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Dear Sir,

As requested by DEP, we are glad to submit the attached report for her consideration. Thank you.

Best Regards,

Patrick Tsui

Mobile: [redacted]

Total: 47 pages

Date: 28 June 2025

TPB Ref.: A/NE-TKLN/99

By Email

Town Planning Board
15/F, North Point Government Offices
333 Java Road
North Point
Hong Kong
(Attn: The Secretary)

Dear Sir,

Proposed Temporary Battery Recycling Plant and Associated Filling of Land for a Period of 3 Years at Lot 215 RP (Part) in D.D.78, Ta Kwu Ling, N.T.

We are glad to submit the attached report for the consideration of the Director of Environmental Protection.

Yours faithfully,

Patrick Tsui

c.c. Sha Tin, Tai Po and North District Planning Office (Attn: Mr. Timothy WU) – By Email

Proposed Battery Recycling Plant in Ta Kwu Ling, North District

Proposed Battery Recycling Plant in Ta Kwu Ling, North District: Landfill Gas Hazard Assessment Report

Vannex International Limited

2024-12-31

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Bringing ideas to life

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Reviewer's signature		Approver's signature	
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Title	Executive Director, Environmental Planning & Green Building	Title	Executive Director, Environmental Planning & Green Building

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1 INTRODUCTION

1.1.1 The proposed battery recycling plant (the Project) will be located adjacent to the north-western side of the existing North East New Territories (NENT) Landfill in Ta Kwu Ling, North District, as indicated in **Figure 1.1**. Also depicted in **Figure 1.2** is the Project site layout at Lot 215 RP (Part) in D.D. 78, Ta Kwu Ling North, New Territories with an area of about 2,070.35 m2, which is immediately adjacent to the Leachate Storage Lagoon of the Leachate Treatment Works of NENT Landfill.

1.1.2 **Figure 1.1** also shows that the Project is located within 250m of NENT Landfill, known as Landfill Consultation Zone, so a qualitative landfill gas hazard assessment will be required to assess the potential risk due to landfill gas migration from the NENT Landfill to the construction and operation of the Project, according to the EPD/TR8/97 Landfill Gas Hazard Assessment Guidance Note (Guidance Note) issued by the Environmental Protection Department (EPD) of the HKSAR.

1.1.3 Aurecon Hong Kong Limited (Aurecon) was appointed by Vannex International Limited (Vannex) as the Environmental Consultant to undertake this landfill gas hazard assessment, which included a review of the qualitative risk assessment taking into account the preliminary design of the Project to assess the potential risk due to landfill gas migration based on the latest construction methodology and building design, and to recommend appropriate protective and preventive measures to ensure the Project to be constructed and operated without undue risk to safety.

1.1.4 The objectives of this landfill gas hazard assessment are:

- Preliminarily review the currently available information of NENT Landfill, particularly the best available environmental monitoring records to identify the potential sources of landfill gas;
- Identify the possible landfill gas pathways through the ground and/or underground cavities, utilities or groundwater, and evaluate the conditions of these pathways through which the landfill gas must pass if it is to reach the works areas;
- Identify the elements of the Project (Target) that are sensitive to landfill gas;
- Preliminarily and qualitatively assess the risk that landfill gas may pose to the Target for each of the Source-Pathway-Target combination; and
- Recommend options of suitable landfill gas protection measures for potential landfill gas migration and monitoring requirements if necessary.

2 NENT LANDFILL

2.1 History

2.1.1 NENT Landfill is located at Ta Kwn Ling, New Territories and the landfill is one of the three strategic landfills in operation in Hong Kong and was designed with a capacity of approximately 35 Mm^3 of waste. NENT landfill was commissioned in 1995 and receives municipal waste, construction waste and special waste from the North East New Territories, and Yuen Long and Sha Tin Transfer Stations solely by road, with an occupying about 108 ha total site area and 64 ha landfilling area of land.

2.1.2 The EPD commissioned a study in Year 2000 on the Extension of Existing Landfills and Identification of Potential New Waste Disposal Sites. Amongst the potential sites recommended in this territory-wide study is the extension of NENT Landfill, with a target capacity of about 19 Mm^3. The proposed extension: NENTX of about 70 ha is located immediately east of the existing NENT Landfill. A large proportion of the extension area is in fact the previous Stockpile and Borrow Area of the existing NENT Landfill. The NENTX project is currently under construction stage.

2.2 Landfill Gas and Leachate Control

2.2.1 NENT Landfill has been incorporated with an effective landfill gas and leachate management system (**Figure 2.1**) in which a coordinated approach to landfill gas and leachate monitoring, collection, extraction, flaring and utilisation in accordance with international best practices for landfill operations. The landfill gas extraction system includes extraction wells and pipework installed within the landfill cap connecting a pumping station on-site. It also incorporates a separate collection system connected to perimeter extraction wells isolated from the main system so that it is operated independently for migration control. The NENT Landfill contractor is undertaking routine maintenance and checking of the landfill gas extraction and leachate treatment system to ensure they are operating satisfactorily.

2.2.2 Landfill gas from the deposited waste is pumped to a landfill gas utilisation plant where the landfill gas is used to generate electricity for the site need. Landfill gas is also utilised as a heat source for the ammonia stripping processing plant in the leachate treatment processing plant. Surplus landfill gas will be completely burnt in the gas flaring system. Methane is also recovered and purified from landfill gas, then exported from NENT Landfill to Tai Po Gas Plant for use as a fuel source for the manufacturing of Towngas.

2.2.3 NENT Landfill includes a leachate treatment plant at the northwest corner of the site which operates at a treatment capacity of 800 m3/day during the dry season (November to April) and 1,200 m3/day during wet season (May to October). The system includes six aeration/storage lagoons with associated dosing and desludging facilities, and an ammonia stripping processing plant. After treatment, the effluent is discharged via a dedicated rising main to Shek Wu Hui Sewage Treatment Works in Sheung Shui.

2.2.4 As the landfill site is lined, and landfill gas and leachate are collected and treated, this effectively controls sub-surface off-site migration of landfill gas and leachate. Typical details of the composite liner system (including an impermeable liner) installed at NENT Landfill are shown in **Figure 2.2**. The NENT Landfill contractor will be required to continue the control and monitoring of landfill gas and leachate following closure of the landfill for a period of 30 years. Recent monitoring results from the monitoring wells located along the boundary of NENT Landfill have been reviewed. The locations of monitoring wells are shown in **Figure 2.3** and the landfill gas monitoring data between August 2019 and August 2024 provided by the EPD (**Appendix A**) are summarised in **Table 2.1**.

Table 2.1: EPD's Landfill Gas Monitoring Data of NENT Landfill (August 2019 to August 2024)

Location	Methane (% gas)*		Carbon Dioxide (% gas)	
	Range	Average	Range	Average
A1	0.0 - 0.0	0.0	0.1 - 3.4	0.3
A2	0.0 - 0.0	0.0	0.1 - 4.5	1.4
A3	0.0 - 0.0	0.0	0.1 - 7.2	1.9
A4	0.0 - 0.0	0.0	0.1 - 9.0	3.8
A5	0.0 - 0.0	0.0	0.1 - 9.0	1.8
A6	0.0 - 0.0	0.0	0.1 - 5.8	2.0
A7	0.0 - 0.0	0.0	0.0 - 3.7	0.7
A8	0.0 - 0.0	0.0	0.1 - 3.8	0.5
A9	0.0 - 0.0	0.0	0.1 - 9.0	1.4
A10	0.0 - 0.0	0.0	0.1 - 5.5	0.7
A11	0.0 - 0.0	0.0	0.1 - 4.6	1.2
B12	0.0 - 0.1	0.0	0.1 - 4.7	1.6
B13	0.0 - 0.0	0.0	0.1 - 4.7	1.8
B14	0.0 - 0.0	0.0	0.1 - 4.9	1.2
B15	0.0 - 0.0	0.0	0.1 - 5.4	0.9
B17	0.0 - 0.0	0.0	0.1 - 6.7	1.9
B18	0.0 - 0.0	0.0	0.1 - 3.6	1.1
B19	0.0 - 0.0	0.0	0.1 - 4.8	1.2
B20	0.0 - 0.0	0.0	0.1 - 2.9	1.4
B21	0.0 - 0.0	0.0	0.1 - 3.4	1.2
B22	0.0 - 0.0	0.0	0.1 - 3.5	0.8
B23	0.0 - 0.4	0.0	0.1 - 5.3	0.9
B24	0.0 - 0.0	0.0	0.1 - 4.3	0.9
B25	0.0 - 0.1	0.0	0.1 - 4.6	1.9
B26	0.0 - 1.0	0.0	0.1 - 5.2	1.1
B27	0.0 - 0.0	0.0	0.1 - 2.3	0.7
A28	0.0 - 0.0	0.0	0.1 - 6.9	1.2
A29	0.0 - 0.0	0.0	0.1 - 8.3	1.9
A30	0.0 - 0.0	0.0	0.0 - 2.4	1.1

*Note: For the concentration of Methane, <0.1% gas of monitoring result was detected for all monitoring wells which were under the detection limit, therefore 0% of Methane gas concentration has been assumed for the above calculation.

2.2.5 Nil or minimal concentration of methane have been observed for all monitoring wells along the boundary of NENT Landfill which indicate that there is no sub-surface off-site migration of methane of the landfill. The average carbon dioxide concentrations detected in all these monitoring wells ranged from 0.7% to 1.9% (v/v) while the maximum gas concentrations ranged from 0% to 8.3% (v/v). Abnormality of carbon dioxide level was record in some monitoring wells, with the cause of abnormalities likely being the presence of the carbonate source and natural biological activities in the soil due to natural source but not landfill activities (all the abnormalities has been reviewed by the Independent Consultant of NENT Landfill and it was concluded that all of them were not originated from NENT Landfill).

2.3 Geology

2.3.1 **Figure 2.4** shows a geological map of NENT Landfill site and its surrounding areas, which are composed of entirely the Tai Mo Shan Formation of the Upper Jurassic Repulse Bay Volcanic Group. The formation is dominantly lapilli to coarse-ash crystal tuff with intercalcated sedimentary rocks, most of which have been metamorphosed. The intercalation of sedimentary rocks in the Tai Mo Shan Formation are well exposed to Wong Mau Hang Shan and 200m north of Ngong Tong. These rocks are composed of mainly purple or brown fine-grained sericitic sandstone and greenish grey or reddish brown

phyllite. At Heung Yuen Wai, 600m north of Wong Mau Hang Shan, the outcrops mainly phyllite (siltstone or mudstone if in an unmetamorphosed state). No major natural geological fault is identified in the area between NENT Landfill and the Project site.

2.4 Utilities

2.4.1 It is known that no underground utilities currently exist in the area between NENT Landfill and the Project site. There are two sewer pipes running in parallel with the existing road and located outside and at the southern end of the Project site, as shown in **Figure 2.5**. It is anticipated that future utilities supporting the Project site will be laid, including electricity, telecommunication, water, drainage, etc.

2.5 Description of the Project

2.5.1 The Project consists of a building with 2 storeys (Ground Floor and First Floor) and a building footprint of 1,550m2 immediately adjacent to the Leachate Storage Lagoon of the Leachate Treatment Works of NENT Landfill. The tentative floor plans of the Project building are shown in **Figure 2.6**.

2.5.2 As shown in **Figure 2.6**, the rooms and compartments on Ground Floor of the Project building are identified below:

- Computer, printer disposal and storage area (with weighbridge);
- Crushing and screening area (with preliminary disassembly area, fine disassembly area, and milling machine);
- Temporary storage area;
- Office;
- Landing platform (loading/unloading bays);
- Car parks;
- Guard room;
- Electroless battery area;
- Toilets;
- Carbonization furnace areas;
- Discharge area;
- Classification area;
- Salt soak; and
- Air filter area.

Outside the Project building, there are an underground fire cistern area, storage room, pump room, and electric meter room, which are adjacent to a 7m-wide road access for the ingress and egress.

2.6 Construction Methodology

2.6.1 Works associated with the construction of the Project would include open excavation for the underground fire cistern area and the associate structures and the laying of necessary pipes and cables. With respect to the construction method, there will be no narrow and deep trench (deeper than 1.5m below adjacent ground levels) to be excavated for the construction. The laying of new underground utilities services and removal of trees/vegetation would be carried out.

3 ASSESSMENT METHODOLOGY

3.1 General

3.1.1 The procedure is based on the Source-Pathway-Target method recommended in the Guidance Note as described below:

- Source - the location, nature and likely quantities/ concentration of landfill gas which have the potential to affect the landfill extension.
- Pathway - the ground and groundwater conditions, through which the landfill gas must pass if they are to reach the development.
- Target - the elements of the development that are sensitive to the effects of the landfill gas.

3.1.2 The landfill gas source, pathway and target are categorised for the assessment. An assessment of the overall risk is made based on the risk category as summarised in below, following the combination of NENT Landfill and the Project during construction and operation stages.

3.2 Source

3.2.1 The classification of the Source (i.e. landfill) is determined as follows:

- **Minor** - Landfill sites at which gas controls have been installed and proven to be effective by comprehensive monitoring which has demonstrated that there is no migration of gas beyond the landfill boundary (or any specific control measures) and at which control of gas does not rely solely on an active gas extraction system or any other single control measure which is vulnerable to failure; or

  Old landfill sites where the maximum concentration of methane within the waste, as measured at several locations across the landfill and on at least four occasions over a period of at least 3 months (preferably longer), is less than 5 % by volume (v/v).

