



132kV Circuit Reinforcement at Discovery Bay Tunnel

Project Profile

PREPARED FOR



CLP Power Hong Kong Limited

DATE

04 September 2025

REFERENCE

0750437



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1. BASIC INFORMATION

1.1 PROJECT TITLE

The title of the project is '132kV Circuit Reinforcement at Discovery Bay Tunnel' (hereafter referred to as the 'Project').

1.2 NAME OF PROJECT PROPONENT

CLP Power Hong Kong Limited (CLP Power).

1.3 PURPOSE AND NATURE OF THE PROJECT

There are 2 series of existing 132kV cable circuits (between Sham Shui Kok and Discovery Bay) passing through Discovery Bay Tunnel for power supply to Discovery Bay. The Common Cable Infrastructures (CCIs) shared by these circuits are currently managed by third parties. To further enhance power supply reliability, CLP Power has reviewed and assessed the relevant transmission facilities, confirming that measures are necessary to further enhance their safety and power supply reliability.

CLP Power proposed to build a new 132kV transmission cable circuit at the location abutting Discovery Bay Tunnel, through a proposed micro-tunnel for cable laying. After the works are completed, the existing cable circuits running between Sham Shui Kok and Discovery Bay, and the proposed new cable circuit under the Project would be housed in separate cable corridors, which can further enhance reliability of power supply to Discovery Bay.

The proposed micro-tunnel will run through conservation area, country park and green belt, therefore Horizontal Directional Drilling (HDD) is preferred as a trenchless approach to mitigate potential impacts to the environment. The proposed cable circuit / HDD alignment, location of conservation area and land use of the surrounding environment are shown in **Figure 1.1**.

Consideration of alternative construction method and launching pit locations are given in **Section 1.4**.

This Project, as part of the CLP Power 2024-2028 Development Plan, has been approved by the HKSAR Government to uphold the safety and reliability of CLP Power's territory-wide network.

1.4 CONSIDERATION OF CONSTRUCTION METHODS AND LAUNCHING PIT LOCATIONS

1.4.1 CONSIDERATION OF CONSTRUCTION METHODS

The proposed cable circuit runs along the south of Discovery Bay Tunnel. The following possible construction methods have been considered and investigated:

Construction Method 1 – Open trenching

Construction Method 2 – Overhead line

Construction Method 3 – Trenchless cable laying by Tunnel Boring Machine (TBM)

Preferred Construction Method 4 – Trenchless cable laying by Horizontal Directional Drilling (HDD)

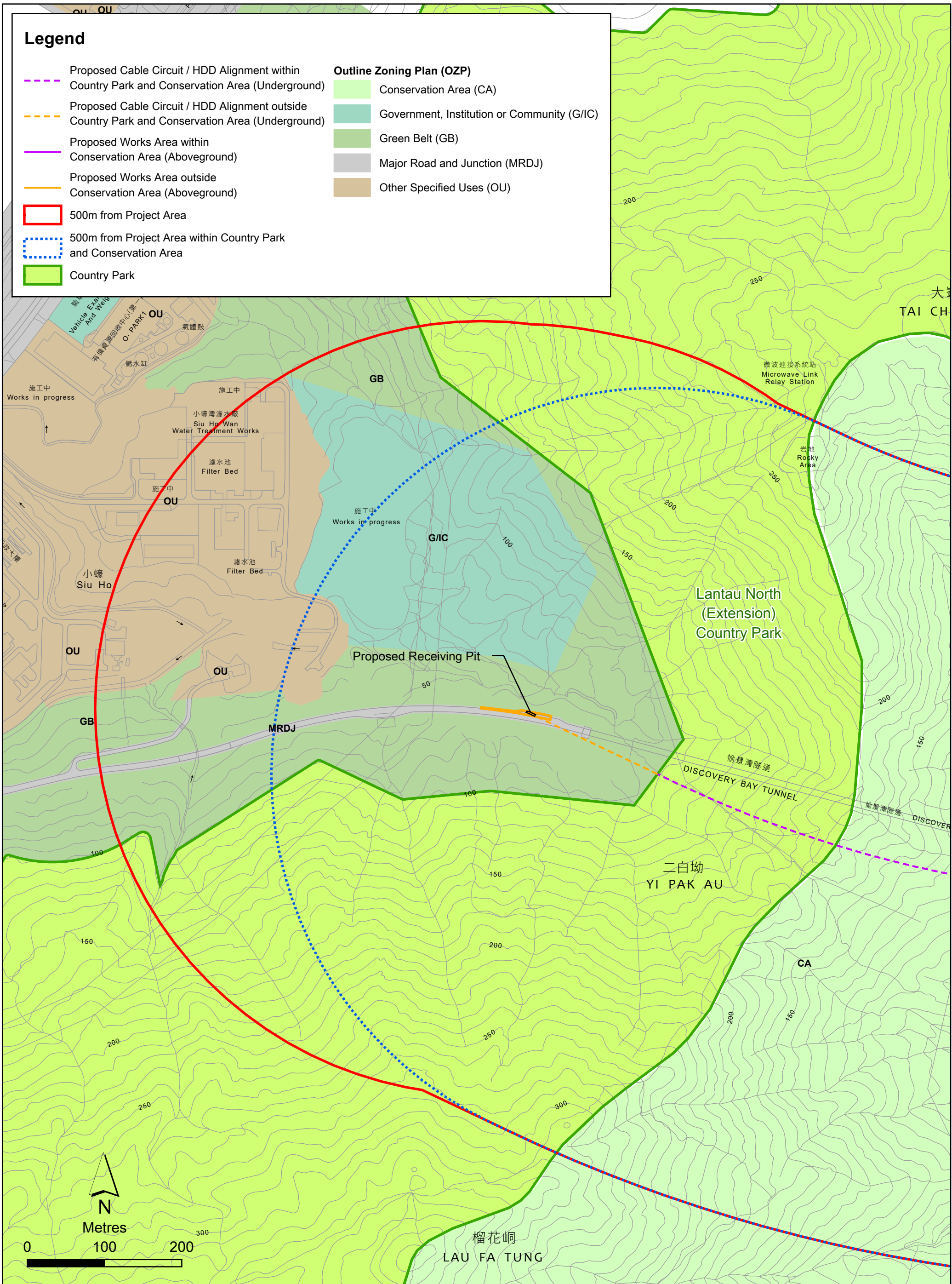
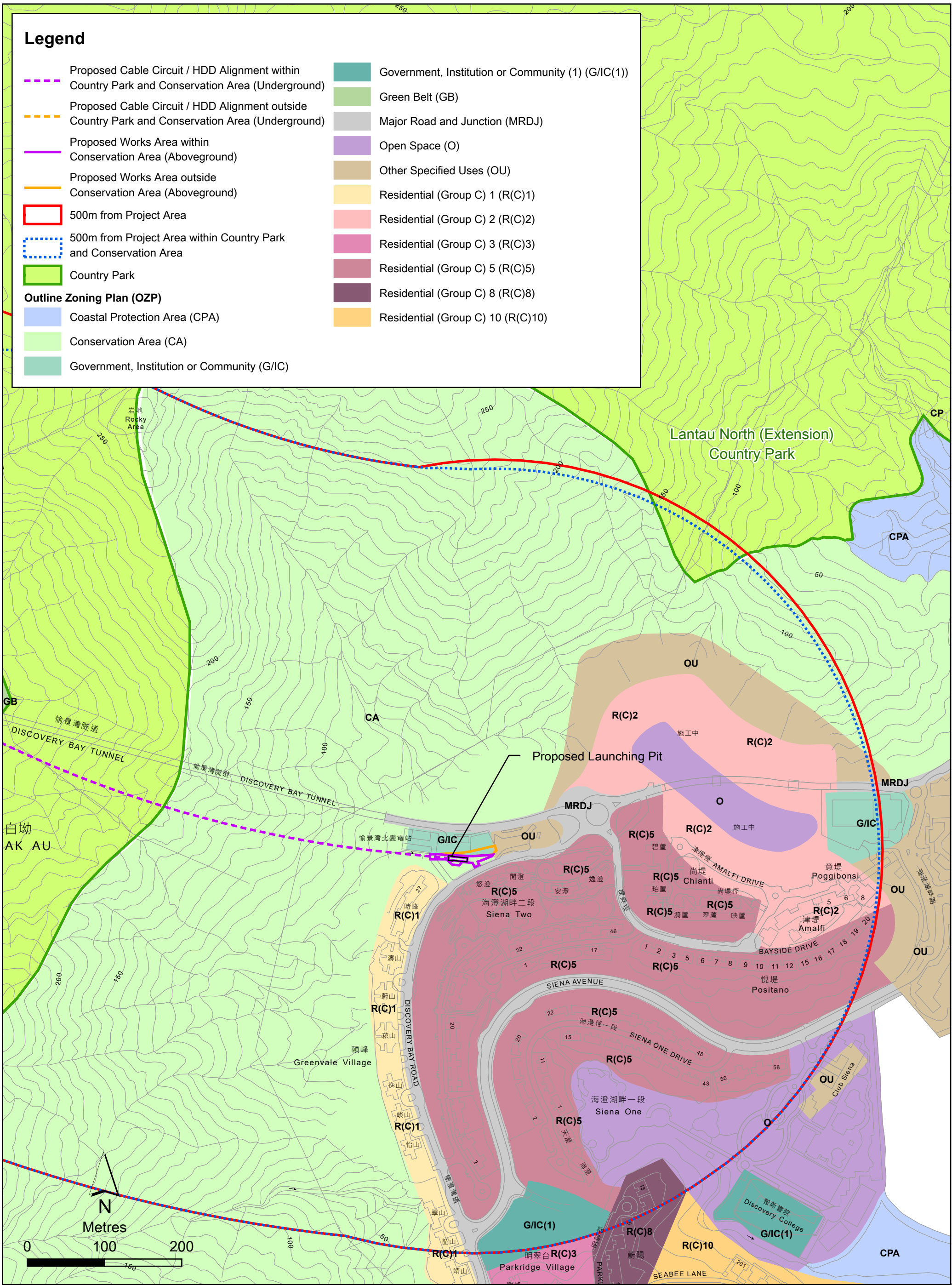


Figure 1.1a

132 kV Circuit Reinforcement at Discovery Bay Tunnel (Sheet 1 of 2)





132 kV Circuit Reinforcement at Discovery Bay Tunnel (Sheet 2 of 2)



CONSTRUCTION METHODS 1 & 2

Traditional cable laying methods, such as open trenching or constructing an overhead line, would require the installation of new poles on natural slopes within the Lantau North (Extension) Country Park and Conservative Area (CA) under the Outline Zoning Plan (OZP). Besides, these areas lack paved access, hence, new and/or temporary access road would need to be constructed for transportation of construction equipment and materials, potentially resulting in vegetation removal and tree felling works. This will involve extensive construction areas and could necessitate the clearance of numerous vegetation and natural habitats (e.g. shrubland at Yi Pak Au) and may cause potential soil erosion if not controlled properly. Considering that the adoption of traditional cable laying methods would cause significant environmental impacts with large-scale surface disruptions, hence they would not be appropriate for that site.

CONSTRUCTION METHOD 3

The use of Tunnel Boring Machine (TBM) reduces surface impacts by performing excavation underground, requiring only setting up launching and receiving pits aboveground. However, TBM has lower flexibility when it comes to planning and selecting cable route alignment. Based on preliminary estimation, the tunnel size and aboveground works areas for TBM would be 40% and 30% larger than Horizontal Directional Drilling (HDD) respectively. The construction duration for TBM would be around 36 months, which is 20 months longer than the current expected timeline for HDD of around 16 months. The working pit for TBM would also be deeper, of which TBM would require at least 6-7m depth, while HDD would only require 2-3m depth. Since TBM would create more impacts to the environment as compared to HDD, TBM would not be considered.

CONSTRUCTION METHOD 4 (PREFERRED)

HDD is the most preferred construction method. HDD is a trenchless micro-tunnelling method with the merit of minimising disruption to the environment, public and surface transport. It allows for adjustments in cable route alignment while maintaining adequate ground cover that helps preserve the overall landscape without causing damage to the environment during the construction. Since the entire alignment is at underground rock level, using HDD can minimise disturbance to existing structures, ground, facilities and vegetation. This method conducts the works underground while aboveground works areas only require setting up launching and receiving pits. HDD requires smaller and shallower shafts compared to TBM, which reduces the generation of construction dust, noise and C&D materials, as well as shortens the construction period. Moreover, while drilling fluid will be adopted during HDD, the drilling fluid would be recycled and reconditioned to be reused for further drilling as much as practicable. Residual drilling fluid that cannot be reused further would be collected in appropriate container(s) for subsequent appropriate disposal by licensed contractor, thereby minimising environmental impact. Therefore, HDD is preferred.

1.4.2 CONSIDERATION OF LAUNCHING PIT LOCATIONS

A launching pit for deploying the HDD rig will be constructed at the east of Discovery Bay Tunnel. A total of 6 locations have been reviewed by the Project Team and discussed with Discovery Bay Management Office with details given in the following. These locations have been indicated in **Figure 1.2**.

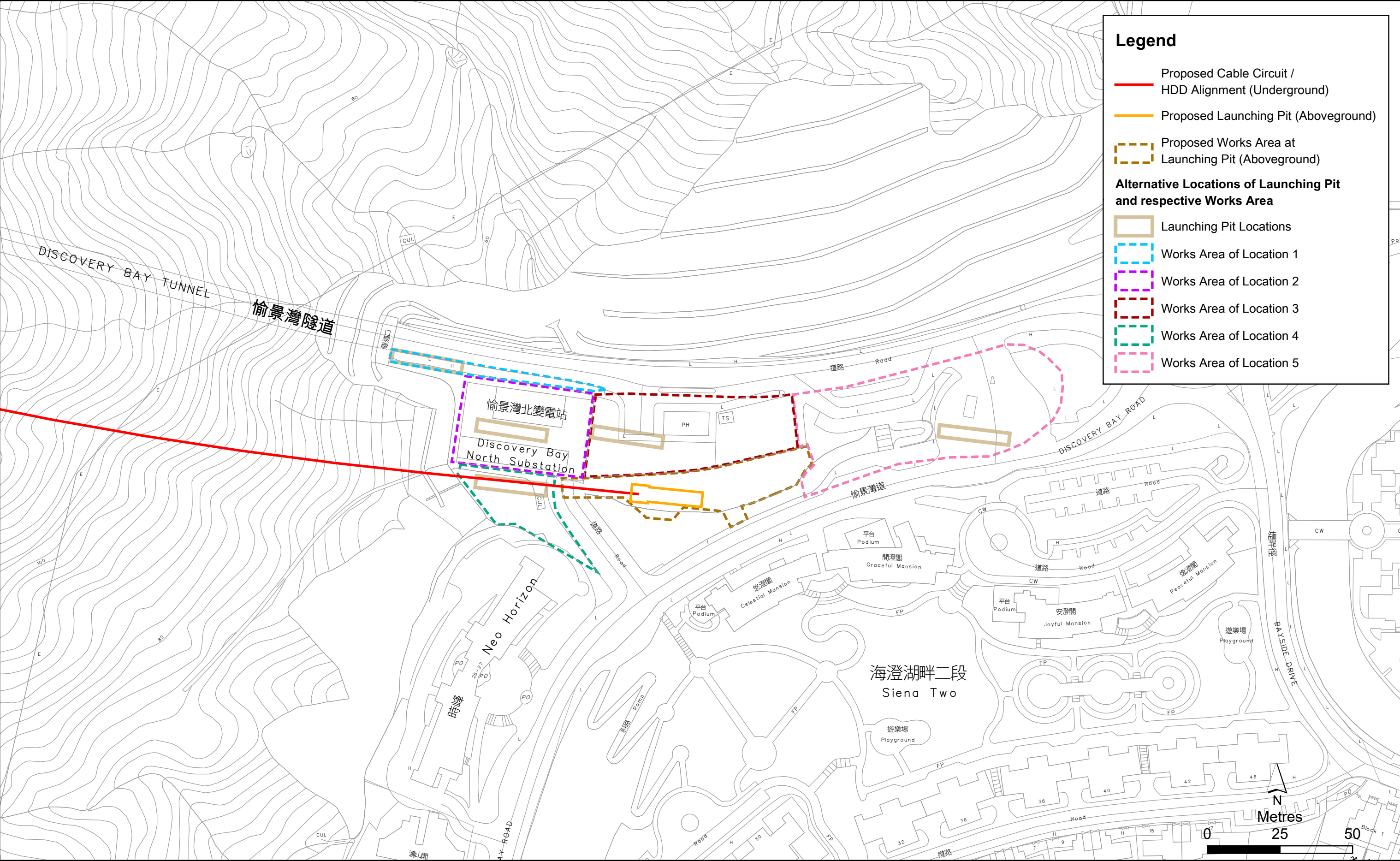


Figure 1.2

Alternative Locations of Proposed Launching Pit



Launching pit location 1 – North of Discovery Bay North Substation

Launching pit location 2 – Within Discovery Bay North Substation

Launching pit location 3 – East of Discovery Bay North Substation

Launching pit location 4 – South of Discovery Bay North Substation

Launching pit location 5 – Other Specified Uses (OU) Zone at East of Discovery Bay North Substation

Preferred launching pit location – Southeast of Discovery Bay North Substation

LAUNCHING PIT LOCATION 1

There are numerous existing underground utilities at the launching pit location 1, including underground cable circuits and drainage pipes. There is not enough space for the proposed launching pit and cable circuit. Besides, this location is adjacent to the roadside of Discovery Bay Tunnel, which becomes very crowded during the daytime period and it is the only tunnel through which the Discovery Bay residents travel to other parts of Hong Kong. Conducting construction works near the road would pose safety risks to both road users and workers. Setting up of construction site at this location would affect the emergency access and egress footpath of the Discovery Bay Tunnel, which poses significant impacts to road users and workers during HDD especially during lifting, loading and unloading operations. Therefore, this location is considered not viable for positioning the launching pit.

LAUNCHING PIT LOCATION 2

Launching pit location 2 is located within Discovery Bay North Substation. Two existing cable trenches with 2m width and 1.4m apart from each other are located in the middle between the 2 blocks of Discovery Bay North Substation. These trenches extend approximately 40m from east to west along the buildings. The remaining space is not sufficient for setting up the launching pit. The interior of existing substation would also cause insufficient aboveground space to set up the launching pit, HDD equipment as well as the temporary storage area.

LAUNCHING PIT LOCATION 3

Launching pit location 3 is a reserved area for future development located near a pump house to the east of Discovery Bay North Substation. As per advice from the Discovery Bay Management Office, this location is reserved for future development of a gas station and no permanent utility is allowed, and hence, location 3 is not a feasible launching pit location.

LAUNCHING PIT LOCATION 4

Launching pit location 4 is a fenced off paved area at the south of Discovery Bay North Substation. The small area size however poses technical challenges for construction and may pose unnecessary impacts to existing trees located in the vicinity. The only access to Discovery Bay North Substation may be obstructed in the course of HDD works and the operation of Discovery Bay North Substation may be affected if any emergency event is to be encountered. Furthermore, launching pit location 4 is located at close proximity with existing residential tower of Neo Horizon (i.e. around 8m), there may be adverse air and noise impacts

to residents in that area during construction phase. Therefore, this launching pit location is not preferred.

LAUNCHING PIT LOCATION 5

Launching pit location 5 is the Other Specified Uses (OU) zone to the east of Discovery Bay North Substation, which is currently a paved area with operating facilities currently being run by Discovery Bay Management Office, including a vehicle permit return office to re-route vehicles back to Discovery Bay Tunnel without entering the residential area of Discovery Bay, a traffic control zone for taxi exit and a bus stop. Breaking of the paved area would be required for the construction of launching pit. These breaking works would likely cause noise impact to the adjacent residential buildings of Siena Two and obstruction to the operation of the aforementioned facilities. Also, given that the finish point of the purposed cable circuit at launching pit location 5 is further away from Discovery Bay North Substation, an additional cable trench would be required to connect the cables from the launching pit to the substation, which causes more environmental impacts, especially in terms of the generation of construction dust, noise and C&D materials. Hence, this area is not preferred for positioning the launching pit.

PREFERRED LAUNCHING PIT LOCATION

This location is mostly a grassy area and is currently unoccupied. Positioning the launching pit at this location will not affect any trees. Besides, no public roads and public access will be impacted by the site, thereby minimising disruption to the public. While excavation works would also be required at this location, excavation works will be conducted at grassy surface as compared to the paved surface at the launching pit location 5. Therefore, conducting excavation works at this location is anticipated to generate less noise. This location is located further away from the nearest residential premises as compared to the launching pit location 4 (i.e. around 22m from the preferred location as compared to 8m from launching pit location 4). Hence, potential air and noise impacts can be minimised.

CONCLUSION

After a comprehensive study and assessment of the technical feasibility, site constraints, potential environmental impacts, interfaces with nearby existing and planned developments and other relevant factors, the preferred location is considered the most suitable location for the launching pit.

1.5 LOCATION AND SCALE OF PROJECT AND HISTORY OF THE PROJECT AREA

Figure 1.1 presents the proposed cable circuit / HDD alignment along with the proposed works areas at the launching and receiving pits.

1.5.1 PROPOSED CABLE CIRCUIT AND CONSTRUCTION WORKS

The proposed cable circuit is located along the south of Discovery Bay Tunnel, as shown in **Figure 1.1**. The proposed launching pit is located at the east of Discovery Bay Tunnel, at the southeast of the existing Discovery Bay North Substation, while a proposed receiving pit is located at the west of Discovery Bay Tunnel. The proposed cable circuit is around 810m long and 900mm in diameter. About 250m and 130m of the underground section passes through

Lantau North (Extension) Country Park and Green Belt respectively, and about 370m of the underground and aboveground sections passes through Conservation Area (CA) zone. The remaining sections of the proposed cable circuit passes through existing road. New cables (3 x 630 mm² power cable + 1 x 48/C optical fibre cable) will be laid by the HDD and cable jointing will be conducted. Locations of the proposed cable circuit and works areas are shown in **Figure 1.3**.

1.5.2 ADOPTION OF HDD ("MINI NO DIG" METHOD) FOR CONSTRUCTION OF PROPOSED CABLE CIRCUIT

As presented in **Section 1.4.1**, the proposed cable circuit will be constructed by HDD, i.e. micro-tunnelling with 'no-dig' method. Launching pit and receiving pit will be constructed at the ends of the proposed cable circuit, which are approximately 140m² x 2.5m (D) and 30m² x 3.0m (D) in size respectively. Prior to the excavation of launching and receiving pits, three trial pits will be first excavated to confirm the existing underground piping facilities; one at the launching pit area and two at the receiving pit area. The dimensions of all trial pits are approximately 3m (L) x 3m (W) x 3m (D). Besides, small-scale open cut excavation area of approximately 5m (L) x 5m (W) x 5.5m (D) is also required under the Project for cable lead-in to the Discovery Bay North Substation. The entire HDD and cable laying process is expected to last for 13 months subject to underground conditions. The actual location of working pits may be adjusted due to the site situation, cable-laying routing, and existing utilities.

The construction process is summarised in **Table 1.1**.

TABLE 1.1 SUMMARY OF THE CONSTRUCTION PROCESS

No.	Construction Process	Aboveground or underground	Time Period
1	Pit Construction at Two Ends Size of launching pit: ~140m ² x 2.5m (D) Size of receiving pit: ~30m ² x 3.0m (D) Details of proposed works areas: see Figure 1.4	Aboveground	Approximately 2 months
2	HDD, Duct Laying, Cable Laying and Jointing HDD alignment: ~810m (L) x 900mm (diameter) Excavation area for cable lead-in: ~5m (L) x 5m (W) x 5.5m (D) Details of proposed works areas: see Figure 1.4	Underground (HDD alignment) Aboveground (Excavation works for cable lead-in)	Approximately 13 months, subject to ground condition
3	Backfill and Reinstatement No impact aboveground upon reinstatement	Aboveground	Approximately 1 months

1.5.3 HISTORY OF THE PROJECT AREA

The major portion of the proposed cable circuit passes through Yi Pak Au, an area predominantly covered in shrubland. Discovery Bay Tunnel, a single-tube, two-way private road tunnel constructed for the Discovery Bay residential community, was opened in 2000, linking Discovery Bay Road to Cheung Tung Road. In order to maintain the environment and

