

FORM 5
ENVIRONMENTAL IMPACT ASSESSMENT ORDINANCE
(CHAPTER 499)
SECTION 13(1)

Application for Variation of an Environmental Permit

PART A PREVIOUS APPLICATIONS

- ☒ No previous application for variation of an environmental permit.
☐ The environmental permit was previously amended.

Application No. :

PART B DETAILS OF APPLICANT

B1. Name : (person or company)

ENVIRONMENTAL PROTECTION DEPARTMENT - Environmental Infrastructure Division

[Note : In accordance with section 13(1) of the Ordinance, the person holding an environmental permit or a person who assumes responsibility for the designated project may apply for variation of the environmental permit.]

B2. Business Registration No. :
(if applicable)

B3. Correspondence Address :

B4. Name of Contact Person :

B5. Position of Contact Person :

B6. Telephone No. :

B7. Fax No. :

B8. E-mail Address : (if any)

PART C DETAILS OF CURRENT ENVIRONMENTAL PERMIT

C1. Name of the Current Environmental Permit Holder :

ENVIRONMENTAL PROTECTION DEPARTMENT - Environmental Infrastructure Division

C2. Application No. of the Current Environmental Permit : AEP-393/2010

C3. The Current Environmental Permit was Issued in : month / year

06 | 2010

Important Notes : Please submit the application together with
(a) 3 copies of this completed form; and
(b) appropriate fee as stipulated in the Environmental Impact Assessment (Fees) Regulation
to the Environmental Protection Department at the following address :

The EIA Ordinance Register Office,
27th floor, Southorn Centre, 130 Hennessy Road,
Wan Chai, Hong Kong.

☐ Tick (✓) the appropriate box

PART D PROPOSED VARIATIONS TO THE CONDITIONS IN CURRENT ENVIRONMENTAL PERMIT

D1. Condition(s) in the Current Environmental Permit :	D2. Proposed Variation(s) :	D3. Reason for Variation(s) :	D4. Describe the environmental changes arising from the proposed variation(s) :	D5. Describe how the environment and the community might be affected by the proposed variation(s) :	D6. Describe how and to what extent the environmental performance requirements set out in the EIA report previously approved or project profile previously submitted for this project may be affected :	D7. Describe any additional measures proposed to eliminate, reduce or control any adverse environmental impact arising from the proposed variation(s) and to meet the requirements in the Technical Memorandum on Environmental Impact Assessment Process :
<p>Part B, Title of Designated Project</p> <p>West New Territories (WENT) Landfill Extensions – Feasibility Study [This designated project is hereinafter referred to as “the Project”]</p> <p>Part B, Scale and Scope of Designated Project</p> <p>Construction and operation of a landfill extension on the western side of the existing WENT Landfill of about 200 hectares and a filling capacity of not more than: (i) 81 million cubic metres if the proposed Integrated Waste Management Facilities Phase 1 are to be located in the middle Tsang Tsui Ash Lagoon; or (ii) 88 million cubic metres if the proposed Integrated Waste Management Facilities Phase 1 are not to be located in the middle Tsang Tsui Ash Lagoon, including:</p> <p>(i) Site formation and preparation;</p> <p>(ii) Relocation of existing landfill infrastructures including leachate treatment plant, landfill gas management plant, power generators, workshops and site offices;</p> <p>(iii) Installation of a liner system;</p> <p>(iv) Installation of leachate collection, treatment and disposal facilities;</p> <p>(v) Installation of gas collection, utilization and management facilities;</p> <p>(vi) Realignment of a section of Nim Wan Road;</p> <p>(vii) Provision of utilities and drainage;</p> <p>(viii) Landfilling operation;</p> <p>(ix) Restoration and aftercare in subsequent stages;</p> <p>(x) Implementation of measures to mitigate environmental impacts as well as environmental monitoring and audit; and</p> <p>(xi) Decommissioning of the Pulverized Fuel Ash Lagoons at Tsang Tsui.</p>	<p>West New Territories (WENT) Landfill Extension [This designated project is hereinafter referred to as “the Project”]</p> <p>Construction and operation of a landfill extension on the western side of the existing WENT Landfill of about 100 hectares and a filling capacity of not more than 76 million cubic metres, including:</p> <p>(i) Site formation and preparation;</p> <p>(ii) Installation of landfill infrastructures including leachate treatment plant, landfill gas management plant, power generators, workshops and site offices;</p> <p>(iii) Installation of a liner system;</p> <p>(iv) Installation of leachate collection and disposal facilities;</p> <p>(v) Installation of gas collection and utilization facilities;</p> <p>(vi) Provision of utilities and drainage;</p> <p>(vii) Landfilling operation;</p> <p>(viii) Restoration and aftercare in subsequent stages; and</p> <p>(ix) Implementation of measures to mitigate environmental impacts as well as environmental monitoring and audit.</p>	<p>The project title should read as “West New Territories (WENT) Landfill Extension”.</p> <p>The boundary of WENTX is reduced under the Enhanced Scheme. The waste filling area and landfill capacity are updated accordingly.</p> <p>The reduced boundary will avoid the existing Nim Wan Road. The scope of realignment of a section of Nim Wan Road is not applicable. The construction works for the new road section, i.e. Nim Wan Road (South), will be undertaken by others under a separate project. The reduced WENTX boundary will not include any Pulverized Fuel Ash Lagoons where decommissioning is required before further development.</p>	<p>Not applicable</p> <p>No environmental changes arise from the proposed variation. For the details, please refer to the attached Supporting Document.</p>	<p>Not applicable</p> <p>The environmental and the community will not be affected by the proposed variation. For the details, please refer to the attached Supporting Document.</p>	<p>Not applicable</p> <p>The environmental performance requirements set out in the EIA report previously approved or project profile previously submitted for this project will not be affected by the proposed variation. For the details, please refer to the attached Supporting Document.</p>	<p>Not applicable</p> <p>Not required</p>