- **Medium** - Landfill site at which some form of gas control has been installed (e.g. lined site or one where vents or barriers have been retrospectively installed) but where there are only limited monitoring data to demonstrate its efficacy to prevent migration of gas; or

  Landfill site where comprehensive monitoring has demonstrated that there is no migration of gas beyond the landfill boundary but where the control of gas relies solely on an active gas extraction system or any other single control system which is vulnerable to failure.

- **Major** - Recently filled landfill site at which there is little or no control to prevent migration of gas or at which the efficacy of the gas control measures has not been assessed; or

  Any landfill site at which monitoring has demonstrated that there is significant migration of gas beyond the site boundary.

3.3 Pathway

3.3.1 The type of pathway can be broadly classified based on various geological features of the landfill extension site such as permeability of soil, spacing, tightness and direction of fissures/ joints; topography; depth and thickness of the medium through which the gas may migrate (also affected by groundwater level); nature of strata over the potential pathway; number of media involved; and depth to groundwater table and flow patterns, etc. In general, the type of pathway can be broadly classified is as follows:

- Very Short/Direct — Path length of less than 50m for unsaturated permeable strata and fissured rock or less than 100m for man-made conduits.
- Moderate Short/Direct — Path length of 50-100m for unsaturated permeable soil or fissured rock or 100-250m for man-made conduits.
- Long/Indirect — Path length of 100-250m for unsaturated permeable soils and fissured rock.

3.4 Target

3.4.1 Different types of targets may be broadly classified as follows:

- High Sensitivity — Buildings and structures with ground level or below ground rooms/voids or into which services enter directly from the ground and to which members of the general public have unrestricted access or which contain sources of ignition;

  This would include any developments where there is a possibility of additional structures being erected directly on the ground on an ad hoc basis and thereby without due regard to the potential risks.
- Medium Sensitivity — Other buildings, structures or service voids where there is access only by authorised, well trained personnel, such as the staff of utility companies, who have been briefed on the potential hazards relating to landfill gas and the specific safety procedures to be followed;

  Deep excavation.
- Low Sensitivity — Buildings/structures which are less prone to gas ingress by virtue of their design (such as those with a raised floor slab);

  Shallow excavation;

  Developments which involve essentially outdoor activities but where evolution of gas could pose potential problems.

3.4.2 The above examples of the different categories should be used as a general guide only and particular aspects of a building or development may render it more or less sensitive than indicated. Account should be taken of any particular circumstances when assigning a target to one of the three categories.

3.4.3 A qualitative assessment of the overall risk is made based on the risk category as summarised in **Table 3.1**, which is extracted from Guidance Note. For the purpose of categorising the landfill extension site, the category is based upon the highest level of risk

determined for any of the potential impacts identified in **Table 3.1**, in which the general implications fall into different overall risk categories as show in **Table 3.2**.

Table 3.1: Classification of Risk Category

Source	Pathway	Receiver Sensitivity	Risk Category
Major	Very Short/Direct	High	Very high
		Medium	High
		Low	Medium
	Moderately short/Direct	High	High
		Medium	Medium
		Low	Low
	Long/Indirect	High	High
		Medium	Medium
		Low	Low
Medium	Very Short/Direct	High	High
		Medium	Medium
		Low	Low
	Moderately short/Direct	High	High
		Medium	Medium
		Low	Low
	Long/Indirect	High	High
		Medium	Medium
		Low	Very Low
Minor	Very Short/Direct	High	High
		Medium	Medium
		Low	Low
	Moderately short/Direct	High	High
		Medium	Medium
		Low	Very Low
	Long/Indirect	High	High
		Medium	Medium
		Low	Very Low

Table 3.2: Measures on Risk Categorisation

Level of Risk	Implication
Very high	At the very least, extensive engineering measures and alarm systems are likely to be required. An emergency actions plan should also be developed so that appropriate actions may be immediately taken in the event of high landfill gas concentrations being detected within the development.
High	Significant engineering measures will be required to protect the planned development.
Medium	Engineering measures required to protect the development.
Low	Some precautionary measures will be required to ensure that the planned development is safe.
Very low	No protection or precautionary measures are required.

4 ASSESSMENT FINDING

4.1.1 The currently available information has been reviewed, including:

- Previous landfill gas hazard assessment studies related to NENT Landfill, including NENT Landfill Extension – Feasibility Study EIA; NENT Landfill Extension – Detailed Landfill Gas Hazard Assessment Report.
- Past landfill gas monitoring data of NENT Landfill (August 2019 to August 2024).
- Aerial photograph (Figure 1.2), geological map (Figure 2.3), approved Ta Kwu Ling North Outline Zoning Plan No. S/NE-TKLN/2, topographical plans, utilities plan (e.g. water, drainage, sewer, electricity, telecommunication, etc).
- Information about the NENT Landfill operation, e.g. landfill operation, leachate treatment works, landfill gas and leachate control, etc.
- Conceptual scheme of the proposed recycling plant (the Project) proposed by Vannex.

4.2 Source

4.2.1 The latest available landfill gas monitoring data of NENT Landfill are discussed in Section 2.2 above. NENT Landfill will be the source of potential risk of landfill gas migration. As NENT Landfill is a large operating landfill, it is a significant potential source of landfill gas. NENT Landfill was designed and constructed to incorporate international best practices to contain, manage and control waste and landfill gas. It is operated by an experienced international waste management contractor.

4.2.2 The potential off-site migration of landfill gas is assessed, taking into account the comprehensive and highly effective landfill gas collection and management system installed and operated. According to the NENT Landfill Extension EIA, it is acknowledged from the NENT Landfill monthly reports that the only justifiable exceedance recorded for surface gas monitoring in October to December 1997 was likely due to the proximities of monitoring locations to the active tipping faces. It was also recorded that the frequency of surface gas monitoring had been increased in accordance with the corrective actions when exceedances occurred. As such, the potential of off-site migration of landfill gas cannot be eliminated.

4.2.3 Given the large size of NENT Landfill and multiple landfill gas controls implemented, NENT Landfill was classified as a "**Medium**" source of potential landfill gas risk with reference to the Guidance Note.

4.3 Pathway

4.3.1 Landfill gas is generated under positive pressure as a result of microbial degradation of organic matter in the buried waste inside NENT Landfill, which creates a pressure gradient causing migration of the gas to points of lower pressure. Migration pathways are therefore determined by zones of the lowest resistance to gas movement. The potential pathways through which landfill gas may enter the Project site are of three-fold, namely:

- Through transmission along natural pathways such as fissures or joints in rock;
- Man-made pathways such as through permeable backfill in utilities trenches; or
- A combination of both.

The likely potential for each mode of transmission is clearly dependent on the geological conditions, which are discussed below.

Natural Pathway

4.3.2 There is no major fault line identified at the Project site connecting to NENT Landfill as the potential natural pathways for landfill gas migration to the vicinities of sensitive receivers as discussed in Section 2.3 above. As such, the natural pathway is classified as "**Long/Indirect**".

Man-made Pathway

4.3.3 As described in Section 2.4 above, there are two sewer pipes running in parallel with the existing road and located outside and at the southern end of the Project site, which are less than 100m as man-made conduits from the Project site, as shown in **Figure 2.5**. It is anticipated that future utilities supporting the Project site will also be laid, e.g. electricity, water, drainage, etc. As such, the man-made pathways are near sensitive receivers at the Project site and classified as "**Very Short/Direct**".

4.4 Target

4.4.1 As there will be no basement level at the Project site, the likelihood of landfill gas infiltration upon the Project construction and operation would be low. Potential targets associated with the Project would include:

- Excavation for utilities installation during the construction phase.
- Manholes, inspection chambers and voids of services and utilities during the operation phase.
- Ground floor areas within the Project's building block during the operation phase.

4.4.2 It is anticipated that shallow excavation for the utilities would be involved during the construction phase. According to the EPD's Landfill Gas Hazard Assessment Guidance Note, the level of risk for shallow excavations is categorised as "**Low Sensitivity**".

4.4.3 During the operation phase, some manholes, inspection chambers and voids of services and utilities will be present within the Project site. There is a risk of asphyxiation to persons using any insufficiently ventilated enclosed spaces, where landfill gas may accumulate. As the access to underground services voids will only allow authorised or well-trained personnel who have been briefed on the potential hazards related to landfill gas and specific safety procedures to be followed, the risk level of these targets is also categorised as "**Medium Sensitivity**".

4.4.4 The building block within the Project site is generally restricted to authorised personnel, so the risk level for the ground floor areas is categorised as "**Medium Sensitivity**".

4.5 Site Categorisation

4.5.1 Based on the above classification of the sources, pathways and targets, the qualitative landfill gas hazard assessment for the proposed data centre development is summarised in **Table 4.1**.

Table 4.1: Source-Pathway-Target Analysis

Source	Pathway	Target Sensitivity	Risk
NENT Landfill	Natural Pathways	Shallow excavation works during construction phase **Low Sensitivity Target**	**Very Low**

Source	Pathway	Target Sensitivity	Risk
Medium Source	**Long/Indirect Pathway**	Maintenance of services during operation phase **Medium Sensitivity Target**	**Medium**
		Ground floor areas during operation phase **Medium Sensitivity Target**	**Medium**
	Man-made Pathways **Very Short/Direct Pathway**	Shallow excavation works during construction phase **Low Sensitivity Target**	**Low**
		Maintenance of services during operation phase **Medium Sensitivity Target**	**Medium**
		Ground floor areas during operation phase **Medium Sensitivity Target**	**Medium**

4.5.2 According to the Guidance Note, for the purpose of categorising the Project site, the category is based on the highest level of risk nominated for any of the potential impacts identified. Based on **Table 4.1**, the overall risk level for the Project associated with NENT Landfill is classified as "**Medium**", which falls under Risk Category C according to **Table 3.2**. As such, engineering measures would be required to protect the Project, including the use of semi-active or enhanced passive gas control protection system.

5 RECOMMENDED PROTECTION MEASURES

5.1 Construction Phase

5.1.1 Specific safety procedures on landfill gas would be implemented to minimise the risks of fire and explosion, asphyxiation of workers, and toxicity effects. Precautions would also be clearly laid down and rigidly adhered to with respect to trenching and excavation, and creation of confined spaces at, near to or below ground level. Additional safety requirements during construction works would include the appointment of safety officer, safety measures, monitoring, and event action of gas being detected.

Safety Officer and Competent Person

5.1.2 Safety Officer, or competent person trained in the use of gas detection equipment and landfill gas-related hazards, would be resident on site throughout the ground-works. He/she would be provided with intrinsically safe portable instrument appropriately calibrated and capable of measuring the following gases in the ranges indicated:

- Methane: 0-100% Lower Explosion Limit (LEL) and 0-100% v/v
- Carbon dioxide: 0-100%
- Oxygen: 0-21%

Safety Measures

5.1.3 All personnel working on-site and all visitors to the site would be made aware of the possibility of ignition of gas in the vicinity of excavation and ground-work. Safety notices would be posted at prominent locations to warn the potential hazards. All safety procedures in Code of Practice on Safety and Health at Work in Confined Spaces issued by the Labour Department would be followed.

5.1.4 Those staff who work in, or have responsibility for “at risk” areas, including excavation workers, foremen and engineers within the NENT Landfill 250m Consultation Zone, would receive appropriate training on working in areas susceptible to landfill gas, fire and explosion hazards.

5.1.5 An excavation procedure to minimise landfill gas-related risk would be devised and implemented on-site.

5.1.6 In view of the close proximity of the works area to NENT Landfill, mechanical ventilation would always be used when workers are present in the excavated trenches.

5.1.7 No worker would be allowed to work alone at any time in or near to any excavation. At least one other worker would be available to assist with a rescue if needed.

5.1.8 Smoking, naked flames and all other sources of ignition would be prohibited within 15m of any excavation or ground-level confined space. “No Smoking” and “No Naked Flame” notices would be posted prominently on the construction site. Special warning notices such as “Prohibition of Hot Works”, etc would be posted in any temporary storage areas.

5.1.9 Welding, flame-cutting or other hot works would be confined to open areas at least 15m from any trench or excavation.

5.1.10 Welding, flame-cutting or other hot works would only be carried out in trenches or confined spaces when controlled by a “permit to work” procedure, properly authorised by the Safety Officer.

5.1.11 Permit to work procedure would be clearly established for the requirements of continuous monitoring of methane, carbon dioxide and oxygen throughout the period during with hot works in progress. The procedure would also require the presence of an appropriately qualified person, e.g. Safety Officer, in attendance outside the "confined area", who would be responsible for reviewing the gas measurements as they are made, and who would have executive responsibility for suspending the work in the event of unacceptable or hazardous conditions. Only those workers who are appropriately trained and fully aware of the potentially hazardous conditions would be permitted to carry out hot works in confined areas.

5.1.12 Ground level construction plant would be fitted with vertical exhausts at least 0.6m above ground level and with spark arrestors.

5.1.13 Any electrical equipment, e.g. motors and extension cords, would be intrinsically safe.

5.1.14 During piping assembly or conduit construction, all valves/seals would be closed immediately after installation. As construction progresses, all valves/seals would be closed as installed to prevent the migration of gases through the pipeline/conduit. All piping/conduit would be capped at the end of each working day.

5.1.15 Any mobile offices, equipment stores, mess rooms, etc installed on-site within the NENT Landfill 250m Consultation Zone would be located where gas free conditions would be proven by on-going monitoring. Building protection design measures would be incorporated into the temporary site offices to be located within the Consultation Zone with passive and active control systems and gas detection system as follows:

- Passive systems would be considered for low and medium risk conditions where gas emissions are expected to be at relatively low rates and concentrations and venting to atmosphere would be unlikely to cause hazard or nuisance due to low concentration or high dilution.