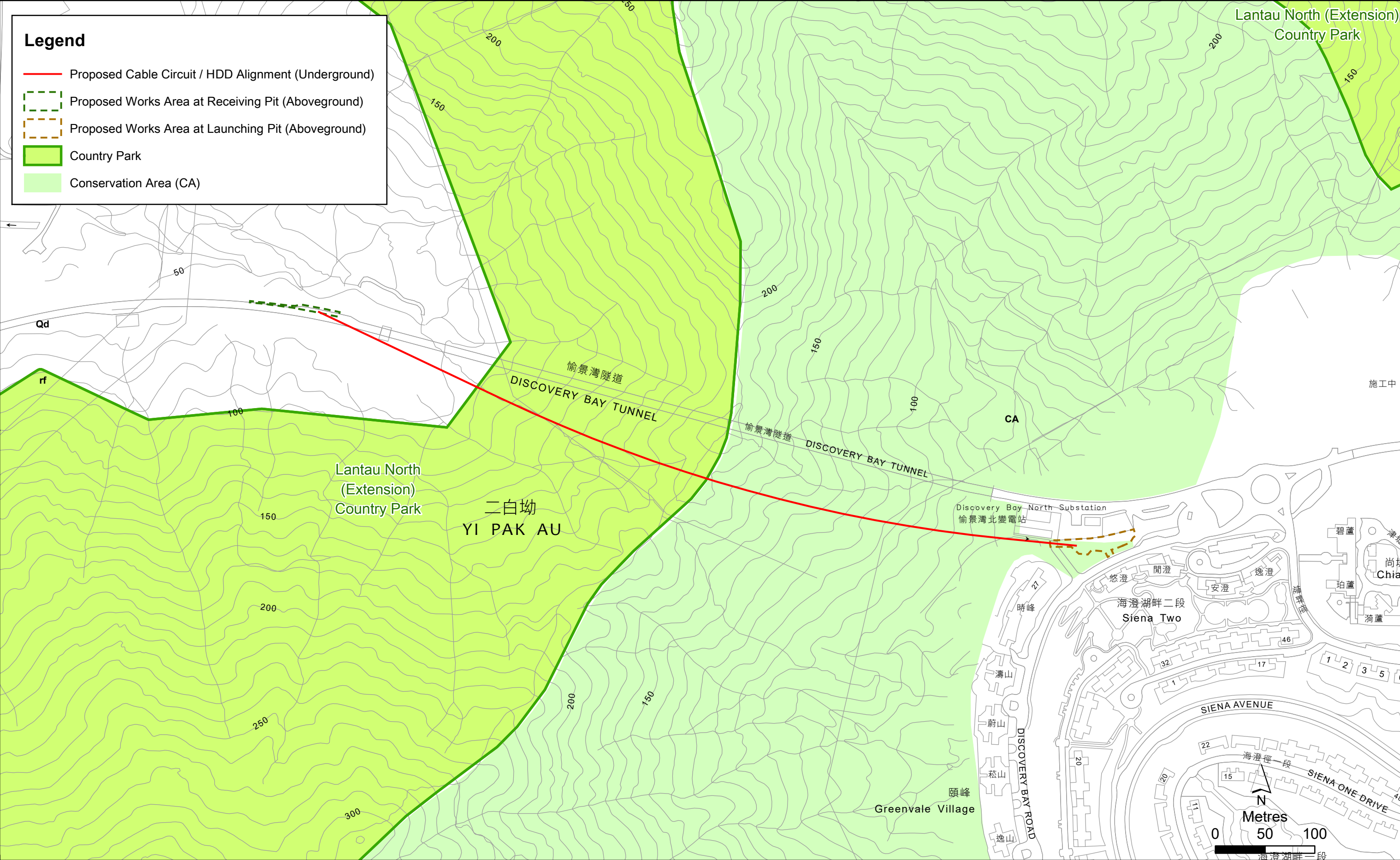


Figure 1.3

Proposed Cable Circuit / HDD Alignment and Works Areas



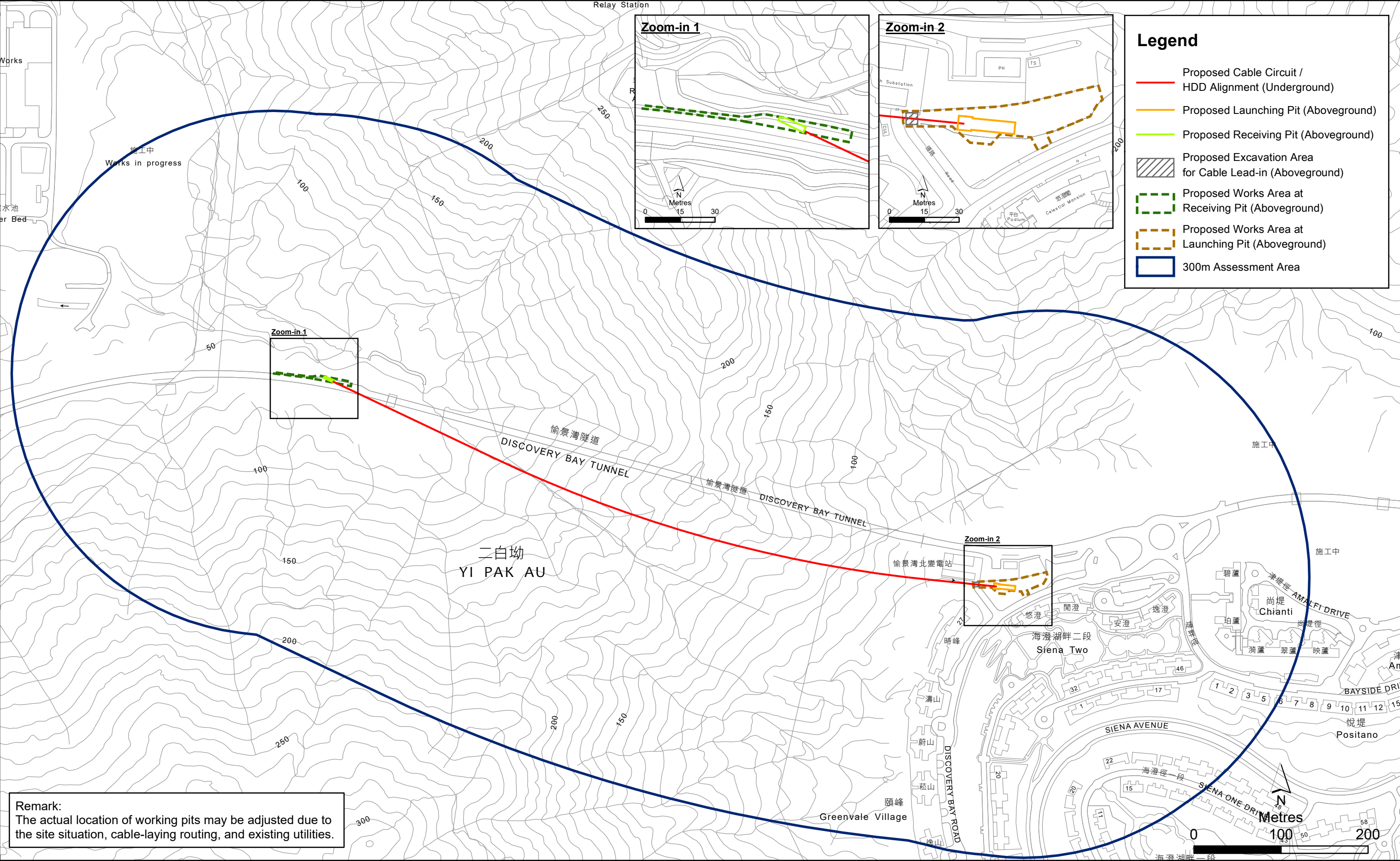


Figure 1.4

Details of Proposed Works Areas



minimal traffic flow of that area, only public buses serving authorised resident routes and goods vehicles delivering supplies or providing services are permitted to use the tunnel. Private cars and taxis are prohibited from accessing Discovery Bay via this route.

Prior to the construction of the Discovery Bay Tunnel, the proposed works areas at launching pit and receiving pit were part of the shrubland of Yi Pak Au. Site clearance at these works areas were conducted during the construction of the Discovery Bay Tunnel. The current lay-by area at the proposed works area at receiving pit was constructed to support the operation of Discovery Bay Tunnel. The proposed works area at launching pit is mostly a grassy area and a small paved area at the access road to Discovery Bay North Substation. The concrete paving at the works area of the receiving pit and the small paved area at the works area of the launching pit are in good condition. There are no signs of land contamination at the works areas of launching and receiving pits.

There are 2 series of existing 132kV cable circuits passing through the Discovery Bay Tunnel for power supply to Discovery Bay. These 2 circuits transmit electricity from Sham Shui Kok Substation to Discovery Bay North Substation, which then further distribute electricity to the whole Discovery Bay Development Area. Both existing circuits inside the Discovery Bay Tunnel will be retained after the completion of the proposed cable works while one of the circuits will remain energised and the other one will be kept as spare cable circuits.

1.6 DESIGNATED PROJECTS TO BE COVERED BY THE PROJECT PROFILE

The section of the proposed cable circuit located within the Lantau North (Extension) Country Park and CA zone as well as the unoccupied area for launching pit being located within CA zone are classified as Designated Project under *item Q.1* (All projects involving earthworks partly or wholly in an existing country park and a conservation area) of *Part I, Schedule 2* of *Environmental Impact Assessment Ordinance* (EIAO) (see **Figure 1.1**).

1.7 NAME AND TELEPHONE NUMBER OF CONTACT PERSON

ERM-Hong Kong, Limited (ERM) has been appointed to undertake the environmental permitting for this Project on behalf of the Project proponent. All queries regarding the project can be addressed to:

ERM

Attention: Mr. Terence Fong (Partner)
Telephone: (852) 2271 3000
Fax: (852) 3015 8052

Or the Project Proponent:

CLP Power

Attention: Mr. Chiang, Tung Ho (Principal Project Manager - Special Projects)
Telephone: (852) 2678 6044

2. OUTLINE OF PLANNING AND IMPLEMENTATION PROGRAMME

2.1 PROJECT PLANNING AND IMPLEMENTATION

This Project involves the construction and operation of the proposed cable circuit as described in **Section 1**. The overall construction period of the Project will last for about 16 months, which is tentatively scheduled to start in late 2025 subject to the approval process, and expected to complete in the first quarter of 2027. The proposed cable circuit is tentatively scheduled for operation in Q2 2027. Key implementation schedule of the Project is summarised in **Table 2.1**.

TABLE 2.1 KEY IMPLEMENTATION SCHEDULE

Key Project Planning and Milestones	Tentative Date
Design	Nov 2024 – Q4 2025
Construction	Q4 2025 – Q1 2027
Testing and Commissioning	Q1 2027
Commencement of Operation	Q2 2027

The Project is planned with consideration of land usage constraints, technical feasibility, supply and security, safety and health and environmental aspects. Construction of the Project will be carried out by contractor to be appointed by CLP Power through a tendering process and CLP Power will deploy direct supervision for the Project.

The proposed works areas of the Project are located along existing roads so all necessary equipment and materials can be delivered by truck to the Project Area. As HDD will be used for the construction of the proposed cable circuit, drilling equipment and HDD plant will be used.

It is expected that the proposed cable circuit is maintenance free in normal operation.

2.2 INTERACTIONS WITH OTHER SURROUNDING PROJECTS

Concurrent projects identified near the Project have been indicated in **Figure 2.1**.

One of the potential projects is the Proposed Residential Development at Area N1 North (Excluding Area N1D) Northern Portion (Phase 19), Discovery Bay North, Lantau DD352 Lot385 R.P. and The Extension Thereto (hereinafter referred to as 'Phase 19 of Discovery Bay') by Hong Kong Resort Company Limited, which is located about 145m east from the Project Area. Based on publicly available information, the proposed construction programme of this project is from April 2023 to June 2025. The scope of this project is to construct 1400-unit Residential Development Project in Discovery Bay North. Phase 19 of Discovery Bay is situated within 500m Assessment area of the Project Area. At the time of this assessment, all buildings of the project have been constructed up to roof floor, with only minor superstructure and external landscape works remaining, with the implementation of air quality control measures and good site practices, the associated air pollutant emissions and construction noise are anticipated to be limited, hence no adverse cumulative environmental impacts are anticipated.

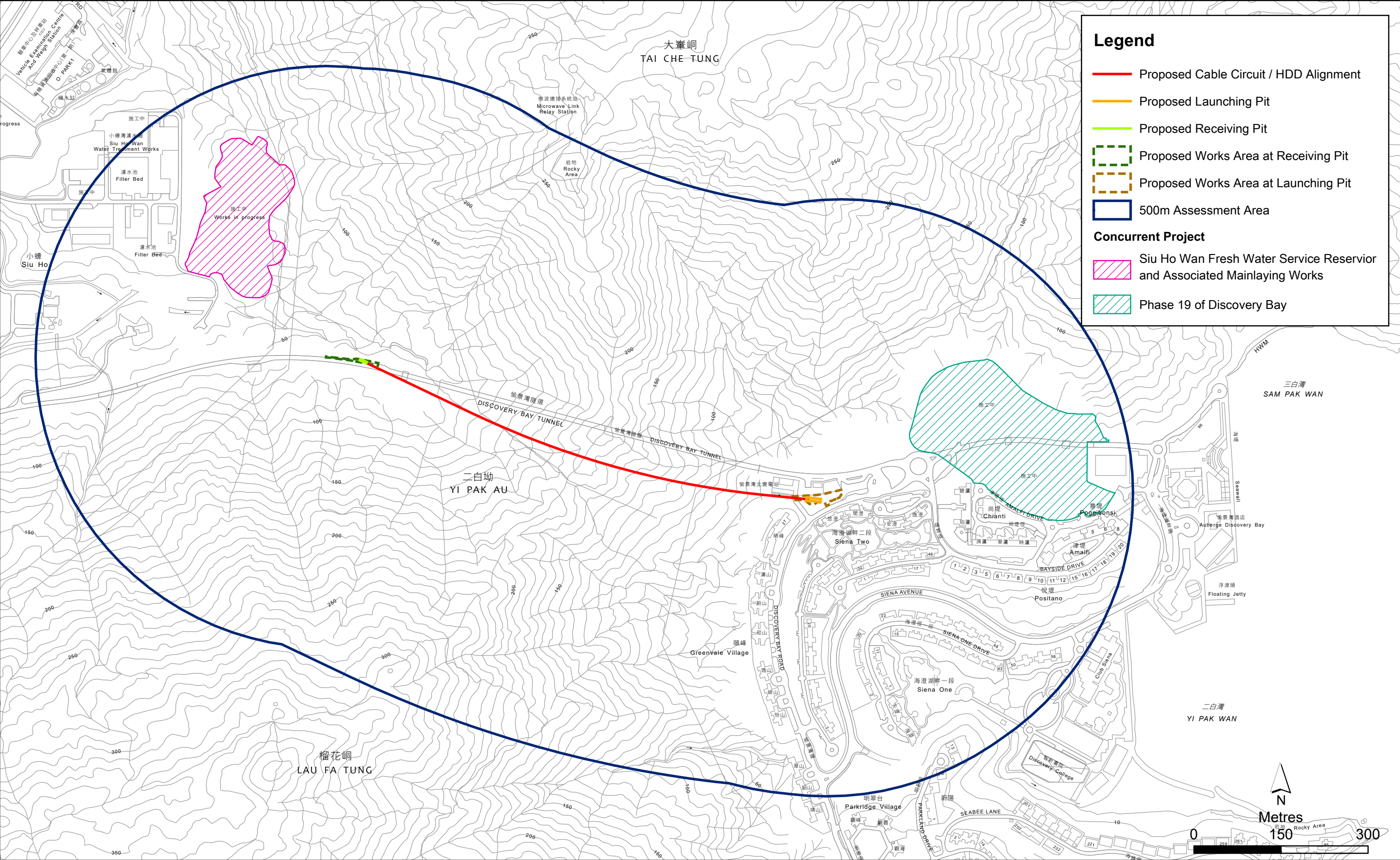


Figure 2.1

Concurrent Projects within 500m Assessment Area



The first occupation permit for Phase 19 of Discovery Bay is expected to be obtained at around Q3-Q4 2025, which coincides with the construction period of the Proposed Project. Hence, Phase 19 of Discovery Bay is considered as planned air and noise sensitive receivers.

Another potential project is the Siu Ho Wan Fresh Water Service Reservoir and Associated Mainlaying Works by Civil Engineering and Development Department (CEDD). The proposed scope of this project is to install fresh watermains and stormwater drainage system, construct Siu Ho Wan Fresh Water Reservoir, an access road from Siu Ho Wan Water Treatment Works to Siu Ho Wan Fresh Water Service Reservoir and associated retaining wall. The construction works is situated approximately 130m northwest of the Receiving Pit and is currently under construction. With implementation of appropriate air quality control measures and good site practices, the associated air pollutant emissions and construction noise are anticipated to be limited. Considering Siu Ho Wan Water Treatment Works Administration Office is 70m west of the aforementioned project but surrounded by the terrain, adverse cumulative environmental impact (e.g. air quality) from the project and this Project is not anticipated.

Close liaison with the contractors of the above projects will be undertaken to minimise concurrent works as far as practicable. Given the small scale of works involved in the Project, adverse cumulative environmental impact (e.g. air quality, noise) is not anticipated during construction of the Project.

3. MAJOR ELEMENTS OF THE SURROUNDING ENVIRONMENT

The existing environment of the Project Area within 500m from the boundary of the Project Area is shown in **Figure 1.1**. The east side of the Project (near launching pit) comprises of residential developments at Discovery Bay, such as Neo Horizon, Siena One and Siena Two, while Siu Ho Wan Fresh Water Service Reservoir is located at the west side of the receiving pit.

A significant underground portion of the proposed cable circuit is located within the Lantau North (Extension) Country Park and CA zone, where the proposed cable circuit runs along the south of Discovery Bay Tunnel. Apart from these areas, the surrounding areas are zoned as Green Belt (GB), Other Specified Uses (OU), Government, Institution or Community (G/IC), and Residential (Group C) 1 to 5.

A review of ecological resources within 500m from the Project Area, supplemented with baseline ecological survey conducted in September and October 2024, was conducted and the details are provided in **Appendix B**. Five (5) major habitat types were identified within 500m from the Project Area, namely Woodland, Shrubland, Plantation, Developed Area and Watercourse. Their ecological importances have been evaluated in accordance with the *Technical Memorandum on Environmental Impact Assessment Process (EIAO-TM) Annex 8* criteria and all of these habitats are of low to moderate ecological importance except for Developed Area which is of low ecological importance.

4. POSSIBLE IMPACTS ON THE ENVIRONMENT

The potential environmental impacts associated with the construction works within the Project Area (i.e. 500m from the Project Area) have been assessed in accordance with the criteria stipulated in *Annex 1* of the *EIAO-TM*.

4.1 MAJOR WORK ACTIVITIES

4.1.1 CONSTRUCTION PHASE

The Project is expected to involve construction works, such as micro-tunnel drilling by HDD for no-dig section, cable and duct laying, backfilling and reinstatement works. The proposed construction works is mainly underground during the construction of the micro-tunnelling as well as the cable laying process, while the launching pit and receiving pit will be aboveground (size of launching pit: $\sim 140\text{m}^2 \times 2.5\text{m}$ (D), size of receiving pit: $\sim 30\text{m}^2 \times 3.0\text{m}$ (D)). No construction of haul road or temporary access is necessary for the Project.

The construction arrangements will be:

- A limited number of powered mechanical equipment (PME) and hand-tools will be deployed for the relatively small-scaled construction works (please refer to **Section 4.4**);
- The PMEs and equipment will be transported by trucks;
- The excavated materials generated from the duct will be disposed of at an appropriate waste reception facility;
- The erected fences will be remained intact during the construction period and no works will be allowed to take place outside the fenced working area;
- Cable duct and cable installation will be carried out using a winch or by hand; and
- Backfilling and reinstatement.

4.1.2 OPERATION PHASE

Potential operation phase environmental impacts are not anticipated as the proposed cable circuit is expected to be maintenance free in normal operation. The proposed cable circuit will be monitored by automatic signalling system.

4.2 SUMMARY OF POTENTIAL ENVIRONMENTAL IMPACTS

A summary of potential environmental impacts arising from the Project during the construction and operation phases is presented in **Table 4.1**. The key potential construction phase impacts are related to air quality, noise, site runoff and water quality, waste, ecology and landscape and visual. Further details on the consideration of the potential environmental impacts are provided in subsequent sections.

TABLE 4.1 POTENTIAL SOURCES OF ENVIRONMENTAL IMPACTS

Potential Impact	Construction Phase	Operation Phase
Air Quality	✓	X
Noise	✓	X
Water Quality	✓	X
Waste Management	✓	X
Terrestrial Ecology	✓	X
Others:		
Landscape and Visual	X	X
Cultural Heritage	X	X
Hazard to Life	X	X

Note:

(a) '✓' = Possible; 'X' = Not Anticipated

4.3 AIR QUALITY

4.3.1 AIR SENSITIVE RECEIVERS

Representative air sensitive receivers (ASRs) have been identified as shown in **Figure 4.1** and summarised in **Table 4.2**. The closest representative ASR is located at about 22m away from the Project Area.

TABLE 4.2 REPRESENTATIVE AIR SENSITIVE RECEIVERS

ASR ID	Description	Type of Use	Maximum Height of the Building (m)	Approximate Distance from Project Area (m)
A1	Neo Horizon	Residential	119	24
A2	Greenvale Village-Greenbelt Court	Residential	113	116
A3	Siena Two-Discovery Bay Celestial Mansion	Residential	125	22
A4	Joyful Mansion	Residential	120	83
A5	House 30, Siena Two	Residential	51	100
A6	House 32, Siena Two	Residential	56	108
A7	The Barion	Residential	111	197
A8	The Pavilion (Block 1)	Residential	120	193
A9	Block 1, Positano	Residential	57	222
A10	House 20, Siena One	Residential	33	219

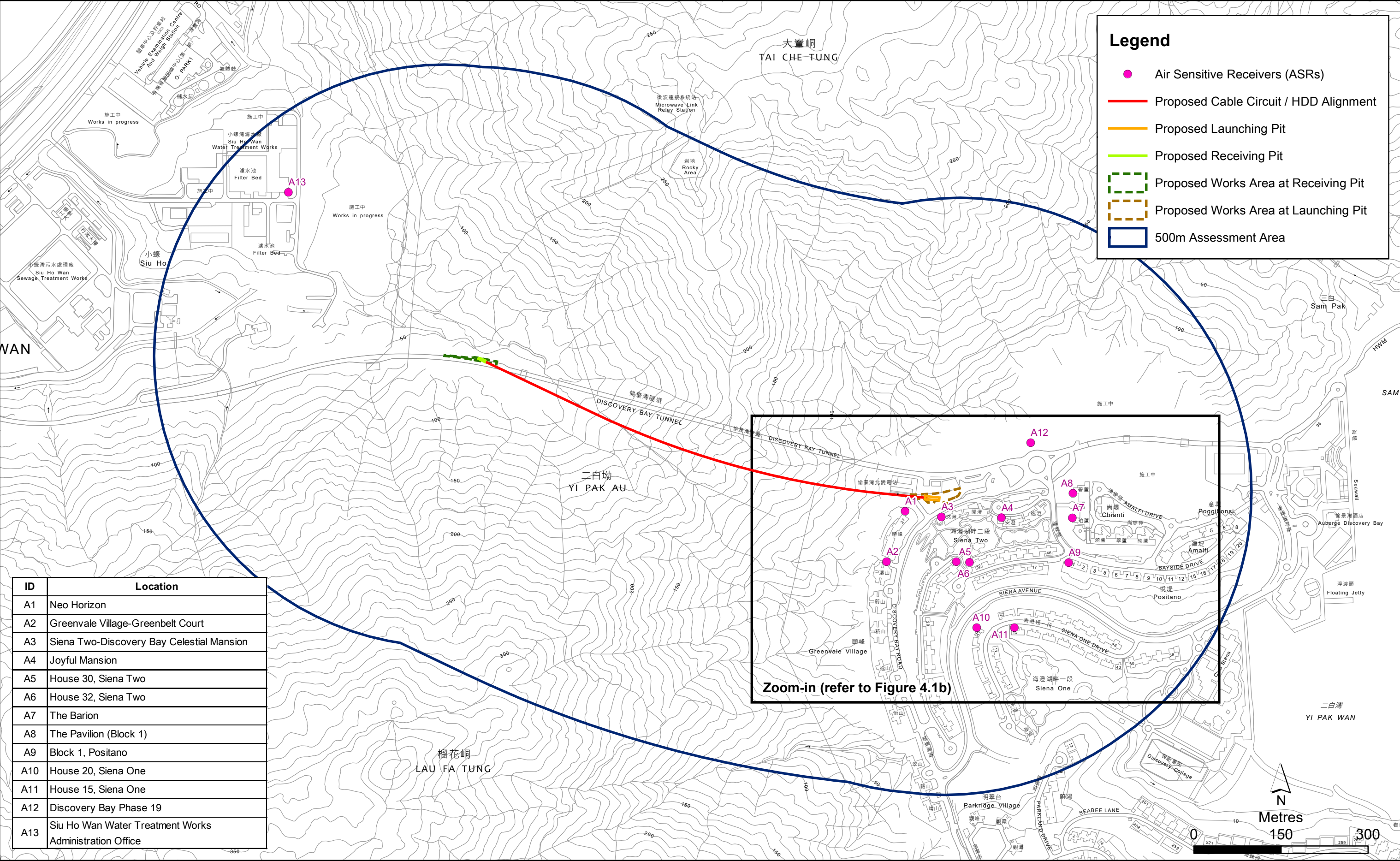


Figure 4.1a

Locations of Representative Air Sensitive Receivers



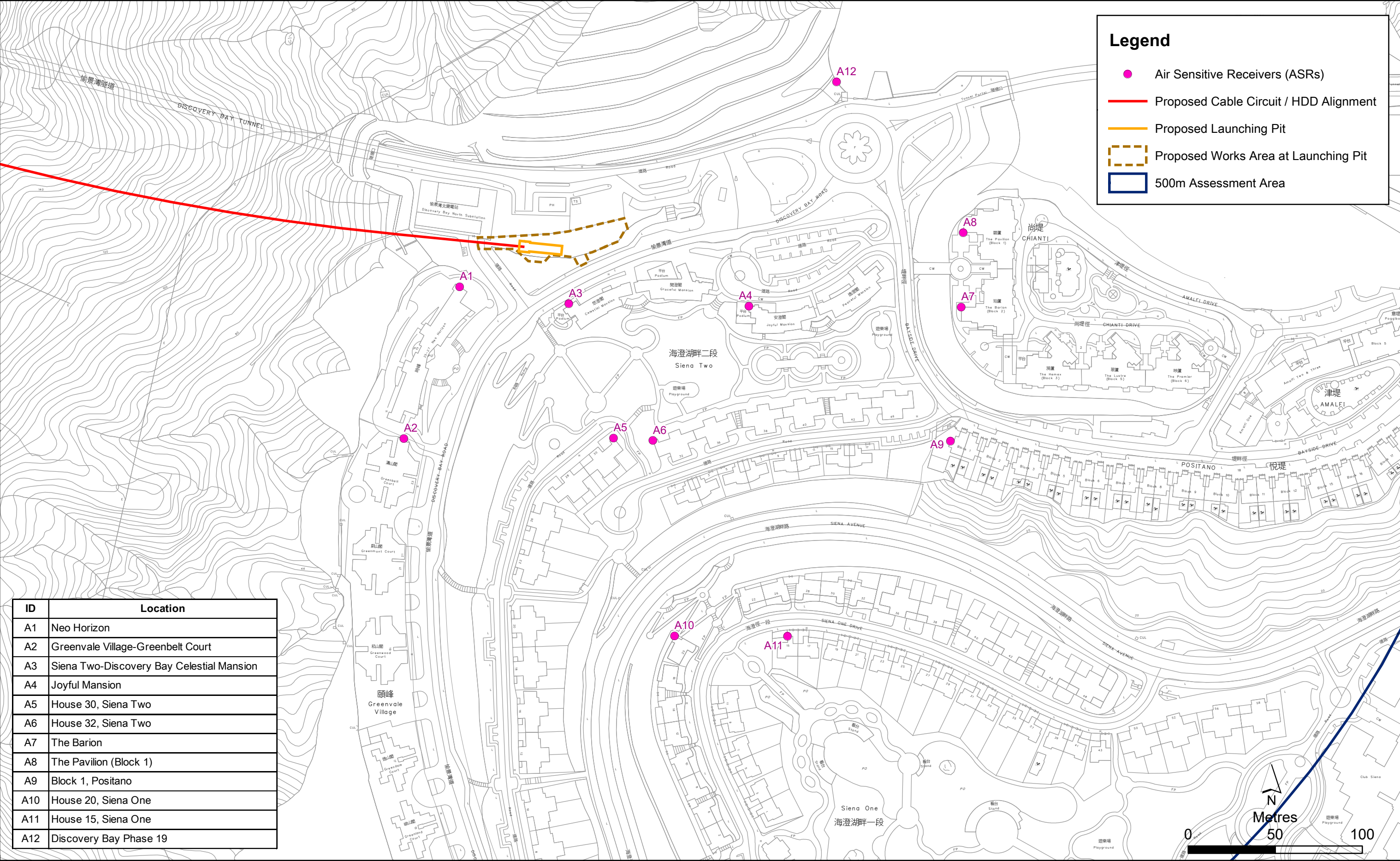


Figure 4.1b

Locations of Representative Air Sensitive Receivers (Zoom-in)



ASR ID	Description	Type of Use	Maximum Height of the Building (m)	Approximate Distance from Project Area (m)
A11	House 15, Siena One	Residential	17	243
A12	Phase 19 of Discovery Bay	Residential (Planned)	No info	145
A13	Siu Ho Wan Water Treatment Works Administration Office	Office	9	388

4.3.2 EVALUATION OF AIR QUALITY IMPACTS DURING CONSTRUCTION PHASE

Potential sources of air quality impacts during the construction phase include:

- Fugitive dust emissions (key air pollutants including respirable suspended particulates (RSP) and fine suspended particulates (FSP)) are generated from site clearance, drilling works by HDD, backfilling and reinstatement, and other construction activities; and
- Exhaust emissions (i.e. Nitrogen Dioxide (NO₂), Sulphur Dioxide (SO₂) and Carbon Monoxide (CO)) and particulates (including RSP and FSP) will be emitted from the use of powered mechanical equipment (PMEs) and dump trucks during the construction phase.