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D1. Condition(s) in the Current Environmental Permit :	D2. Proposed Variation(s) :	D3. Reason for Variation(s) :	D4. Describe the environmental changes arising from the proposed variation(s) :	D5. Describe how the environment and the community might be affected by the proposed variation(s) :	D6. Describe how and to what extent the environmental performance requirements set out in the EIA report previously approved or project profile previously submitted for this project may be affected :	D7. Describe any additional measures proposed to eliminate, reduce or control any adverse environmental impact arising from the proposed variation(s) and to meet the requirements in the Technical Memorandum on Environmental Impact Assessment Process :
<p>Part C, Condition 2.6</p> <p>Submission of Habitat Creation, Transplantation and Management Plan (HCTMP)</p> <p>At least 1 month before the commencement of construction of the Project, 3 hardcopies and 1 electronic copy of the HCTMP shall be submitted to the Director for approval. The HCTMP shall contain at least the following details on provision of freshwater ponds and transplantation:</p> <p>Detailed specifications for the habitat in the form of freshwater pond(s)</p> <p>(i) The size of each freshwater pond shall be at least 0.5 ha and shall contain suitable habitat characteristics for Little Grebe as shown in Figure 2;</p> <p>(ii) The total size of all the freshwater ponds shall be at least 8 ha;</p> <p>(iii) The freshwater ponds shall be established no later than the first year of the commencement of construction of the Project;</p> <p>(iv) The locations of the freshwater ponds shall be clearly shown in a plan with an appropriate scale; and</p> <p>Transplantation Details.</p> <p>(v) The transplantation details, including transplanting locations and procedures, of Pitcher Plant (<i>Nepenthes mirabilis</i>), Bamboo Orchid (<i>Arundina graminifolia</i>), Incense Tree (<i>Aquilaria sinensis</i>) and other plants of conservation interest to be affected by the Project shall be included.</p>	<p>Submission of Habitat Creation, Transplantation and Management Plan (HCTMP)</p> <p>At least 1 month before the commencement of construction of the Project, 3 hardcopies and 1 electronic copy of the HCTMP shall be submitted to the Director for approval. The HCTMP shall contain at least the following details on provision of freshwater ponds and transplantation:</p> <p>Detailed specifications for the habitat in the form of freshwater pond(s)</p> <p>(i) The size of each freshwater pond shall be at least 0.5 ha and shall contain suitable habitat characteristics for Little Grebe as shown in Figure 2;</p> <p>(ii) The total size of all the freshwater ponds shall be at least 8 ha;</p> <p>(iii) The freshwater ponds shall be established no later than the first year of the commencement of construction of the Project;</p> <p>(iv) The locations of the freshwater ponds shall be clearly shown in a plan with an appropriate scale; and</p> <p>Remark: Subsequent to the avoidance of encroachment of breeding habitat for Little Grebe in the Enhanced Scheme, the above requirements for provision of freshwater pond(s) are no longer applicable.</p>	<p>The requirement on compensatory freshwater ponds for Little Grebe is not applicable, given that there is no loss of the breeding habitat for Little Grebe in the Enhanced Scheme.</p>	<p>No environmental changes arise from the proposed variation. For the details, please refer to Section 8 of the attached Supporting Document.</p>	<p>The environmental and the community will not be affected by the proposed variation. With the reduced boundary of the project, encroachment onto the breeding habitat of Little Grebe can be totally avoided. The proposed change can bring positive ecological impact. For the details, please refer to Section 8 of the attached Supporting Document.</p>	<p>The environmental performance requirements set out in the EIA report previously approved or project profile previously submitted for this project will not be affected by the proposed variation. For the details, please refer to Section 8 of the attached Supporting Document.</p>	<p>Not required</p>

PART D PROPOSED VARIATIONS TO THE CONDITIONS IN CURRENT ENVIRONMENTAL PERMIT

D1. Condition(s) in the Current Environmental Permit :	D2. Proposed Variation(s) :	D3. Reason for Variation(s) :	D4. Describe the environmental changes arising from the proposed variation(s) :	D5. Describe how the environment and the community might be affected by the proposed variation(s) :	D6. Describe how and to what extent the environmental performance requirements set out in the EIA report previously approved or project profile previously submitted for this project may be affected :	D7. Describe any additional measures proposed to eliminate, reduce or control any adverse environmental impact arising from the proposed variation(s) and to meet the requirements in the Technical Memorandum on Environmental Impact Assessment Process :
<p>In preparing the HCTMP, the Director of Agriculture, Fisheries and Conservation shall be consulted. Before submission to the Director, the HCTMP shall be certified by the ET Leader and verified by the IEC as conforming to the information and recommendations contained in the approved EIA report (Register No. AEIAR-147/2009). All measures recommended in the approved HCTMP shall be fully and properly implemented and thereafter maintained.</p> <p>Part C, Condition 2.10</p> <p><u>Submission of Archaeological Action Plan</u></p> <p>At least 1 month before the commencement of construction of the Project, 3 hardcopies and 1 electronic copy of Archaeological Action Plan shall be deposited with the Director. The Plan shall detail the actions required to mitigate the potential impacts on archaeological deposits in Tsang Tsui Archaeological Site and shall include at least the following:</p> <p>(i) A detailed plan for an archaeological survey;</p> <p>(ii) a detailed plan for rescue excavation; and</p>	<p>Transplantation Details.</p> <p>(v) The transplantation details, including transplanting locations and procedures, of Pitcher Plant (<i>Nepenthes mirabilis</i>), Bamboo Orchid (<i>Arundina graminifolia</i>), Incense Tree (<i>Aquilaria sinensis</i>) and other plants of conservation interest to be affected by the Project shall be included.</p> <p>In preparing the HCTMP, the Director of Agriculture, Fisheries and Conservation shall be consulted. Before submission to the Director, the HCTMP shall be certified by the ET Leader and verified by the IEC as conforming to the information and recommendations contained in the approved EIA report (Register No. AEIAR-147/2009). All measures recommended in the approved HCTMP shall be fully and properly implemented and thereafter maintained.</p> <p>Proposed to be deleted.</p>	<p>The reduced WENTX boundary will totally avoid Tsang Tsui Archaeological Site. The requirement for submission of Archaeological Action Plan is not applicable.</p>	<p>No environmental changes arise from the proposed variation. For the details, please refer to Section 9.3 of the attached Supporting Document.</p>	<p>The environmental and the community will not be affected by the proposed variation. The revised boundary of the project can totally avoid the Tsang Tsui Archaeological Site. For the details, please refer to Section 9.3 of the attached Supporting Document.</p>	<p>The environmental performance requirements set out in the EIA report previously approved or project profile previously submitted for this project will not be affected by the proposed variation. For the details, please refer to Section 9.3 of the attached Supporting Document.</p>	<p>Not required</p>