- Active systems would be considered where the rates of gas emission are expected to be too high to rely on passive ventilation or where sensitive targets exist requiring protection. Active systems are normally required for high risk areas where gas has been detected at the ground or close to the development site and the buildings are adjacent in the proximity to the source of gas. Active control would always be used in conjunction with passive barriers such as membranes in floors to ensure no leakage of air/gas flow through the floor or wall into buildings. Gas detection systems would be installed to monitor the extracted air flow and internal air spaces.

- Gas detection system would be used where a long-term use of the building development is required for regular system maintenance and calibration. If the gas detection system is the final defence, appropriate emergency action would be specified for the event of exceedance of trigger levels.

5.1.16 During construction, adequate fire extinguishing equipment, fire-resistant clothing and approved breathing apparatus sets would be made available on site. Fire drills would be organised at not less than 6 monthly intervals. A health and safety policy, standards and instructions would be formulated for site personnel to follow.

Landfill Gas Monitoring

5.1.17 Periodically during ground-works construction, the works area would be monitored for methane, carbon dioxide and oxygen using appropriately calibrated portable gas detection equipment.

5.1.18 The monitoring frequency and areas to be monitored would be set down prior to commencement of ground-works either by the Safety Officer or an appropriately qualified person.

5.1.19 Routine monitoring would be carried out in all excavations, manholes and chambers and any other confined spaces.

5.1.20 All measurements in excavations would be made with the monitoring tube located not more than 10mm from the exposed ground surface.

5.1.21 For excavations deeper than 1m, landfill gas monitoring would be made:

- At the ground surface before excavation commences.
- Immediately before any worker enters the excavation.
- At the beginning of each working day for the entire period the excavation remains open.
- Periodically through the working day whilst workers are in the excavation.

5.1.22 For excavations between 300mm and 1m deep, landfill gas monitoring would be made:

- Directly after the excavation has been completed.
- Periodically whilst the excavation remains open.

5.1.23 For excavations less than 300mm deep, landfill gas monitoring would be omitted at the discretion of the Safety Officer or other appropriately qualified persons.

5.1.24 Depending on the results of the measurements, timely and appropriate action would be required which may vary and should be set down by the landfill gas team. As a minimum, the action would cover that in **Table 5.1**.

Table 5.1 Event Action Plan Landfill Gas Monitoring

Parameter	*Measurement*	*Action*
Oxygen (O_2)	<19%	Ventilate trench/ void to restore O_2 level to >19%
	<18%	Stop works, evacuate personnel/ prohibit entry, and increase ventilation to restore O_2 level to >19%
Methane (CH_4)	>10% LEL*	Post 'No smoking' signs, prohibit hot works, and ventilate to attenuate CH_4 level to <10% LEL
	>20% LEL	Stop works, evacuate personnel/ prohibit entry, and ventilate to attenuate CH_4 level to <10% LEL
Carbon dioxide (CO_2)	>0.5%	Ventilate to attenuate CO_2 level to <0.5%
	>1.5%	Stop works, evacuate personnel/ prohibit entry, and ventilate to attenuate CO_2 level to <0.5%

* LEL: Lower Explosion Limit

Thorough Communication

5.1.25 As the entire Project site falls within the 250m Consultation Zone of NENT Landfill, the appointed construction contractor would consult the existing landfill restoration contractor regarding the potential landfill gas hazards and maintain close communications with this landfill restoration contractor throughout the construction works period, especially in case of gas leakage detected.

5.2 Operation Phase

5.2.1 Some general control measures for minimising the landfill gas risk are recommended as follows:

- No smoking be allowed in entire Project site;
- Provision of safety training to all staff of the Project; and
- Security control to restrict access to the Project premises.

5.2.2 Vannex will be responsible to train and ensure their staff to take appropriate precautionary measures at all times when entering the Project site. No general public will be permitted to unsupervised access to the Project site. Any proposed modification or addition to the structure in the Project should be subject to a further assessment of landfill gas hazard.

Compact Concrete Floor Slab with HDPE Membrane

5.2.3 For the floor slab on ground level, building materials e.g. dense, well-compacted concrete with minimum thickness 150mm would be used. The ground floor slab would be designed as suspended supported by piles socketed into rock. Any anticipated ground settlement to leave small empty voids to allow landfill gas accumulation would be taken into account.

5.2.4 HDPE (High Density Polyethylene) gas membrane would be installed below grade and at grade structures. The membrane system would provide a continuous high integrity barrier to prevent landfill gas ingress into the building and structures. The HDPE membrane would be with 10-12m/s or lower permeability.

5.2.5 The membrane would be installed across the entire area of the Project building and around the perimeter edges of the building. It would also be installed beneath any underground structures. Schematic and typical details of installation of HDPE membrane are illustrated in **Figures 5.1-5.2**.

Ventilation Control

5.2.6 If the entire building is provided with positive pressure, the rooms on ground floor, e.g. equipment rooms, switch rooms, toilets, security control rooms, communication rooms, store rooms, etc would be provided with fresh air supply intake from the roof according to the allowed maximum number of people in each room and monitored by Building Management System (BMS) to ensure compliance and proper control by increasing the ventilation in the event of rising landfill gas concentration as detected. Separate exhaust system would be installed to extract air to outdoor through the lower part of the ground floor. Schematic of the mechanical ventilation system is illustrated in **Figure 5.3**.

Automatic Gas Detection System

5.2.7 Automatic, wall-mounted landfill gas detectors would be installed to monitor the landfill gas levels especially in less ventilation where landfill gas may accumulate posing risks to occupants when access and with potential ignition sources, e.g. back of house corridors where less ventilated would be suspected, etc.

5.2.8 The detector system would be integrated with the BMS to ensure compliance and proper control by increasing the ventilation in the event of rising landfill gas concentration as detected. The sensors detect flammable gas by catalytic oxidation or infra-red principles and pass the data back to the BMS.

5.2.9 Typical details of the automatic gas detection system are illustrated in **Figure 5.4**.

Measures for Subsurface Building Services

5.2.10 Underground manholes would be labelled with warning signs for potential risk of landfill gas hazards.

5.2.11 Utilities under the building would be constructed with collar fitted measures or concrete around the utilities, which would be installed at the inlet/outlet of electricity, water, telecommunication and sewer, etc to intercept the landfill gas ingress into the building.

5.2.12 Typical details of the measures for subsurface building services are illustrated in **Figure 5.5**.

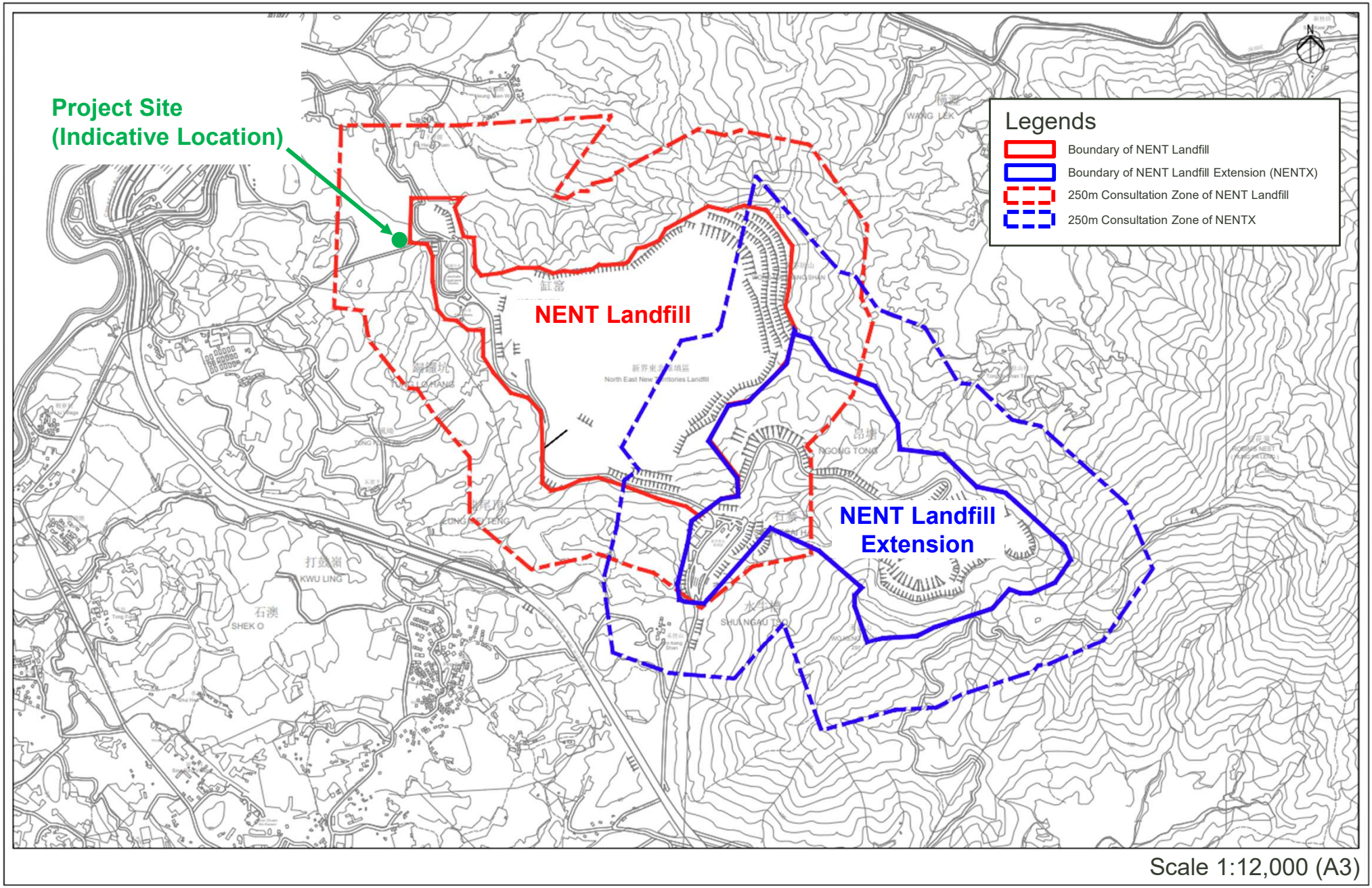
6 CONCLUSION

6.1.1 Given the Project site lies within the NENT Landfill 250m Consultation Zone, this landfill gas hazard assessment was undertaken to determine the overall level of landfill gas risk and categorised as “Medium”. Appropriate landfill gas protection measures and regular monitoring during both the construction and operation phases would be carried out.

6.1.2 When the detailed design of the Project is available, Vannex would finalise the detailed and specific design of landfill gas protection measures for the approval by the EPD.

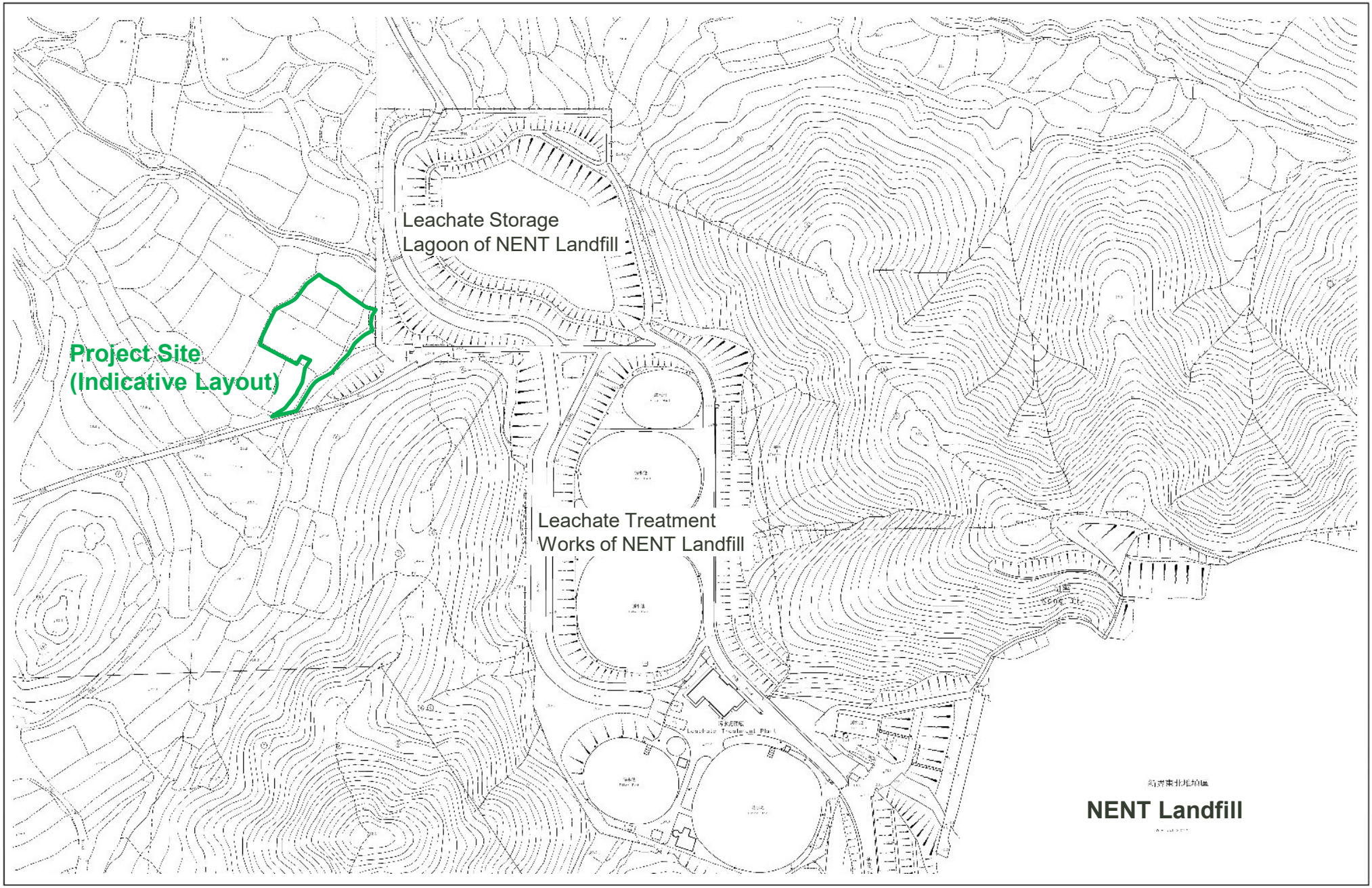
6.1.3 Provided that all the recommended measures and monitoring were implemented properly, the safety of construction workers and all personnel present in the Project site would be safeguarded and adverse impact is unlikely anticipated.

