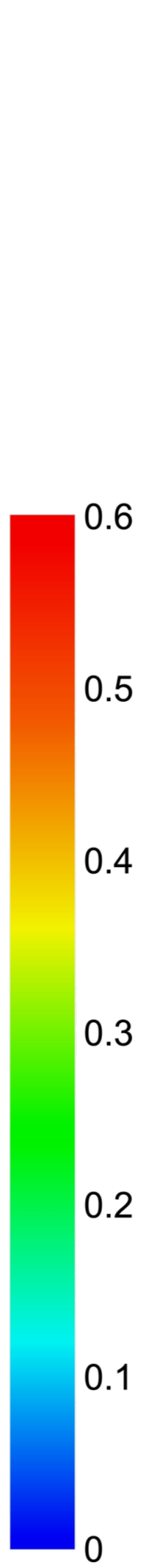
Summer S at 2mAG

Base Scenario



Proposed Scenario

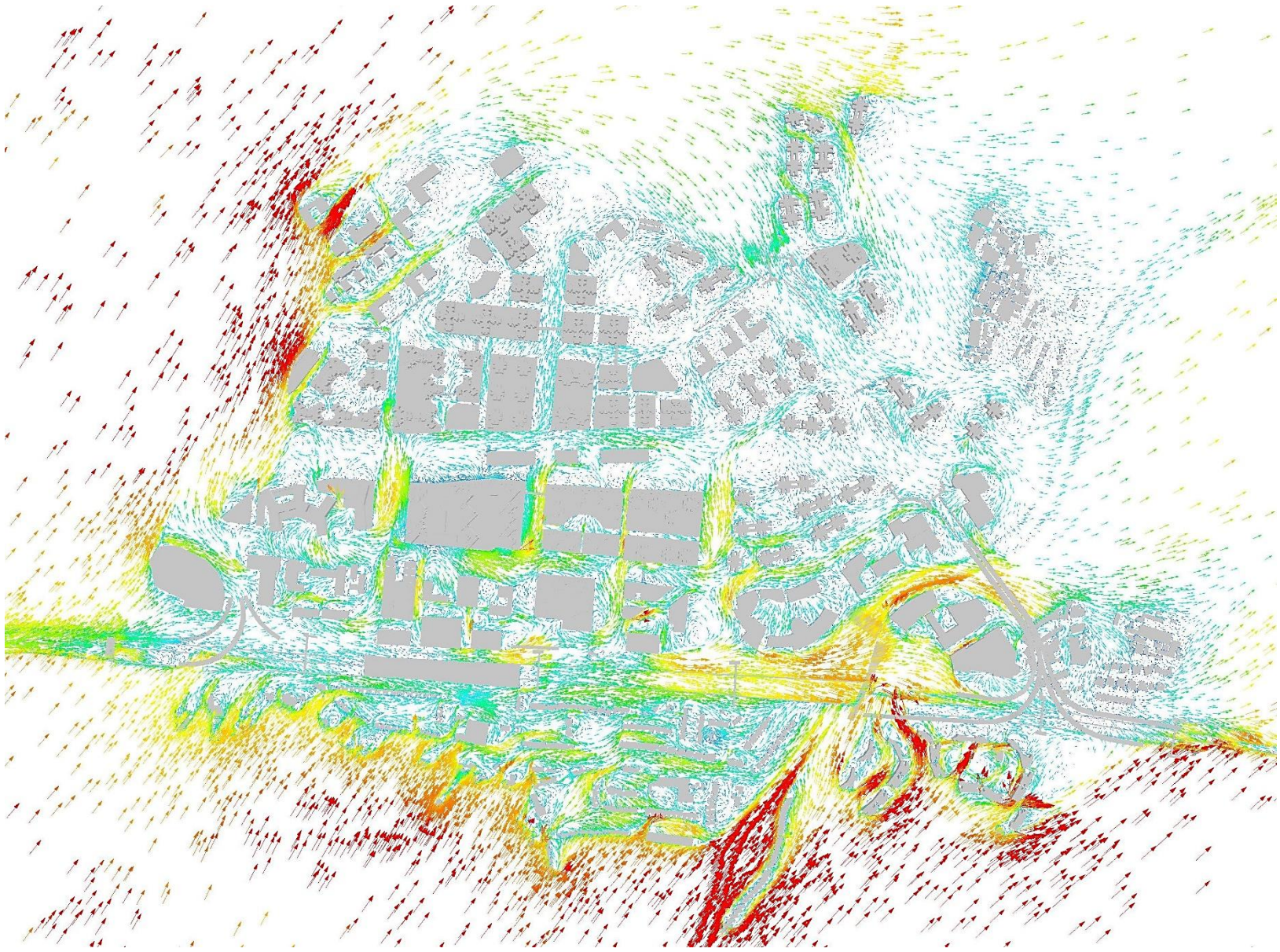




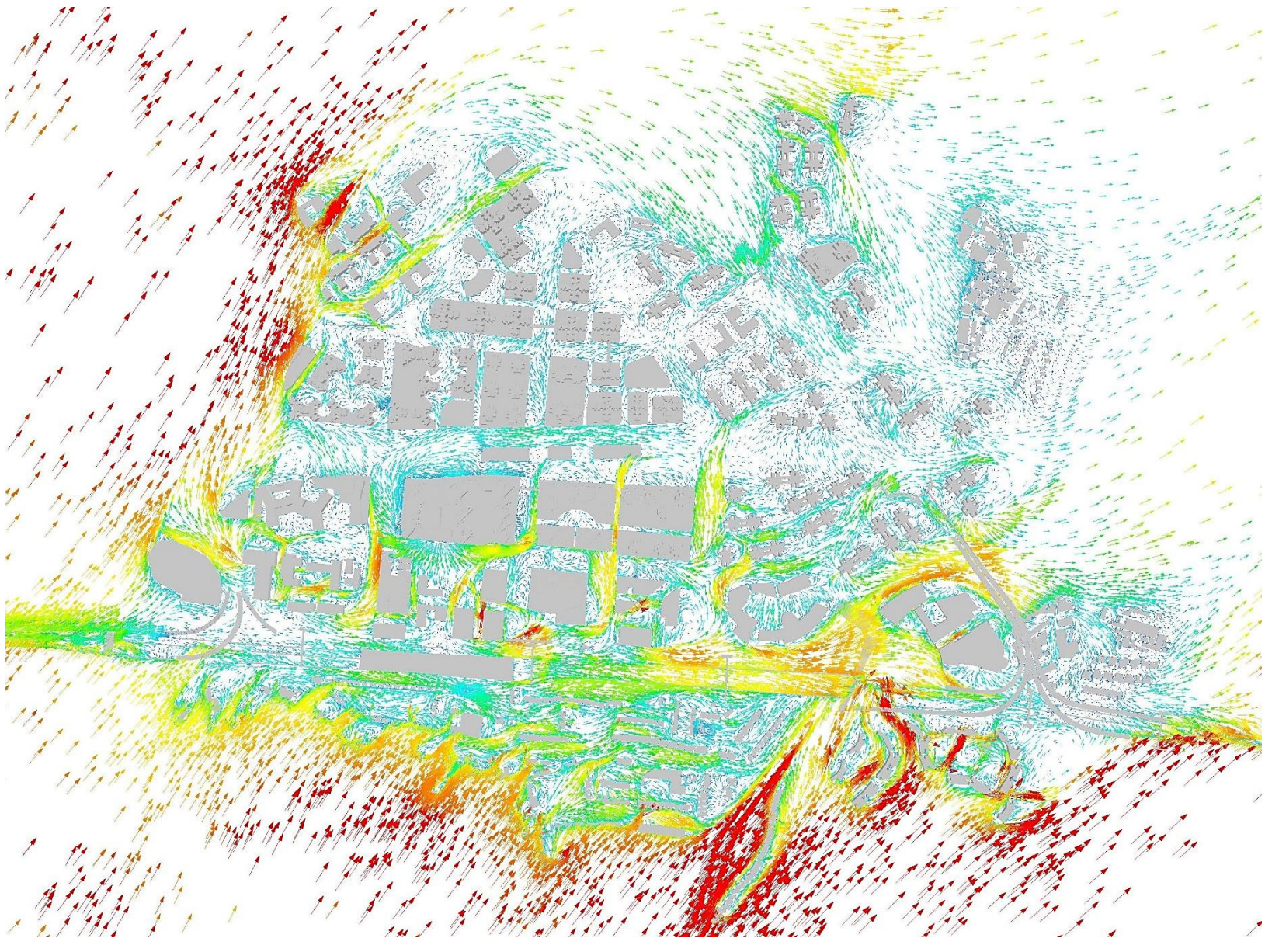
Annex III – Wind Velocity Ratio Vector Plots