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D1. Condition(s) in the Current Environmental Permit :	D2. Proposed Variation(s) :	D3. Reason for Variation(s) :	D4. Describe the environmental changes arising from the proposed variation(s) :	D5. Describe how the environment and the community might be affected by the proposed variation(s) :	D6. Describe how and to what extent the environmental performance requirements set out in the EIA report previously approved or project profile previously submitted for this project may be affected :	D7. Describe any additional measures proposed to eliminate, reduce or control any adverse environmental impact arising from the proposed variation(s) and to meet the requirements in the Technical Memorandum on Environmental Impact Assessment Process :
<p>(iii) a contingency plan to address possible arrangements when significant archaeological findings are unearthed.</p> <p>In preparing the Archaeological Action Plan, the Antiquities and Monuments Office shall be consulted. Before submission to the Director, the Archaeological Action Plan shall be certified by the ET Leader and verified by the IEC as conforming to the information and recommendations contained in the approved EIA report (Register No.: AEIAR-147/2009).</p> <p>All measures recommended in the deposited Archaeological Action Plan shall be fully and properly implemented for the Project.</p> <p>Part C, Condition 2.11</p> <p><u>Measure to Mitigate Construction Noise Impact</u></p> <p>To mitigate construction noise impacts, a noise bund of 3.5m tall shall be constructed along the north eastern seafront of the existing landfill as shown in Figure 3 prior to the commencement of construction. The noise bund shall be properly maintained during the construction of the Project.</p> <p>In case of any change of the design of the noise bund from that described in the approved EIA report (Register No.: AEIAR-147/2009), 3 hardcopies and 1 electronic copy of the revised noise bund design shall be submitted to the Director for approval at least 1 month before commencement of construction of the noise bund. Before submission to the Director, the revised noise bund design has to be certified by the ET Leader and verified by the IEC as conforming to the requirements set out in the</p>	<p>Part C, Condition 2.11</p> <p><u>Measure to Mitigate Noise Impact</u></p> <p>A noise bund of 3.5m tall shall be constructed along the north eastern seafront of the existing landfill as shown in Figure 3 prior to the commencement of construction. The noise bund shall be properly maintained during the construction, operation and restoration of the Project.</p> <p>In case of any change of the design of the noise bund from that described in the approved EIA report (Register No.: AEIAR-147/2009), 3 hardcopies and 1 electronic copy of the revised noise bund design shall be submitted to the Director for approval at least 1 month before commencement of construction of the noise bund. Before submission to the Director, the revised noise bund design has to be certified by the ET Leader and verified by the IEC as conforming to</p>	<p>The maintenance period of the noise bund will be extended to cover the construction, operation and restoration stages of the Project.</p>	<p>No environmental changes arise from the proposed variation. For the details, please refer to Section 5 of the attached Supporting Document.</p>	<p>The environmental and the community will not be affected by the proposed variation. For the details, please refer to Section 5 of the attached Supporting Document.</p>	<p>The environmental performance requirements set out in the EIA report previously approved or project profile previously submitted for this project will not be affected by the proposed variation. For the details, please refer to Section 5 of the attached Supporting Document.</p>	<p>Not required</p>

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D1. Condition(s) in the Current Environmental Permit :	D2. Proposed Variation(s) :	D3. Reason for Variation(s) :	D4. Describe the environmental changes arising from the proposed variation(s) :	D5. Describe how the environment and the community might be affected by the proposed variation(s) :	D6. Describe how and to what extent the environmental performance requirements set out in the EIA report previously approved or project profile previously submitted for this project may be affected :	D7. Describe any additional measures proposed to eliminate, reduce or control any adverse environmental impact arising from the proposed variation(s) and to meet the requirements in the Technical Memorandum on Environmental Impact Assessment Process :
Memorandum on Environmental Impact Assessment Process".	the requirements set out in the "Technical Memorandum on Environmental Impact Assessment Process".					
Part C, Condition 2.15 On-site storage of excavated materials shall be covered with tarpaulin or similar materials.	Part C, Condition 2.15 On-site storage of excavated materials shall be covered with tarpaulin or otherwise agreed by the Director.	It allows more flexibility to suit practical needs and possible development of landfill technology in future.	No environmental changes arise from the proposed variation.	The environmental and the community will not be affected by the proposed variation.	The environmental performance requirements set out in the EIA report previously approved or project profile previously submitted for this project will not be affected by the proposed variation.	Not required
Part C, Condition 2.21 The size of each active tipping face with ongoing tipping activities shall not exceed 60m x 30m and shall be covered with at least 150mm thick of soil at the end of each working day (i.e. after 8:00pm).	Part C, Condition 2.21 The size of each active tipping face with ongoing tipping activities shall not exceed 60 m x 30 m and shall be covered with at least 150 mm thick of soil or otherwise agreed by the Director, at the end of each working day (i.e. after 8:00 pm).	It encourages beneficial uses of other suitable materials and also allows flexibility for possible development of landfill technology in future.	No environmental changes arise from the proposed variation.	The environmental and the community will not be affected by the proposed variation.	The environmental performance requirements set out in the EIA report previously approved or project profile previously submitted for this project will not be affected by the proposed variation.	Not required