Figures



Scale 1:12,000 (A3)

aurecon Aurecon Hong Kong Limited	**Site Plan and 250m Consultation Zone of NENT Landfill**	**Figure 1.1**



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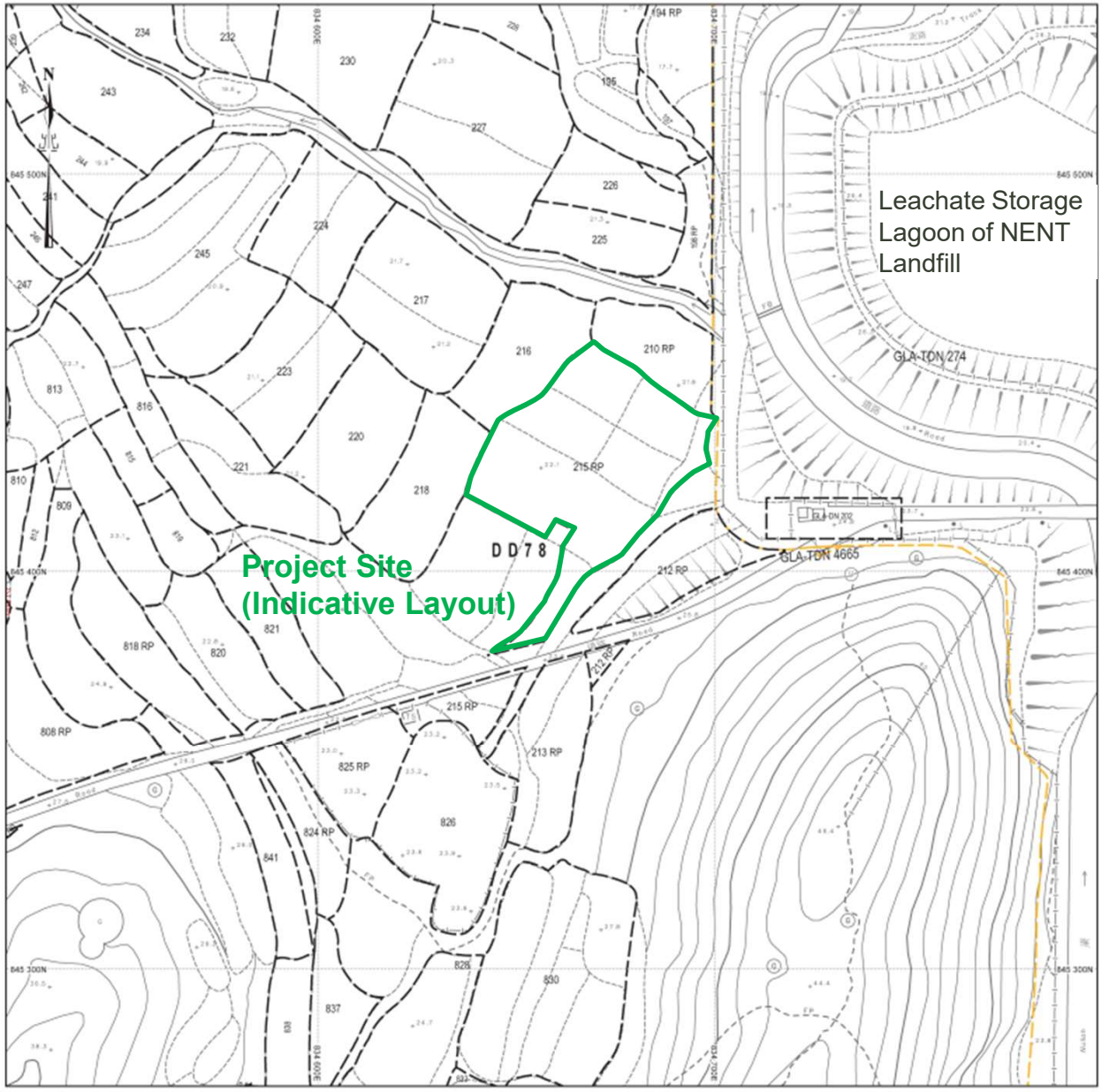
Project Site Layout Plan

Figure 1.2 (1 of 3)



SMO-P02 20240921102513 10

地段索引圖
LOT INDEX PLAN

摘要說明：本地段索引圖在其背景的地形圖上標示了各種永久和短期持有的土地的圖像界線。這些土地包括私人地段、政府撥地、短期租約批地，以及其他作核准用途的土地。請注意：(1)本索引圖上的資料會被不時更新而不作事先通知；(2)索引圖的更新或會延後於有關資料的實際變更；以及(3)本索引圖中顯示的界線僅供識別之用，資料是否準確可靠，應徵詢專業土地測量師的意見。

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Explanatory notes : This plan shows the graphical boundaries of different kinds of permanent and temporary land holdings with the topographic map in the backdrop. The land holdings as shown may include private lots, government land allocations, short term tenancies and other permitted uses of land. It must be noted that: (1) the information shown on this plan is subject to update without prior notification; (2) there may be time lag between an update and the related changes taken place; and (3) the graphical boundaries as shown are for identification purpose only and interpretation of their accuracy and reliability requires the advice from professional land surveyor.

Disclaimer : The Government shall not be responsible for any loss or damage howsoever arising from the use of this plan or in reliance upon its correctness, completeness, timeliness or accuracy.

地政總署測繪處
Survey and Mapping Office
Lands Department

比例尺 SCALE 1 : 1 000

米 metres 10 0 10 20 30 40 50 米 metres

Locality :	
Lot Index Plan No. :	ags_S00000132999_0001
District Survey Office :	Lands Information Center
Date :	20-Sep-2024
Reference No. :	3-NW-14A

aurecon Aurecon Hong Kong Limited	**Project Site Layout Plan**	**Figure 1.2 (2 of 3)**

地段索引圖圖例 LOT INDEX PLAN LEGEND

- 有蓋 Open-sided structure
- TS 寮屋 Temporary structure
- R 頹垣 Ruin
- 油站 Petrol station
- 石油氣加氣站 LPG filling station
- 人工斜坡 Artificial slope
- 削坡 Vertical cutting
- 欄，閘 Fence, Gate
- 牆 Free standing wall
- 隔音屏障 Noise barrier
- ARCH 拱門 Archway

- 電塔，塔架 Power line, Pylon
- 梯級 Steps
- FP 小徑 Footpath
- FB 行人橋 Footbridge
- 水道 Water course
- HWM 高潮標 High water mark
- 100 等高線 Contour
- G / 墳基 / 墳場 Grave / Cemetery
- U 骨殖甕 Burial urn
- B 路障 Barred access
- R 限制通道 Restricted access
- 耕地 Cultivation
- 沙 Sand
- 峭壁 Cliff
- 大石 Boulder
- 沼澤 Marsh or Swamp
- 沼林 Mangrove
- 樹 / 古樹 Tree / Old and valuable tree
- 擬建建築物 Proposed building
- 擬建道路 Proposed road
- 擬建路軌 Proposed rail
- 擬建海堤 / 河道 Prop. seawall / channel

BN 航標 Beacon
CUL 暗渠口 Culvert
CW 有蓋行人路 Covered walkway
E 電線杆 Electricity pole
ESS 電力變壓站 Electricity sub-station
ET 電力變壓器 Electrical transformer
EW 行人天橋 Elevated walkway
F 噴泉 Fountain
FT 燃料缸 Fuel tank
GT 氣體鼓 Gas tank
H 消防栓 Fire hydrant
HL 直升機坪 Helicopter landing pad
INC 焚化爐 Incinerator
L 燈柱 Lamp post
LT 燈標 Light
M 紀念性建築 Monument
P 亭 Pavilion
PH 抽水房 Pump house
PO 塘 / 池 Pond / Pool
RCP 垃圾站 Refuse collection point
SA 衛星天線 Satellite Antenna
SHR 神龕 Shrine
SLU 水閘 Sluice

TSZ 祠堂 Tsz Tong
VO 鄉 / 村公所 Village office
VS 通風井 Ventilation shaft
W 井 Well
WIP 施工中 Works in progress
WT 儲水缸 Water tank
危險倉庫 Dangerous goods store
法定古蹟 Declared monument
泳池 Swimming pool
廁所 Toilet
港鐵進出口 / 輕鐵月台 MTR access / LR platform
地段 / 政府撥地 / 軍事設施禁區 / 受保護地方 / 射擊練習區 Lot/Government Land Allocation/ Military Installations Closed Area/ Protected Place/Firing Area
建屋牌照 Building Licence
短期租賃 / 政府土地牌照 / 臨時政府撥地 Short Term Tenancy/Government Land Licence/ Temporary Government Land Allocation
訴訟案土地 Court Case
丈量約份界線 Demarcation District Boundary
地政處分區界線 District Lands Office Boundary

高程資料

高程以米為單位，由香港主水平基準(HKPD)向上計算。一般而言，平均海平面處於主水平基準以上約1.3米。
高程點的數值為約數，其位置以十字符號表示。
等高線之垂直間距為 2 米。
「高潮標」位於「主水平基準」以上 2.3 米處。

擬建基建

資料搜集來自不同源處，
本署不確保其準確性。

Elevation Data

Heights are shown in metres above the Hong Kong Principal Datum (HKPD). For general reference, the Mean Sea Level is about 1.3 metres above the HKPD.
Spot heights are approximate in value, with their positions depicted by crosses.
Contour lines are at 2 metre vertical interval.
The High Water Mark is 2.3 metres above the Principal Datum.

Proposed Infrastructure

Data were captured from various sources.
Their accuracy is not guaranteed.

地段號碼以紅色標示及前有"*"者表示該地段有地界測量資料。並非所有分拆地段之地界均顯示於此圖上。
Lot number shown in red colour and prefixed by a "*" indicates that land boundary survey information is available for the lot. Not all section boundaries are shown on this plan.

本地段索引圖則已根據一切有關資料編製。倘使用者發現任何遺漏，敬請通知地政總署測繪處。
This lot index plan is compiled to the best of our knowledge. In case users discover any omission, please inform the Survey and Mapping Office of Lands Department.

地政總署測繪處
Survey and Mapping Office
Lands Department

圖例版本 Legend version 20230707

Aurecon Hong Kong Limited	**Project Site Layout Plan**	**Figure 1.2 (3 of 3)**

Landfill Gas Recovery & Monitoring

Waste degradation produces landfill gas in significant quantities. Landfill gas is made up of several gases and chemicals such as methane which are potential flammable and harmful to health. At NENT Landfill, facilities have been installed to recover the gas for beneficial uses or proper treatment so that it will not harm the environment. The movement of landfill gas is monitored and controlled throughout the operation and aftercare of the landfills to reduce atmospheric emissions, to minimise the release of odourous emissions and to restrict subsurface migration.