Evaluation of the air quality impacts during the construction phase is presented below.

No odour impact is anticipated during the construction phase of the Project.

Fugitive Dust Emissions

All construction works will be carried out within the Project Area. The installation of the proposed cable circuit includes pit construction at two ends (i.e. launching pit and receiving pit), cable duct laying and joining, followed by backfilling and reinstatement.

Site clearance and small-scale excavation works for trial pits, launching and receiving pits as well as cable lead-in are anticipated. Given that the total area of the proposed works areas is limited (around 1050m² for works area at launching pit and around 280m² for works area at receiving pit), site clearance activities are anticipated to be minimal, resulting in limited fugitive dust generation. Additionally, minor excavation works will be confined to the proposed launching and receiving pits (including trial pits) as well as cable lead-in with an estimated excavated material quantity of around 660m³. Fugitive dust emissions from minor excavation works are anticipated to be limited and localised within the proposed launching and receiving pits (including trial pits).

The estimated total quantity of excavated materials from drilling works by HDD is approximately 520m³. Once excavated, these materials will be transported away from the Project Area. Potential fugitive dust emissions from the drilling and excavation activities are anticipated to be limited.

For backfilling and reinstatement, the amount of materials for backfilling and reinstatement are limited (approximately not more than 660m³). Potential dust emission impact is not anticipated from such minimal amount of the materials. Furthermore, due to the limited area of the proposed works areas as discussed above, fugitive dust emissions from backfilling and reinstatement are anticipated to be limited and localised within the proposed works areas.

In view of the above and the implementation of good construction site practices and relevant mitigation measures recommended in the *Air Pollution Control (Construction Dust) Regulation* (CAP.311R), adverse fugitive dust impact arising from pit construction, HDD and cable duct laying, and backfilling and reinstatement works during the construction phase is not anticipated. Appropriate mitigation measures for the Project are detailed in **Section 5.1.1**.

Emissions from the On-site Use of PME's and Dump Trucks

It is estimated that there will be a maximum of 7 on-site PME's operating within the launching pit and 4 on-site PME's operating within the receiving pit any one time during the construction phase. In addition, approximately 2 dump trucks are expected to be used for handling excavated materials, transporting equipment and delivering C&D materials off-site. Considering the relatively small size of the proposed works areas (total area of 1,330m²) and the limited number of PME's and dump trucks operating concurrently, gaseous and particulate matter (PM) emissions from these PME's and dump trucks are anticipated to be minimal during the construction phase.

With the proper implementation of the requirements stipulated in the *Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation* (CAP.311Z), *Air Pollution Control (Fuel Restriction) Regulations* (CAP.311I) and *Air Pollution Control (Smoke) Regulations* (CAP.311C) to control the emissions from the on-site PME's and construction trucks, adverse air quality impact from emissions from on-site PME's and construction trucks to the identified ASRs during the construction phase are not anticipated.

Furthermore, power supply for on-site machinery will be provided, if feasible; and the use of exempted Non-Road Mobile Machinery (NRMMS) on-site will also be avoided, if feasible, which can minimise the use of diesel generators and machinery.

Cumulative Impacts During Construction Phase

The construction period of the Project is tentatively from Q4 2025 to Q1 2027. 2 concurrent projects in the vicinity of the Project Area have been identified and presented in **Table 4.3** and **Figure 2.1**.

TABLE 4.3 SUMMARY OF CONCURRENT PROJECTS IN THE VICINITY OF THE PROJECT AREA DURING CONSTRUCTION PHASE

Project Description	Project Proponent	Construction Period
Proposed Residential Development at Area N1 North (Excluding Area N1D) Northern Portion (Phase 19), Discovery Bay North, Lantau DD352 Lot385 R.P. and The Extension Thereto (hereinafter referred to as 'Phase 19 of Discovery Bay')	Hong Kong Resort Company Limited	April 2023 to June 2025
Siu Ho Wan Fresh Water Service Reservoir and Associated Mainlaying Works	Civil Engineering and Development Department (CEDD)	Since January 2021

The proposed residential development in Phase 19 of Discovery Bay is situated approximately 145m east of the launching pit and is currently under construction. At the time of this study, only minor superstructure and external landscape works are remaining for the project. As no large-scale site formation or excavation works are involved, the associated air pollutant

emissions are anticipated to be limited, provided that appropriate air quality control measures and good site practices are implemented. The cumulative air quality impact resulting from these construction activities is anticipated to be limited. Therefore, adverse cumulative air quality impact from the concurrent project and this Project is not anticipated during the construction phase.

The Siu Ho Wan Fresh Water Service Reservoir and Associated Mainlaying Works is situated approximately 130m northwest of the receiving pit and is currently under construction. Based on the latest public information ^[1], the superstructure of the reservoir, the installation of fresh water mains and stormwater drainage system, and associated retaining wall construction are in progress. The associated air pollutant emissions from these construction activities are anticipated to be limited, provided that appropriate air quality control measures and good site practices are implemented. Moreover, the air pollutant emissions from the construction of Siu Ho Wan Fresh Water Service Reservoir would not have direct impact to the identified ASRs of this Project due to screening by natural terrain and cut slope. The cumulative air quality impact resulting from these construction activities is anticipated to be limited. Therefore, adverse cumulative air quality impact from the concurrent project and this Project is not anticipated during the construction phase.

4.3.3 EVALUATION OF AIR QUALITY IMPACTS DURING OPERATION PHASE

No machinery or equipment will operate during the operation phase since the proposed cable circuit will be stationary in the micro-tunnel. No air or odour emissions are generated during the operation phase. Hence, air quality and odour impact during the operation phase of the Project is not anticipated.

4.4 NOISE

4.4.1 BASELINE CONDITIONS

The area within 300m from proposed cable circuit is rural in nature with prevailing noise from the community and traffic along Discovery Bay Road, Bayside Drive and Siena Avenue.

4.4.2 NOISE SENSITIVE RECEIVERS

Representative Noise Sensitive Receivers (NSRs) have been identified within the assessment area in accordance with the criteria stipulated in *Annex 13 of the Technical Memorandum on Environmental Impact Assessment Process (EIAO-TM)*. The locations of the NSRs are presented in **Figure 4.2** and listed in **Table 4.4**. The representative NSRs for construction noise impact assessment will be further reviewed in the submission of Construction Noise Management Plan (CNMP), subject to the details of construction activities that will be available in later stage of the Project.

¹ Newsletter Issue No.26 of Tung Chung New Town Extension. Published by Sustainable Lantau Office of CEDD (Link: https://www.tung-chung.hk/files/docs/newsletters/issue_26_20241220.pdf)

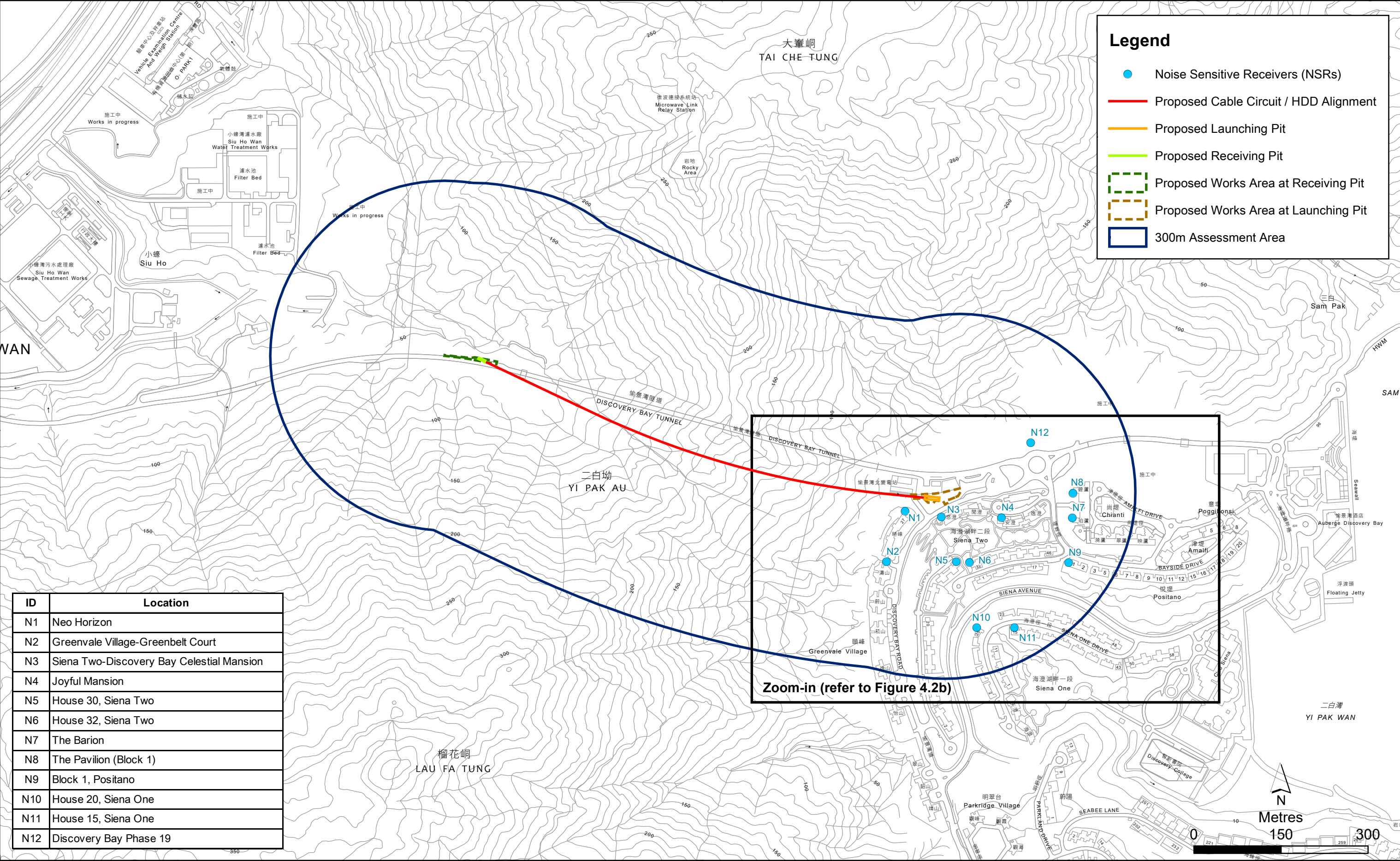


Figure 4.2a

Location of Representative Noise Sensitive Receivers



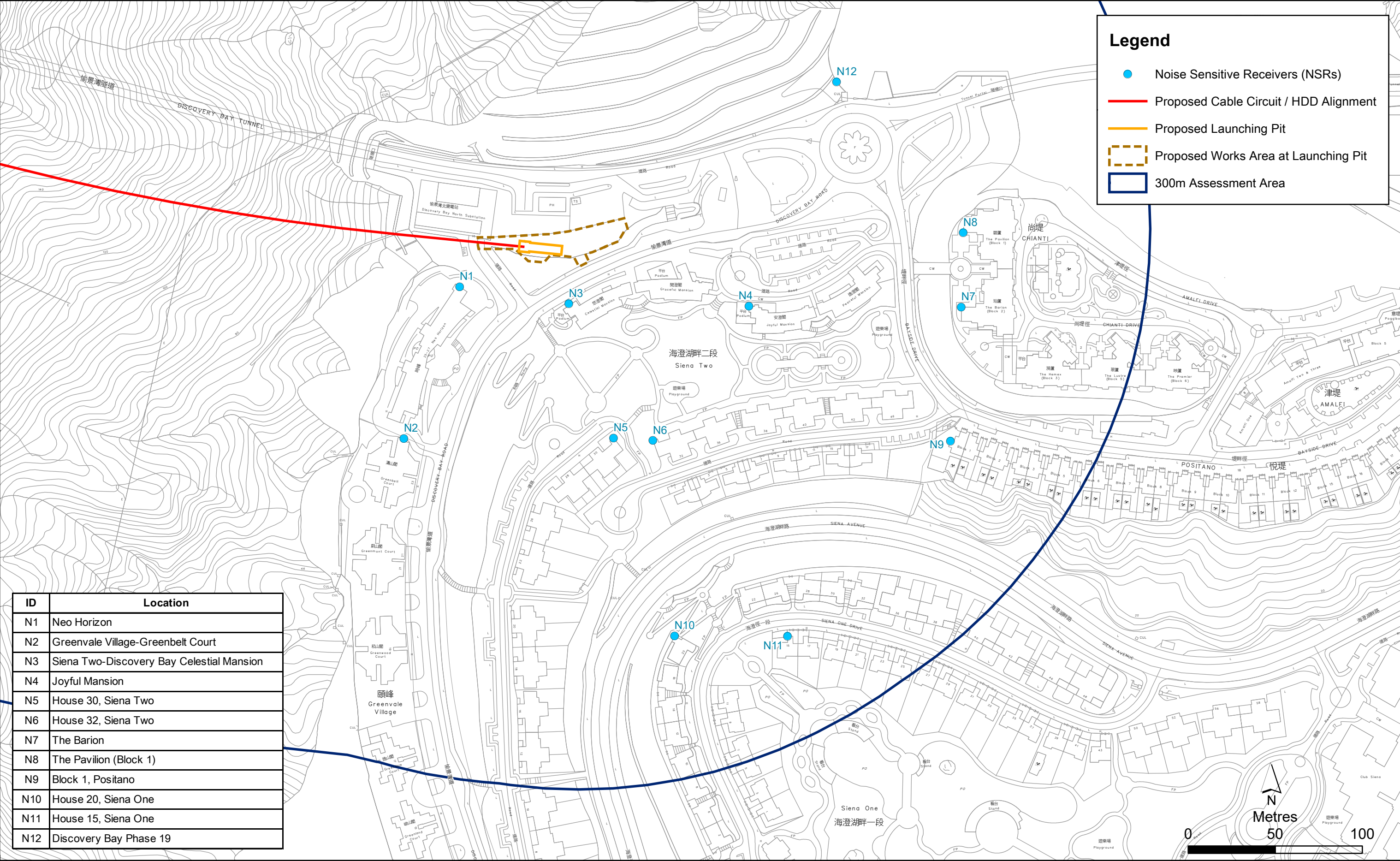


Figure 4.2b

Location of Representative Noise Sensitive Receivers (Zoom-in)



TABLE 4.4 REPRESENTATIVE NOISE SENSITIVE RECEIVERS

NSR No.	Description	Type of Use	Distance from the Nearest Works Area (m)
N1	Neo Horizon	Residential	24
N2	Greenvale Village-Greenbelt Court	Residential	116
N3	Siena Two-Discovery Bay Celestial Mansion	Residential	22
N4	Joyful Mansion	Residential	83
N5	House 30, Siena Two	Residential	100
N6	House 32, Siena Two	Residential	108
N7	The Barion	Residential	197
N8	The Pavilion (Block 1)	Residential	193
N9	Block 1, Positano	Residential	222
N10	House 20, Siena One	Residential	219
N11	House 15, Siena One	Residential	243
N12	Phase 19 of Discovery Bay	Residential	145

4.4.3 EVALUATION OF NOISE IMPACT DURING CONSTRUCTION PHASE

4.4.3.1 ASSESSMENT METHODOLOGY

A construction noise impact assessment has been conducted in accordance with the criteria and guidelines as stipulated in Annexes 5 and 13 of the EIAO-TM. A qualitative construction noise impact assessment has been carried out to assess the potential construction noise impact associated with the Project. A summary of key steps for the qualitative construction noise impact assessment is given below:

- Establish assessment criteria;
- Determine assessment area;
- Identify representative NSRs that may be affected by the proposed construction works;
- Collect information regarding construction programme, plant inventory;
- Identify major noise sources/activities
- Propose quieter construction methods and/or equipment;
- Propose noise mitigation measures, such as noise barriers/noise enclosures; and
- Qualitatively assess the feasibility, practicability, programming and effectiveness of the recommended mitigation measures.

4.4.3.2 CONSTRUCTION NOISE CRITERIA

Under the *EIAO*, potential noise impact arising from general construction works during normal working hours (i.e. 0700hrs to 1900hrs on any day not being a Sunday or public holiday) at noise sensitive receivers is to be assessed in accordance with the noise criteria specified in the *EIAO-TM*. The *EIAO-TM* noise standards are presented in **Table 4.5**.

TABLE 4.5 EIAO-TM NOISE STANDARDS FOR DAYTIME CONSTRUCTION ACTIVITIES

Uses	0700 to 1900 hours on any day not being a Sunday or general holiday Leq (30mins), dB(A)
- All Domestic Premises - Temporary Housing Accommodation - Hostels - Convalescent Homes, and - Homes for the Aged	75
- Places of Public Worship - Courts of Law, and - Hospitals and Medical Clinics	70
Educational Institutions (including Kindergartens and Nurseries)	70 65 (during examinations)

Notes:

- (1) The above standards apply to uses which rely on opened windows for ventilation and are assessed at 1m from the external façade.
- (2) A Construction Noise Permit shall be required for carrying out relevant construction work during restricted hours under the Noise Control Ordinance. In case the applicant would like to evaluate whether carrying out relevant construction works during restricted hours under the Noise Control Ordinance is feasible or not in the context of programming construction works, reference should be made to relevant technical memoranda issued under the Noise Control Ordinance.

4.4.3.3 IDENTIFICATION OF CONSTRUCTION NOISE IMPACT

The potential sources of noise impact during the construction of the Project would be the use of PME for various construction activities. Key construction activities include excavation, drilling by HDD, cable laying, backfilling and reinstatement works. Most of the drilling works will be conducted underground, while some PMEs will still be located at ground level.

The Project consists of two aboveground proposed works areas, namely the launching pit and the receiving pit. Details of these proposed works areas are indicated in **Figure 1.4**. Works for excavation, drilling and backfilling & reinstatement will not be carried out at the same time within the same works area.

The construction works will be scheduled during daytime hours only, i.e. between 0700hr and 1900hr from Monday to Saturday (except public holidays). It is anticipated that no works are planned during restricted hours (i.e. 1900 to 0700 hrs of the next day and any time on Sundays and public holidays). Should night-time works be required, the Contractor must apply for a Construction Noise Permit (CNP) and ensure full compliance with the requirements of the Noise Control Ordinance (NCO) (Cap 400). The Technical Memorandum on Noise from Construction Work other than Percussive Piling (GW-TM) and Technical Memorandum on Noise

from Construction Work in Designated Areas (DA-TM) details the procedures adopted by the Environmental Protection Department (EPD) for assessing such an application.

The major noise sources of the Project would be the excavation and drilling works required for the construction of the micro-tunnel. In order to alleviate the potential adverse noise impacts due to these works, corresponding quieter construction methods for these works will be proposed in the subsequent sections. The tentative construction programme can be referred to **Table 1.1**. With due consideration of the EPD's list of good practices and state-of-the-art technologies within the industry, the following quieter construction method is applicable in this Project.

- Use of HDD for construction of micro-tunnel for proposed cable circuit instead of open trenching

According to the construction methodology envisaged at this stage, the preliminary plant inventory of this Project has been identified as presented in **Table 4.6**. The plant inventory adopted for the assessment have been confirmed by Project Engineer. It is noted that the Contractor would consider the engineering data available during the construction phase and review/update the tentative construction plant inventory during the preparation of the CNMP.

TABLE 4.6 TENTATIVE PLANT INVENTORY FOR KEY CONSTRUCTION ACTIVITIES

Construction Activities	Possible PME's Required*		
Excavation Works	• Excavator Mounted Breaker	• Dump Truck	
Drilling and Cable Laying Works	• Drilling Equipment (HDD Machine) • Generator • Wetsep	• Water/Mud Pump • Mobile Crane	• Mud Processor with Mud Tank • Crane Lorry
Backfill & Reinstatement Works	• Excavator	• Generator	• Water Pump

* Quiet equipment (e.g. hydraulic crusher / quieter type saw) or Quality powered mechanical equipment (QPME) would be adopted where applicable and practicable

4.4.3.4 EVALUATION OF CONSTRUCTION NOISE IMPACT

The nearest NSRs relying on opened windows for ventilation are the residential units of Neo Horizon and Celestial Mansion (i.e. N1 and N3). These residential units are located approximately 24m and 22m respectively from the launching pit works area, and are considered as the most sensitive and most susceptible to the noise coming from the Project. It is considered that mitigation measures and good site practices including the adoption of QPME, noise barriers etc. would be required to control the associated construction noise impacts, which are discussed in detail in **Section 4.4.3.5**.

There are no NSRs within 300m of the receiving pit works area, adverse construction noise impact due to the works at the receiving pit works area is not anticipated.

Two potential concurrent projects at the vicinity of the Project have been identified, which are the Proposed Residential Development at Area N1 North (Excluding Area N1D) Northern Portion (Phase 19), Discovery Bay North, Lantau DD352 Lot385 R.P. and The Extension Thereto and the Siu Ho Wan Fresh Water Service Reservoir and Associated Mainlaying Works.

Proposed Residential Development at Area N1 North (Excluding Area N1D) Northern Portion (Phase 19), Discovery Bay North, Lantau DD352 Lot385 R.P. and The Extension Thereto by Hong Kong Resort Company Limited is situated around 145m towards the east of the launching pit of Project. At the time of this assessment, only minor superstructure and external landscape works are remaining for the project, while the construction period is expected to end in June 2025. Therefore, no adverse cumulative noise impact is anticipated.

The construction works of Siu Ho Wan Fresh Water Service Reservoir and Associated Mainlaying Works at located at around 130m northwest of the receiving pit of this Project. Since there are no NSRs near the receiving pit, no adverse cumulative noise impact is anticipated.

4.4.3.5 MITIGATION MEASURES FOR NOISE IMPACTS

Recommended noise mitigation measures include, but not limited to, the following:

- Adoption of quieter construction methods and use of QPME;
- Use of temporary noise barriers and noise enclosure to reduce noise from PMEs;
- Good site management practices to limit at-source noise emissions.

The above mitigation measures and the EPD's "Recommended Pollution Control Clauses for Construction Contracts" would need to be implemented in work sites as good practices where appropriate. Detailed descriptions of these mitigation measures are given in the following sections.

Adoption of Quieter Construction Methods and use of QPME

As mentioned in **Section 4.1**, HDD will be adopted for constructing the proposed cable circuit. Compared to conventional open trenching methods, the major drilling works will be conducted underground. Only minor excavation works are required at the launching and receiving pits, such that noise impacts to nearby NSRs can be minimised. Furthermore, by adopting HDD instead of TBM, the construction duration can be shortened by over 50%, hence the duration of construction noise impact to nearby NSRs can also be reduced.

Excavation works is required during site formation for set up of HDD machine. The practicability of adopting hydraulic crusher and quieter type saw to replace excavator mounted breaker will be further reviewed during the preparation of the CNMP. Since the area of surface excavation is small, adverse noise impact is not anticipated.

Other quieter construction methods, such as those mentioned in EIAO Guidance Note No. 9/2023, will be further reviewed in the detailed design and construction stages, and in the CNMP.

The use of QPME is considered to be a practicable means to mitigate the construction noise impact. QPME (e.g. electric mobile crane, enertainer etc.) is defined as a PME having actual SWL lower than the value specified in the GW-TM. The adoption of QPME, such as those listed on the EPD web page, shall be considered whenever applicable and feasible. The use of QPME will be further reviewed in the CNMP.

Use of Temporary Noise Barriers and Enclosures

The use of temporary noise barriers is an effective means to mitigate the noise impact arising from the construction works. The use of noise barrier for large or movable PME could generally provide a 5 dB(A) reduction. The Contractor shall be responsible for the design and actual

position of the temporary noise barriers with due consideration given to the position and size of the PME, and the requirement of intercepting the line-of-sight from the NSRs to the PME, as well as ensuring that the barriers have no gaps nor openings.

Temporary noise barriers are proposed to adopt in screening noise from construction plants. Noise barriers located close to a PME can produce at least 10 dB(A) screening for stationary plant and 5 dB(A) for mobile plant provided that the direct line-of-sight of the PME is blocked, depending on the actual design.

For the use of temporary noise barrier for at-grade construction works, working space would be considered for their manoeuvrability and placement. Generally, sufficient separation between major plants during at-grade construction works is envisaged to cater for the use of temporary noise barriers on-site. Temporary noise barriers should be placed close to noise source locally as far as practicable.

The use of standard enclosure would be adopted to shelter relatively stationary plants, including generators and water/mud pumps. In accordance with GN 9/2023, about 15 dB(A) noise reduction could be achieved by noise enclosures depending on the actual design.

Indicative drawings of examples of temporary noise barrier and enclosure can be referred to **Appendix A**.

Upon review by Project Engineer, it is confirmed that the use of HDD, temporary noise barriers and enclosures are feasible, effective and suitable for the current construction programme.

Good Site Practices

Good construction site practice and noise management can considerably reduce the potential noise impact of the construction activities on nearby NSRs. The noise reduction benefits of these practices can vary according to specific site conditions and operations. The following site practices should be followed during the construction of the Project:

- Only well-maintained plant will be operated on-site and plant will be serviced regularly during the construction phase;
- Silencers or mufflers on construction equipment will be utilised and will be properly maintained during the construction phase;
- Mobile plant, if any, will be sited as far away from NSRs as possible;
- Machines and plant (such as trucks) that may be in intermittent use will be shut down between work periods or will be throttled down to a minimum;
- Plants known to emit noise strongly in one direction will, wherever possible, be orientated so that the noise is directed away from the nearby NSRs;
- Material stockpiles and other structures will be effectively utilised, wherever practicable, in screening noise from on-site construction activities; and
- The Contractor should devise, arrange methods of working and carrying out the works in such manner as to minimise noise impacts on the surrounding environment, and should provide experienced personnel with suitable training to ensure that all these measures are implemented properly.

Evaluation of Effectiveness of Proposed Noise Mitigation Measures

By adopting HDD instead of open trenching or TBM, the construction noise to nearby NSRs has been minimised. Considering that there will be limited on-site PMEs operating within the launching pit at any one time during the construction phase and that noise mitigation

measures will be implemented (e.g. use of QPME, temporary noise barrier and enclosure), no adverse construction noise impact is anticipated due to the proposed Project.

A CNMP will be prepared and checked by Certified Noise Modelling Professional recognised by the Hong Kong Institute of Qualified Environmental Professionals (HKIQEP) or equivalent so that both the verification of the plant inventory and the assessment of the effectiveness and practicality of all identified mitigation measures for mitigating the construction noise impact would be performed before the construction of the Project. The CNMP will include a quantitative construction noise impact assessment, propose quieter construction methods and equipment, recommended noise mitigation measures and a proposed construction noise impact monitoring and audit programme of the Project. All the recommended mitigation measures shall be implemented properly.

4.4.4 EVALUATION OF NOISE IMPACT DURING OPERATION PHASE

No machinery or equipment will operate during the operation phase since the proposed cable circuit will be stationary in the micro-tunnel. There will be no noise generation during the operation phase. Hence, noise impact during the operation phase of the Project is not anticipated.