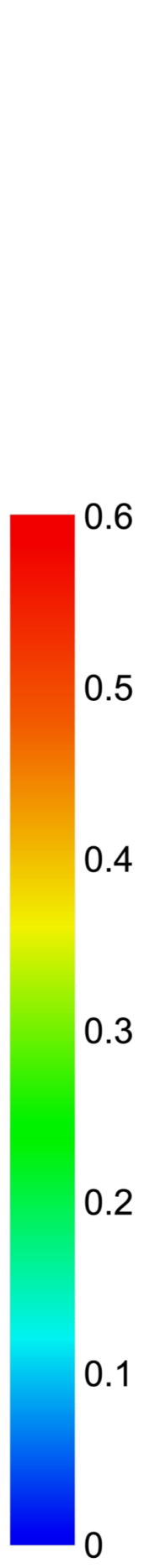
Summer SSW at 2mAG

Base Scenario



Proposed Scenario

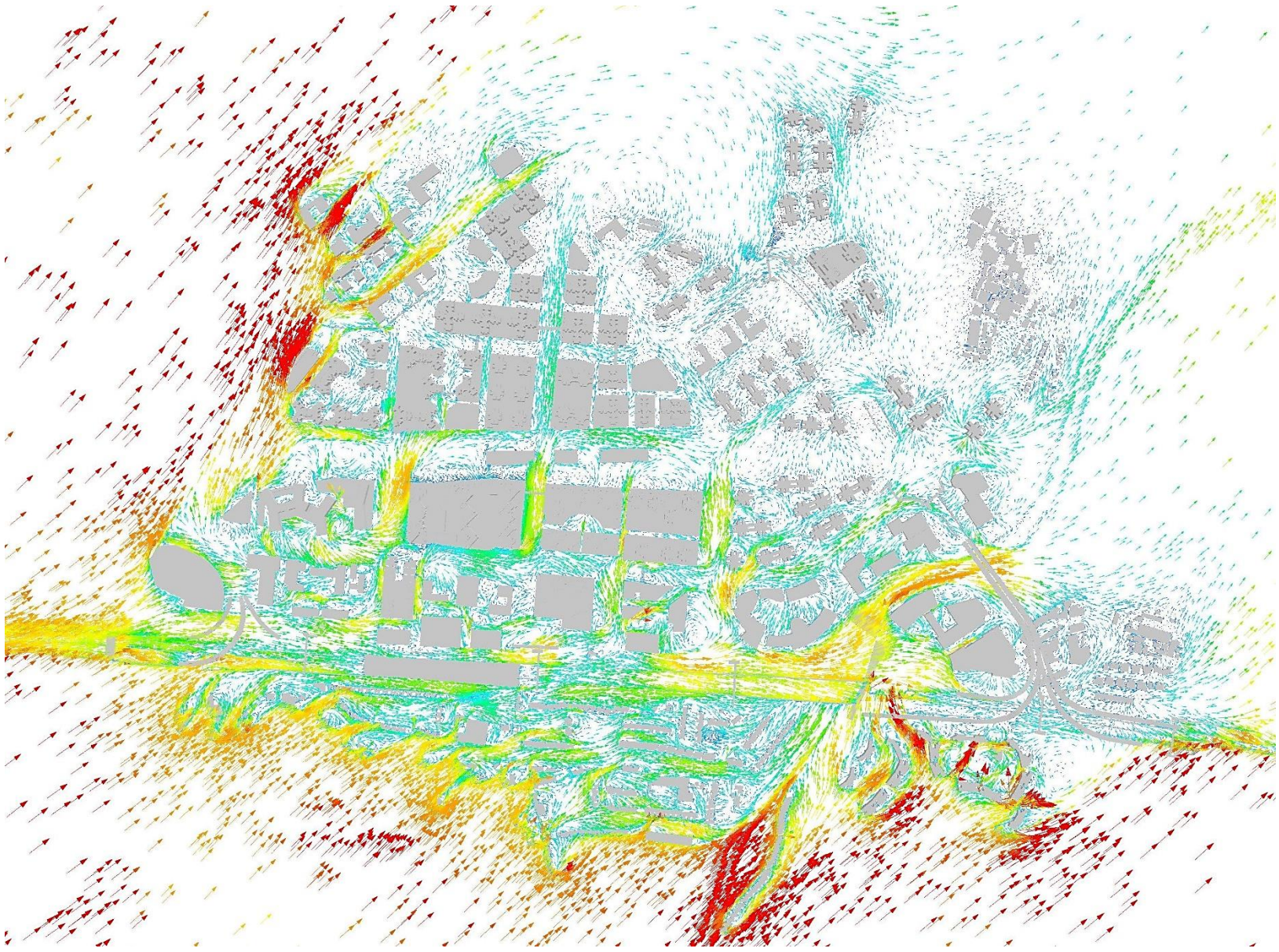