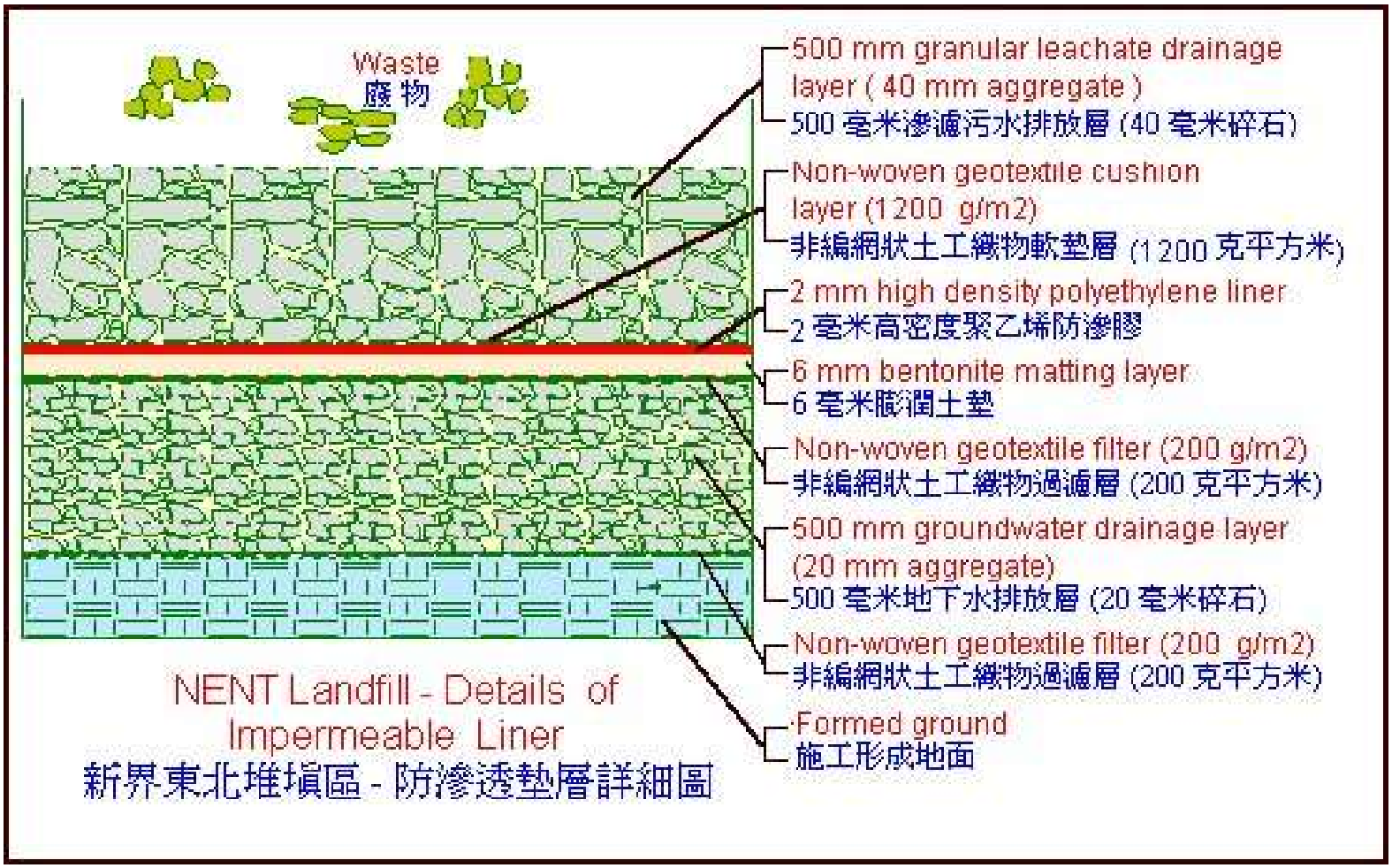
Landfill Gas Utilisation Plant

One beneficial use of landfill gas is to generate power. The generators at landfills provide the power for on-site usage. Landfill gas is also used as a source of heat energy for leachate treatment at landfills. For the case of NENT Landfill, facilities have been installed for the treatment and export of landfill gas for off-site beneficial uses.

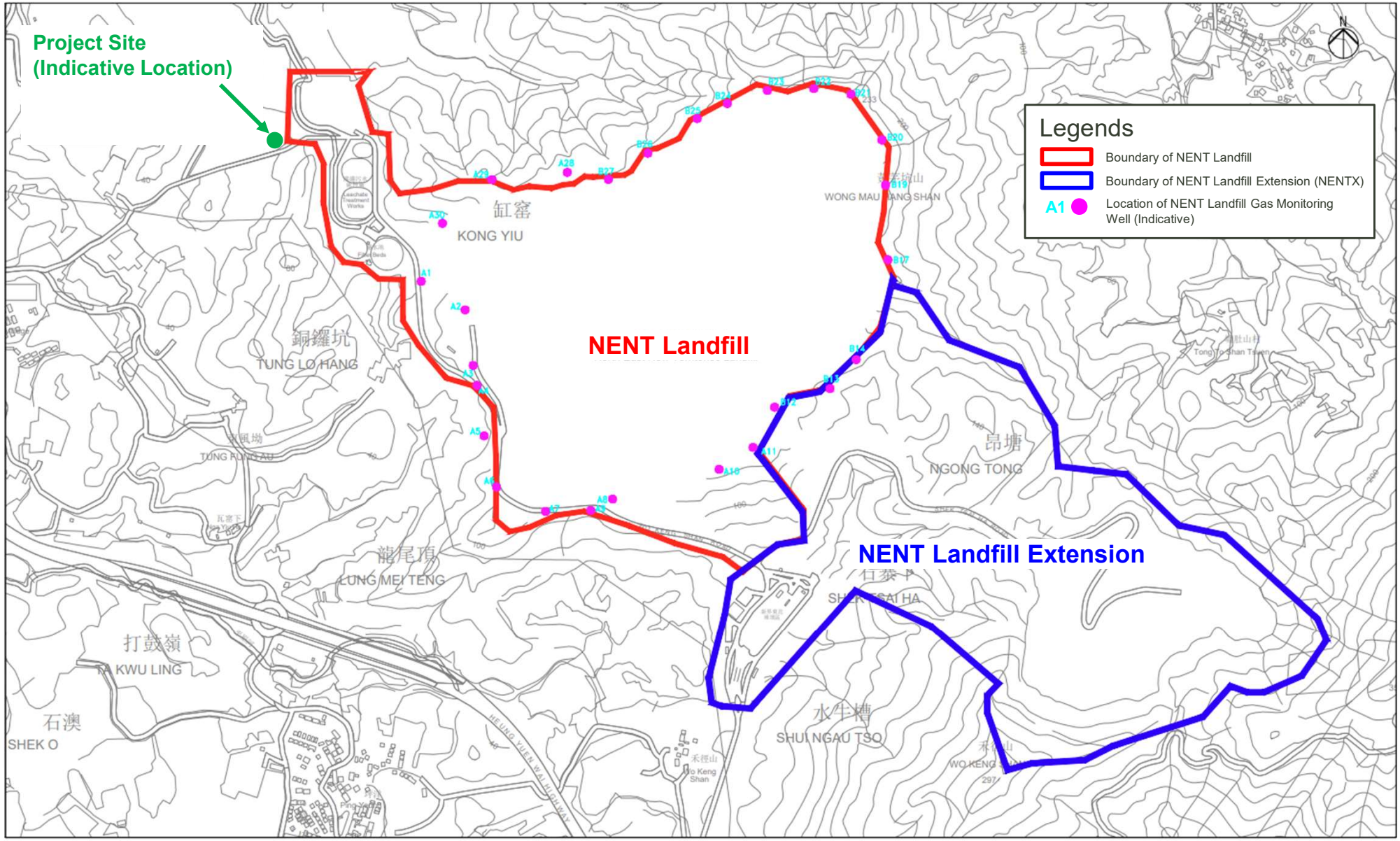
Leachate Collection System

Leachate is the liquid that has percolated through solid waste. The source of the liquid is primarily the water already present in the waste and any water induced from an external source such as rainwater and ground water. To prevent the movement of leachate beyond the landfill site, an effective impermeable liner collection system becomes critical. Leachate collection pipes are entrenched near the bottom of the liner layers and are connected to a main pipe that leads to a leachate holding tank.

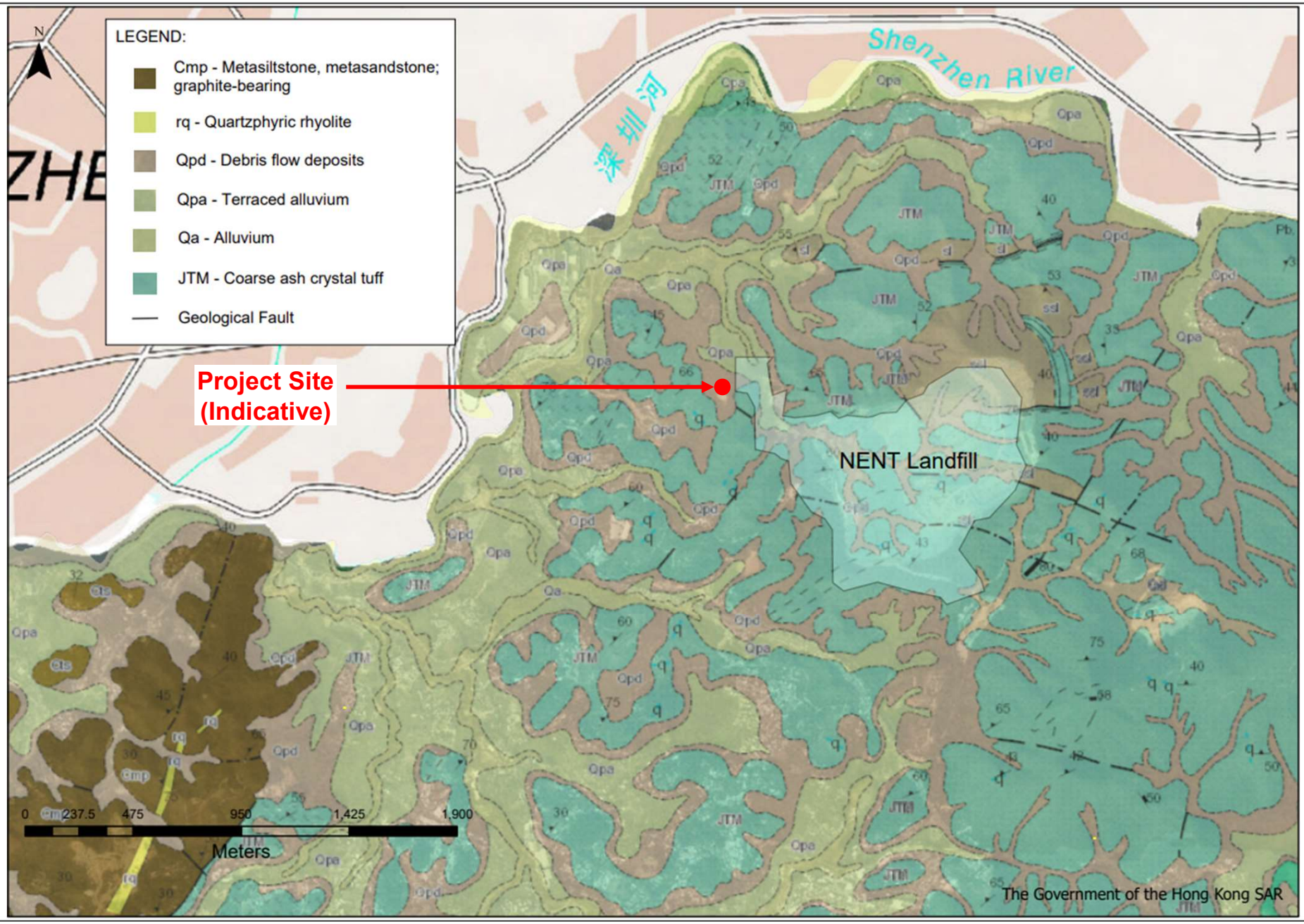
aurecon Aurecon Hong Kong Limited	**Landfill Gas Management System at NENT Landfill**	**Figure 2.1**



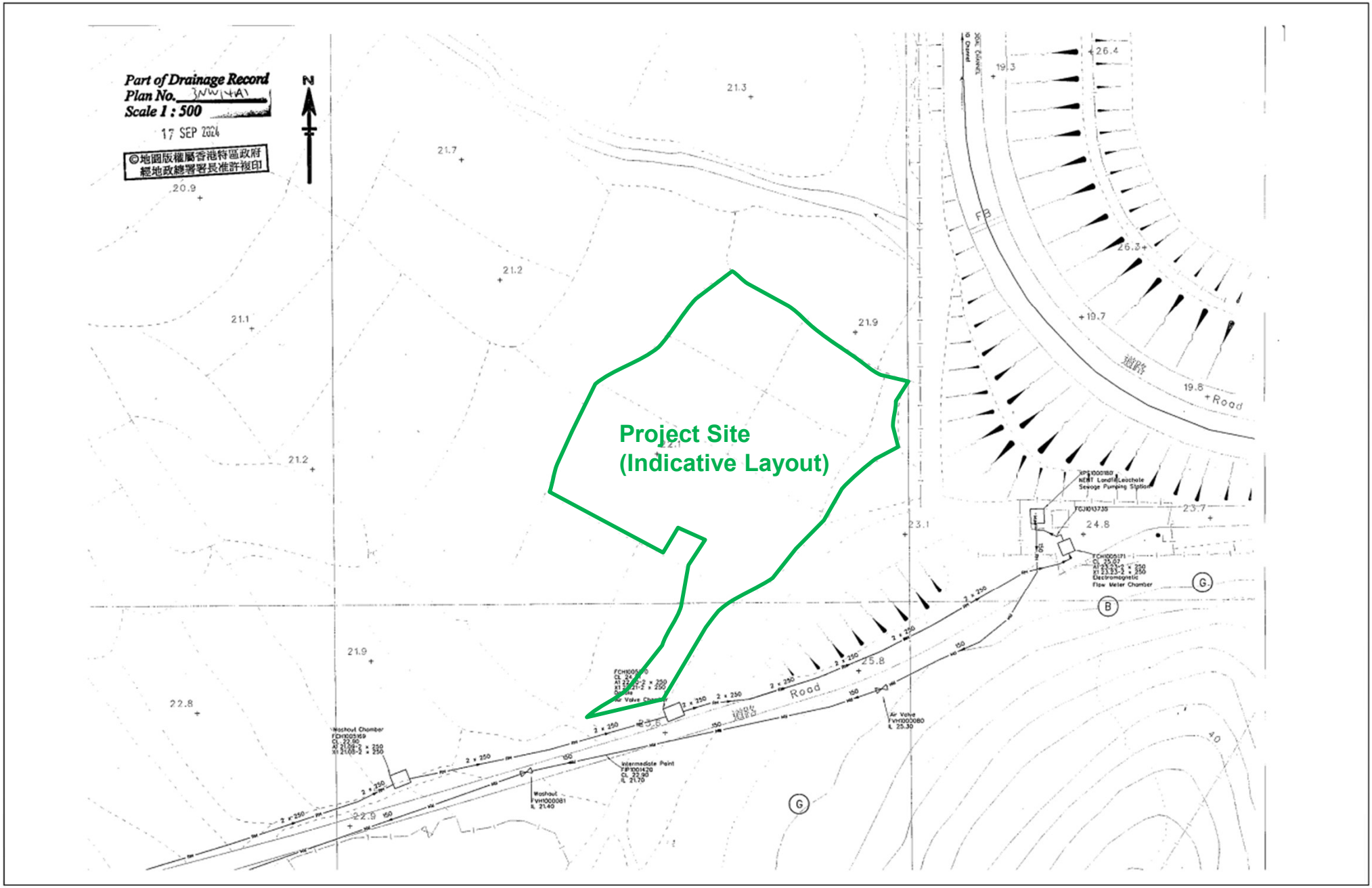
aurecon Aurecon Hong Kong Limited	**Typical Details of Composite Liner System at NENT Landfill**	**Figure 2.2**