4.5 WATER QUALITY

As discussed under **Section 4.1**, most of the proposed works only involve underground tunnelling with HDD, as well as the installation of pipes and cables. The proposed works areas would only include the launching and receiving pits, and their immediate vicinity, which are relatively small area.

Streams / hydrolines are located within 500m from the proposed cable circuit. They are typically located on the hillsides on both sides of the road, and are relatively higher than the proposed works areas for the launching and receiving pits. As shown in **Figure 1.4**, both of the working pits are located on flat area next to existing road or building. There is also no stream or hydroline crossing or encroaching into the launching pits, and thus no diversion of existing stream is required. The same applies to the Lantau North (Extension) Country Park, which is within 500m from the launching and receiving pits but is much higher in altitude relative to the proposed works areas under this Project. The launching pits will be at +47 mPD and +54.5 mPD level, and the proposed HDD alignment would be below the launching pits and could reach depth of +15 mPD. The hill side streams / hydrolines on top of the HDD alignment would be in the level of +60 to +180 mPD level. As such, even though there are water sensitive receivers within 500m from the Project Area that is susceptible to potential change in water quality, they are unlikely to be affected by works under this Project. These WSRs are shown in **Figure 4.3**.

Excavation will be required for the launching and receiving pits. Impact to the water quality associated with the excavation for the launching and receiving pits is anticipated to be minimal and surface runoff will not directly discharge to the nearby water bodies/existing drainage systems. The area of excavation is small (dimension of launching pit = $\sim 140\text{m}^2$; dimension of receiving pit = $\sim 30\text{m}^2$; dimension of excavation for cable lead-in = $\sim 25\text{m}^2$), and therefore only minimal impact to the surrounding is anticipated. Given the relatively low elevation when compared with the hillsides on both sides of the road, suitable site drainage and/or other measures would be required to divert stormwater from outside of the site from encroaching into the site and result in contamination, minimising site runoff and erosion on the excavated

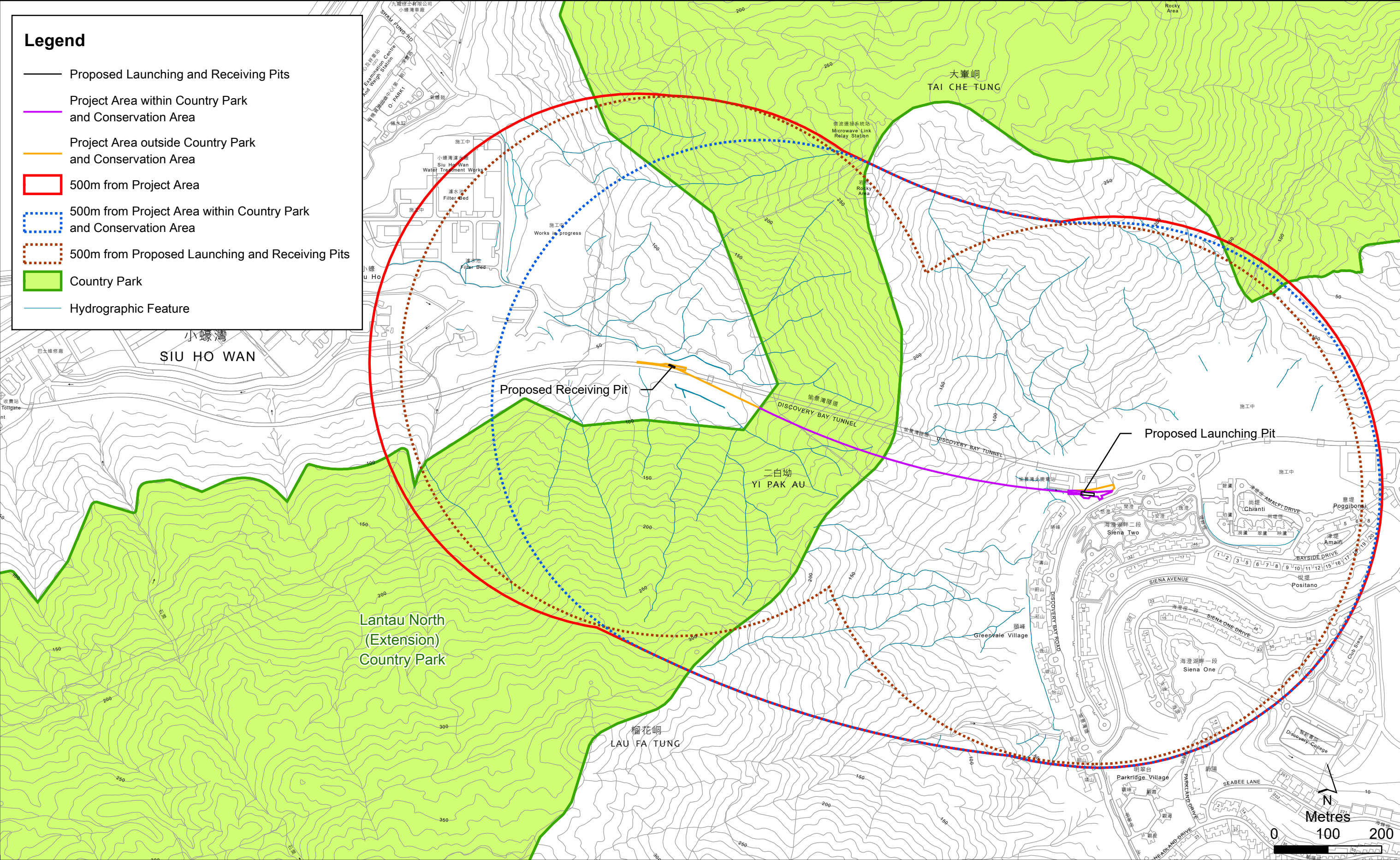


Figure 4.3

Locations of Water Sensitive Receivers



material. Also, proper site control measures will be implemented to avoid run-off of excavated materials into any channel or stream during excavation. Potential water quality impacts on water bodies around the proposed cable circuit are therefore not anticipated.

The risk of potential groundwater infiltration into the HDD micro-tunnel is anticipated to be limited because the HDD tunnel will be pressurised with drilling fluid (to maintain structural integrity of the tunnel and to counteract groundwater infiltration) with drilling fluid so groundwater will not be drawn in. Upon completion of the drilling, the cable installed will fill the void left behind from HDD and thus groundwater infiltration is not anticipated during operation. Therefore, no unacceptable groundwater drawdown is anticipated. Any drilling fluid from HDD would be recycled for reuse for further drilling as much as practicable. Surplus bentonite fluid and drilling fluids would be collected and treated through sedimentation and slurry collection systems to separate solids from liquids. Residual drilling fluid that cannot be reused further would be collected in appropriate container(s), for subsequent appropriate disposal by licensed contractor. Given the use of drilling fluid would be confined to the working pits as well as the drilling fluid recycling system, the risk associated with leak / spill leading to contamination of runoff / nearby watercourse would be very low. And in case of spill, the release would be contained and cleaned up promptly with waste generated collected and stored for disposal by licensed contractor. No unacceptable water quality impact associated with the use of drilling fluid is anticipated.

Temporary storage area with proper covering to avoid erosion by wind or rain will be set up next to the launching pit to allow storage of equipment or stockpile of materials. The temporary storage area is limited in size. Good site practice in terms of minimising storage duration, as well as providing cover is deemed sufficient to avoid loss of materials to nearby surface water. No unacceptable water quality impact from the temporary storage area is anticipated.

Sewage generated from workforce will be properly managed to avoid any impacts to water quality at the nearby drainage and watercourses. Appropriate number of chemical toilets would be provided at both aboveground proposed works areas and these chemical toilets will be cleaned and emptied regularly by licensed contractors.

Spillage of chemicals, lube or fuel could also affect water quality at the nearby drainage and watercourses. The number of PMEs are limited and they will not be refuelled or repaired on the workfront, and there will not be storage of chemicals, lube or fuel onsite. Therefore, spillage of chemicals, lube or fuel is not anticipated.

Beyond the tunnelling works, other works under this project (including pipe and ducts installation, cable laying and jointing, as well as testing and commissioning) are not anticipated to result in notably different water quality concern, such as site runoff, sewage from workforce erosion or construction wastewater. These potential sources of water quality impact are anticipated to be properly controlled with the implementation of the mitigation measures above.

With the implementation of proper site runoff control measures (see **Section 5.1.3**) and considering the small scale of works activities and area, water quality impacts associated with the construction of the Project are not anticipated.

No water quality impact will be anticipated during operation phase as the proposed cable circuit is expected to be maintenance free in normal operation.

4.6 WASTE MANAGEMENT

4.6.1 RELEVANT ENVIRONMENTAL LEGISLATION, STANDARDS AND GUIDELINES

The following legislations governing waste management and disposal in Hong Kong are considered in assessing potential waste management implications:

- *Environmental Impact Assessment Ordinance* (CAP.499), Annexes 7 and 15 of *Technical Memorandum on Environmental Impact Assessment Process* (EIAO-TM);
- *Waste Disposal Ordinance* (CAP.354) and its subsidiary legislation such as *Waste Disposal (Chemical Waste) (General) Regulation* (CAP.354C) and *Waste Disposal (Charges for Disposal of Construction Waste) Regulation* (CAP.354N);
- *Public Health and Municipal Service Ordinance* (CAP.132), *Public Cleansing and Prevention of Nuisances Regulation* (CAP.132BK); and
- *Land (Miscellaneous Provisions) Ordinance* (CAP.28).

Other relevant documents and guidelines that are applicable to waste management and disposal in Hong Kong include:

- Chapter 9 of Hong Kong Planning Standards and Guidelines (HKPSG);
- *A Guide to the Chemical Waste Control Scheme*;
- *A Guide to the Registration of Chemical Waste Producers*;
- *Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes*;
- *Public Dumps* (Works Bureau Technical Circular No.2/93);
- *Public Filling Facilities* (Works Bureau Technical Circular No.2/93B);
- *Fill Management* (Works Bureau Technical Circular No.12/2000);
- *Specifications Facilitating the Use of Recycled Aggregates* (Works Bureau Technical Circular No.12/2002);
- *Environmental Management on Construction Sites* (Environmental, Transport and Works Bureau Technical Circular (Works) No.19/2005);
- *Trip Ticket System for Disposal of Construction & Demolition Materials* (Development Bureau Technical Circular (Works) No.6/2010);
- *Enhanced Specification for Site Cleanliness and Tidiness* (Development Bureau TC(W) No. 8/2010);
- *Management of Construction and Demolition Materials* (Civil Engineering and Development Department Technical Circular No.11/2019); and
- *Section 4.1.3 of Chapter 4 – Management of Construction and Demolition Material Including Rock in Project Administration Handbook (PAH) for Civil Engineering Works (2024 Edition)*.

4.6.2 EVALUATION OF WASTE MANAGEMENT IMPLICATIONS DURING CONSTRUCTION PHASE

During the construction phase, construction activities such as site excavation will result in the generation of waste. The typical waste types associated with these construction activities are summarised below:

- C&D materials, including excavated materials (soil and rock) from excavation works;

- General refuse; and
- Chemical Waste.

No hazardous materials or wastes will be generated during construction phase.

C&D Materials

It is estimated that approximately 520m³ of inert C&D materials (e.g. soil and rock) will be excavated by HDD. There will be no reuse on-site and the excavated soil will be delivered to public fill reception facilities (e.g. Tuen Mun Area 38 Fill Bank) or other public fill reception facilities available at the time of the Project. The designation of inert C&D materials delivery is subject to the designated treatment by the Public Fill Committee according to *DEVB TC(W) No.6/2010*. It is also estimated that approximately 280m³ of bentonite slurry will be used during HDD. The bentonite slurry will be dewatered in accordance with ProPECC PN 2/24 and disposed to public fill reception facility (e.g. Tseung Kwan O Area 137 Fill Bank or Tuen Mun Area 38 Fill Bank).

Approximately 75m³ of non-inert C&D materials (i.e. construction waste) is anticipated to be generated during the construction phase. These non-inert C&D materials will be sorted in order to segregate the recyclable materials (e.g. metals, plastics and papers) which will be collected by recyclers for reuse and recycling. Non-recyclable waste materials of non-inert C&D materials will be disposed of at designated landfill (e.g. West New Territories Landfill (WENT)) by a waste collector or other landfills available at the time of the Project.

Adverse environmental impact associated with handling, transport and disposal of the C&D materials generated from the construction works of the Project is not anticipated.

General Refuse

The presence of a construction site with workers will result in the generation of general refuse (mainly consisting of food waste, plastic bottles, aluminium cans and wastepaper) which requires off-site disposal. Such refuse should be properly managed, and intentional or accidental release to the surrounding environment must be avoided. Effective collection of site waste will be required to prevent waste materials from being blown around by wind, or creating an odour nuisance or pest & vermin problems.

A maximum of 30 workers is estimated under the Project and a waste generation rate of about 0.65kg/person/day, the amount of general refuse that would be generated is approximately 19.5kg/day. As advised by CLP Power, the construction works will be carried out 6 days per week, thus the amount of general refuse is 117kg/week. Such refuse will be properly managed by suitable waste collectors to prevent intentional or accidental release into the surrounding environment. Recycling bins will be provided on-site to facilitate the recovery of recyclable materials. The contractor shall employ a reliable waste collector to remove the non-recyclable general refuse from the Project Area to WENT Landfill on a regular basis and deliver the recyclables to the local specialised recycling companies. Given the small quantity of general refuse involved and with proper housekeeping measures and refuse collection in place, adverse environmental impact arising from handling, transport and disposal of the general refuse during the construction phase is not anticipated.

Chemical Waste

Chemical waste will be generated from maintenance and servicing activities for construction equipment. Chemical waste such as waste lubricating oil, used solvents and spent chemicals

may be generated. It is anticipated that the total quantity of chemical waste produced would be limited and anticipated to be only a few cubic meters per month.

The chemical wastes produced will be handled and disposed of in an appropriate manner as stipulated in the *Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes* and *Waste Disposal (Chemical Waste) (General) Regulation*. A licensed chemical waste collector should be deployed to special handle, transport and dispose of the chemical wastes at the Chemical Waste Treatment Centre (CWTC) or other licensed facilities, in accordance with the *Waste Disposal (Chemical Waste) (General) Regulation*.

With the incorporation of suitable arrangements for the storage, handling, transportation and disposal of chemical wastes under the requirements stated in the *Waste Disposal (Chemical Waste) (General) Regulation* and the *Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes*, adverse environmental impact arising from the handling, transportation and disposal of chemical waste during construction phase is not anticipated.

4.6.3 EVALUATION OF WASTE MANAGEMENT IMPLICATIONS DURING OPERATION PHASE

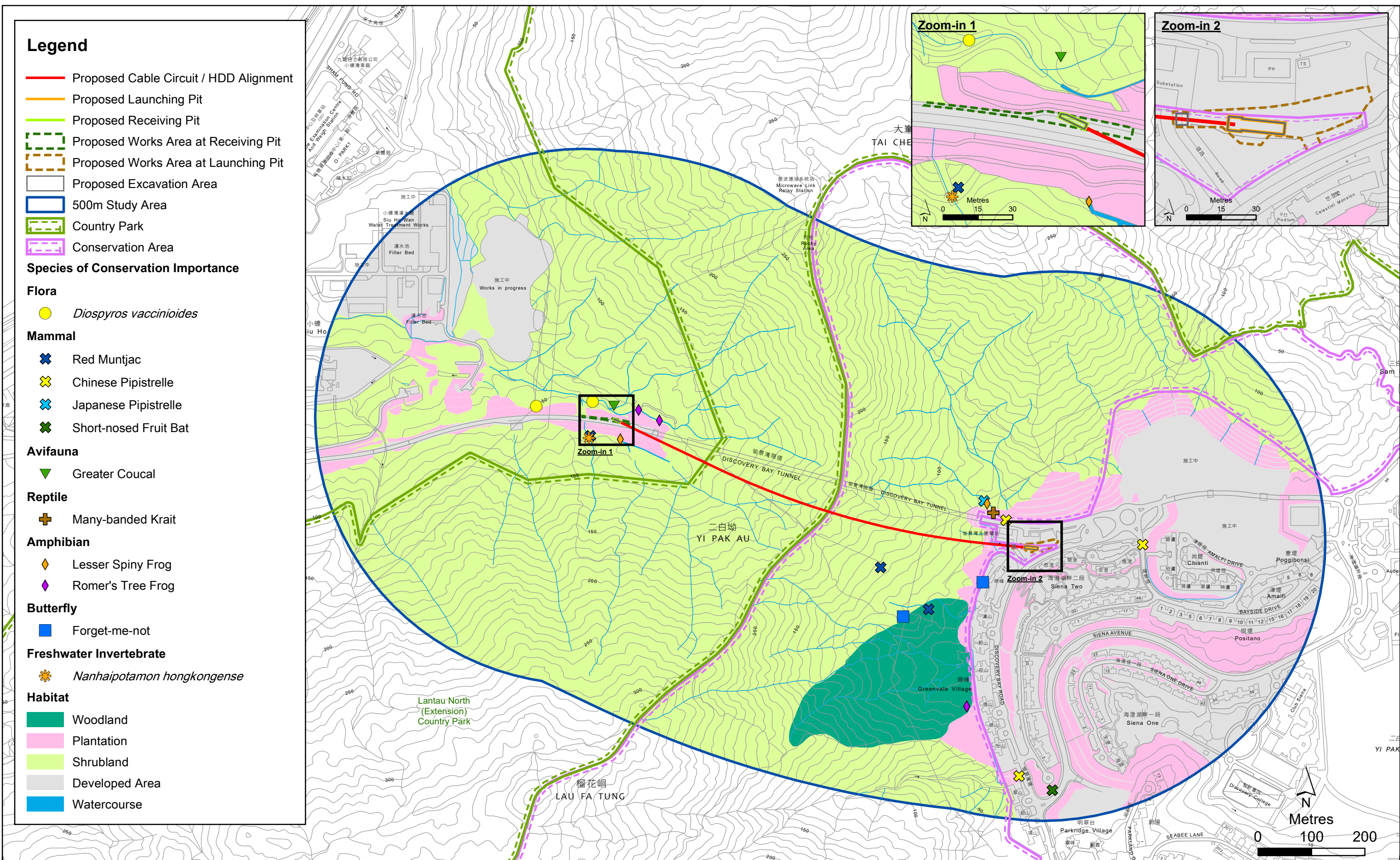
No waste is anticipated to be generated during the operation phase of the Project. Waste management issues are not anticipated during operation phase.

4.7 TERRESTRIAL ECOLOGY

4.7.1 ECOLOGICAL BASELINE CONDITIONS

A review of ecological resources within 500m from the Project Area was conducted and supplemented with baseline ecological surveys conducted in September and October 2024. Five (5) major habitat types were identified within 500m from the Project Area, namely Woodland, Shrubland, Plantation, Developed Area and Watercourse. The aboveground project works areas (i.e. proposed works areas around the launching and receiving pits) comprises Developed Area. The underground Project Area (i.e. proposed cable circuit / HDD alignment) covers Shrubland, Plantation, Developed Area and Watercourse. The habitat map and species of conservation importance recorded during the baseline surveys is presented in **Figure 4.4**. The areas of each habitat recorded within the Project Area and in the Study Area are provided in **Table 4.7**.

In general, the habitats within the Study Area supports low, low to moderate flora and fauna species diversity and low abundance or richness of wildlife. 1 flora and 12 fauna species of conservation importance were recorded within the Study Area, but none were recorded within the Project Area. **Table 4.8** summarises the species of conservation importance recorded within the Study Area. No breeding or nesting activities of wildlife were observed during the survey. The overall ecological importance of other habitats is mostly low to moderate, except for Developed Area which is of low ecological importance. Details of the ecological baseline conditions and evaluation are presented in **Appendix B**.



Habitat and Species of Conservation Importance Recorded in Baseline Survey

TABLE 4.7 AREA OF EACH HABITAT IDENTIFIED IN THE STUDY AREA

Habitat	Area within Project Area (m ²) – Aboveground	Areas within Project Area - Underground Component without Habitat Loss/ Disturbance (m ²)	Total Area within Project Area (m ²)	% of Project Area	Area within Study Area (ha)	% of Study Area
Woodland	-	-	-	-	~6.1	~4%
Shrubland	-	~580	~580	~28%	~115.6	~67%
Plantation	-	~50	~50	~2%	~13.6	~8%
Developed Area	~1,330	~100	~1,430	~70%	~37.5	~22%
Watercourse	-	(length ~ <10m)	(length <10m)	-	~0.03 (length ~13.9km)	<0.1%
TOTAL	~1,330	~730	~2,060	100%	~172.8	100%

TABLE 4.8 SPECIES OF CONSERVATION IMPORTANCE RECORDED WITHIN THE STUDY AREA

Common Name	Scientific Name	Chinese Name	Conservation Status	Recorded Habitat
Flora				
Small Persimmon	<i>Diospyros vaccinioides</i>	小果柿	IUCN: CR; RLCHP: EN	Shrubland
Mammals				
Short-nosed Fruit Bat	<i>Cynopterus sphinx</i>	短吻果蝠	Cap.170	Plantation
Japanese Pipistrelle	<i>Pipistrellus abramus</i>	東亞家蝠	Cap.170	Shrubland
Chinese Pipistrelle	<i>Hypsugo pulveratus</i>	灰伏翼	Cap.170; Fellows: (LC)	Plantation, Developed Area
Red Muntjac	<i>Muntiacus vaginalis</i>	赤麂	Fellows: PRC	Woodland, Shrubland
Avifauna				
Greater Coucal	<i>Centropus sinensis</i>	褐翅鴉鵂	CSMPS(II)	Shrubland

Common Name	Scientific Name	Chinese Name	Conservation Status	Recorded Habitat
Crested Goshawk	<i>Accipiter trivirgatus</i>	鳳頭鷹	Cap.586; CSMPS(II); CITES(II)	In-flight
Black Kite	<i>Milvus migrans</i>	黑鳶	Cap.586; Fellowes: (RC); CSMPS(II); CITES(II)	In-flight
Amphibians				
Lesser Spiny Frog	<i>Quasipaa exilispinosa</i>	小棘蛙	Fellowes: PGC; RLCV(VU)	Watercourse
Romer's Tree Frog	<i>Liuixalus romeri</i>	盧氏小樹蛙	Cap.170; Fellowes: PGC; RLCV(VU); IUCN(EN)	Woodland, Watercourse
Reptiles				
Many-banded Krait	<i>Bungarus multicinctus</i>	銀環蛇	Fellowes: PRC; RLCV(EN)	Plantation

Note:

Conservation Status:

- Cap. 170: Protected under Wild Animals Protection Ordinance. All birds in Hong Kong are protected under Cap. 170.
- Cap. 586: Protection of Endangered Species of Animals and Plants Ordinance
- Fellowes – Fellowes et al. (2002): PGC = Potential Global Concern, PRC = Potential Regional Concern, RC = Regional Concern, LC = Least Concern. Letters in parentheses indicate that the assessment is on the basis of restrictedness in breeding and/or roosting sites rather than in general occurrence.
- RLCV – Red List of China's Vertebrate (2020): VU = Vulnerable, EN = Endangered.
- RLCHP – Red List of China's Higher Plants (2020). EN = Endangered
- CSMPS– China State Major Protection Status: Appendix (II)
- IUCN – International Union for Conservation of Nature Red List of Threatened Species (2025). EN = Endangered, CR = Critically Endangered
- CITES – Under Appendix (II) of Convention on International Trade in Endangered Species of Wild Flora and Fauna

4.7.2 POTENTIAL ECOLOGICAL IMPACTS

The potential ecological impact assessment was conducted in accordance with the EIAO GN 6/2010. The potential ecological impacts associated with the proposed cable circuit laying in Discovery Bay (including but not limited to micro-tunnel drilling, cable laying and backfilling works) during construction are listed below. The details of the potential ecological impacts are summarised in **Table 4.9**. The proposed cable circuit would be placed underground and avoided direct impacts on the Country Park area. The only aboveground elements of the Project are the works areas around the launching and receiving pits as well as cable lead-in. The concerned areas are located within Development Area in CA zone.

- Temporary habitat loss;
- Direct impact on the flora and fauna species of conservation importance;
- Indirect impacts to the surrounding habitats and associated wildlife;

- Indirect impacts of pollution on adjacent waterbodies; and
- Groundwater drawdown.

The potential impacts would not be resulted after completion of the installation works and reinstatement of the Project Area, therefore, no operational impacts are anticipated.

TABLE 4.9 POTENTIAL ECOLOGICAL IMPACTS

Impact	Descriptions	Evaluations	Impact Significance
Direct Impacts			
Temporary habitat loss	- The entire proposed works areas at the launching and receiving pits of ~1,330m² fall within Developed Area. - Among that, ~200m² (of which ~160m² falls within CA) of Developed Area will be temporarily lost due to excavation for the construction of pits and cable lead-in (Figure 4.4).	- The loss of natural habitat was avoided through the adoption of HDD which the proposed cable circuit would go underneath the natural habitats of the entire CP and most of CA without excavation. - No tree felling or pruning would be involved. - The excavated area will be reinstated after construction works. - The directly affected habitat is of low ecological value and subjected to existing disturbances from human activities.	Low
Direct impact on the flora and fauna species of conservation importance	The proposed works may potentially cause the injury/mortality of nearby flora and wildlife.	- No flora and fauna species of conservation importance were recorded within the aboveground Project Area. - Fauna species of conservation importance recorded in the vicinity of the Project Area were highly mobile (i.e. bats and butterflies) and are not subjected to direct impact. - The directly affected habitat (i.e. Developed Area) is subjected to existing disturbances from human activities and not likely to support fauna species of conservation importance during construction phase.	Low
Indirect Impacts			
Indirect impacts to the surrounding habitats and associated wildlife	- The main sources of impacts include increased human activities (esp. during the construction phase) and noise, dust, waste generation and lighting accrued from the construction activities. - Surrounding habitats (i.e. Plantation and Watercourse) and different terrestrial fauna, including mammal, avifauna and amphibian species of conservation importance, identified in the vicinity of the Project Area could be indirectly impacted by the proposed construction works.	- Fauna (i.e. avifauna, bats and terrestrial mammals) inhabiting the nearby area are highly mobile and able to move to the other similar habitats which are larger in area and with higher habitat quality. These faunas are also subjected to existing human activity disturbances from adjacent Developed Area and thus considered less susceptible to additional impacts from the Project given its scale is small. - Good site practice will be adopted. - Night-time works will be avoided under the Project. Only minimal lightings will be used toward the Project Area for safety purpose.	Low

Impact	Descriptions	Evaluations	Impact Significance
Indirect impacts of pollution on adjacent waterbodies	- Site runoff from the Project Area may contain suspended solids and contaminants (e.g. runoff and erosion of exposed bare soil, earth and stockpiles, sediment released during excavation, fuel, oil, and lubricant from maintenance of construction mechanical equipment) if uncontrolled and may lead to water pollution. - Water pollution could be substantial if construction runoff is allowed to discharge without mitigation, resulting in adverse impacts through physical and biological disruption of the area's ecosystem.	- The scale of the construction works is small. - The Project Area is located on ground level or underground where the watercourses in the vicinity are all existing drainage channels with very limited wildlife. No identified natural watercourse is located at the downstream of the Project Area. - Good site practice will be implemented.	Negligible
Groundwater drawdown	- The drilling of underground alignment by HDD may result in groundwater infiltration and potential groundwater table drawdown if uncontrolled. - Groundwater drawdown may lead to settlement and dewatering of surface waterbodies (i.e. watercourses), which may impact freshwater flora and fauna utilizing the waterbodies.	- The scale of the project is small. - The diameter of the HDD alignment is small (900mm). - The risk of potential groundwater infiltration into the HDD tunnel is anticipated to be limited because the HDD tunnel will be pressurised with drilling fluid (to maintain structural integrity of the tunnel and to counteract groundwater infiltration) so groundwater will not be drawn in. Upon completion of the drilling, the cable installed will fill the void left behind from the HDD and thus groundwater infiltration is not anticipated during operation. Therefore, no unacceptable groundwater drawdown is anticipated.	Negligible
Cumulative Impacts			
Proposed Residential Development at Area N1 North (Excluding Area N1D) Northern Portion (Phase 19), Discovery Bay North, Lantau DD352 Lot385 R.P. and The Extension Thereto	- The construction work is located about 145m east from the Project Area. - The proposed construction programme of this project is from April 2023 to June 2025. - The proposed scope of this project is to construct 1400-unit Residential Development Project in Discovery Bay North.	- The overlapping timeline is short (i.e. 1 month). - With the mitigation measures recommended in place in both projects, no unacceptable cumulative impacts are anticipated.	Negligible
Siu Ho Wan Fresh Water Service Reservoir and Associated Mainlaying Works	The construction work is situated approximately 130m northwest of the Receiving Pit and is currently under construction.	With appropriate mitigation measures and good site practices implemented in both projects, the impacts to the surrounding habitats and wildlife are anticipated to be limited. Therefore, unacceptable cumulative impact is not anticipated.	Negligible

4.8 OTHERS

4.8.1 LANDSCAPE AND VISUAL

As the proposed cable circuit will be placed underground, its installation will not cause any visual obstruction or inconvenience to the public. Only minimal above ground works are expected at the launching and receiving pits. No tree felling is anticipated. The proposed works areas will be reinstated to their original state immediately after the works are completed, and so the works are not anticipated to cause any long-term adverse impact on existing landscape resources or character. Therefore, adverse landscape, tree or visual impact is not anticipated during both construction and operation phases.