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D1. Condition(s) in the Current Environmental Permit :	D2. Proposed Variation(s) :	D3. Reason for Variation(s) :	D4. Describe the environmental changes arising from the proposed variation(s) :	D5. Describe how the environment and the community might be affected by the proposed variation(s) :	D6. Describe how and to what extent the environmental performance requirements set out in the EIA report previously approved or project profile previously submitted for this project may be affected :	D7. Describe any additional measures proposed to eliminate, reduce or control any adverse environmental impact arising from the proposed variation(s) and to meet the requirements in the Technical Memorandum on Environmental Impact Assessment Process :
<p>Part C, Condition 2.22</p> <p>A maximum of two active tipping faces shall be allowed to work simultaneously within the Project site. Should the two active tipping faces be lying entirely within either Phase 1 or Phase 3 or Phase 4 of the Project site, one of these active tipping faces shall be located outside the hatched area of that particular phase as shown in Figures 4, 5 and 6 respectively.</p>	<p>Part C, Condition 2.22</p> <p>A maximum of two active tipping faces shall be allowed to work simultaneously within the Project site.</p>	<p>The boundary of WENTX is reduced. The phasing under the approved EIA is not applicable. In addition, the potential odour impacts have been much improved in the Enhanced Scheme. The requirement of distance between the two active tipping faces within the Project site is not applicable.</p>	<p>No environmental changes arise from the proposed variation. For the details, please refer to Section 4 of the attached Supporting Document.</p>	<p>The environmental and the community will not be affected by the proposed variation. The project can still comply with the requirements of the EIAO-TM. For the details, please refer to Section 4 of the attached Supporting Document.</p>	<p>The environmental performance requirements set out in the EIA report previously approved or project profile previously submitted for this project will not be affected by the proposed variation. For the details, please refer to Section 4 of the attached Supporting Document.</p>	<p>Not required</p>
<p>Part C, Condition 2.24</p> <p>No sewage sludge shall be disposed of at the Project site.</p>	<p>Part C, Condition 2.24</p> <p>No sewage sludge shall be disposed of at the Project site or otherwise agreed by the Director.</p>	<p>Sewage sludge is in general diverted and incinerated at sludge treatment facilities (e.g. T-PARK), except due to emergency or other reasons that need to be disposed of at WENT Landfill.</p> <p>The same will also be operated in the WENTX.</p>	<p>No environmental changes arise from the proposed variation.</p>	<p>The environmental and the community will not be affected by the proposed variation.</p>	<p>The environmental performance requirements set out in the EIA report previously approved or project profile previously submitted for this project will not be affected by the proposed variation.</p>	<p>Not required</p>
<p>Part C, Condition 3.1</p> <p>The EM&A programme shall be implemented in accordance with the procedures and requirements as set out in the approved EM&A Manual or as approved by the Director. Any changes to the programme shall be justified by the ET Leader and verified by the IEC as conforming to the information and requirements contained in the EM&A Manual before submission to the Director for approval.</p>	<p>Part C, Condition 3.1</p> <p>The EM&A programme shall be implemented in accordance with the procedures and requirements as set out in the approved EM&A Manual and the application document in the Register or as approved by the Director. Any changes to the programme shall be justified by the ET Leader and verified by the IEC as conforming to the information and requirements contained in the EM&A Manual before submission to the Director for approval.</p>	<p>Textual amendment such that the additional monitoring locations proposed in the VEP supporting document would be addressed in the future EM&A monthly reports.</p>	<p>No environmental changes arise from the proposed variation.</p>	<p>The environmental and the community will not be affected by the proposed variation.</p>	<p>The environmental performance requirements set out in the EIA report previously approved or project profile previously submitted for this project will not be affected by the proposed variation.</p>	<p>Not required</p>

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D1. Condition(s) in the Current Environmental Permit :	D2. Proposed Variation(s) :	D3. Reason for Variation(s) :	D4. Describe the environmental changes arising from the proposed variation(s) :	D5. Describe how the environment and the community might be affected by the proposed variation(s) :	D6. Describe how and to what extent the environmental performance requirements set out in the EIA report previously approved or project profile previously submitted for this project may be affected :	D7. Describe any additional measures proposed to eliminate, reduce or control any adverse environmental impact arising from the proposed variation(s) and to meet the requirements in the Technical Memorandum on Environmental Impact Assessment Process :
Figure 1	See Figure 10.1 of the attached Supporting Document	The WENTX boundary has been reduced in the Enhanced Scheme.	No environmental changes arise from the proposed variation. For the details, please refer to the attached Supporting Document.	The environmental and the community will not be affected by the proposed variation. For the details, please refer to attached Supporting Document.	The environmental performance requirements set out in the EIA report previously approved or project profile previously submitted for this project will not be affected by the proposed variation. For the details, please refer to the attached Supporting Document.	Not required
Figure 2	Add a note no. 9 to the figure: 9. Subsequent to the avoidance of encroachment of breeding habitat for Little Grebe in the Enhanced Scheme is revised landfill design, the above requirements for provision of freshwater pond(s) are no longer applicable.	Under the Enhanced Scheme, the WENTX will no longer encroach onto the west and middle TTALs. The habitat creation of freshwater pond is not required, given that there is no loss of the breeding habitat for Little Grebe in the Enhanced Scheme.	No environmental changes arise from the proposed variation. For the details, please refer to Section 8 of the attached Supporting Document.	The environmental and the community will not be affected by the proposed variation. For the details, please refer to Section 8 of the attached Supporting Document.	The environmental performance requirements set out in the EIA report previously approved or project profile previously submitted for this project will not be affected by the proposed variation. For the details, please refer to Section 8 of the attached Supporting Document.	Not required
Figure 4 to 6	To be deleted.	The boundary of WENTX is reduced. The phasing in the approved EIA is not applicable. In addition, the potential odour impacts have been much improved in the Enhanced Scheme. The requirement of distance between the two active tipping faces within the Project site is not applicable.	No environmental changes arise from the proposed variation. For the details, please refer to Section 4 of the attached Supporting Document.	The environmental and the community will not be affected by the proposed variation. For the details, please refer to Section 4 of the attached Supporting Document.	The environmental performance requirements set out in the EIA report previously approved or project profile previously submitted for this project will not be affected by the proposed variation. For the details, please refer to Section 4 of the attached Supporting Document.	Not required

PART E DECLARATION BY APPLICANT

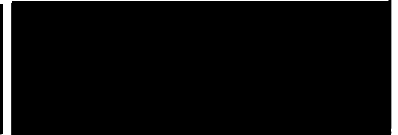
E1. I hereby certify that the particulars given above are correct and true to the best of my knowledge and belief. I understand the environmental permit may be suspended, varied or cancelled if any information given above is false, misleading, wrong or incomplete.