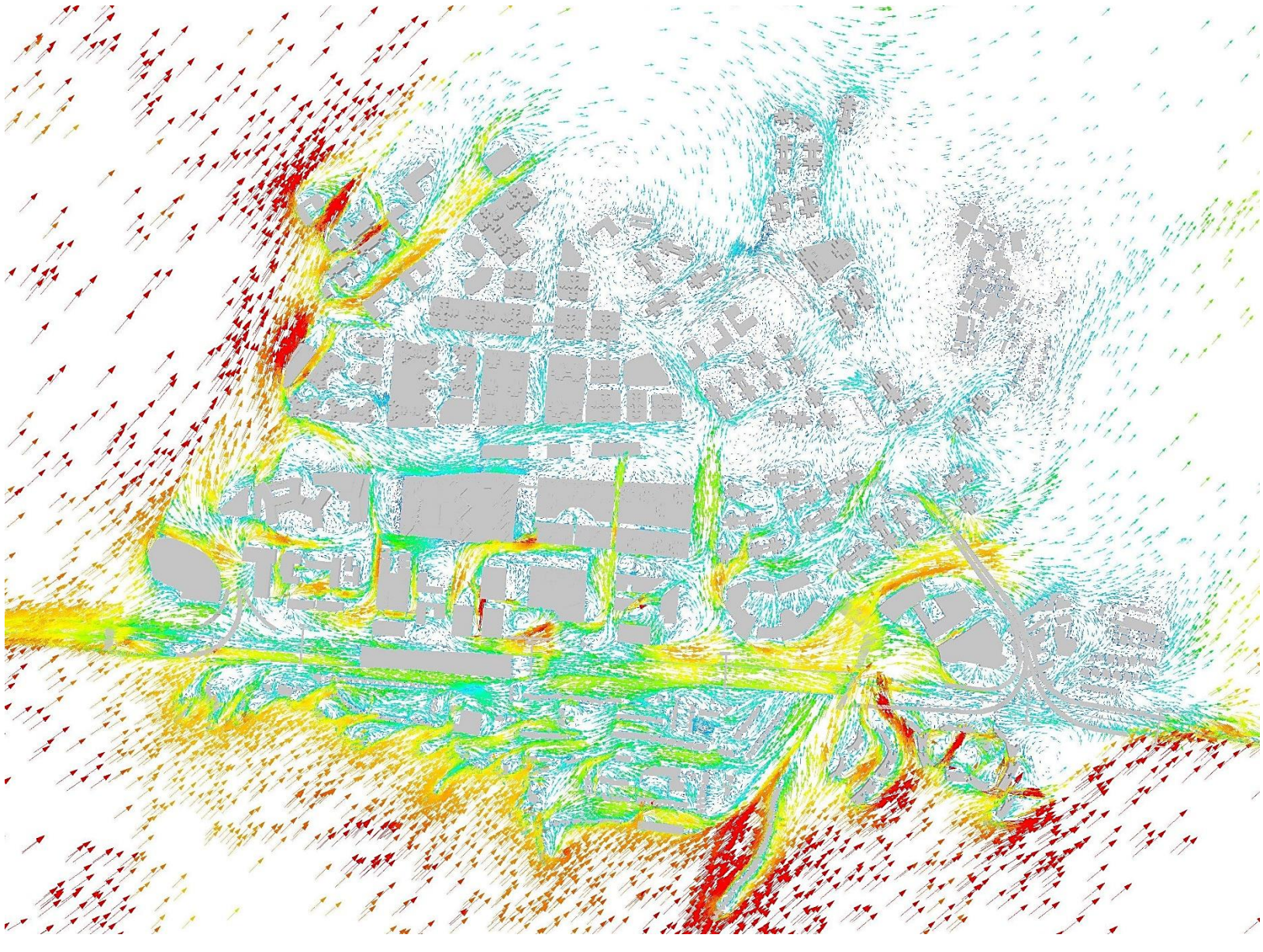
Annex III – Wind Velocity Ratio Vector Plots