4.8.2 CULTURAL HERITAGE

4.8.2.1 WORKS INVOLVED IN CONSTRUCTION PHASE

The works involved for the proposed cable circuit at south of Discovery Bay Tunnel include construction of a cable corridor (around 810m long and 900mm in diameter) by trenchless approach, i.e. HDD. Proposed ground excavation will involve a launching pit at south of the existing Discovery Bay North Substation at Discovery Bay Tunnel, a receiving pit located at the west, an excavation area for cable lead-in, as well as the trial pits. No excavation works will be required for the construction of the cable corridor since the proposed cable circuit is constructed by trenchless approach. Additionally, no excavation works will be required for temporary storage area.

4.8.2.2 CULTURAL HERITAGE ASSESSMENT AREA

Given the scale of work for the proposed launching and receiving pits, trial pits and excavation area for cable lead-in is not large (size of launching pit: $\sim 140\text{m}^2 \times 2.5\text{m}$ (D), size of receiving pit: $\sim 30\text{m}^2 \times 3.0\text{m}$ (D), size of trial pits: $\sim 3\text{m}$ (L) $\times$ 3m (W) $\times$ 3m (D) each), size of excavation area under small-scale open cut excavation for cable lead-in: $\sim 5\text{m}$ (L) $\times$ 5m (W) $\times$ 5.5m (D)), a cultural heritage assessment area (CHAA) (see **Figure 4.5**) within 100m from the boundary from where construction works will take place for the Project is considered adequate to access potential cultural heritage impact associated from the Project as shown in **Figure 4.5**. No heritage sites items including declared monuments, proposed monuments, graded historic buildings, sites/buildings/structures in the list of new items pending for grading assessment, SAI or Government historic sites identified by AMO are identified within the CHAA.

4.8.2.3 ARCHAEOLOGICAL POTENTIAL EVALUATION AND IMPACT ASSESSMENT

With regard to unknown archaeological resources, potential archaeological impact due to the proposed works of the Project will mainly cause by soil disturbance that may contain archaeological deposits. Thus, the focus of archaeological impact review is placed on works area that involve soil excavation work (i.e. the proposed launching and receiving pits, the proposed excavation area for cable lead-in, as well as the proposed trial pits).

The proposed launching and receiving pits, the excavation area for cable lead-in, as well as the trial pits, are located in well developed land of existing pavement/ the road surface of current Discovery Bay Road and Discovery Bay Tunnel. Although these areas mostly fall within debris flow deposits (see **Figure 4.5**) which may hold cultural deposits, the works are mainly conducted in an area that had been disturbed by previous road construction works. Additionally, the steep slope also decreases the archaeological potential as it is not favourable to cultural deposits accumulation.

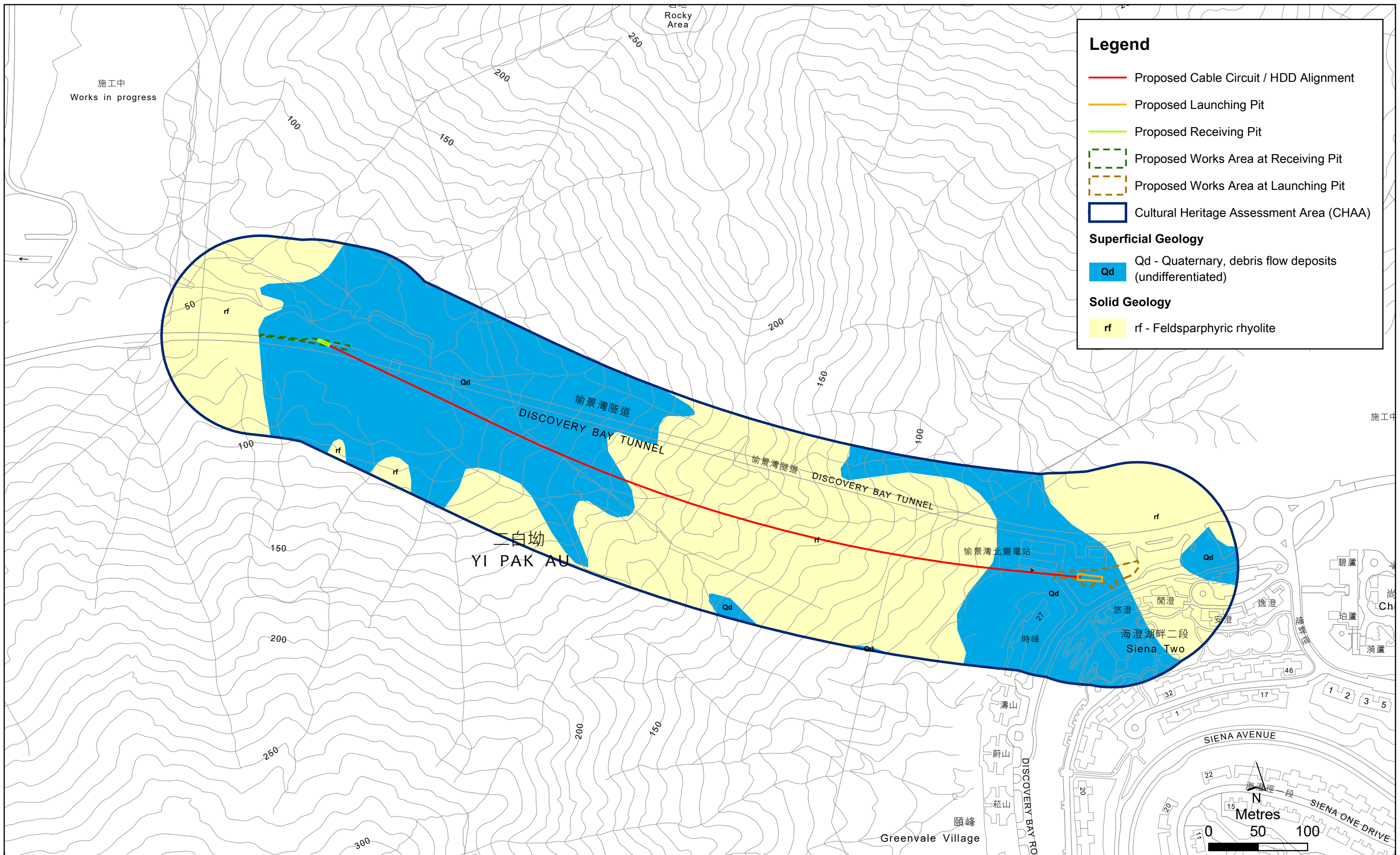


Figure 4.5

Cultural Heritage Assessment Area



As the proposed launching and receiving pits, the excavation area for cable lead-in, as well as the trial pits are of no archaeological potential, no archaeological impact is anticipated during construction work of the Project.

Furthermore, since no excavation works will be required for the construction of the cable corridor as the proposed cable circuit is constructed by trenchless approach, no cultural heritage impact arising from the construction of the cable corridor is anticipated.

As no heritage sites items are identified in the CHAA, no built heritage impacts arising from the construction work of the Project are anticipated.

4.8.2.4 OPERATION PHASE

No cultural heritage resources identified to be impacted by the operation of the Project.

4.8.3 HAZARD TO LIFE

4.8.3.1 DANGEROUS GOODS

No dangerous goods will be involved in this project in either the construction or operation phases.

4.8.3.2 HAZARDOUS MATERIALS OR WASTES, INCLUDING POTENTIALLY CONTAMINATED MATERIALS

No hazardous materials, including potentially contaminated materials or wastes will be generated by this Project at either construction or operation phases. There are no contaminated mud pits in the vicinity of the proposed cable circuit.

4.8.3.3 RISK OF ACCIDENTS RESULTING IN POLLUTION OR HAZARD

Cable laying via HDD is an established industry process, and there is only a minimal risk of accident. Since the Project does not involve the use or generation of any dangerous goods or hazardous materials, the risk of an accident resulting in pollution or hazard is negligible.

5. PROTECTION MEASURES AND ANY FURTHER IMPLICATIONS

5.1 CONSTRUCTION PHASE

5.1.1 AIR QUALITY

In order to comply with *Air Pollution Control Ordinance*, requirements for dust control stipulated in the *Air Pollution Control (Construction Dust) Regulation* should be incorporated in the contract document in order to minimise any potential dust nuisance arising from the construction activities of the Project. Any potential dust impact and watering mitigation would be subject to the actual site condition.

The following air quality control measures should be implemented to alleviate the fugitive dust impact during construction phase:

- All areas involving site clearance and excavations works will be sprayed with water before, during and after the operations to maintain the entire surface wet;
- Restricting heights from which materials are to be dropped, as far as practicable to minimise the fugitive dust arising from unloading/loading;
- Immediately before leaving a work site, all vehicles shall be washed to remove any dusty materials from the bodies and wheels. However, wetting of materials and surfaces should avoid excessive use of water;
- Where a vehicle leaving a work site is carrying a load of dusty materials, the load shall be covered entirely by clean impervious sheeting to ensure that the dusty materials will not be released from the vehicle;
- Any stockpile of dusty materials on-site will be covered entirely by impervious sheeting; and/or placed in an area sheltered on the top and 3 sides. They should also be sprayed with water immediately prior to any loading, unloading or transfer operation to dampen the dusty materials; and
- Any unpaved haul road shall be sprayed with water so as to maintain the entire road surface wet.

The following mitigation measures will be implemented to minimise air quality impact from emissions of PMEs and construction trucks during the construction phase:

- Exempted NRMMS shall be avoided;
- Deploy electrified NRMMS as far as practicable;
- Provide power supply for on-site machinery if feasible; and
- Travelling route of the construction vehicles on public roads will be planned as far as practicable in a way to minimise the air quality impacts to the nearby ASRs.

5.1.2 NOISE

Proposed construction noise mitigation measures include:

- Adoption of quieter construction methods and use of QPME;
- Use of temporary noise barriers and noise enclosure to screen noise from PMEs; and
- Good site management practices.

The above mitigation measures and the EPD's "Recommended Pollution Control Clauses for Construction Contracts" would need to be implemented in work sites as good practices where appropriate.

A CNMP will be prepared before the construction of the Project. The CNMP will include a quantitative construction noise impact assessment, propose quieter construction methods and equipment, recommended noise mitigation measures and a proposed construction noise impact monitoring and audit programme of the Project. All the recommended mitigation measures shall be implemented properly.

5.1.3 WATER QUALITY

Appropriate measures including the provision of temporary movable toilets and controlled wastewater discharge to the nearby water bodies will be implemented in accordance with the guidelines stipulated in *EPD's Practice Note for Professional Persons on Construction Site Drainage (ProPECC PN2/24)* during the construction works to properly control site run-off and drainage and to minimise potential water quality impacts. The following specific measures should be included:

- Suitable perimeter channels or other measures to divert stormwater from outside of the site from encroaching into the site and result in contamination;
- Cover exposed soil and open stockpiles;
- Water used in / generated from tunnelling should be reused / recirculated after sedimentation / treatment as far as practicable. When there is a need for final disposal, the wastewater should be discharged into storm drains via silt removal facilities.
- Bentonite slurries used in tunnel boring should be reconditioned and reused wherever practicable. If the disposal of a certain residual quantity cannot be avoided, the used slurry may be disposed of at the marine spoil grounds subjected to obtaining a marine dumping licence in accordance with the Dumping at Sea Ordinance (Cap. 466). If the used bentonite slurry is intended to be disposed of through the public drainage system, it should be treated to the respective effluent standards applicable to foul sewers, storm drains or the receiving waters as set out in the WPCO Technical Memorandum on Effluent Standards.
- Appropriate number of chemical toilets would be provided at both proposed works areas and these chemical toilets will be cleaned and emptied regularly by licensed contractors; and
- PMEs should not be refuelled or repaired on the workfront. No storage of chemicals, lube or fuel on-site would be allowed.

Where appropriate, wastewater discharge licence will be applied and conditions/requirements will be complied with in accordance with the Water Pollution Control Ordinance (WPCO) (Chapter 358).

In addition, typical control measures would be adopted by this Project to minimise potential water quality impact associated with HDD. The HDD tunnel will be pressurised with drilling fluid to counteract the potential infiltration of groundwater. Any drilling fluid will be recycled and reconditioned for reuse. Any residual drilling fluid that is no longer suitable for reuse will be stored for appropriate disposal by licensed contractor. Any spill will be contained and promptly cleaned up and the waste generated will be disposed of by licensed contractor.

5.1.4 WASTE MANAGEMENT

The contractors employed for the Project will be required to comply with the *Waste Disposal Ordinance* when handling, collection and disposal of wastes from the construction phase of the Project. In addition, the contractors are required to incorporate recommendations on waste recycling, storage, transportation and disposal measures into a comprehensive on-site waste management plan. Such a waste management plan should incorporate site-specific factors, such as the designation of areas for the segregation and temporary storage of reusable and recyclable materials.

In the waste management plan to be prepared, the hierarchy presented below (in order of preference) will be used to evaluate waste management options, thus allowing maximum waste reduction and often reducing costs:

- Avoidance and minimisation, i.e. not generating waste through changing practices;
- Reuse of materials, thus avoiding disposal (generally with only limited reprocessing);
- Recovery and recycling, thus avoiding disposal (although reprocessing may be required); and
- Treatment and disposal, according to relevant laws, guidelines and good practice.

To further minimise waste arising and keep environmental impacts within acceptable levels, careful design, planning and good site management practice will be adopted, including:

- Approved personnel, such as site manager, will be nominated to be responsible for implementation of good site practices, arrangements for waste collection and effective disposal of all wastes generated at the site to appropriate facilities;
- Training on appropriate waste management procedures, including waste reduction, reuse and recycling and chemical waste handling procedures will be provided to the workers and site personnel;
- Sufficient waste disposal points will be provided and collection of waste for disposal will be arranged regularly;
- Different types of waste will be properly segregated and stored on-site to increase the feasibility of recycling certain components of the waste streams, such as steel; and
- Waste will be transported in enclosed containers or skips to minimise windblown litter and dust/odour nuisance during the transportation of waste.

A trip ticket system will be implemented with reference to the *DEVB TC(W) No.6/2010* for the disposal of C&D materials.

All dump trucks engaged on-site for delivery of inert and non-inert C&D material from the site to the designated disposal location (i.e. landfill) should be equipped with GPS or equivalent system for tracking and monitoring of their travel routings and parking locations by the contractor to prohibit illegal dumping and landfilling of materials. The data collected by GPS or equivalent system should be recorded properly to check and analyse the travel routing and parking locations of dump trucks engaged on-site.

Chemical waste generated during the Project will be properly stored in accordance with EPD's *Code of Practice on the Packaging, Labelling and Storage of Chemical Waste* for subsequent collection and disposal by a licensed Chemical Waste Collector. General refuse generated on-site will be stored in enclosed bins and collected by waste collector on regular basis.

5.1.5 TERRESTRIAL ECOLOGY

Based on the ecological impacts identified in **Section 4.7**, mitigation measures to avoid, minimise or compensate (if necessary) for the potential significant impacts are detailed below.

- During the planning stage, the Project Proponent has conducted site visits with contractors to identify Project Area with minimal area/ impact on vegetation, tree and habitat loss at any stage of the Project. No tree felling or pruning will be caused by the Project.
- The proposed cable circuit will be constructed using HDD, which totally avoids excavating trenches under the natural habitats within CP and mostly within CA, and would minimise disturbance to existing habitats and associated wildlife.
- Night-time works will be avoided under the Project;
- The boundary of the works area will be clearly marked by temporary fence. The works area boundaries will be regularly checked to ensure that they are not breached and that no adverse impacts occur to surrounding habitat and associated wildlife;
- Contractors will check the pits each day, prior to commencing work, to ensure that no mammals, reptiles or amphibians are trapped in the pits;
- Avoid the use of direct lighting on adjacent habitats from the Project Area (i.e. shrubland and plantation) and control night-time lighting to reduce potential ecological impacts.
- Adopt appropriate measures including controlled wastewater discharge to the nearby water bodies, in accordance with the guidelines stipulated in *Environmental Protection Department (EPD)'s Practice Note for Professional Persons on Construction Site Drainage (PN2/24)* during the construction works to properly control site run-off and drainage and to minimise potential water quality impacts;
- Avoid any damage and disturbance, particularly those caused by filling and illegal dumping to the surrounding natural habitats;
- Prohibit and prevent open fires within the works area boundary during construction and provide temporary firefighting equipment in the works areas; and
- Good site practice will be enforced, and effective mitigation measures are required. Works Area will be kept tidy at all times.

5.1.6 LANDSCAPE AND VISUAL

Given the limited extent of any landscape or visual impacts as described in **Section 4**, the standard practice measures assumed to be adopted during construction, are considered adequate. The contractor's standard site management practice during construction, must include:

- Briefing all workers to avoid impacting the existing vegetation, within the Project Area in-so-far as possible, and strictly outside the Project Area;
- Maintaining the site in a clean and tidy state at all times, including managing stockpiled materials appropriately to alleviate visual intrusion;
- Managing construction waste appropriately (See **Section 5.1.4**);
- Minimising the extent of works and the construction time as far as practicable; and
- Reinstating any temporarily affected works areas to their original condition promptly upon completion of works

5.1.7 CULTURAL HERITAGE

No cultural heritage impacts have been identified to arise from the construction of the cable corridor using HDD and the associated pits, no mitigation measures are therefore required. As a precautionary measure, the project proponent and his/her contractor are required to inform AMO immediately when any antiquities or supposed antiquities under the Antiquities and Monuments Ordinance (Cap. 53) are discovered during the course of works.

5.2 OPERATION PHASE

Since no impacts are anticipated during operation phase, no mitigation measures are required.

5.3 POSSIBLE SEVERITY, DISTRIBUTION, DURATION OF ENVIRONMENTAL EFFECTS AND FURTHER IMPLICATIONS

Since the major portion of the proposed cable works are located underground, and in view of the small proposed works areas at the launching and receiving pits, the associated environmental impacts during construction phase is anticipated to be localised and temporary. With the implementation of proposed mitigation measures, there would be no adverse residual impacts.

As the proposed cable circuit is expected to be maintenance free in normal operation, and that the proposed cable circuit is located underground, no operational impacts nor further implications would be anticipated.

6. CONCLUSION

The Project proposes the installation of the proposed cable circuit which is located within the Lantau North (Extension) Country Park and Conservative Area (CA). The selection of the cable routing, construction method and launching pit location has taken into consideration the nature of the area and mitigation measures have been proposed to further reduce potential environmental disturbances to sensitive receivers arising from the implementation of the Project.

The scale of the construction works is small, mainly utilising small-scale construction equipment/machineries and hand tools, and most of the construction works will be underground. There will be no adverse environmental impacts during operation phase as the proposed cable circuit is expected to be maintenance free in normal operation. Appropriate environmental mitigation measures have been identified and will be implemented. Overall environmental impacts potentially arising from the proposed cable circuit and associated works area are therefore considered to be insignificant. As appropriate environmental mitigation and control measures will be implemented according to the recommendations provided in the Project Profile, no unacceptable adverse residual environmental impacts are anticipated for the Project.

7. USE OF PREVIOUSLY APPROVED PROJECT PROFILES FOR DIRECT APPLICATION FOR ENVIRONMENTAL PERMITS

Reference has been made to the following Project Profiles shown in **Table 7.1** for direct application of Environmental Permits due to the similarity in work nature, purpose and characteristics of the projects.

TABLE 7.1 PREVIOUSLY APPROVED PROJECT PROFILES RELEVANT TO THE PROPOSED PROJECT

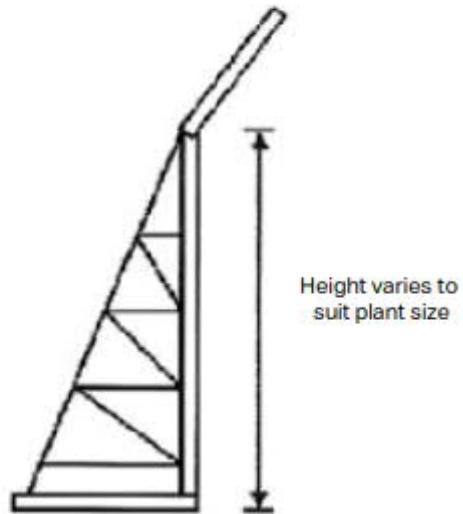
Project Reference	Submission Report (Register No.)	Structure of Project	Aspects of environmental impacts addressed in the Project Profile	Measures recommended in the Project Profile	Conclusion of Study	Date of Approval/ Permission for Direct Application of EP	Date of Issuance of EP (EP No.)
Installation of Proposed Cable Route from Cheung Sha to Tung Chung Town	7 April 2022 (PP-641/2022)	The project involves the installation of an underground 132kV 150MVA cable circuit connecting the Cheung Sha substation to the Tung Chung Town substation.	Air quality, noise, water quality, waste management, terrestrial ecology, landscape and visual, cultural heritage and other impacts.	Implementation of mitigation measures related to air quality, noise, water quality, waste management, terrestrial ecology, landscape and visual and cultural heritage during construction phase.	No unacceptable adverse residual environmental impacts with the implementation of appropriate environmental control measures.	17 May 2022	20 June 2022 (EP-611/2022)
Installation of the Proposed 132kV Cable Circuits Connecting	17 June 2021 (PP-625/2021)	The project involves the installation of two cable circuits (turn in and turn out) linking up the proposed Ho To	Air quality, noise, water quality, waste management, ecology,	Implementation of mitigation measures related to air quality, noise, water quality,	No unacceptable adverse residual environmental impacts with the implementation of	22 July 2021	18 August 2021 (EP-594/2021)

Project Reference	Submission Report (Register No.)	Structure of Project	Aspects of environmental impacts addressed in the Project Profile	Measures recommended in the Project Profile	Conclusion of Study	Date of Approval/ Permission for Direct Application of EP	Date of Issuance of EP (EP No.)
with Ho To West Substation and Existing 132kV Fanling to Mai Po Cable Circuits		West Substation with two existing circuits connected to Fanling and Mai Po Substations	landscape and visual and other impacts.	waste management and ecology during construction phase.	appropriate environmental control measures.		



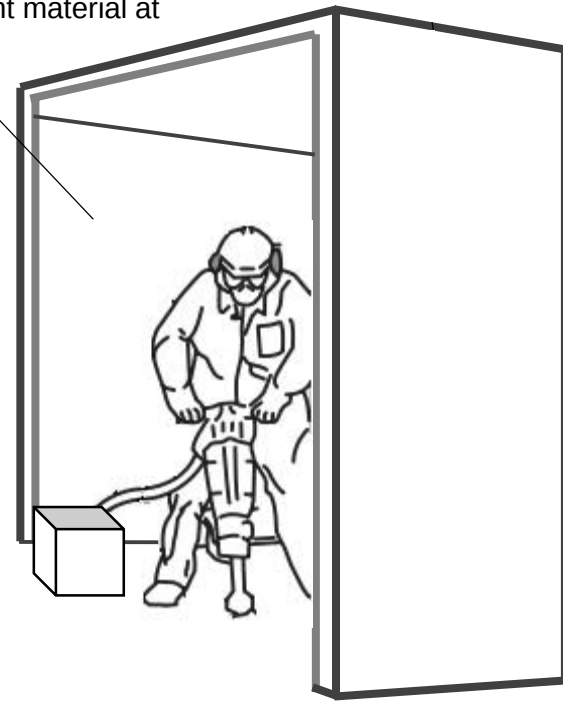
APPENDIX A INDICATIVE DRAWINGS OF TEMPORARY NOISE BARRIER AND ENCLOSURE

Indicative Drawings of Typical Temporary Noise Barrier and Enclosure



Typical Configuration of Noise Barrier

Lined with sound absorbent material at the inner surfaces



Typical Configuration of Portable Noise Enclosure



APPENDIX B ECOLOGICAL BASELINE



132kV Circuit Reinforcement at Discovery Bay Tunnel

Appendix B

PREPARED FOR



CLP Power Hong Kong Limited

DATE

04 September 2025

REFERENCE

0750437



SIGNATURE PAGE

132kV Circuit Reinforcement at Discovery Bay Tunnel

Appendix B

0750437



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B1. LITERATURE REVIEW

A desktop review was conducted to search for relevant scientific papers, reports and previous Environmental Impact Assessment (EIA) reports for the purpose of identifying any available ecological information, including habitats and species of conservation importance in the area. Based on recent aerial photos and relevant previous studies, habitats and species of conservation importance recorded previously were identified. General studies (if any), which may not necessarily focus on the Study Area and Project Site, were also reviewed and relevant information was extracted from the report(s).

B1.1 SITE OF CONSERVATION IMPORTANCE

The Study Area, situated in Discovery Bay, falls within CP and CA (See **Figure B1.1**).

B1.1.1 COUNTRY PARK

The Lantau North (Extension) Country Park within the Study Area is designated under the Country Parks Ordinance (Cap. 208) (**Figure B1.1**). The country park is mainly mountainous and upland valleys covered with natural woodland and unspoiled stream courses. The well-established areas of secondary woodlands, shrubland, grassland and freshwater habitats are of high conservation and landscape value. The proposed Horizontal Directional Drilling (HDD) alignment will be laid underground within this zone.