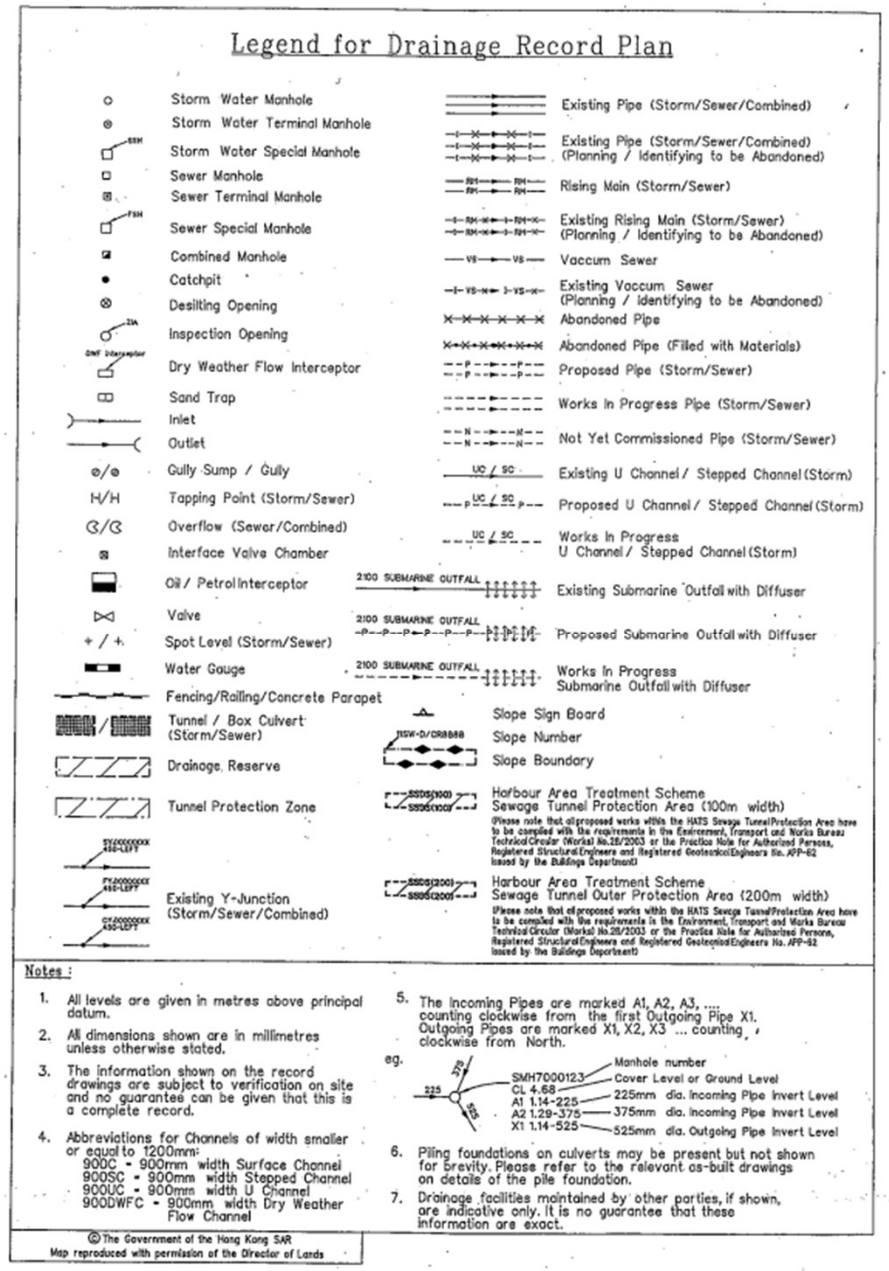
Aurecon Hong Kong Limited	**Location of NENT Landfill Gas Monitoring Wells**	**Figure 2.3**



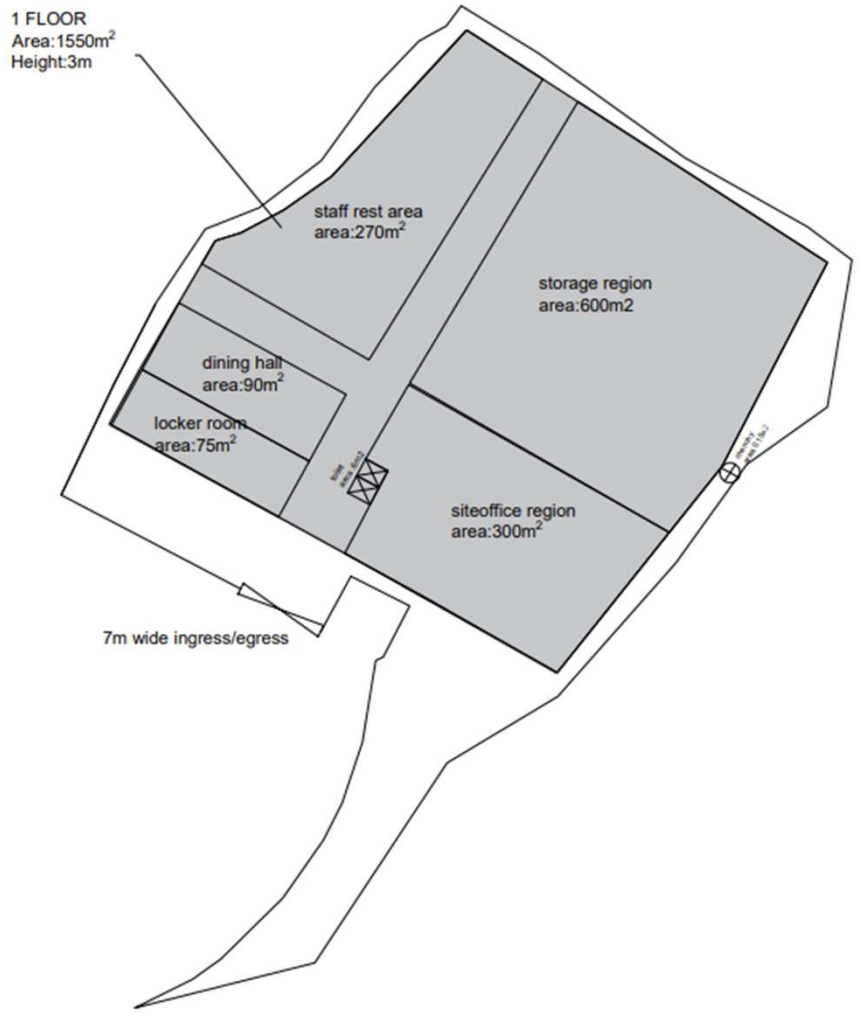
aurecon Aurecon Hong Kong Limited	**Geological Map Showing NENT Landfill and Surrounding Areas**	**Figure 2.4**



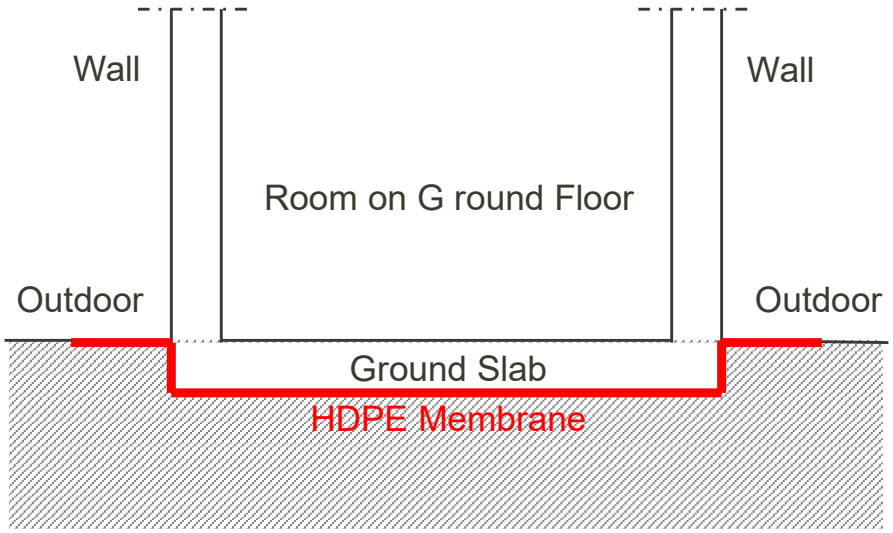
aurecon Aurecon Hong Kong Limited	**Drainage Record Plan near Project Site (from DSD)**	**Figure 2.5 (1 of 2)**

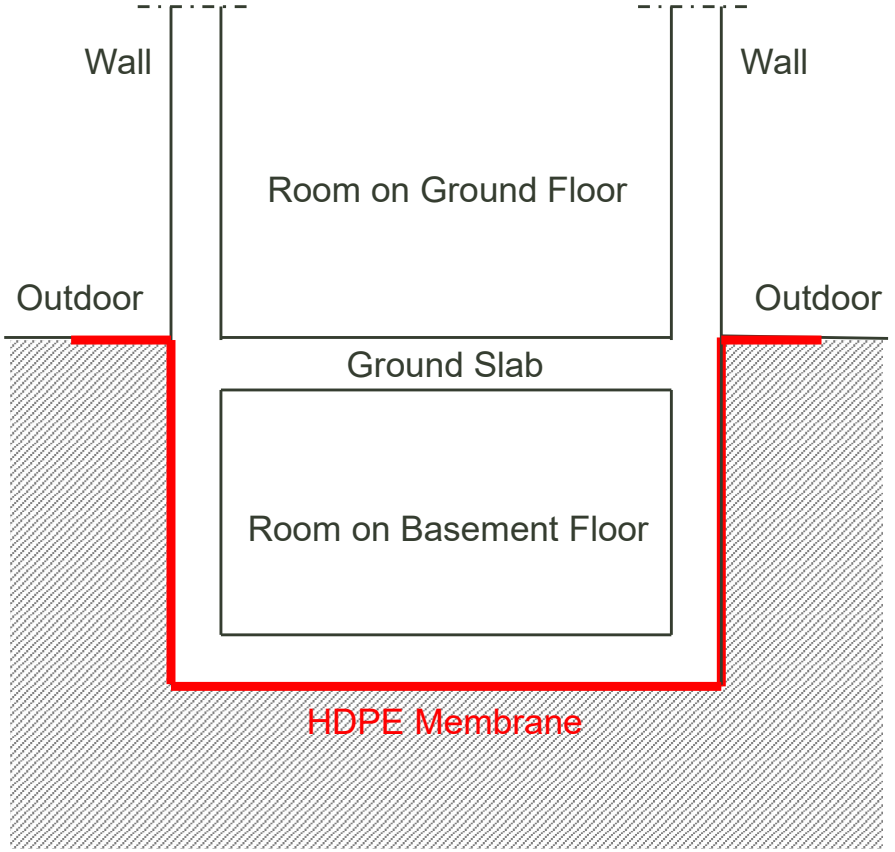


aurecon Aurecon Hong Kong Limited	**Drainage Record Plan near Project Site (from DSD)**	**Figure 2.5 (2 of 2)**

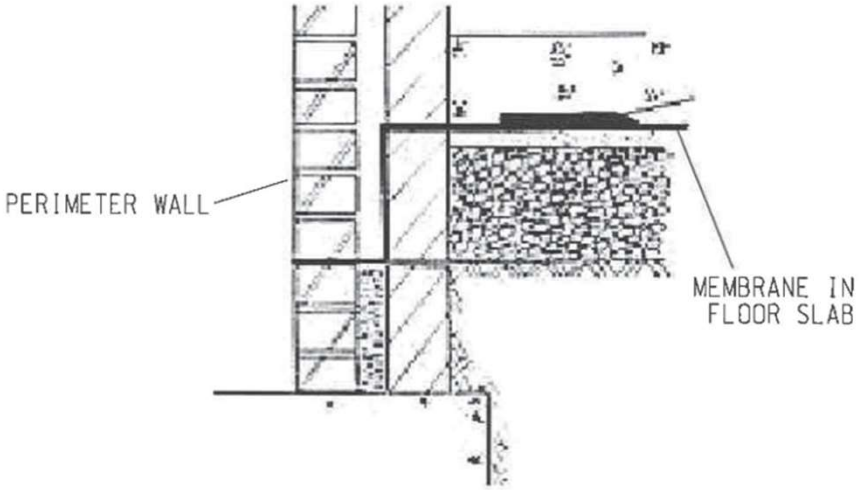


aurecon Aurecon Hong Kong Limited	**Tentative Project Building Floor Plan**	**Figure 2.6**