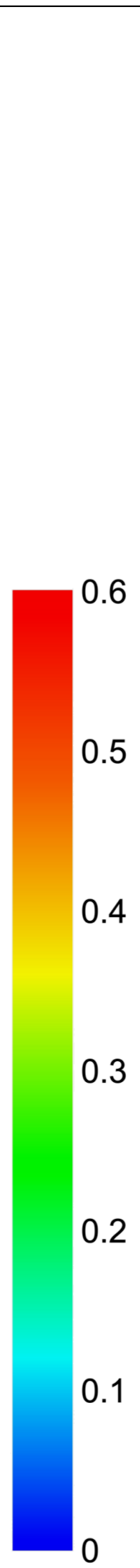
Summer SW at 2mAG

Base Scenario



Proposed Scenario

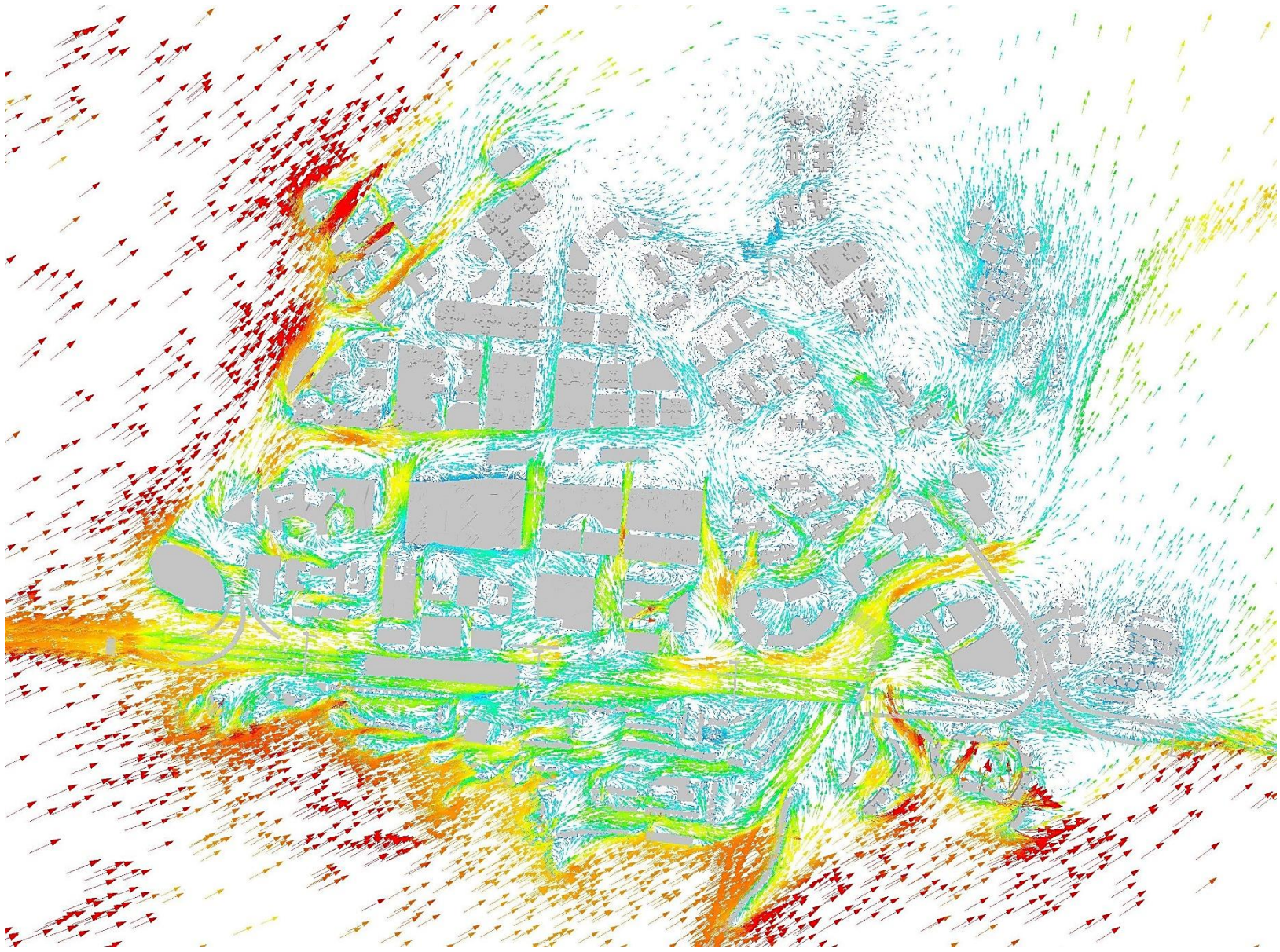




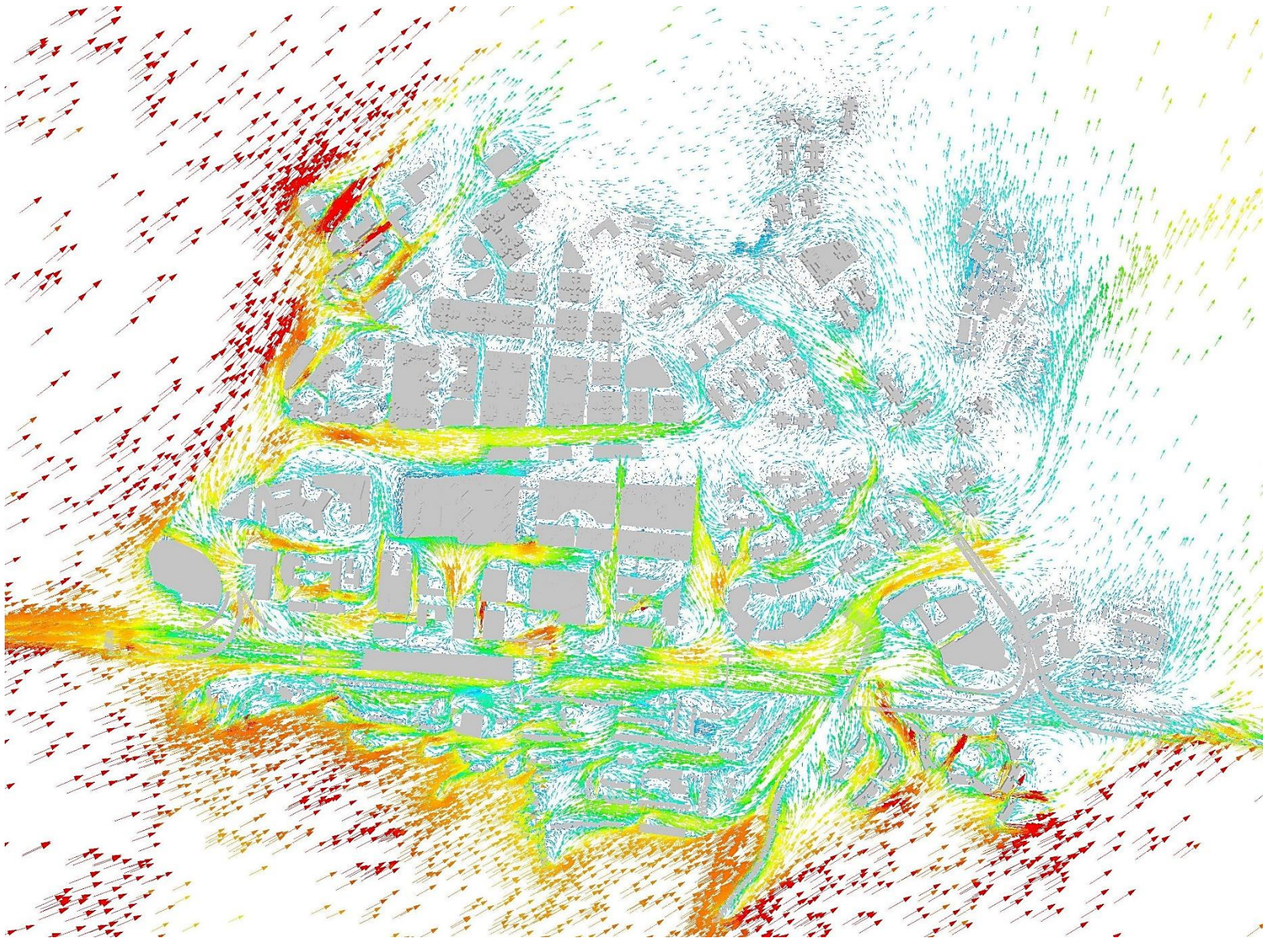
Annex III – Wind Velocity Ratio Vector Plots