The designation of CP is intended to provide the services of nature conservation, countryside recreation and outdoor education. Developments within CP are generally discouraged unless it is necessary to protect the vegetation and wildlife inside CP or to encourage the use of CP for the purposes of recreation and tourism. All uses and developments within CP should seek consent from the Country and Marine Parks Authority.

B1.1.2 CONSERVATION AREA

The large areas of upland valley within the Study Area are zoned as CA under the draft Discovery Bay Outline Zoning Plan No. S/I-DB/6 (**Figure B1.1**). Part of the Project Site including the proposed HDD alignment, launching pit and associated works areas, and the cable lead-in fall within this zone.

The planning intention of this zone is to conserve the existing natural character and intrinsic landscape value by protecting topographical features from encroachment by adjacent developments. There is a general presumption against development within this zone. In general, only uses that support education or for public convenience and utility may be approved.

B1.2 PREVIOUSLY RECORDED SPECIES OF CONSERVATION IMPORTANCE

A literature review has been conducted to characterise the existing ecological conditions of the Project Site and Study Area and to identify habitats and species of conservation

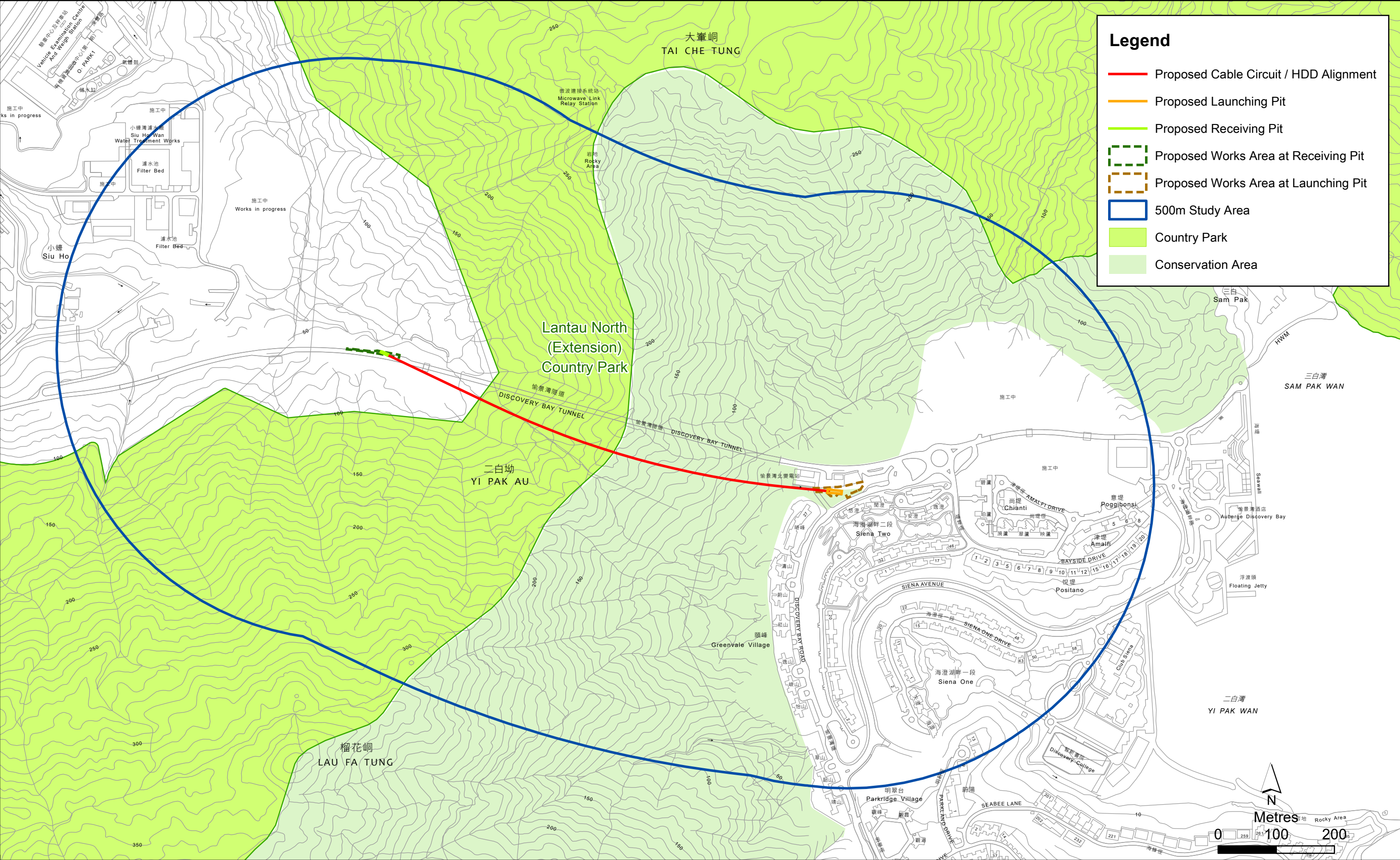


Figure B1.1

Site of Conservation Importance within the Study Area



importance in the area. A number of relevant studies including but not limited to the followings were reviewed.

- EIA – 186/2010 – Integration of Siu Ho Wan and Silver Mine Bay Water Treatment Works (Black & Veatch, 2010)⁽¹⁾
- EIA – 233/2015 – Tung Chung New Town Extension (ARUP, 2015)⁽²⁾
- EIA – 252/2017 – Proposed Comprehensive Residential and Commercial Development atop Siu Ho Wan Depot (ARUP, 2017)⁽³⁾

The ecological survey periods and surveyed flora/ fauna groups that are presented in the above studies are tabulated in **Table B1-1**; a map showing their study areas, whenever defined, is provided in **Figure B1.2**; a map showing the species of conservation importance recorded in previous studies is provided in **Figure B1.3**.

Special attention was paid to ecologically sensitive areas, and species of conservation importance (i.e. species protected by local legislation, endemic to Hong Kong or South China, listed in international conventions for conservation of habitat/wildlife, listed in IUCN Red Data Book or those of the South China region and considered as rare in the territory or having special conservation importance by scientific studies, etc.). The information gathered from the literature review was evaluated and the information gaps concerning assessment of the potential ecological impacts arising from the Project on the terrestrial environment were identified.

TABLE B1-1: PREVIOUS STUDIES RELEVANT TO THE STUDY AREA

Study	Survey Period	Flora and Fauna Groups Surveyed
EIA – 186/2010	Jan 2007 – May 2007	Fauna & Flora
EIA – 233/2015	May 2012 – Mar 2013, Jun – Aug 2013, Aug 2014 – Feb 2015	Fauna & Flora
EIA – 252/2017	Feb 2016 – Oct 2016, Feb 2017	Fauna & Flora

B1.2.1 FLORA SPECIES OF CONSERVATION IMPORTANCE RECORDED IN PREVIOUS STUDIES

Based on the reviewed literatures, one (1) floral species of conservation importance was recorded within the Study Area. It is reported that one individual of this species was observed under a plantation habitat. Details of the flora species of conservation importance are shown in **Table B1-2**.

-
- (1) Black & Veatch (2010). EIA Report for Integration of Siu Ho Wan and Silver Mine Bay Water Treatment Works.
 (2) ARUP (2015). EIA Report for Tung Chung New Town Extension.
 (3) ARUP (2017). EIA Report for Proposed Comprehensive Residential and Commercial Development atop Siu Ho Wan Depot.

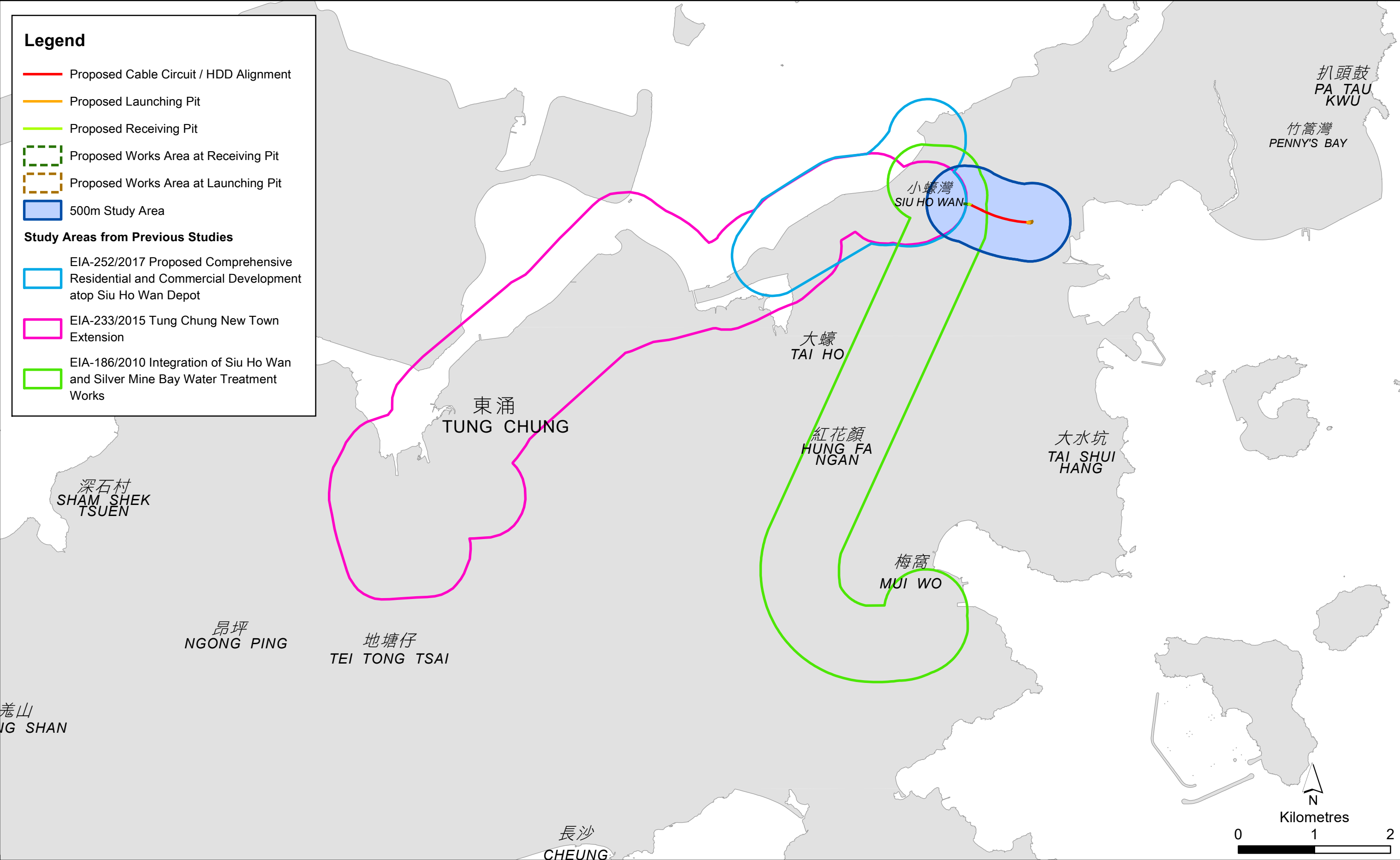


Figure B1.2

Previous Study Areas of Relevant Studies



TABLE B1-2: FLORA OF CONSERVATION IMPORTANCE RECORDED FROM PREVIOUS STUDIES

Scientific Name	Chinese Name	Conservation Status	Previous Study
Flora			
<i>Cibotium barometz</i>	金毛狗	Category 2 (AFCD, 2003); Wild plant under State protection (category II)	EIA – 252/2017
Note: Conservation Status: - Category 2 - AFCD (2003). Rare and Precious Plants of Hong Kong (Online Version). Agriculture, Fisheries and Conservation Department, HKSAR, Hong Kong. Available at: https://www.herbarium.gov.hk/en/publications/books/book2/index.html. Accessed on 2 November 2023. - Wild plant under State protection (category II) - List of Wild plant under State protection (2021): Category I; Category II.			

B1.2.2 FAUNA SPECIES OF CONSERVATION IMPORTANCE RECORDED IN PREVIOUS STUDIES

B1.2.2.1 MAMMALS

Based on the reviewed literature, no mammal species of conservation importance were recorded in the Study Area.

B1.2.2.2 AVIFAUNA

Based on the reviewed previous approved EIA studies, three (3) avifauna species of conservation importance were recorded in the shrubland or urbanized area within the Study Area. Details of the avifauna species of conservation importance are shown in **Table B1-3**.

TABLE B1-3: AVIFAUNA OF CONSERVATION IMPORTANCE RECORDED FROM PREVIOUS STUDIES

Common Name	Scientific Name	Chinese Name	Conservation Status	Previous Study
Avifauna				
Greater Coucal	<i>Centropus sinensis</i>	褐翅鴉鵂	CSMPS(II)	EIA – 186/2010
Common Kestrel	<i>Falco tinnunculus</i>	紅隼	Cap.586; CSMPS(II); CITES(II)	EIA – 186/2010
Collared Scops Owl	<i>Otus lettia</i>	領角鴞	Cap.586; CSMPS(II); CITES(II)	EIA – 252/2017

Common Name	Scientific Name	Chinese Name	Conservation Status	Previous Study
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Note:

Conservation Status:

- Cap. 170: Protected under Wild Animals Protection Ordinance, all birds in Hong Kong are protected under Cap. 170
- Cap. 586: Protection of Endangered Species of Animals and Plants Ordinance
- CSMPS – China State Major Protection Status: Appendix (II)
- CITES – Under Appendix (II) of Convention on International Trade in Endangered Species of Wild Flora and Fauna

B1.2.2.3 OTHER TERRESTRIAL FAUNA

Based on the reviewed literature, no other terrestrial fauna species of conservation importance were recorded within the Study Area.

B1.2.2.4 AQUATIC FAUNA

Based on reviewed EIA studies, the only aquatic fauna species of conservation importance recorded within the Study Area is Freshwater Crab *Sinolapotamon anacoluthon*. Details of the aquatic fauna species of conservation importance is shown in **Table B1-4**.

TABLE B1-4: AQUATIC FAUNA SPECIES OF CONSERVATION IMPORTANCE RECORDED FROM PREVIOUS STUDIES

Common Name	Scientific Name	Chinese Name	Conservation Status	Previous Study
Aquatic Fauna				
Freshwater Crab	<i>Sinolapotamon anacoluthon</i>	鰓刺溪蟹	Fellowes: PGC; IUCN(VU)	EIA – 252/2017

Note:

Conservation Status:

- Fellowes – Fellowes et al. (2002). PGC = Potential Global Concern.
- IUCN – International Union for Conservation of Nature Red List of Threatened Species (2025). VU = Vulnerable

B1.2.3 EVALUATION & IDENTIFICATION OF INFORMATION GAP

The information gathered from the literature review were evaluated to identify any information gaps. While previous studies did not cover the entire Study Area, an ecological survey was conducted to gather more baseline ecological information for further assessment.

B2. ECOLOGICAL BASELINE SURVEY

The Study Area comprises an area within 500m from the Project Site. In order to gather more ecological information to supplement the data from the literature review and to establish a comprehensive baseline data, ecological survey, including day and night surveys, was conducted between September 2024 and October 2024 with particular focus on habitats and wildlife along and adjacent to the proposed cable circuit. A summary of the ecological baseline survey methodologies is provided in **Table B2-1**. Survey transects mainly followed the existing roads (**Figure B2.1** refers), aiming to cover all types of habitats within the Study Area.

TABLE B2-1: SUMMARY OF THE ECOLOGICAL BASELINE SURVEY METHODOLOGIES

Survey Type	Methodology	Survey Date
Habitat and Vegetation	Habitat mapping and vegetation identification through ground truthing in major habitats, in order to ensure they reflected current conditions and to distinguish between habitats which could not always be reliably distinguished from aerial photos. Representative colour photos were taken for each habitat type (Annex B1) and any important ecological features identified.	19 September, 23 September, 17 October 2024
Avifauna	Quantitative (active searching along the survey transect) and Qualitative (recorded within Study Area); including day and night surveys. The presence and abundance of avifauna species at various habitats observed from transects were recorded visually and aurally. Any signs of breeding (e.g. nests, recently fledged juveniles) within the Study Area were also recorded if observed. Observations were made using 8×42 binoculars.	
Mammal	Quantitative (active searching along the survey transect) and qualitative (recorded within Study Area); including day and night surveys. As mammals usually occur at low densities, in addition to direct observation, any observation of signs of mammal activity, such as tracks, scats or burrows were actively sought.	
Herpetofauna	Quantitative (active searching along the survey transect) and qualitative (recorded within Study Area); including day and night surveys. Potential hiding places such as among leaf litter, inside holes and under stones and logs were actively searched within the Study Area. Auditory detection of species-specific calls was also used to survey frogs and toads.	
Butterfly and Odonates	Qualitative (recorded within Study Area) survey; including only day survey.	

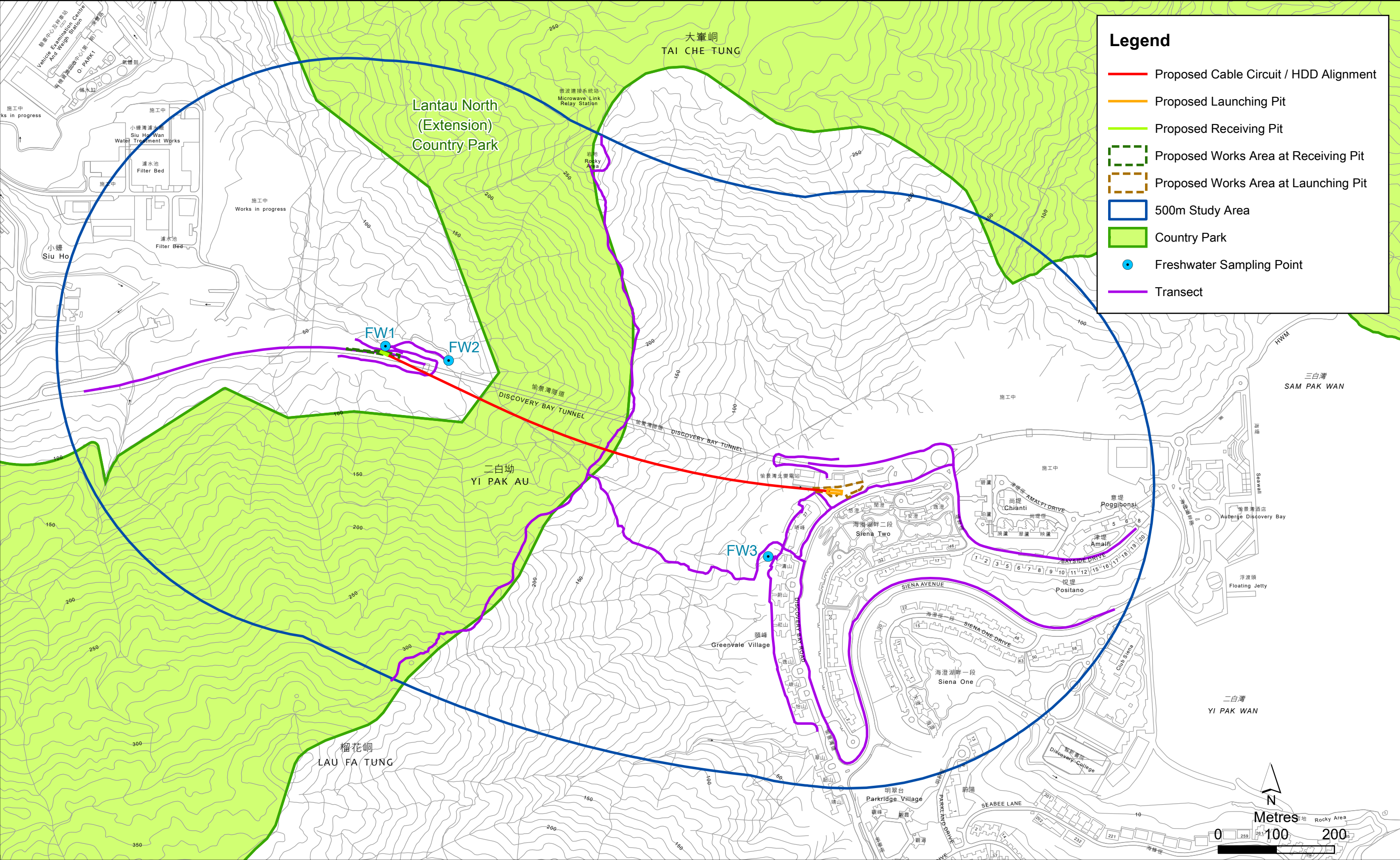


Figure B2.1

Survey Transects Map



Survey Type	Methodology	Survey Date
	Particular attention was given to food/ host plants for butterfly larvae and favoured habitats for both groups, such as shrubland for butterflies and streams for odonates (both adults and larvae).	
Aquatic fauna	Active searching at sizable streams and notable water bodies by direct observation for aquatic fauna, including but not limited to fish, and macroinvertebrates; including day and night surveys.	
Firefly	Qualitative (recorded within Study Area) survey; including only night survey. Surveys commenced immediately after sunset and lasted for approximately 2 hours. Active searching on the potential habitats such as watercourses utilized by fireflies.	

B3. EXISTING ECOLOGICAL BASELINE

The Project Site is located within CA and CP. Five (5) major habitat types have been identified in the Study Area, namely Woodland, Shrubland, Plantation, Developed Area and Watercourse. Habitats present within the Study Area are shown in **Figure B3.1**.

B3.1 HABITAT AND VEGETATION

Error! Reference source not found. Error! Reference source not found. summarises the area of each habitat recorded in the Study Area. For the current ecological impact assessment, only aboveground elements of the Project (i.e. the proposed works areas around the launching and receiving pits, and the cable lead-in) would be considered. The representative habitat photos and representative photos of the Project Site are shown in **Annex B1**. A total of 137 flora species were recorded within the Study Area. Only one (1) flora species of conservation importance were recorded within the Study Area. Its conservation and protection status in Hong Kong are presented in **Table B3-2**. No flora species of conservation importance were recorded within the Project Site. A list of flora species recorded in the survey is provided in **Annex B2**. The following text elaborates the ecological conditions, flora and fauna recorded at each habitat during the ecological baseline survey.

Table B3-1: AREA OF EACH HABITAT IDENTIFIED IN THE STUDY AREA

Habitat	Area within Project Site (m ²) – Aboveground	Areas within Project Area - Underground Component without Habitat Loss/ Disturbance (m ²)	Total Area within Project Area (m ²)	% of Project Area	Area within Study Area (ha)	% of Study Area
Woodland	-	-	-	-	~6.1	~4%
Shrubland	-	~580	~580	~28%	~115.6	~67%
Plantation	-	~50	~50	~2%	~13.6	~8%
Developed Area	~1,330	~100	~1,430	~70%	~37.5	~22%
Watercourse	-	(length <10m)	(length <10m)	-	~0.03 (length ~13.9km)	<0.1%
TOTAL	~1,330	~730	~2,060	100%	~172.8	100%

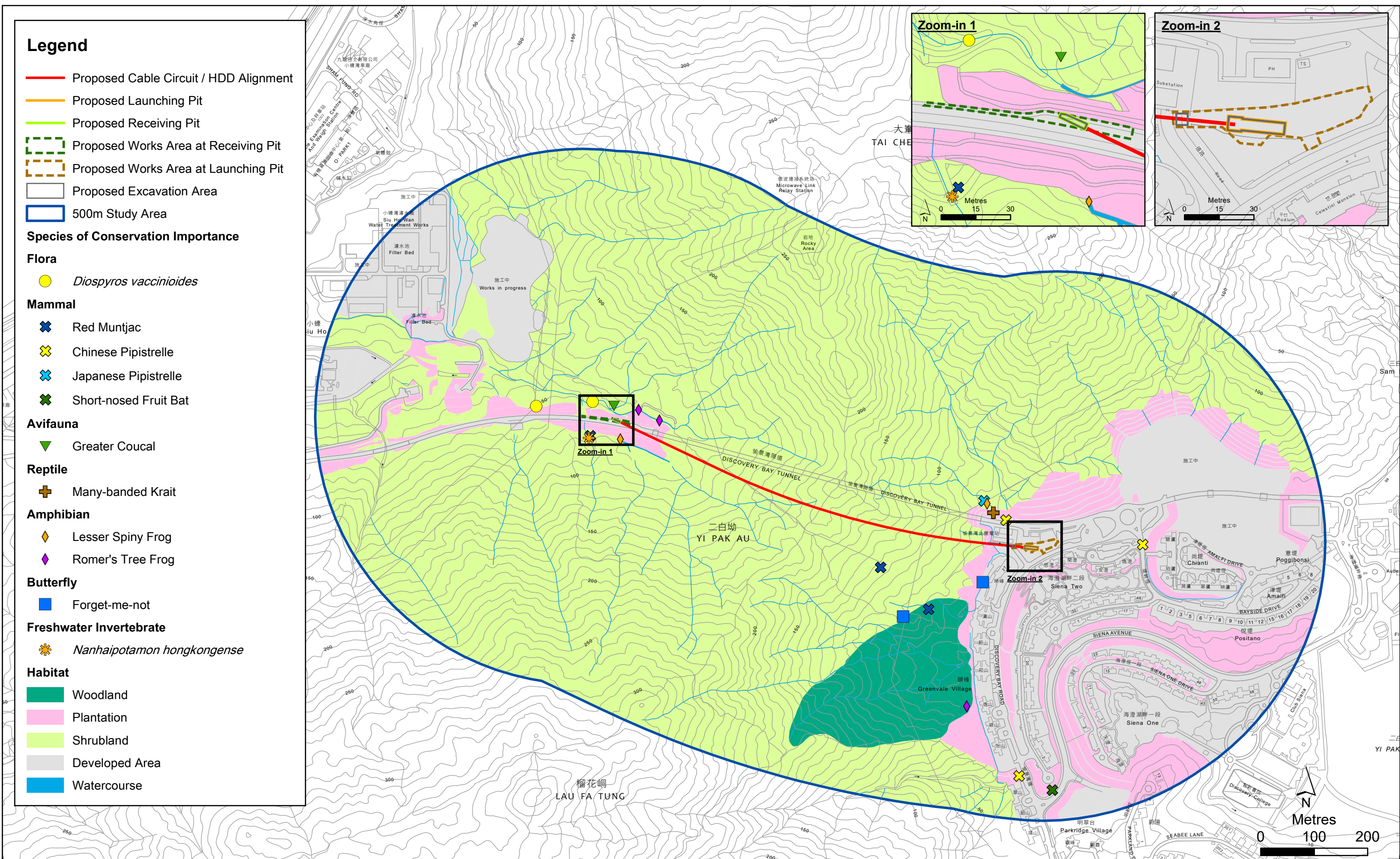


Figure B3.1

Habitat and Species of Conservation Importance Recorded in Baseline Survey



TABLE B3-2: FLORA OF CONSERVATION IMPORTANCE RECORDED WITHIN THE STUDY AREA

Common Name	Scientific Name	Chinese Name	Conservation Status	Recorded Habitat
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Flora

Small Persimmon	<i>Diospyros vaccinioides</i>	小果柿	IUCN: CR; RLCHP: EN	Shrubland
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Note:

Conservation Status:

- RLCHP – Red List of China’s Higher Plants (2020). EN = Endangered
- IUCN – International Union for Conservation of Nature Red List of Threatened Species (2025). CR = Critically Endangered

B3.1.1 HABITATS WITHIN THE STUDY AREA**B3.1.1.1 WOODLAND**

A patch of woodland is located along foothills within the south-eastern side of the Study Area. This habitat occupied approximately 6.1ha which is equivalent to ~4% of the Study Area. Due to the vicinity to residential area in Discovery Bay and near the hiking trails, this patch of woodland received a relatively high level of disturbance, especially on their fringes close to the developed area.