Signature of Applicant



Full Name in Block Letters



Position

on behalf of ENVIRONMENTAL PROTECTION DEPARTMENT
- Environmental Infrastructure Division

Company Name and Chop (as appropriate)

7/7/2022

Date

NOTES :

1. A person who constructs or operates a designated project in Part I of Schedule 2 of the Ordinance or decommissions a designated project listed in Part II of Schedule 2 of the Ordinance without an environmental permit or contrary to the permit conditions commits an offence under the Ordinance and is liable to a maximum fine of \$5,000,000 and to a maximum imprisonment for 2 years.
2. A person for whom a designated project is constructed, operated or decommissioned and who permits the carrying out of the designated project in contravention of the Ordinance commits an offence and is liable to a maximum fine of \$5,000,000 and to a maximum imprisonment for 2 years.

Environmental Protection
Department

**Agreement No. CE 6/2015 (EP)
West New Territories (WENT)
Landfill Extension – Design and
Construction**

Supporting Document for Variation
of Environmental Permit

245706-REP-129

Final | July 2022

This report takes into account the particular
instructions and requirements of our client.

It is not intended for and should not be relied
upon by any third party and no responsibility
is undertaken to any third party.

Job number 245706

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Hong Kong
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ARUP

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1 Introduction

1.1 Background

1.1.1 The WENT Landfill Extension (WENTX – the Project) is classified as a Designated Project (DP) requiring an Environmental Permit (EP) under Schedule 2, Part II of the Environmental Impact Assessment Ordinance (EIAO) (Cap. 499). The Environmental Impact Assessment (EIA) Report (AEIAR-147/2009) of WENTX was approved in November 2009 and the respective EP (EP-393/2010) was granted in June 2010. For the WENTX development scheme adopted in the WENTX-EIA in 2009 (hereby referred to the Original Scheme), the site covering about 188 hectares (ha) of land adjacent to the existing WENT Landfill has been confirmed feasible to provide approximately 81 million m³ (Mm³) of additional landfill capacity.

1.1.2 Since then, a number of interfacing projects, commitments and neighbourhood enhancement initiatives have been proposed and considered in conjunction with the Project. Compared with the Original Scheme (as shown in **Figure 1.1**), the following changes and considerations are identified and have implications on the site layout and hence the development of the Project under the Original Scheme:

- Development of the existing Tsang Tsui Columbarium and Garden of Remembrance (the Columbarium) by others;
- Need to reserve land in the middle Tsang Tsui ash lagoon (TTAL) for the development of the proposed Integrated Waste Management Facilities Phase 2 (IWMF2) by others;
- Need to extend / enlarge the tree buffer zones to meet the community needs;
- Consideration to avoid the ecologically sensitive west TTAL;
- Consideration to avoid the Tsang Tsui Site of Archaeological Interest (TTAS), private lots, graves, and temple;
- Consideration to minimise the interfacing issues with the construction works for realignment of Nim Wan Road; and
- Consideration to minimise the interfacing issues with the existing WENT Landfill, including relocation of existing landfill infrastructures and associated utilities, etc.

1.1.3 In considerations of the above, the reference design and implementation programme for the WENTX (hereby referred to the Enhanced Scheme) has been revised. The major design changes and revised layout design are shown in **Table 1.1** and **Figure 1.2** respectively.

Table 1.1: Major design changes between Original Scheme and Enhanced Scheme

Design Parameters	Original Scheme	Enhanced Scheme
Waste Filling Area	188 ha	94 ha
Design Landfill Capacity	81 Mm ³	76 Mm ³
Anticipated Development Phasing (subject to contractor's design)	clock-wisely from east to north	from north to south

1.2 Purpose and Structure of this Document

1.2.1 In respect of various design and engineering changes to the Original Scheme, there is a need to conduct a review to identify and evaluate the potential environmental impacts of the Enhanced Scheme. The review findings presented in this document serve as a supporting document to be submitted to the EPD for the application of a variation of Environmental Permit (VEP) for the WENTX.

1.2.2 The structure of this document is as follows:

Section 1	Present the project background, project description, and purpose and structure of this document
Section 2	Present the latest development and design changes, betterment of the Enhanced Scheme, and tentative implementation programme
Section 3	Review the potential air quality impacts arising from the proposed change of the Project
Section 4	Review the potential odour impacts arising from the proposed change of the Project
Section 5	Review the potential noise impacts arising from the proposed change of the Project
Section 6	Review the potential water quality impacts arising from the proposed change of the Project
Section 7	Review the potential waste management implications arising from the proposed change of the Project
Section 8	Review the potential ecological impacts arising from the proposed change of the Project
Section 9	Review the other potential environmental impacts including landfill gas hazard, landscape and visual, cultural heritage and impacts associated with pulverised fuel arising from the proposed change of the Project
Section 10	Propose the variations to the Environmental Permit under the Original Scheme
Section 11	Conclude the findings of this document

2 Project Update and Proposed Changes

2.1 Original Scheme Adopted in WENTX-FS and Approved EIA

- 2.1.1** In the Original Scheme and WENTX EP, the waste filling area would occupy a footprint of about 188 ha, comprising an area to the west of the existing WENT Landfill, the existing WENT Landfill infrastructure area, the entire west TTAL, and part of middle and east TTALs. The design landfill capacity is about 81 Mm³ and the highest filling level of the WENTX is about +290 mPD.
- 2.1.2** The WENTX development would commence from east to west in a clockwise direction as shown in **Figure 2.1**.
- 2.1.3** The northern part of the site is designated as the landfill infrastructure area to accommodate site office, leachate treatment facilities, landfill gas (LFG) treatment facilities and LFG power generators. New leachate treatment facilities, LFG treatment facilities and LFG power generators will be built for WENTX. The existing WENT Landfill infrastructures will need to be relocated as the entire infrastructure area would form part of the WENTX's filling area.
- 2.1.4** It is estimated that two tipping faces with an area of 1,800 m² (say 30 m x 60 m) each would generally be required to meet the daily waste disposal need. A soil cover of 150 mm thick will be applied to cover up the compacted waste at the active tipping faces at each day end for more effective prevention of odour emission and rainwater infiltration.