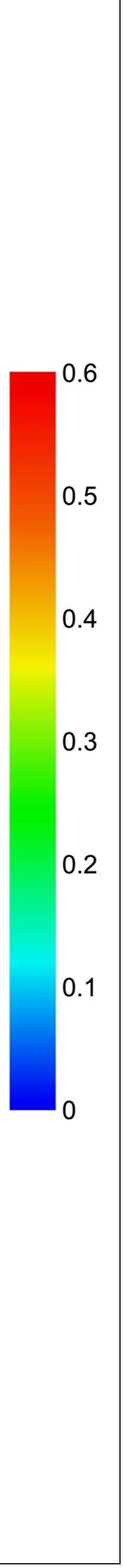
Summer WSW at 2mAG

Base Scenario



Proposed Scenario

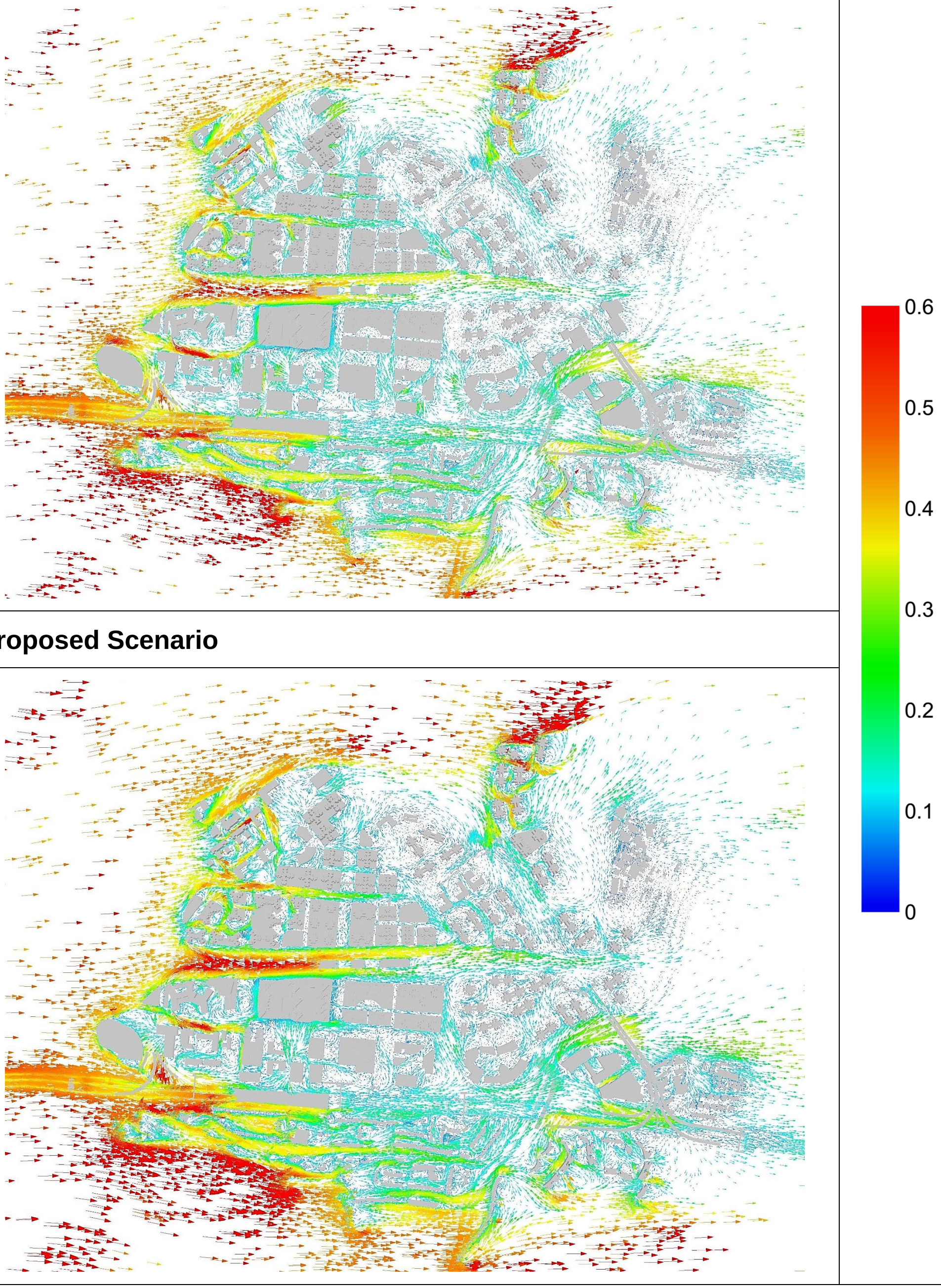




Annex III – Wind Velocity Ratio Vector Plots

Summer W at 2mAG

Base Scenario



Proposed Scenario