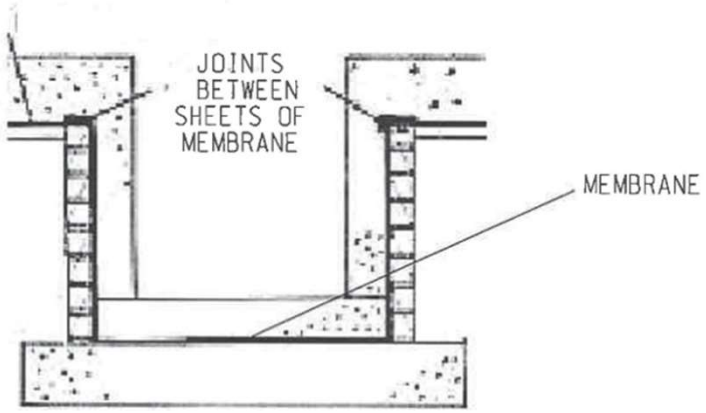




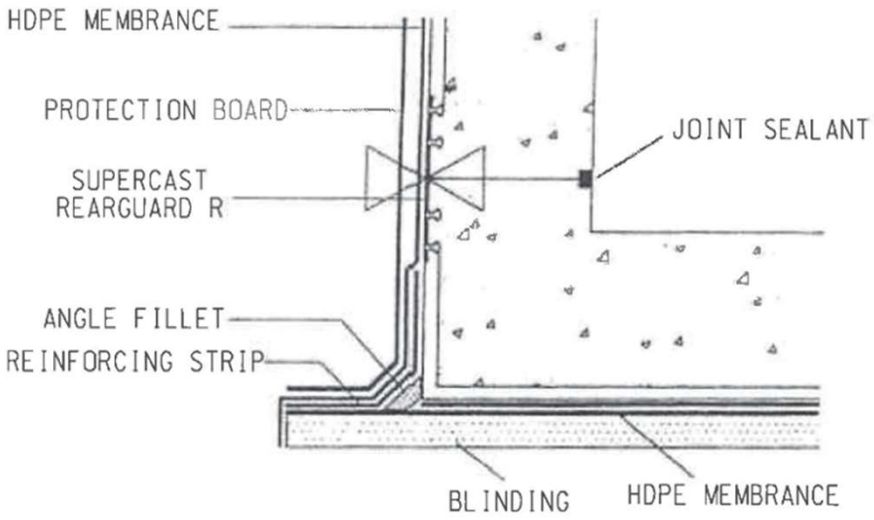
aurecon Aurecon Hong Kong Limited	**Schematic of Installation of HDPE Membrane**	**Figure 5.1**



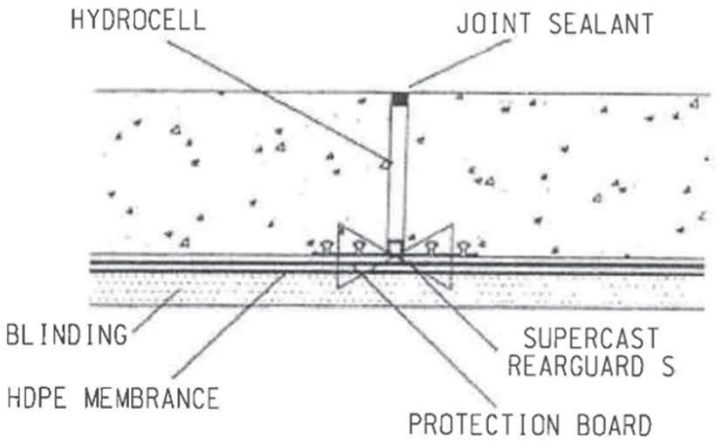
MEMBRANCE INSTALLATION
THROUGH THE PERIMETER WALL



HDPE MEMBRANE AT LIFT PIT

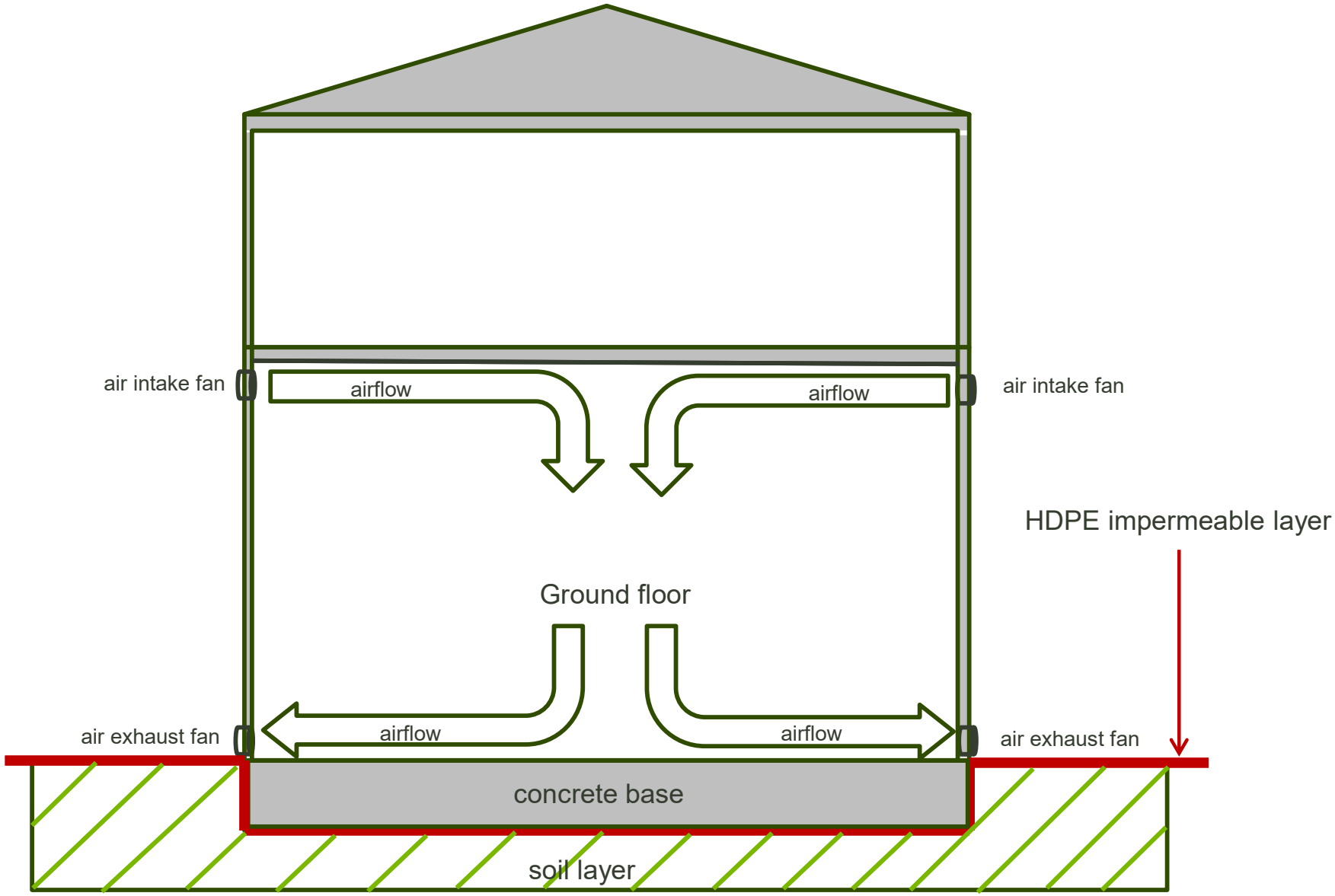


FLOOR/WALL JUNCTION



FLOOR

aurecon Aurecon Hong Kong Limited	**Typical Details of Installation of HDPE Membrane**	**Figure 5.2**

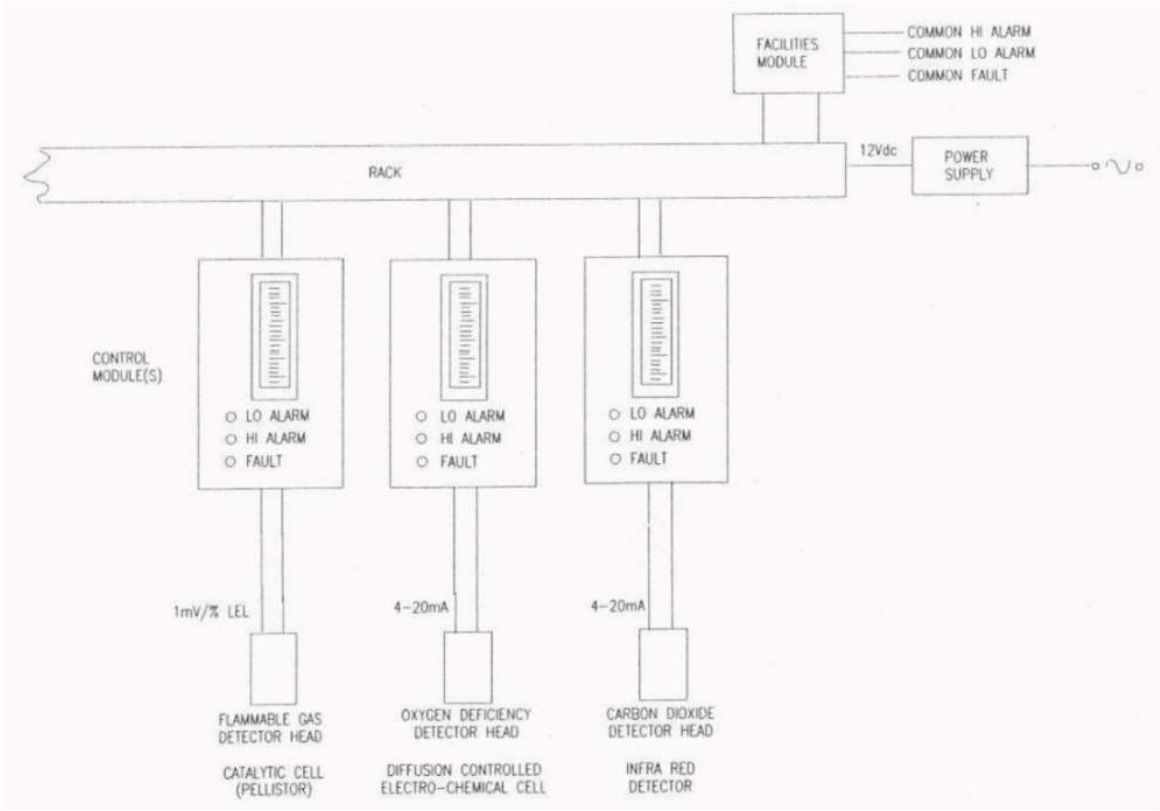


aurecon Aurecon Hong Kong Limited	**Schematic of Mechanical Ventilation System**	**Figure 5.3**

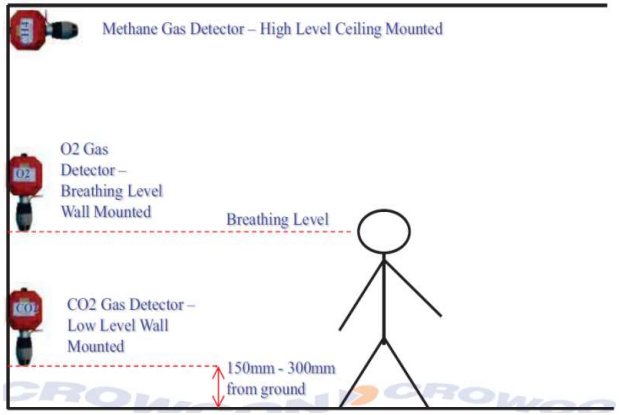
Specifications of Landfill Gas Detectors

序号	产品名称	仪器型号（代码）	量程	分辨率	检测精度	单位	数量	单价	合计	备注
1	在线式甲烷检测仪	GY/VGD-200-3M-Y	CH_4 ： 0-5000ppm CO2:0-5000ppm O2： 0-30%VOL	CH_4 ： 1ppm CO2:1ppm O2： 0.01%VOL	±3%F.S	台				品牌：GUOYUGRA:介质：CH4、CO2、O2， 量程：CH_4 ： 1ppm、CO2:1ppm O2： 0.01%VOL 车间检测，背景气体空气。检测原理：红外，电化学；（具体详见资料）