This habitat has a semi-closed to closed canopy, with tree heights ranging from 2m to 5m depending on the local topography and the canopy species. It may derive from shrubland under natural succession. A total of 59 plant species were recorded in the woodland habitat. Native tree and shrub species were commonly found in this habitat, including *Aporosa dioica*, *Litsea rotundifolia* var. *oblongifolia* and *Melicope pteleifolia*. Self-colonised *Leucaena leucocephala* can also be found at the edge of woodland area. The mid-storey of this habitat is occupied by shrubs and small to medium sized trees (e.g. *Alangium chinense*, *Mallotus paniculatus*, *Microcos nervosa* and *Sterculia lanceolata*) and the understory occupied by shrubs and climbers including *Alpinia hainanensis*, *Desmos chinensis* and *Paederia scandens*. No flora species of conservation importance was recorded in woodland habitat.

B3.1.1.2 SHRUBLAND

Shrubland is the major habitat within the Study Area, located mainly on uphill areas. This habitat occupied approximately 115.6ha which is equivalent to ~67% of the Study Area. A total of 83 plant species were recorded in shrubland habitat. Plant species present are mainly common shrub and herb species such as *Aporosa dioica*, *Baeckea frutescens*, *Dicranopteris pedata*, *Rhodomyrtus tomentosa* and *Melastoma malabathricum*. Tree species commonly recorded included *Litsea glutinosa*, *Rhus succedanea* and *Sterculia lanceolata*. *Diospyros vaccinioides*, a flora species of conservation importance, was recorded in this habitat. It is listed as “Critically

Endangered” under IUCN Red list of Threatened Species Plantation and “Endangered” under Red List of China’s Higher Plants.

B3.1.1.3 PLANTATION

Plantation is mainly located along the openings of Discovery Bay Tunnel and around the Developed Area within the Study Area. This habitat occupies approximately 13.6ha which is equivalent to ~8% of the Study Area.

There are 55 plant species recorded in this habitat. Most of the plant species recorded are commonly grown for ornamental purpose or as orchards such as *Abutilon indicum*, *Acacia confusa*, *Casuarina equisetifolia* and *Livistona chinensis*. No flora species of conservation importance was recorded in plantation habitat.

B3.1.1.4 DEVELOPED AREA

Developed Area refers to degraded area associated with intensive human disturbances. This habitat is present at western and eastern side of Study Area comprising residential area, construction site, road and so on (**Figure B3.1**). This habitat occupied approximately 37.5ha which is equivalent to ~22% of the Study Area. Vegetation recorded in this habitat largely consisted of planted species for amenity purpose, including *Bauhinia variegata*, *Calliandra haematocephala*, *Delonix regia*, *Ficus altissima*, *Ficus microcarpa*, *Ficus elastica* and *Ixora chinensis*. Total 39 flora species was recorded in this habitat and none of them is of conservation importance.

B3.1.1.5 WATERCOURSE

The watercourses within the Study Area refer to semi-natural watercourse, they are of similar nature, with lower section reaching urbanized area being channelized and upper section locating within hillside area being more natural. The total length of watercourse is about 13.9km within the Study Area.

As there is no physical boundary between these watercourses and their neighboring habitats (i.e. Plantation, shrubland), the vegetation composition of the riparian zone is similar to adjacent areas. Vegetation commonly recorded in this habitat included *Commelina communis*, *Commelina diffusa*, *Leucaena leucocephala*, *Pteris semipinnata* and *Wedelia trilobata*. No flora species of conservation importance was recorded in this habitat.

B3.1.1.6 THE PROJECT SITE

The aboveground elements of the Project fall only within the Developed Area. The area of the aboveground Project Site is approximately 1,330m². The Project Site is located close to the openings of the south of Discovery Bay Tunnel, and near residential areas, which is subjected to human disturbances.

B3.2 TERRESTRIAL WILDLIFE

Wildlife recorded during the ecological surveys are described below in **Section B3.2.1** to **Section B3.2.6**. The photos of the recorded species of conservation importance are presented in **Annex B3**. A full list of fauna species recorded during the verification

surveys for the Project is found in **Annexes B4 – B10**. The locations of species of conservation importance in the Study Area are shown in **Figure B3.1**. No fauna species of conservation importance were recorded within the Project Site.

B3.2.1 MAMMALS

The survey identified five (5) mammal species within the Study Area, of which four (4) are of conservation importance, namely, Short-nosed Fruit Bat, Japanese Pipistrelle, Chinese Pipistrelle and Red Muntjac. Their conservation and protection status in Hong Kong are presented in **Table B3-3** below.

TABLE B3-3: MAMMAL OF CONSERVATION IMPORTANCE RECORDED WITHIN THE STUDY AREA

Common Name	Scientific Name	Chinese Name	Conservation Status	Recorded Habitat
Mammals				
Short-nosed Fruit Bat	<i>Cynopterus sphinx</i>	短吻果蝠	Cap.170	Plantation
Japanese Pipistrelle	<i>Pipistrellus abramus</i>	東亞家蝠	Cap.170	Shrubland
Chinese Pipistrelle	<i>Hypsugo pulveratus</i>	灰伏翼	Cap.170; Fellowes: (LC)	Plantation, Developed Area
Red Muntjac	<i>Muntiacus vaginalis</i>	赤麂	Fellowes: PRC	Woodland, Shrubland
Note: Conservation Status: - Cap. 170: Protected under Wild Animals Protection Ordinance - Fellowes – Fellowes et al. (2002): PRC = Potential Regional Concern, LC = Least Concern. Letters in parentheses indicate that the assessment is on the basis of restrictedness in breeding and/or roosting sites rather than in general occurrence.				

B3.2.2 AVIFAUNA

The survey identified nineteen (19) avifauna species. Most of the avifauna species recorded are common and widespread in Hong Kong. A total of three (3) avifauna species of conservation importance, namely Greater Coucal, Crested Goshawk and Black Kite, were recorded within the Study Area. Their protection and/or conservation status are presented in **Table B3-4**. Due to high mobility, avifauna recorded in-flight was not provided in **Figure B3.1**.

TABLE B3-4: AVIFAUNA OF CONSERVATION IMPORTANCE RECORDED WITHIN THE STUDY AREA

Common Name	Scientific Name	Chinese Name	Conservation Status	Recorded Habitat
Avifauna				

Common Name	Scientific Name	Chinese Name	Conservation Status	Recorded Habitat
Greater Coucal	<i>Centropus sinensis</i>	褐翅鴉鵂	CSMPS(II)	Shrubland
Crested Goshawk	<i>Accipiter trivirgatus</i>	鳳頭鷹	Cap.586; CSMPS(II); CITES(II)	In-flight
Black Kite	<i>Milvus migrans</i>	黑鳶	Cap.586; Fellowes: (RC); CSMPS(II); CITES(II)	In-flight

Note:

Conservation Status:

- All birds in Hong Kong are protected under Cap. 170 – Protected under Wild Animals Protection Ordinance
- Cap. 586: Protection of Endangered Species of Animals and Plants Ordinance
- Fellowes – Fellowes et al. (2002): RC = Regional Concern. Letters in parentheses indicate that the assessment is on the basis of restrictedness in breeding and/or roosting sites rather than in general occurrence.
- CSMPS– China State Major Protection Status: Appendix (II)
- CITES – Under Appendix (II) of Convention on International Trade in Endangered Species of Wild Flora and Fauna

B3.2.3 HERPETOFAUNA

Seven (7) amphibian and three (3) reptile species were recorded during the survey within the Study Area. Among them, two (2) amphibian species, namely Romer's Tree Frog and Lesser Spiny Frog, and one (1) reptile species, namely Many-banded Krait, were of conservation importance. Their protection and/or conservation status are presented in **Table B3-5**.

TABLE B3-5: HERPETOFAUNA OF CONSERVATION IMPORTANCE RECORDED WITHIN THE STUDY AREA

Common Name	Scientific Name	Chinese Name	Conservation Status	Recorded Habitat
Amphibians				
Lesser Spiny Frog	<i>Quasipaa exilispinosa</i>	小棘蛙	Fellowes: PGC; RLCV(VU)	Watercourse
Romer's Tree Frog	<i>Liuixalus romeri</i>	盧氏小樹蛙	Cap.170; Fellowes: PGC; RLCV(VU); IUCN(EN)	Woodland, Watercourse
Reptiles				
Many-banded Krait	<i>Bungarus multicinctus</i>	銀環蛇	Fellowes: PRC; RLCV(EN)	Plantation

Note:

Conservation Status:

- Cap. 170: Protected under Wild Animals Protection Ordinance
- Fellowes – Fellowes et al. (2002): PGC = Potential Global Concern, PRC = Potential Regional Concern.

Common Name	Scientific Name	Chinese Name	Conservation Status	Recorded Habitat
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- RLCV – Red List of China's Vertebrate (2020): VU = Vulnerable, EN = Endangered.
- IUCN: International Union for Conservation of Nature Red List of Threatened Species (2025). EN = Endangered.

B3.2.4 BUTTERFLIES AND ODONATES

Eighteen (18) butterfly and four (4) odonate species were recorded during the survey within the Study Area. Only one butterfly species is of conservation importance. Its protection and/or conservation status are presented in **Table B3-6**.

TABLE B3-6: BUTTERFLY SPECIES OF CONSERVATION IMPORTANCE RECORDED WITHIN THE STUDY AREA

Common Name	Scientific Name	Chinese Name	Conservation Status / AFCD Assessment	Recorded Habitat
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Butterflies

Forget-me-not	<i>Catochrysops strabo</i>	咖灰蝶	AFCD: Very Rare; Species of Conservation Concern	Shrubland, Developed Area
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Note:

Conservation Status:

- AFCD refers to Chan et. al. 2011. A Review of the Local Restrictedness of Hong Kong Butterflies. Hong Kong Biodiversity 21: 1-12

B3.2.5 AQUATIC FAUNA

Four (4) freshwater invertebrates within the Study Area during the survey. Only one of them is of conservation importance. Its protection and/or conservation status are presented in **Table B3-7**.

TABLE B3-7: FRESHWATER FAUNA SPECIES OF CONSERVATION IMPORTANCE RECORDED WITHIN THE STUDY AREA

Common Name	Scientific Name	Chinese Name	Conservation Status / AFCD Assessment	Recorded Habitat
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Freshwater Invertebrates

Freshwater Crab	<i>Nanhaipotamon hongkongense</i>	香港南海溪蟹	Fellowes: PGC	Watercourse
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Note:

Conservation Status:

- Fellowes – Fellowes et al. (2002): PGC = Potential Global Concern.

B3.2.6 FIREFLY

No firefly species were recorded within the Study Area during the survey.

B4. ECOLOGICAL EVALUATION

In this section, the ecological importance of the habitats identified within the Study Area are evaluated in accordance with the *EIAO TM Annex 8* criteria. The evaluation is based upon the information of literature review and the ecological baseline survey presented in the **Sections B1 – B3**.

B4.1 STUDY AREA AND PROJECT SITE

A total of five major terrestrial habitats have been identified within the Study Area, including Woodland, Shrubland, Plantation, Developed Area, and Watercourse. The aboveground Project Site falls within Developed Area only. The underground Project Site (i.e. proposed HDD alignment) covers Shrubland, Plantation, Developed Area and Watercourse. The ecological importance evaluation of each habitat type within the Study Area is presented in **Table B4-1** to **Table B4-5**. The following tables included ecological evaluation on habitats within the Project Site considering habitats' condition within the Project Site is of very similar nature to surrounding area.

TABLE B4-1: ECOLOGICAL EVALUATION OF WOODLAND

Criteria	Woodland
Naturalness	Natural habitat, but subjected to human disturbances
Size	Approx. 6.1ha within the Study Area
Diversity	Low to moderate in diversity of plant species and structural complexity Low diversity of fauna species
Rarity	No flora species of conservation importance recorded during surveys Two (2) fauna species of conservation importance recorded during surveys, including Red Muntjac and Romer's Tree Frog
Re-creatability	Re-creatable
Fragmentation	Existed as an isolated patch
Ecological Linkage	Ecologically linked to shrubland, plantation and watercourse
Potential Value	Low to moderate potential value to become a more mature woodland if given sufficient time and protection from disturbances
Nursery/ Breeding Ground	No significant nursery or breeding ground recorded.
Age	Over 15 years
Abundance/ Richness of Wildlife	Low abundance and richness for fauna species
Overall Ecological Importance	Low to moderate

TABLE B4-2: ECOLOGICAL EVALUATION OF SHRUBLAND

Criteria	Shrubland
	Study Area (including Project Site)
Naturalness	Natural habitats mainly covered by native shrub
Size	Approx. 115.6ha within the Study Area, including approx. 580m ² within Project Site (underground)
Diversity	Low to moderate in diversity of plant species and structural complexity Low to moderate diversity of fauna species
Rarity	One flora species of conservation importance recorded during surveys, namely <i>Diospyros vaccinioides</i> Four (4) fauna species of conservation importance recorded during surveys, including Japanese Pipistrelle, Red Muntjac, Greater coucal and Forget-me-not
Re-creatability	In the absence of disturbance, it would take at least 5 years for the shrubland to be re-created
Fragmentation	Not fragmented
Ecological Linkage	Ecologically linked to woodland, plantation and watercourse
Potential Value	Low to moderate potential value to become mature shrubland and then young woodland if given sufficient time and protection from disturbance
Nursery/ Breeding Ground	No significant nursery or breeding ground recorded
Age	5 – 10 years
Abundance/ Richness of Wildlife	Low abundance and richness for fauna species
Overall Ecological Importance	Low to moderate

TABLE B4-3: ECOLOGICAL EVALUATION OF PLANTATION

Criteria	Plantation
	Study Area (including Project Site)
Naturalness	Semi-natural habitat subjected to some human disturbance
Size	Approx. 13.6ha, including approx. 50m ² within Project Site (underground)
Diversity	Low to moderate in diversity of plant species, low structural complexity

Criteria	Plantation
	Study Area (including Project Site)
	Low to moderate diversity of fauna species
Rarity	No flora species of conservation importance recorded during surveys Three (3) fauna species of conservation importance recorded during surveys, including Short-nosed Fruit Bat, Chinese Pipistrelle and Many-banded Krait
Re-creatability	Re-creatable
Fragmentation	Fragmented
Ecological Linkage	Ecologically linked to woodland, shrubland and watercourse
Potential Value	Low to moderate
Nursery/ Breeding Ground	No significant nursery or breeding ground recorded
Age	5 – 15 years
Abundance/ Richness of Wildlife	Low abundance and richness for fauna species
Overall Ecological Importance	Low to moderate

TABLE B4-4: ECOLOGICAL EVALUATION OF DEVELOPED AREA

Criteria	Developed Area
	Study Area (including Project Site)
Naturalness	Anthropogenic habitat with a high level of human disturbance
Size	Approx. 37.5ha, including approx. 1,330m ² (aboveground) and 100m ² (underground) within Project Site
Diversity	Low in diversity of plant species and structural complexity. Low faunal diversity
Rarity	No flora species of conservation importance recorded during surveys Two (2) fauna species of conservation importance recorded during surveys, including Chinese Pipistrelle and Forget-me-not
Re-creatability	Readily re-creatable
Fragmentation	Fragmented
Ecological Linkage	Weak ecological linkage with adjacent habitats
Potential Value	Low

Criteria	Developed Area
	Study Area (including Project Site)
Nursery/ Breeding Ground	No significant nursery or breeding ground recorded
Age	N/A
Abundance/ Richness of Wildlife	Low abundance and richness for fauna species.
Overall Ecological Importance	Low

TABLE B4-5: ECOLOGICAL EVALUATION OF WATERCOURSE

Criteria	Watercourse
	Study Area (including Project Site)
Naturalness	Generally semi-natural
Size	Approx. 13.9km long within the Study Area, including <10m within Project Site (underground)
Diversity	Low in diversity of plant species and structural complexity. Low diversity of fauna species.
Rarity	No flora species of conservation importance was recorded Three (3) fauna species of conservation importance recorded during surveys, including Lesser Spiny Frog, Romer's Tree Frog and <i>Nanhaipotamon hongkongense</i> .
Re-creatability	Re-creatable given the hydrological conditions are available for modified watercourse
Fragmentation	N/A
Ecological Linkage	Ecologically linked to woodland, shrubland and plantation
Potential Value	Low to moderate
Nursery/ Breeding Ground	No significant nursery or breeding ground recorded
Age	N/A
Abundance/ Richness of Wildlife	Low
Overall Ecological Importance	Low to moderate



ANNEXES



Woodland



Shrubland



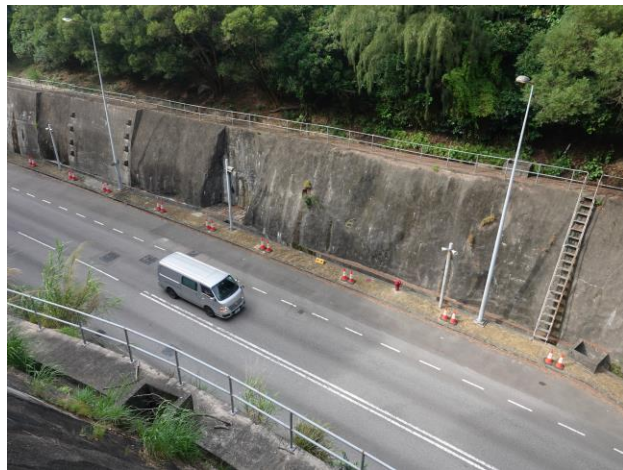
Plantation



Developed Area



Watercourse



Project Site

Annex B1

DATE: 25/2/2025

Representative Photos of Habitats within the Study Area



Annex B2 Presence of Plant Species Recorded Within the Study Area										
Species Name	Chinese Name	Origin ¹	Growth Form	Distribution in Hong Kong	Protection Status ³	Habitat ³				
						WL	SL	PL	DA	WC
<i>Acacia auriculiformis</i>	耳果相思	E	Tree	common	-	+		++		
<i>Acacia confusa</i>	台灣相思	E	Tree	common	-	++		++++	++++	
<i>Acacia mangium</i>	大葉相思，馬占相思	E	Tree	common	-			++		
<i>Acorus gramineus</i>	石菖蒲	N	Herb	very common	-					++
<i>Acronychia pedunculata</i>	山油柑	N	Tree	very common	-	++	+			
<i>Adiantum capillus-veneris</i>	鐵線蕨	N	Herb	common	-	++				
<i>Alangium chinense</i>	八角楓	N	Shrub/Tree	common	-	++	+++			
<i>Albizia corniculata</i>	天香藤	N	Climber/Shrub	common	-	++	+++			
<i>Aleurites moluccana</i>	石栗	E	Tree	common	-			++	++	
<i>Allamanda schottii</i>	硬枝黃蟬	E	Shrub	common	-				+++	
<i>Alocasia macrorrhizos</i>	海芋	N	Herb	very common	-	++		+		+
<i>Alpinia hainanensis</i>	草豆蔻	N	Herb	common	-	+				
<i>Aporosa dioica</i>	銀柴	N	Tree	very common	-	++++	+++	++		
<i>Archidendron clypearia</i>	猴耳環	N	Tree	common	-	+	+			
<i>Archidendron lucidum</i>	亮葉猴耳環	N	Tree	common	-	+	++			
<i>Ardisia lindleyana</i>	山血丹，腺點紫金牛	N	Shrub	common	-	+++	++			
<i>Ardisia quinqueгона</i>	羅傘樹	N	Shrub	common	-	+++				
<i>Asparagus cochinchinensis</i>	天門冬	N	Climber/Shrub	common	-		+			+
<i>Asystasia micrantha</i>	小花十萬錯	E	Herb	cultivated or naturalised	-	++		++	+	++
<i>Baeckea frutescens</i>	崗松	N	Shrub/Tree	common	-		++++			
<i>Bauhinia glauca</i>	粉葉羊蹄甲，羊蹄甲藤	N	Climber	very common	-			++		
<i>Bauhinia variegata</i>	宮粉羊蹄甲	E	Tree	common	-			++	++	+
<i>Berchemia floribunda</i>	多花勾兒茶	N	Climber	common	-	++	+++			
<i>Bidens alba</i>	白花鬼針草	E	Herb	very common	-	+++	+++	+++	++++	
<i>Bischofia javanica</i>	秋楓	N	Tree	common	-		+			
<i>Bombax ceiba</i>	木棉	E	Tree	very common	-			++		
<i>Bougainvillea spectabilis</i>	簕杜鵑	E	Climber/Shrub	cultivated	-			++	++	
<i>Breynia fruticosa</i>	黑面神	N	Shrub	very common	-	+	++	+		
<i>Bridelia tomentosa</i>	土蜜樹，逼迫仔	N	Shrub/Tree	very common	-	+++	++	++		
<i>Brucea javanica</i>	鴉膽子，苦參子	N	Shrub/Tree	common	-		++		++	
<i>Calliandra haematocephala</i>	朱纓花，紅絨球	E	Shrub	common	-			++	++++	
<i>Calliandra riparia</i>	小朱纓花	E	Shrub	common	-				+	
<i>Callicarpa kochiana</i>	枇杷葉紫珠	N	Shrub	common	-		++			
<i>Carallia brachiata</i>	竹節樹	N	Tree	common	-		++	+		
<i>Carica papaya</i>	番木瓜	E	Tree	common	-				+	
<i>Cassytha filiformis</i>	無根藤	N	Climber	very common	-		+++			
<i>Casuarina equisetifolia</i>	木麻黃，牛尾松	E	Tree	rare; but commonly cultivated	-			+++		
<i>Celtis sinensis</i>	朴樹	N	Tree	common	-	++		++	++	
<i>Centotheca lappacea</i>	假淡竹葉	N	Herb	common	-	++				
<i>Chorisia speciosa</i>	絲木棉	E	Tree	cultivated	-				+	
<i>Chukrasia tabularis</i>	麻棟	E	Tree	common	-				+	
<i>Cinnamomum burmannii</i>	陰香	N	Tree	common	-			+++		
<i>Cinnamomum camphora</i>	樟	N	Tree	common	-	++	+	+	++	
<i>Cinnamomum parthenoxylon</i>	黃樟	N	Tree	common	-	++				
<i>Cocculus orbiculatus</i>	木防己	N	Climber	common	-	++	++			
<i>Commelina communis</i>	鴨跖草	N	Herb	common	-					++
<i>Commelina diffusa</i>	節節草	N	Herb	very common	-					++

Annex B2 Presence of Plant Species Recorded Within the Study Area										
Species Name	Chinese Name	Origin ¹	Growth Form	Distribution in Hong Kong	Protection Status ³	Habitat ³				
						WL	SL	PL	DA	WC
<i>Conyza japonica</i>	白酒草	N	Herb	common	-				++	
<i>Cratoxylum cochinchinense</i>	黃牛木	N	Shrub/Tree	very common	-		+++			
<i>Cyclea hypoglauca</i>	粉葉輪環藤	N	Climber	common	-		+			
<i>Cyclosorus interruptus</i>	間斷毛蕨	N	Herb	very common	-					++
<i>Cyclosorus parasiticus</i>	華南毛蕨	N	Herb	very common	-	+++	++	++		
<i>Dalbergia benthamii</i>	兩廣黃檀	N	Climber	common	-	+	+	+	+	
<i>Daphniphyllum calycinum</i>	牛耳楓	N	Shrub	very common	-	++				
<i>Delonix regia</i>	鳳凰木	E	Tree	common	-			+	+++	
<i>Dendranthema indicum</i>	野菊	N	Herb	common	-		++			
<i>Dendrotrophe varians</i>	寄生藤	N	Climber	common	-		+			
<i>Desmodium heterocarpum</i>	假地豆	N	Shrub	very common	-			++		
<i>Desmos chinensis</i>	假鷹爪	N	Climber/Shrub	common	-	+++	++			
<i>Dianella ensifolia</i>	山菅蘭	N	Herb	very common	-	+	+++	++		
<i>Dicranopteris pedata</i>	芒萁	N	Herb	very common	-	++	++++	++++		
<i>Diospyros vaccinioides</i>	小果柿	N	Shrub	very common	IUCN Red List (ver. 2022.2): CR RLCHP: EN		+			
<i>Duhaldea cappa</i>	羊耳菊	N	Herb/Shrub	common	-		+++			
<i>Duranta erecta</i>	假連翹	E	Climber/Shrub	common	-				+++	
<i>Dyopsis lutescens</i>	散尾葵	E	Shrub	common	-				+++	
<i>Elephantopus scaber</i>	地膽草	N	Herb	common	-		++++	+++		
<i>Embelia laeta</i>	酸藤子	N	Climber/Shrub	very common	-	++	+++	+++		
<i>Embelia ribes</i>	白花酸藤子	N	Climber/Shrub	common	-		++			
<i>Eurya nitida</i>	細齒葉柃	N	Shrub/Tree	very common	-		+++			
<i>Ficus altissima</i>	高山榕	E	Tree	cultivated	-				+	
<i>Ficus elastica</i>	印度榕，印度橡樹	E	Tree	cultivated					+	
<i>Ficus hispida</i>	對葉榕	N	Shrub/Tree	very common	-	++	++	++	++	+
<i>Ficus microcarpa</i>	細葉榕	N	Tree	common	-		+	+	++	+
<i>Ficus pumila</i>	薛荔	N	Climber	very common	-			+		
<i>Ficus variegata</i>	青果榕	N	Tree	common	-	++	++			
<i>Ficus variolosa</i>	變葉榕	N	Shrub/Tree	very common	-	+				
<i>Glochidion eriocarpum</i>	毛果算盤子	N	Shrub/Tree	very common	-	+				
<i>Glochidion hirsutum</i>	厚葉算盤子	N	Shrub/Tree	common	-		+			
<i>Hedyotis acutangula</i>	方骨草	N	Herb	very common	-		+			
<i>Hedyotis hedyotideae</i>	牛白藤	N	Climber/Shrub	common	-		++			
<i>Ilex asprella</i>	梅葉冬青	N	Shrub	very common	-	++	+++	++		
<i>Ipomoea cairica</i>	五爪金龍	E	Herb	very common	-		++			
<i>Ixora chinensis</i>	龍船花	N	Shrub	restricted but widely cultivated	-			+++		
<i>Lagerstroemia speciosa</i>	大花紫薇	E	Tree	common	-				+++	
<i>Lantana camara</i>	馬纓丹	E	Shrub	very common	-	++	++	+++	+++	
<i>Leucaena leucocephala</i>	銀合歡	E	Shrub/Tree	very common	-	+	++	+++	++++	++
<i>Ligustrum sinense</i>	山指甲	E	Shrub/Tree	common	-	+	++	++	++	
<i>Lindsaea ensifolia</i>	劍葉鱗始蕨	N	Herb	common	-		+++			
<i>Liquidambar formosana</i>	楓香	N	Tree	common	-			++		
<i>Litsea glutinosa</i>	潺槁樹	N	Tree	very common	-		++		++	+
<i>Litsea rotundifolia</i> var. <i>oblongifolia</i>	豺皮樟	N	Shrub/Tree	very common	-	+++	++++			
<i>Livistona chinensis</i>	蒲葵	E	Tree	common	RLCHP: VU			+++		