2.2 Proposed Changes under the Enhanced Scheme

- 2.2.1** Taking into account the changes and updated development scheme of the Project, there are a number of changes made to the Enhanced Scheme, including the following:

Reduction of Waste Boundary and Filling Height

- 2.2.2** Under the Enhanced Scheme, the waste filling area has been significantly reduced from 188 ha to 94 ha, which is 50% less than that proposed in the Original Scheme.
- 2.2.3** The reduced WENTX boundary will no longer encroach onto the west and middle TTALs. The revised waste boundary has also avoided the southern area outside the middle TTAL, where the TTAS, several graves and shrines, as well as a temple were identified. To minimize the associated landfill capacity loss due to the 50% decrease in the waste filling area, a deep-bowl design is adopted under Enhanced Scheme, which will provide 76 Mm³ of landfill capacity, or about 6% less than that of the Original Scheme of 81 Mm³. The highest filling level of the landfill will also be lowered from +290 mPD to +270 mPD.

Changes in Landfill Development Phasing

- 2.2.4** In the Original Scheme, the WENTX would be developed in phases, generally from the east to the west of the site in a clockwise direction, as shown in **Figure 2.1**. In the Enhanced Scheme, the WENTX would also be developed in phases, but generally from north near the Nim Wan Road to the south, as shown in the tentative outline phasing programme in **Figure 2.2**. In view of the design-build-operate nature of the WENTX project, the WENTX contractor will, upon contract award, prepare its own landfill development phasing plan to suit the actual site development programme, plants and resources availability, method of works, etc. The outline landfill phasing programme is only indicative and for reference use.

Blasting Works

- 2.2.5** The construction of landfill site would still involve both blasting and hydraulic rock-breaking as proposed in the WENTX-FS and the approved EIA. With the deep-bowl design proposed in the Enhanced Scheme and in order to meet the associated implementation programme, blasting is considered as the primary means of rock excavation. Upon contract award, the WENTX contractor will, according to its landfill design and implementation programme, prepare a detailed blasting assessment report for application of the necessary blasting permit prior to conducting of any blasting works on site. Besides, Mines Division of the Civil Engineering and Development Department (CEDD) will deliver explosives to site through vessels and trucks on a daily basis. The transportation of explosives is entirely under a separate permit control of Mines Division of CEDD.

Eastern Platform and Modification of Tsang Kok Stream Outfall

- 2.2.6** A platform (hereafter refer to the Eastern Platform) on the eastern side of the site will be designed and built as the reception and crushing area for the excavated rock generated during site formation. As the Eastern Platform will be formed on a hilly terrain, site formation and construction works including retaining structures will be carried out during the initial works stage, tentatively from Years 2023 to 2024. The need of a platform within the Project site boundary for handling / processing of the excavated rock will also be required in the Original Scheme, though the exact location is yet to be decided.

- 2.2.7** At the same time, the Tsang Kok Stream Outfall will be modified to form a site for rock crushing and as barging points during the construction stage of WENTX. The proposed extent of the modification works and construction method are the same as the Original Scheme. Tentatively, the related construction works will be undertaken from Years 2023 to 2024.

- 2.2.8** Upon the WENTX contract award, the contractor will, according to its landfill design, prepare the crushing plants design and apply for the necessary Specified Process licence(s) prior to conducting any crushing operation.

Retention of Existing WENT Landfill Infrastructures

- 2.2.9** Under the Enhanced Scheme, the landfill infrastructures, including site offices, leachate treatment facilities, LFG treatment facilities and LFG power generators for WENTX would be constructed at the south of the existing T • PARK, which is the same as the Original Scheme. As for the existing WENT Landfill infrastructures, they would now be retained at the current locations under the Enhanced Scheme instead of relocation as proposed in the Original Scheme.

Exclusion of Nim Wan Road (South) Works

- 2.2.10** In view of the reduction in landfill site footprint, the existing Nim Wan Road will be retained to continue to serve as the main access to WENTX. Separately, a new road section, i.e. Nim Wan Road (South), which is previously named as Nim Wan Road realignment in the WENTX EIA, is proposed to run along the seaward side of the west and middle TTALs as shown in **Figure 2.2**. The proposed Nim Wan Road (South) will be implemented under a separate project managed by other parties, and thus has been removed from the scope of the Project.

Exclusion of West and Middle TTALs

- 2.2.11** Subsequent to the reduction in landfill site footprint under the Enhanced Scheme, the entire west and middle TTALs will be excluded from the Project boundary of WENTX. There is also no loss of any breeding habitat for Little Grebe and thus

the associated need for compensatory freshwater ponds due to WENTX development as required in the WENTX EIA is no longer applicable.

Cultural Heritage

2.2.12 Subsequent to the reduction in landfill site footprint under the Enhanced Scheme, the TTAS will be excluded from the Project boundary of WENTX. There is also no encroachment onto any graves and temple. Therefore, no potential cultural heritage impact is anticipated.

Landscape / Tree Management

2.2.13 To meet the stakeholders' demands for further enhancement on the visual appearance of the site during Project development, a 10 m and 30 m wide tree buffer planting will respectively be provided along the northern and western & southern boundaries of the site.

2.3 Betterment of the Enhanced Scheme

2.3.1 In summary, the Enhanced Scheme would bring many environmental benefits to the nearby community and the environment when compared to the Original Scheme, including the following:

- Reduce the WENTX footprint, thus increasing its distance away from the sensitive receivers and reducing magnitude of landscape and visual impacts;
- Reduce the overall waste filling area by 50%, thus decreasing the odour emission, surface runoff, etc;
- Implementation of additional odour control measures, such as Posi-shell and/or other suitable materials, to the top of the 150 mm thick soil layer to be applied to cover the active tipping face at the end of each operation day;
- Totally avoid the west and middle TTALs and therefore avoid habitat loss for Little Grebe;
- Significantly minimise the woodland loss from 3.76 ha in the Original Scheme to 0.12 ha in the Enhanced Scheme and reduce the hillside grassland / shrubland habitat loss largely by about 70 ha;
- Totally avoid the Tsang Tsui area where the TTAS, graves and temple are located, and hence impacts on these cultural heritage resources could be avoided;
- Significantly reduce the number of trees to be felled;
- Enlargement of tree buffer zone serving as a visual relief to the local community and neighbourhood.
- Receivers outside the WENTX will no longer fall within the 250 m Landfill Consultation Zone, hence the potential risk could be avoided.
- Use blasting as the primary mean for WENTX construction, and so the entire construction period could be shortened; and
- Environmental Monitoring and Audit (EM&A) will be maintained to verify the environmental performance as in the Original Scheme and additional air quality monitoring and odour patrol locations are recommended in verifying no adverse environmental impact on them.