Schematic of Automatic Gas Detection System



Indicative Installation Levels of Landfill Gas Detectors



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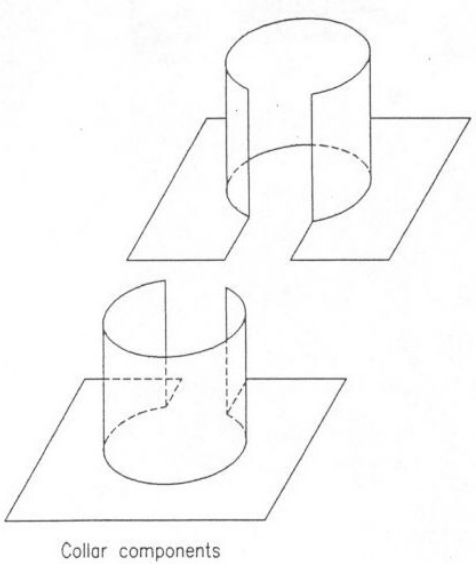
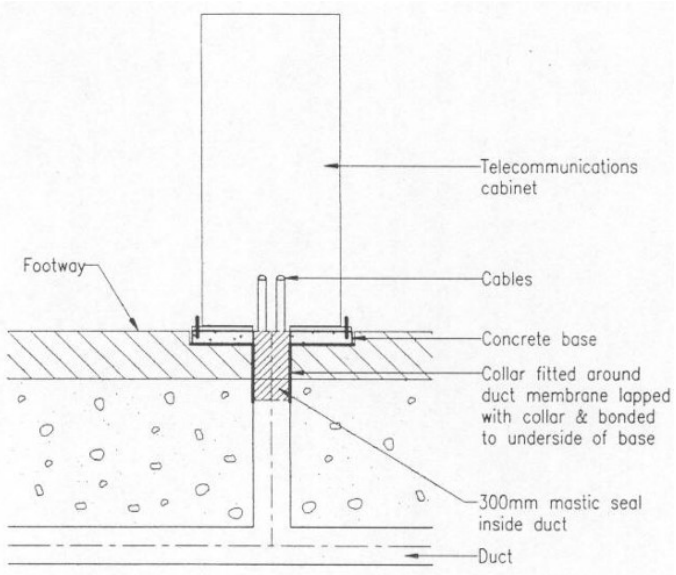
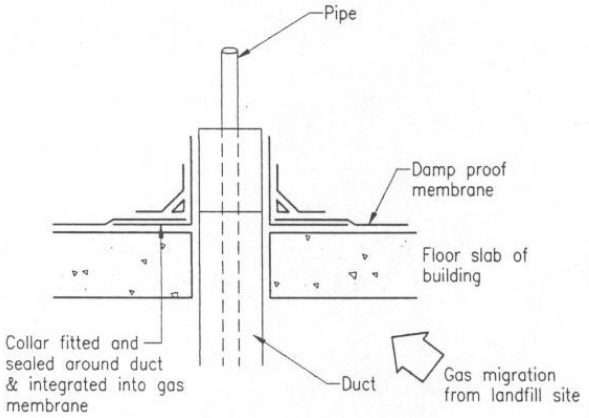
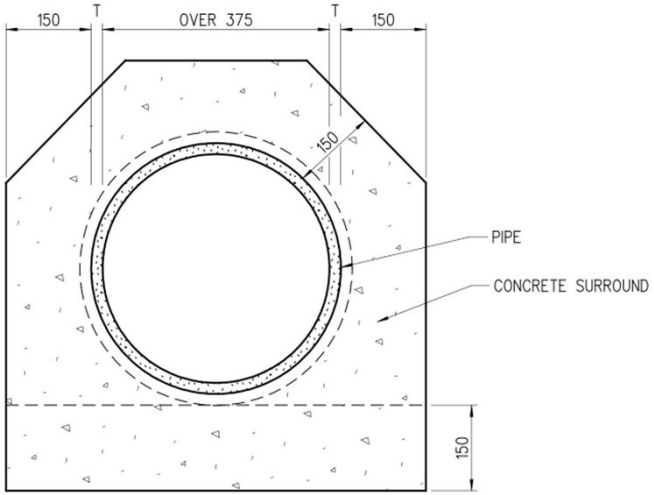
Typical Details of Automatic Gas Detection System

Figure 5.4









aurecon Aurecon Hong Kong Limited	**Typical Details of Measures for Subsurface Building Services**	**Figure 5.5**

Appendix A

Summary of Landfill Gas Monitoring Results of the Monitoring Wells for Existing NENT (From August 2019 to August 2024)

	Methane (% gas) *		Carbon Dioxide (% gas)	
Location	Range	Average	Range	Average
A1	0.0 - 0.0	0.0	0.1 - 3.4	0.3
A2	0.0 - 0.0	0.0	0.1 - 4.5	1.4
A3	0.0 - 0.0	0.0	0.1 - 7.2	1.9
A4	0.0 - 0.0	0.0	0.1 - 9.0	3.8
A5	0.0 - 0.0	0.0	0.1 - 9.0	1.8
A6	0.0 - 0.0	0.0	0.1 - 5.8	2.0
A7	0.0 - 0.0	0.0	0.0 - 3.7	0.7
A8	0.0 - 0.0	0.0	0.1 - 3.8	0.5
A9	0.0 - 0.0	0.0	0.1 - 9.0	1.4
A10	0.0 - 0.0	0.0	0.1 - 5.5	0.7
A11	0.0 - 0.0	0.0	0.1 - 4.6	1.2
B12	0.0 - 0.1	0.0	0.1 - 4.7	1.6
B13	0.0 - 0.0	0.0	0.1 - 4.7	1.8
B14	0.0 - 0.0	0.0	0.1 - 4.9	1.2
B15	0.0 - 0.0	0.0	0.1 - 5.4	0.9
B17	0.0 - 0.0	0.0	0.1 - 6.7	1.9
B18	0.0 - 0.0	0.0	0.1 - 3.6	1.1
B19	0.0 - 0.0	0.0	0.1 - 4.8	1.2
B20	0.0 - 0.0	0.0	0.1 - 2.9	1.4
B21	0.0 - 0.0	0.0	0.1 - 3.4	1.2
B22	0.0 - 0.0	0.0	0.1 - 3.5	0.8
B23	0.0 - 0.4	0.0	0.1 - 5.3	0.9
B24	0.0 - 0.0	0.0	0.1 - 4.3	0.9
B25	0.0 - 0.1	0.0	0.1 - 4.6	1.9
B26	0.0 - 1.0	0.0	0.1 - 5.2	1.1
B27	0.0 - 0.0	0.0	0.1 - 2.3	0.7
A28	0.0 - 0.0	0.0	0.1 - 6.9	1.2
A29	0.0 - 0.0	0.0	0.1 - 8.3	1.9
A30	0.0 - 0.0	0.0	0.0 - 2.4	1.1

Notes:

For the has concentration of Methane, <0.1% gas of monitoring result was detected for all monitoring wells which were under the detection limit therefore 0% of Methane gas concentration has been assumed for the table calculation.

Prepared by:

Aurecon Hong Kong Limited

Unit 1608, 16/F, Tower B, Manulife Financial Centre,

223 – 231 Wai Yip Street, Kwun Tong,

Kowloon Hong Kong S. A. R.

T: [redacted]

F: [redacted]

E: [redacted]

aurecon

Bringing ideas to life

ecember 2024

Fredrick Leong

From: lhchiang@epd.gov.hk
Sent: Saturday, 19 October 2024 3:49 PM
To: Fredrick Leong
Cc: amandanyyeung@epd.gov.hk; [redacted]
Subject: RE: Request for EPD's NENT Landfill Gas Monitoring Data
Attachments: Landfill Gas Monitoring Results (From August 2019 to August 2024).docx

Dear Fredrick,
5-year average LFG monitoring data of NENT is enclosed fyrp. Thanks.

Regards,

Johnny CHIANG
E(LD)24, EPD
[redacted]

From: Fredrick Leong <[redacted]>
To: "lhchiang@epd.gov.hk" <lhchiang@epd.gov.hk>
Cc: "amandanyyeung@epd.gov.hk" <amandanyyeung@epd.gov.hk>, "[redacted]" <[redacted]>
Date: 12/10/2024 18:25
Subject: RE: Request for EPD's NENT Landfill Gas Monitoring Data

Dear Johnny

Many thanks for sending through the past LFG monitoring data. Foe the completeness of a 5-year average data, would you please send me the data from August 2019 to Aug 2024? Many thanks for your help.

Fredrick Leong
Executive Director, Environmental Planning and Green Building - Hong Kong, Aurecon
T [redacted] **M** [redacted]

DISCLAIMER
From: lhchiang@epd.gov.hk <lhchiang@epd.gov.hk>
Sent: Thursday, 10 October 2024 1:55 PM
To: Fredrick Leong <[redacted]>
Cc: amandanyyeung@epd.gov.hk; [redacted]
Subject: RE: Request for EPD's NENT Landfill Gas Monitoring Data

[External email] This email was sent from outside Aurecon. Do not click links or open attachments unless you wer

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Dear Fredrick,

The landfill gas monitoring results from Jan 2020 to Aug 2024 is attached fyrp.

Points 4.2.2 and 4.2.3 of NENTX Landfill Gas Hazard Assessment Report are still valid:

4.2.2 - Nil or minimal concentration of methane have been observed for all monitoring wells along the boundary of NENT Landfill which indicate that there is no sub-surface off-site migration of methane of the landfill.

4.2.3 - Abnormality of CO2 level was record in some monitoring wells, the cause of abnormalities were the presence of the carbonate source and natural biological activities in the soil and it was considered due to natural source and not due to landfill activities and all the abnormalities has been reviewed by the Independent Consultant of NENT Landfill and it was concluded that all of them were not originated from the existing NENT Landfill

The location of landfill gas monitoring wells of NENT landfill in figure 4.2 of NENTX Landfill Gas Hazard Assessment Report remains valid.
https://www.nentx-ema.com/report/LandfillGasHazardAssessmentReportRev.2HTML/Figure/Figure%204.2%20Location%20of%20Landfill%20Gas%20Monitoring%20Wells%20of%20NENT%20Landfill.pdf

You are reminded that the landfill gas monitoring results shall only be used for landfill gas hazard assessment for the proposed development at Lot 215 RP (Part) in D.D. 78, Ta Kwu Ling North, New Territories.

Thank you.

Regards,

Johnny CHIANG
E(LD)24, EPD
[redacted]

From: Fredrick Leong <[redacted]>
To: "lhchiang@epd.gov.hk" <lhchiang@epd.gov.hk>
Cc: "amandanyyeung@epd.gov.hk" <amandanyyeung@epd.gov.hk>, "[redacted]" <[redacted]>
Date: 01/10/2024 14:56
Subject: RE: Request for EPD's NENT Landfill Gas Monitoring Data

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Dear Johnny

As discussed, I made reference to the Environmental Permit (EP-292/2007) submission: “Detailed Landfill Gas Hazard Assessment Report” under the North East New Territories (NENT) Landfill Extension project. The following information is listed for your reference:

Table 4.1 Summary of Landfill Gas Monitoring Results of the Monitoring Wells for Existing NENT (From January 2017 to December 2021)
https://www.epd.gov.hk/eia/register/english/permit/ep2922007/documents/dlghar/pdf/dlghar.pdf

Figure 4.2 Location of Landfill Gas Monitoring Wells of NENT Landfill
https://www.nentx-ema.com/report/LandfillGasHazardAssessmentReportRev.2HTML/Figure/Figure%204.2%20Location%20of%20Landfill%20Gas%20Monitoring%20Wells%20of%20NENT%20Landfill.pdf

Fredrick Leong
Executive Director, Environmental Planning and Green Building - Hong Kong, Aurecon
[redacted]

DISCLAIMER
From: lhchiang@epd.gov.hk <lhchiang@epd.gov.hk>
Sent: Tuesday, October 1, 2024 2:28 PM
To: Fredrick Leong <[redacted]>
Cc: amandanyyeung@epd.gov.hk; [redacted]
Subject: RE: Request for EPD's NENT Landfill Gas Monitoring Data

---

Dear Fredrick,

As discussed before, please provide the old landfill gas monitoring data of NENT landfill for my reference. Thanks.

Regards,

Johnny CHIANG
E(LD)24, EPD
[redacted]

From: Fredrick Leong <[redacted]>
To: "lhchian[redacted]e_d.gov.hk" <lhchiang@epd.gov.hk>
Cc: "[redacted]" <[redacted]>, "amandanyyeung@epd.gov.hk" <amandanyyeung@epd.gov.hk>
Date: 01/10/2024 09:27
Subject: RE: Request for EPD's NENT Landfill Gas Monitoring Data

---

Dear Johnny

Thanks for your reply. I'd like to attach the letter from our client, Vannex International Limited, accordingly. Please feel free to let us know if you require further information. Many thanks.

Fredrick Leong
Executive Director, Environmental Planning and Green Building - Hong Kong, Aurecon
[redacted]

At Aurecon, we encourage flexible working. If you receive an email from us outside your work hours, we don't expect you to read it, act on it, or reply until you return.

From: lhchiang@epd.gov.hk <lhchiang@epd.gov.hk>
Sent: Sunday, September 29, 2024 4:56 PM
To: Fredrick Leong <[redacted]>
Cc: [redacted]; amandanyyeung@epd.gov.hk
Subject: Re: Request for EPD's NENT Landfill Gas Monitoring Data

---

Dear Fredrick,

Before we consider your request, please provide the following information:

- appointment letter between Aurecon and Vannex
- appointment letter between Vannex and the applicant of TPO S16 (i.e. Mr. Chui Po Keung / Mr. Wong Sun Wo William)

Thanks.

Regards,

Johnny CHIANG
E(LD)24, EPD
[redacted]

From: Fredrick Leong <[redacted]>
To: "lhchian_@e_d.gov.hk" <lhchiang@epd.gov.hk>
Cc: "[redacted]" <[redacted]>
Date: 29/09/2024 14:19
Subject: Request for EPD's NENT Landfill Gas Monitoring Data

Dear Mr CHIANG Lai Hang, Johnny
EPO (Landfills & Dev)24
EPD

We (Aurecon) are appointed by our client, Vannex International Limited, to carry out a landfill gas (LFG) hazard assessment for a proposed development at Lot 215 RP (Part) in D.D. 78, Ta Kwu Ling North, New Territories

(attached with the location plan), which is known to fall within the 250m LFG Consultation Zone of NENT Landfill specified in the EPD's Landfill Gas Hazard Assessment Guidance Note.

I write on behalf of our client to obtain the NENT LFG monitoring data in the past 5 years so as to furnish the LFG hazard assessment. Look forward to hearing from you soon. Many thanks.

Fredrick Leong
Executive Director, Environmental Planning and Green Building - Hong Kong, Aurecon
[redacted]

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Unit 1608, 16/F, Tower B, Manulife Financial Centre, 223 – 231 Wai Yip Street, Kwun Tong, Kowloon Hong Kong S. A. R.
aurecongroup.com

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