Annex B2 Presence of Plant Species Recorded Within the Study Area										
Species Name	Chinese Name	Origin ¹	Growth Form	Distribution in Hong Kong ²	Protection Status ³	Habitat ³				
						WL	SL	PL	DA	WC
<i>Lophostemon confertus</i>	紅膠木	E	Tree	common	-			++		
<i>Lygodium japonicum</i>	海金沙	N	Climber/Herb	common	-					+
<i>Lygodium scandens</i>	小葉海金沙	N	Climber/Herb	common	-		++			+
<i>Macaranga tanarius</i> var. <i>tomentosa</i>	血桐	N	Tree	common	-	+++	++	++	+++	+
<i>Machilus chekiangensis</i>	浙江潤楠	N	Tree	very common	-		++	++		
<i>Mallotus paniculatus</i>	白楸	N	Shrub/Tree	very common	-	++	+	++		
<i>Melaleuca cajuputi</i> subsp. <i>cumingiana</i>	白千層	E	Tree	common	-			+++	++	
<i>Melastoma dodecandrum</i>	地蕊	N	Herb/Shrub	common	-		+			
<i>Melastoma malabathricum</i>	野牡丹	N	Shrub	common	-		+++			
<i>Melastoma sanguineum</i>	毛蕊	N	Shrub	common	-		+			
<i>Melia azedarach</i>	苦楝	E	Tree	common	-				++	
<i>Melicope pteleifolia</i>	三椏苦	N	Shrub/Tree	common	-		+++			
<i>Microcos nervosa</i>	破布葉，布渣葉	N	Shrub/Tree	-	-	+++	++	+++		
<i>Microstegium ciliatum</i>	剛莠竹	N	Herb	very common; common (2)	-		+++			
<i>Mikania micrantha</i>	微甘菊	E	Climber/Herb	very common	-	+	+++	+++	++++	++
<i>Millettia reticulata</i>	雞血藤	N	Climber	common	-	+				
<i>Millettia speciosa</i>	美麗崖豆藤，牛大力	N	Climber	common	-		++			
<i>Miscanthus floridulus</i>	五節芒	N	Herb	common	-		+++			
<i>Murraya paniculata</i>	九里香	E	Tree	common	-			+	+++	
<i>Paederia scandens</i>	雞矢藤	N	Herb	very common	-	+++	+++		+++	
<i>Palhinhaea cernua</i>	鋪地蜈蚣，燈籠草	N	Herb	very common	-	+	++	++		
<i>Panicum maximum</i>	大黍	E	Herb	very common	-	++		+++	+++	++
<i>Panicum repens</i>	鋪地黍，枯骨草	N	Herb	very common	-	+			++	
<i>Phyllanthus reticulatus</i>	小果葉下珠	N	Shrub	common	-		+++			
<i>Pinus elliotii</i>	濕地松，愛氏松	E	Tree	common	-			+++		
<i>Psychotria asiatica</i>	山大刀，九節	N	Shrub/Tree	very common	-	++++	++	++		
<i>Pteridium aquilinum</i> var. <i>latiusculum</i>	蕨	N	Herb	fairly common	-		++			++
<i>Pteris semipinnata</i>	半邊旗	N	Herb	very common	-			++		+++
<i>Eremochloa ciliaris</i>	蜈蚣草	N	Herb	very common	-		+++			
<i>Pueraria lobata</i>	葛	N	Climber	common	-		+			
<i>Rhodomyrtus tomentosa</i>	桃金娘，崗檢	N	Shrub	very common	-	++	+++			
<i>Rhus succedanea</i>	野漆樹	N	Shrub/Tree	common	-	++	++			
<i>Rubus reflexus</i>	鋪毛莓，蛇泡筋	N	Climber/Shrub	very common	-	+	++			
<i>Schefflera heptaphylla</i>	鴨腳木	N	Shrub/Tree	common	-	+	+	++		+
<i>Smilax china</i>	菝葜，金剛藤	N	Climber	very common	-		+++			
<i>Stephania tetrandra</i>	粉防己，石蟾蜍	N	Climber	common	-		++			
<i>Sterculia lanceolata</i>	假蒺藜	N	Tree	very common	-	+	++	++		
<i>Strophanthus divaricatus</i>	羊角拗	N	Climber/Shrub	common	-		+			
<i>Syzygium jambos</i>	蒲桃	E	Tree	very common	-	++	+			
<i>Syzygium levinei</i>	山蒲桃，李萬蒲桃	N	Shrub/Tree	common	-	+				
<i>Tetracera asiatica</i>	錫葉藤	N	Climber	very common	-	++	+++			
<i>Tylophora ovata</i>	娃兒藤	N	Climber	common	-		++			
<i>Wedelia chinensis</i>	蟛蜞菊	N	Herb	common	-					++
<i>Wedelia trilobata</i>	三裂葉蟛蜞菊	E	Herb	common; also widely	-			++	++	++
<i>Wikstroemia nutans</i>	細軸薔花	N	Shrub	common	-		++			

Annex B2 Presence of Plant Species Recorded Within the Study Area

Species Name	Chinese Name	Origin ¹	Growth Form	Distribution in Hong Kong	Protection Status ³	WL	SL	PL	DA	WC
<i>Zanthoxylum avicennae</i>	箭欖花椒	N	Tree	common	-	++	+++			
<i>Zanthoxylum nitidum</i>	兩面針	N	Climber/Shrub	very common	-	++	++	++	+	
					TOTAL	59	83	55	39	22
Notes:										
1. Origin of plant species refers to AFCD (2012). Check List of Hong Kong Plants 2012. Agriculture, Fisheries and Conservation Department, HKSAR, Hong Kong.										
2. Commonness follows:										
- Xing, F.W., Ng, S.C., Chau, L.K.C. 2000. Gymnosperms and angiosperms of Hong Kong. Memoirs of the Hong Kong Natural History Society 23: 21-136.										
- KFBG (2003) Flora of Hong Kong – Pteridophyta. Kadoorie Farm and Botanic Garden, Hong Kong										
- AFCD (2003) Rare and Precious Plants of Hong Kong. Agriculture, Fisheries and Conservation Department, HKSAR, Hong Kong.										
- AFCD (2007) Flora of Hong Kong Vol. 1. Edited by Hong Kong Herbarium, Agriculture, Fisheries and Conservation Department & South China Botanical Garden,										
Chinese Academy of Sciences										
- AFCD (2008) Flora of Hong Kong Vol. 2. Edited by Hong Kong Herbarium, Agriculture, Fisheries and Conservation Department & South China Botanical Garden										
Chinese Academy of Sciences										
- AFCD (2009) Flora of Hong Kong Vol. 3. Edited by Hong Kong Herbarium, Agriculture, Fisheries and Conservation Department & South China Botanical Garden										
Chinese Academy of Sciences										
- AFCD (2011) Flora of Hong Kong Vol. 3. Edited by Hong Kong Herbarium, Agriculture, Fisheries and Conservation Department & South China Botanical Garden										
Chinese Academy of Sciences										
Conservation status follows:										
- AFCD (2003) Rare and Precious Plants of Hong Kong. Agriculture, Fisheries and Conservation Department, HKSAR, Hong Kong.										
- Cap. 96A: Forestry Regulations, the subsidiary legislation of Forests and Countryside Ordinance (Cap. 96).										
- Cap. 586: Protection of Endangered Species of Animals and Plants Ordinance										
- CPRDB: Fu and Jin (1992) China Plant Red Data Book										
- IUCN. (2022). The IUCN Red List of Threatened Species (Version 2022-1). Accessed from < http://www.iucnredlist.org > in Jan 2022. NT = Near threatened, VU = Vulnerable, CR = Critically Endangered.										
- Qin et al., 2017. Threatened Species List of China's Higher Plants. Biodiversity Science 2017, Vol. 25, Issue (7): 696-744.										
- CITES (II) - Under Appendix II of Convention on International Trade in Endangered Species of Wild Fauna and Flora										
3. Habitats: WL = Woodland, SL = Shrubland, PL = Plantation, DA = Developed Area, WC = Watercourse										



Diospyros vaccinioides



Many-banded Krait

Annex B4 Presence of Mammal Species Recorded Within the Study Area										
Item No.	Common Name	Scientific Name	Chinese Name	Conservation Status ¹	Commonness ²	Habitat ³ 500m Study Area				
						WL	SL	PL	DA	WC
1	Short-nosed Fruit Bat	<i>Cynopterus sphinx</i>	短吻果蝠	Cap.170	Very widely distributed in urban and countryside areas throughout Hong			✓		
2	Japanese Pipistrelle	<i>Pipistrellus abramus</i>	東亞家蝠	Cap.170	Widely distributed throughout Hong Kong.		✓			
3	Chinese Pipistrelle	<i>Hypsugo pulveratus</i>	灰伏翼	Cap.170; Fellowes: (LC)	Only several records in the countryside areas at Ting Kau, Ma On			✓	✓	
4	Chestnut Spiny Rat	<i>Niviventer fulvescens</i>	針毛鼠	-	Widely distributed in countryside areas throughout Hong Kong.			✓		
5	Red Muntjac	<i>Muntiacus vaginalis</i>	赤麂	Fellowes: PRC	Very widely distributed in countryside areas throughout Hong	✓	✓			
TOTAL						1	2	3	1	0

Notes:

1. Conservation and Protection Status:

- Cap. 170 - Protected under Wild Animals Protection Ordinance
- Fellowes - Fellowes *et al.* (2002): PRC = Potential Regional Concern, LC = Local Concern

Letters in parentheses indicate that the assessment is on the basis of restrictedness in breeding and/or roosting sites rather than in general occurrence.

2. Commonness as per AFCD database: Available at <https://bih.gov.hk/en/home/index.html>

3. Habitats: WL = Woodland, SL = Shrubland, PL = Plantation, DA = Developed Area, WC = Watercourse

4. References:

AFCD. 2022. Hong Kong Biodiversity Information Hub. Accessed from <<https://bih.gov.hk/en/home/index.html>> in Feb 2022.

Fellowes *et al.* 2002. Wild animals to watch: Terrestrial and freshwater fauna of conservation concern in Hong Kong. *Memoirs of the Hong Kong Natural History Society* 25:123-159.

Annex B5 Maximum Count of Avifauna Species Recorded Within the Study Area											
Item No.	Common Name	Scientific Name	Chinese Name	Conservation Status ¹	Distribution in Hong Kong ²	Habitat ³ 500m Study Area					
						WL	SL	PL	DA	WC	IF
1	House Swift	<i>Apus nipalensis</i>	小白腰雨燕	-	Abundant spring migrant and common resident. Widely distributed in Hong Kong.						9
2	Greater coucal	<i>Centropus sinensis</i>	褐翅鴉鵂	CSMPS(II)	Common resident. Widely distributed in Hong Kong.		1				
3	Spotted Dove	<i>Spilopelia chinensis</i>	珠頸斑鳩	-	Abundant resident. Widely distributed in Hong Kong.				1		
4	Crested Goshawk	<i>Accipiter trivirgatus</i>	鳳頭鷹	Cap.586; CSMPS(II); CITES(II)	Common resident. Widely distributed in woodlands and shrublands throughout Hong Kong.						1
5	Black Kite	<i>Milvus migrans</i>	黑鳶	Cap.586; Fellowes: (RC); CSMPS(II); CITES(II)	Common resident and winter visitor. Widely distributed in Hong Kong.						1
6	Large-billed Crow	<i>Corvus macrorhynchos</i>	大嘴烏鴉	-	Common resident. Widely distributed in Hong Kong.		1				1
7	Cinereous Tit	<i>Parus cinereus</i>	蒼背山雀	-	-			1	1		
8	Chinese Bulbul	<i>Pycnonotus sinensis</i>	白頭鵲	-	Abundant resident. Widely distributed in Hong Kong			1	10		
9	Red-whiskered Bulbul	<i>Pycnonotus jocosus</i>	紅耳鵲	-	Abundant resident. Widely distributed in Hong Kong		4	2	4		
10	Yellow-browed Warbler	<i>Phylloscopus inornatus</i>	黃眉柳鶯	-	Abundant winter visitor and migrant. Widely distributed in woodland throughout Hong Kong			1			
11	Common Tailorbird	<i>Orthotomus sutorius</i>	長尾縫葉鶯	-	Common resident. Widely distributed in Hong Kong	1			1		
12	Black-throated Laughingthrush	<i>Pterorhinus chinensis</i>	黑喉噪鵲	-	Common resident. Widely distributed in woodland and shrubland throughout Hong Kong		1				
13	Crested Myna	<i>Acridotheres cristatellus</i>	八哥	-	Abundant resident. Widely distributed in Hong Kong		1				
14	Black-collared Starling	<i>Gracupica nigricollis</i>	黑領棕鳥	-	Common resident. Widely distributed in Hong Kong				1		
15	Oriental Magpie Robin	<i>Copsychus saularis</i>	鵲鴝	-	Abundant resident. Widely distributed in Hong Kong	1			1		
16	Blue Whistling Thrush	<i>Myophonus caeruleus</i>	紫嘯鵲	-	Common resident. Widely distributed in shrubland and woodland throughout Hong Kong	1		1			
17	Eurasian Tree Sparrow	<i>Passer montanus</i>	樹麻雀	-	Abundant resident. Widely distributed in Hong Kong				5		
18	Grey Wagtail	<i>Motacilla cinerea</i>	灰鵲鵒	-	Common passage migrant and winter visitor. Widely distributed in hill streams throughout Hong Kong					1	
19	White wagtail	<i>Motacilla alba</i>	白鵲鵒	-	Resident, common passage migrant and winter visitor. Widely distributed in Hong Kong				1		
TOTAL						3	5	5	9	1	4

Notes:

1. Conservation and Protection Status:

- a. Cap. 170: Protected under Wild Animals Protection Ordinance, all birds in Hong Kong are protected under Cap. 170
- b. Cap. 586: Protection of Endangered Species of Animals and Plants Ordinance
- c. Fellowes – Fellowes et al. (2002): RC = Regional Concern.

Letters in parentheses indicate that the assessment is on the basis of restrictedness in breeding and/or roosting sites rather than in general occurrence.

- d. CSMPS – China State Major Protection Status: Appendix II
- e. CITES – Under Appendix (II) of Convention on International Trade in Endangered Species of Wild Flora and Fauna

2. Distribution as per AFCD database. Available at <https://bih.gov.hk/en/home/index.html>:

3. Habitats: WL = Woodland, SL = Shrubland, PL = Plantation, DA = Developed Area, WC = Watercourse, IF = In-Flight

4. References:

AFCD. 2022. Hong Kong Biodiversity Information Hub. Accessed from <<https://bih.gov.hk/en/home/index.html>> in Feb 2022.

Fellowes *et al.* 2002. Wild animals to watch: Terrestrial and freshwater fauna of conservation concern in Hong Kong. *Memoirs of the Hong Kong Natural History Society* 25:123-159.

IUCN. (2025). The IUCN Red List of Threatened Species (Version 2025-1). Accessed from <<http://www.iucnredlist.org>> in Jan 2025.

Annex B6 Relative Abundance of Amphibian Species Recorded Within Study Area											
Item No.	Common Name	Scientific Name	Chinese Name	Conservation and Protection Status ¹	Rarity in Hong Kong ²	Distribution in Hong Kong ³	Habitat ^{4/5} 500m Study Area				
							WL	SL	PL	DA	WC
1	Asian Common Toad	<i>Duttaphrynus melanostictus</i>	黑眶蟾蜍	-	Least Concern	Widely distributed in HK	+				
2	Asiatic Painted Frog	<i>Kaloula pulchra</i>	花狹口蛙	-	Least Concern	Widely distributed in HK					+
3	Paddy Frog	<i>Fejervarya limnocharis</i>	澤蛙	-	Least Concern	Widely distributed throughout HK					+
4	Lesser Spiny Frog	<i>Quasipaa exilispinosa</i>	小棘蛙	Fellows: PGC; RLCV(VU)	Potential Concern	Widely distributed in upland forest streams throughout Hong Kong					+
5	Romer's Tree Frog	<i>Liuixalus romeri</i>	盧氏小樹蛙	Cap.170; Fellows: PGC; RLCV(VU); IUCN(EN)	Immediate Concern	Distributed in woodlands on Lantau Island, Po Toi Island, Lamma Island, Hong Kong Island and New Territories	+				+
6	Brown Tree Frog	<i>Polypedates megacephalus</i>	斑腿泛樹蛙	-	Least Concern	Widely distributed throughout Hong Kong		+	++		+
7	Greenhouse Frog	<i>Eleutherodactylus planirostris</i>	溫室蟾	-	-	Widely distributed throughout Hong Kong					+
TOTAL							2	1	1	0	6

Notes:

1. Conservation and Protection Status:

- Cap. 170 – Protected under Wild Animals Protection Ordinance
- Fellows – Fellows *et al.* (2002): PGC = Potential Global Concern
- RLCV – Red List of China's Vertebrate (2020): VU = Vulnerable
- IUCN – International Union for Conservation of Nature Red List of Threatened Species (2023). EN = Endangered

2. Rarity as per AFCD. 2009. The Proposed Action Plan for the Conservation of Amphibians in Hong Kong (NCSC 4/09). Annex 1.

3. Distribution as per AFCD database. Available at <https://bih.gov.hk/en/home/index.html>

4. Habitats: WL = Woodland, SL = Shrubland, PL = Plantation, DA = Developed Area, WC = Watercourse

5. Relative abundance: +: Scarce (1-5), ++: Uncommon (6-20), +++: Common (20 - 50), ++++: Abundant (>50)

6. References:

AFCD. 2009. The Proposed Action Plan for the Conservation of Amphibians in Hong Kong (NCSC 4/09). Annex 1. Accessed from <http://www.epd.gov.hk/epd/textonly/english/boards/advisory_council/files/ncsc_paper04_2009.pdf> in Sep 2014

AFCD. 2022. Hong Kong Biodiversity Information Hub. Accessed from <<https://bih.gov.hk/en/home/index.html>> in Feb 2022.

Fellows *et al.* 2002. Wild animals to watch: Terrestrial and freshwater fauna of conservation concern in Hong Kong. *Memoirs of the Hong Kong Natural History Society* 25:123-159.

IUCN. (2025). The IUCN Red List of Threatened Species (Version 2025-1). Accessed from <<http://www.iucnredlist.org>> in Jan 2025.

Ministry of Ecology and Environment of the People's Republic of China, and Chinese Academy of Sciences. 2023. Red List of China's Vertebrates.

Annex B7 Maximum Count of Reptile Species Recorded Within Study Area										
Item No.	Common Name	Scientific Name	Chinese Name	Conservation and Protection Status ¹	Distribution in Hong Kong ²	Habitat ³ 500m Study Area				
						WL	SL	PL	DA	WC
1	Chinese Gecko	<i>Gekko chinensis</i>	壁虎	-	Widely distributed throughout Hong Kong		1			2
2	Bowring's Gecko	<i>Hemidactylus bowringii</i>	原尾蜥虎	-	Distributed throughout Hong Kong					1
3	Many-banded Krait	<i>Bungarus multicinctus</i>	銀環蛇	Fellowes: PRC; RLCV(EN)	Common and widely distributed in Hong Kong			1		
TOTAL						0	1	1	0	2

Notes:

1. Conservation and Protection Status:

a. Fellowes – Fellowes et al. (2002): PRC = Potential Regional Concern

b. RLCV – Red List of China's Vertebrate (2020): EN = Endangered

2. Distribution as per AFCD database. Available at <https://bih.gov.hk/en/home/index.html>

3. Habitats: WL = Woodland, SL = Shrubland, PL = Plantation, DA = Developed Area, WC = Watercourse

4. References:

AFCD. 2022. Hong Kong Biodiversity Information Hub. Accessed from <<https://bih.gov.hk/en/home/index.html>> in Feb 2022.

Fellowes *et al.* 2002. Wild animals to watch: Terrestrial and freshwater fauna of conservation concern in Hong Kong. *Memoirs of the Hong Kong Natural History Society* 25:123-159.

Ministry of Ecology and Environment of the People's Republic of China, and Chinese Academy of Sciences. 2023. Red List of China's Vertebrates.

Annex B8 Maximum Count of Butterfly Species Recorded within the Study Area											
Item No.	Common Name	Scientific Name	Chinese Name	Consevation/ Protection Status	Rarity in Hong Kong ¹	Distribution in Hong Kong ²	Habitat ³ 500m Study Area				
							WL	SL	PL	DA	WC
1	Forget-me-not	<i>Catochrysops strabo</i>	咖灰蝶	-	Very Rare; Species of Conservation Concern	Pui O, Tai Po Kau, Fung Yuen, Shing Mun, Sha Lo Wan.		1		1	
2	Pale Grass Blue	<i>Zizeeria maha</i>	酢漿灰蝶	-	Very Common	Widely distributed throughout Hong Kong.			1	6	
3	Plum Judy	<i>Abisara echerius</i>	蛇目褐蛩蝶	-	Very Common	Widely distributed throughout Hong Kong.	2	1	1		
4	Common Indian Crow	<i>Euploea core</i>	幻紫斑蝶	-	Common	Widely distributed throughout Hong Kong.			1		
5	Glassy Tiger	<i>Parantica aglea</i>	絹斑蝶	-	Common	Widely distributed throughout Hong Kong.			1		
6	Blue Tiger	<i>Tirumala limniace</i>	青斑蝶	-	Common	Widely distributed throughout Hong Kong.			1		
7	Indian Fritillary	<i>Argyreus hyperbius</i>	斐豹蛩蝶	-	Common	Widely distributed throughout Hong Kong.			1		
8	Colour Sergeant	<i>Athyma nefte</i>	相思帶蛩蝶	-	Common	Widely distributed throughout Hong Kong.			1		
9	Rustic	<i>Cupha erymanthis</i>	黃襟蛩蝶	-	Very Common	Widely distributed throughout Hong Kong.			1		
10	Red-ring Skirt	<i>Hestina assimilis</i>	黑脈蛩蝶	-	Common	Widely distributed throughout Hong Kong.		1	1		
11	Blue Admiral	<i>Kaniska canace</i>	琉璃蛩蝶	-	Common	Widely distributed throughout Hong Kong.			1		
12	Common Palmfly	<i>Elymnias hypermnestra</i>	翠袖鋸眼蝶	-	Common	Widely distributed throughout Hong Kong.			1		
13	Common Bluebottle	<i>Graphium sarpedon</i>	青鳳蝶	-	Very Common	Widely distributed throughout Hong Kong.			1		
14	Great Mormon	<i>Papilio memnon</i>	美鳳蝶	-	Very Common	Widely distributed throughout Hong Kong.			1		
15	Paris Peacock	<i>Papilio paris</i>	巴黎翠鳳蝶	-	Very Common	Widely distributed throughout Hong Kong.		1			
16	Spangle	<i>Papilio protenor</i>	藍鳳蝶	-	Very Common	Widely distributed throughout Hong Kong.			1		
17	Lemon Emigrant	<i>Catopsilia pomona</i>	遷粉蝶	-	Common	Widely distributed throughout Hong Kong.		1	3	3	
18	Common Grass Yellow	<i>Eurema hecabe</i>	寬邊黃粉蝶	-	Very Common	Widely distributed throughout Hong Kong.			2	1	
TOTAL							1	5	16	4	0

Notes:

1. Rarity in Hong Kong refers to AFCD database:

Chan, A., Cheung, J., Sze, P., Wong, A., Wong, E. and Yau, E. 2011. A Review of the Local Restrictedness of Hong Kong Butterflies. Hong Kong Biodiversity 21: 1-12

2. Distribution as per AFCD database. Available at <https://bih.gov.hk/en/home/index.html>

3. Habitats: WL = Woodland, SL = Shrubland, PL = Plantation, DA = Developed Area, WC = Watercourse

4. References:

AFCD. 2022. Hong Kong Biodiversity Information Hub. Accessed from <<https://bih.gov.hk/en/home/index.html>> in Feb 2022.

Chan, A., Cheung, J., Sze, P., Wong, A., Wong, E. and Yau, E. 2011. A Review of the Local Restrictedness of Hong Kong Butterflies. Hong Kong Biodiversity 21: 1-12

Annex B9 Maximum Count of Odonate Species Recorded within the Study Area											
Item No.	Common Name	Scientific Name	Chinese Name	Consevation/ Protection Status	Rarity in Hong Kong ¹	Distribution in Hong Kong ²	Habitat ³ 500m Study Area				
							WL	SL	PL	DA	WC
1	Common Blue Skimmer	<i>Orthetrum glaucum</i>	黑尾灰蜻	-	Abundant	Widely distributed in streams, conduits, drainage channels, seepages and road gutters throughout				1	
2	Green Skimmer	<i>Orthetrum sabina sabina</i>	狹腹灰蜻	-	Abundant	Widely distributed in all wetland habitats throughout Hong Kong		1			
3	Wandering Glider	<i>Pantala flavescens</i>	黃蜻	-	Abundant	Widely distributed all over Hong Kong		25	1	50	
4	Saddlebag Glider	<i>Tramea virginia</i>	華斜痣蜻	-	Abundant	Widely distributed in trees adjacent to ponds and lakes throughout Hong Kong		1			
TOTAL							0	3	1	1	1

Notes:

1. Rarity as per AFCD. 2014.: Available at <http://www.afcd.gov.hk/english/conservation/hkbiodiversity/database/search.asp?lang=en>.

2. Distribution as per AFCD database. Available at <https://bih.gov.hk/en/home/index.html>

3. Habitats: WL = Woodland, SL = Shrubland, PL = Plantation, DA = Developed Area, WC = Watercourse

4. References: AFCD. 2022. Hong Kong Biodiversity Information Hub. Accessed from <<https://bih.gov.hk/en/home/index.html>> in Feb 2022.

Annex B10 Relative Abundance of Freshwater Fauna Recorded within the Study Area

Item No.	Common Name	Scientific Name	Chinese Name	Conservation Status ¹	Habitat ^{2/3}				
					500m Study Area				
					WL	SL	PL	DA	WC
Freshwater Invertebrates									
1	Backswimmer	<i>Notonectidae sp.</i>	仰泳蟾	-					+
2	Freshwater Shrimp	<i>Caridina cantonensis</i>	廣東米蝦	-					+
3	Freshwater Crab	<i>Nanhaipotamon hongkongense</i>	香港南海溪蟹	Fellowes: PGC					+
4	Mitten Crab	<i>Eriocheir sp.</i>	絨螯蟹	-					++
				TOTAL		0	0	0	4

Notes:

1. Conservation and Protection Status:

a. Fellowes – Fellowes et al. (2002): PGC = Potential Global Concern.

2. Habitats: WL = Woodland, SL = Shrubland, PL = Plantation, DA = Developed Area, WC = Watercourse

3. Relative abundance: +: Scarce (1-5), ++: Uncommon (6-20), +++: Common (20 - 50), ++++: Abundant (>50)

4. References:

AFCD. 2022. Hong Kong Biodiversity Information Hub. Accessed from <<https://bih.gov.hk/en/home/index.html>> in Feb 2022.

Fellowes *et al.* 2002. Wild animals to watch: Terrestrial and freshwater fauna of conservation concern in Hong Kong. *Memoirs of the Hong Kong Natural History Society* 25:123-159.