2.4 Tentative Implementation Programme

2.4.1 The WENTX development comprises 4 stages: construction (i.e. initial works and remaining works), operation, restoration and aftercare stages.

2.4.2 The construction of the Project will commence by phases, with the initial works as listed below to be conducted tentatively from 2023 to 2026. Locations of these works are shown in **Figure 2.2**.

- Tsang Kok Stream Outfall modification works;
- site formation for establishing Eastern Platform;
- rock crushing at Eastern Platform and Tsang Kok Stream Outfall area;
- site formation and construction of landfill cell; and
- construction of landfill infrastructures, including site offices, leachate treatment facilities, LFG treatment facilities, LFG power generators, etc.

2.4.3 The remaining works include mainly the construction of other landfill cells would continue until about 2037, subject to the contractor's design and the development programme. The WENTX landfill operation, including mainly waste filling activities, would commence in 2026 and would continue for over 20 years, subject to the actual waste intake. The WENTX is expected to reach its design capacity in around late 2040s to early 2050s.

2.4.4 When the WENTX reaches its design capacity, restoration works will be undertaken by phases and expected to complete in the following two years. The restoration works would involve the installation of the final cap, comprising soil cover, high density polyethylene liner, top soil, as well as the landscaping. The operation of aftercare facilities, such as leachate treatment works, LFG treatment works and LFG utilisation plants, etc. would continue up to the end of the aftercare period, i.e. 30 years after the completion of the restoration works.

2.5 Development of New Waste-to-energy Facilities

2.5.1 EPD has announced to carry out an EIA and technical studies for the development IWMF2 at the middle TTAL site and a comprehensive territory-wide site search study to identify other potential sites suitable for developing more waste-to-energy facilities across the territory. Since there are no design details available for the development of IWMF2 at the middle TTAL site, cumulative environmental impact from this potential concurrent project is therefore not considered. Presumably, this would be addressed in the EIA study for the IWMF2 in due course.

2.6 Environmental Review of the Enhanced Scheme

2.6.1 In respect of various design and engineering changes to the Original Scheme, an environmental review has been conducted to identify and evaluate the potential environmental impacts of the Enhanced Scheme. Based on desktop review of previous studies/assessments (for example, WENT Landfill Extension, Sludge Treatment Facilities, Decommissioning of West Portion of the Middle Ash Lagoon at Tsang Tsui, and associated impact assessments on air, water, ecology, pulverized fuel ash, etc.), the anticipated impacts on representative sensitive receivers would meet the relevant assessment criteria as stipulated in the Technical Memorandum on Environmental Impact Assessment Process (EIAO-TM) and relevant environmental legislations. The proposed changes will not constitute material

change to the environmental impacts of the Project. The findings of the environmental review are presented in the following sections.

3 Air Quality

3.1.1 The changes in the Enhanced Scheme that might have potential air quality impacts are presented in **Table 3.1**.

Table 3.1: Changes in the Enhanced Scheme that might have potential air quality impacts

Potential Environmental Implication	Changes in the Enhanced Scheme
Construction Stage	
Dust emissions from construction of landfill cells	<ul style="list-style-type: none"> Under the Enhanced Scheme, the waste filling area has been reduced to 94 ha from 188 ha in the Original Scheme. It will no longer encroach onto the west and middle TTALs. Due to the reduced size of waste boundary and the exclusion of the proposed Nim Wan Road (South) from the Project, it is expected the dust emission from associated construction works at landfill cells would be reduced. Change in development phases (i.e. from 6 phases with overlapping each other and from the east to the west in a clockwise direction in the approved WENTX EIA to 6 phases (with 3 sub-phases for Phase 1) from north to south to be carried out sequentially in the Enhanced Scheme as shown in Figure 2.2). Although the development phasing is changed, the size of the landfill cells has been reduced in the Enhanced Scheme and so reduction in the dust emission from construction works at landfill cells. Both blasting and hydraulic rock-breaking had been discussed in the approved WENTX EIA and mechanical excavation method which involves more machinery and results in a longer construction period was considered as worst case in the approved EIA. In the Enhanced Scheme, the construction of landfill site would still involve both blasting and hydraulic rock-breaking. In order to meet the programme in the Enhanced Scheme, blasting is considered as the primary means of construction of bowl-shaped area for waste filling. As the blasting will last for very short duration, the dust impact will be transient. The programme of the entire construction period would also be shortened.
Dust emissions from rock crushing plants	<ul style="list-style-type: none"> Since blasting is the primary means of construction of bowl-shaped area, rock crushing and processing facilities and conveyor belt system for handling and exporting of rock materials will be provided at Eastern Platform and Tsang Kok Stream Outfall area. Although details of the rock crushing plants are to be designed by the contractor in future, to minimise the dust emission, all crushers, including the inlets and outlets, will be enclosed and dust extraction and collection system will be provided in accordance with “A Guidance Note on the Best Practicable Means for Mineral Works (Stone Crushing Plants) (BPM 11/1(95))”. The processed materials will be exported off-site mainly by using enclosed conveyor belt system and transported to the marine barging points. Upon the WENTX contract award, the contractor will, according to its landfill design, prepare the crushing plants design and apply for the necessary Specified Process licence prior to conducting any crushing operation.
Dust emissions from stockpiling areas	<ul style="list-style-type: none"> On site stockpiling areas have been identified in the Enhanced Scheme. Subject to the contractor’s design, stockpiling areas outside the Project boundary might also be proposed. Tarpaulin, hydroseeding or other means of control measures shall as far as practicable be applied on the stockpiling areas to avoid wind-blown dust emissions. In addition to the proposed mitigation measure, dust monitoring will be implemented to detect any deteriorating air quality and rectify the situation in a timely

Potential Environmental Implication	Changes in the Enhanced Scheme
	manner. Thus, adverse air quality impacts due to the stockpiling is not anticipated.
Dust and marine emissions from barging facilities	<ul style="list-style-type: none"> Barging facilities have been identified in the Enhanced Scheme. Associated dust emissions from material unloading activities and marine emissions from construction barges / explosive delivery vessel manoeuvring from / to and idling at the proposed barging points are anticipated. On-shore power supply shall be provided for the construction barges and marine vessels to power the cranes and other machinery on the barges / vessels at the berths to avoid emission idling at the berth.
Operation / Restoration / Aftercare Stages	
Gaseous emission from landfill infrastructures	<ul style="list-style-type: none"> Same as in the approved WENTX EIA, the new landfill infrastructures for WENTX, including leachate treatment facilities, LFG treatment facilities and LFG power generators, will be established at the designated area to the south of the existing T•PARK (refer to Figure 2.2). However, for the existing WENT Landfill infrastructures which are to be relocated to site together with WENTX infrastructures under the approved WENTX EIA, they will now be retained at the current locations under the Enhanced Scheme. The locations of the chimneys of the existing WENT Landfill (i.e. Thermal Destructor, Flare, and LFG power generator) are thus different from those adopted in the Enhanced Scheme when compared to the Original Scheme.
Dust emissions from landfill cells	<ul style="list-style-type: none"> During the operation stage, although the waste boundary of WENTX has been reduced, the number and size of the active waste tipping faces at landfill cells remain the same as the Original Scheme. Since the area of the tipping faces with application of daily soil cover in the Enhanced Scheme is the same as that of the Original Scheme, the associated dust emission will be the same. During the restoration stage, the restoration works will be carried out by phases. Due to the reduced size in waste boundary, it is anticipated that the dust emissions associated with restoration works at landfill cells will be reduced. During the aftercare stage, dust emission from the restored landfill is not anticipated.

3.1.2

Air sensitive receivers (ASRs) identified within 500 m from the boundary of the Project are T • PARK office and Tsang Tsui Columbarium. The locations and details of the identified representative ASRs are summarised in **Table 3.2** and illustrated in **Figure 3.1**. Although the T • PARK office is located in vicinity of WENTX boundary, its fresh air intakes (FAI) are located at high level. The Tsang Tsui Columbarium – Management Office is located far away from the WENTX at some 450m. Besides, the Tsang Tsui Columbarium - Garden of Remembrance is a place-of-worship. The actual receivers at here are therefore generally the worshippers / descendants whose visits to the place are transient in nature only. Other ASRs such as West Ha Pak Nai, Black Point Power Station and Lung Kwu Sheung Tan - Lau Ancestral are located more than 800 m from the WENTX site boundary.

Table 3.2: Representative ASRs within 500 m from the boundary of the Project

ASR ID	Description	Land Use	No. of Storey (Approx.)	Approx. Distance from Updated Project Boundary (m) ^[1]
A3-1 ^[2]	FAI at 8/F T • PARK Office	Office	1 ^[3]	60

ASR ID	Description	Land Use	No. of Storey (Approx.)	Approx. Distance from Updated Project Boundary (m) ^[1]
A3-2 ^[2]	FAI at 9/F T • PARK Office	Office	1 ^[3]	60
A5-1	Tsang Tsui Columbarium - Management Office	Office	1 ^[3]	450
A5-2	Tsang Tsui Columbarium - Garden of Remembrance	Community	1	350

Note:

- [1] Shortest horizontal distances are measured according to the updated Project boundary of WENTX under the Enhanced Scheme.
- [2] Locations of T•PARK Office (A3-1 and A3-2) are based on the T•Park's layout.
- [3] Central air conditioning is provided for T•PARK Office and the Columbarium Management Office and the fresh air intakes are located at 39 m and 42 m above ground (for T•PARK Office) and 4 m above ground (for the Columbarium Management Office) respectively.

3.1.3 To minimise the dust emission, the procedure and requirements given in the Air Pollution Control (Construction Dust) Regulation (Cap. 311R) shall be followed. Good site practice and dust suppression measures as stipulated in the approved WENTX EIA are still applicable and recommended for the Enhanced Scheme, including but not limited to regular watering on construction / restoration workfronts, haul roads, stockpiling areas etc (at least once per hour), provision of vehicle washing facilities at every designated exit point of the site, covering the on-site storage of excavated materials by impervious sheeting where practicable, paving the haul roads with concrete, bituminous materials or hardcores.

3.1.4 To avoid the dust emissions due to air overpressure and fly-rock generation, the quantity of explosive used at each time and spacing of shot holes shall be carefully designed. Blast nets, screens and other protective covers shall be adopted to prevent any fly rocks resulting from blasting activities. According to the Air Pollution Control (Construction Dust) Regulation (Cap 311R), the areas within 30 m from the blasting area will be wetted with water prior to blasting and blasting shall not be carried out when the strong wind signal or tropical cyclone warning signal No. 3 or higher is hoisted. Water spraying shall be conducted immediately after each blasting to avoid dispersion of dust.

3.1.5 The entire area of Eastern Platform and Tsang Kok Stream Outfall area will be paved with concrete, bituminous materials or hardcores. The crushers, including the inlets and outlets will be enclosed and ducted to a dust extraction and collection system such as fabric filter in accordance with “A Guidance Note on the Best Practicable Means for Mineral Works (Stone Crushing Plants) (BPM 11/1(95))”. All transfer points and conveyor belts will also be enclosed. Water spraying system will be installed at all feeding and outlet areas to further suppress dust emission. The contractor shall also apply and obtain the license from EPD for operation of the rock crushing plants under the Air Pollution Control Ordinance and ensure the rock crushing plants designed and operated in accordance with BPM 11/1(95).

3.1.6 For other land emission sources such as stockpiling areas, tarpaulin, hydroseeding or other means of control measures shall as far as practicable be applied to avoid wind-blown dust emission.

3.1.7 For marine emissions, on-shore power supply shall be provided where practicable for the construction barges and marine vessels to power the cranes and other

machinery on the barges / vessels at the berths to avoid emission from idling at the berth.

3.1.8 With implementation of good site practices and the abovementioned mitigation measures and based on desktop review of previous studies / assessments, adverse air quality impacts due to the construction, operation, restoration and aftercare of the proposed WENTX under the Enhanced Scheme are not anticipated.

3.1.9 The EM&A programme as specified in the EM&A Manual shall be implemented to detect any deteriorating air quality and rectify the situation in a timely manner. No change on the recommended air quality monitoring locations is proposed. However, additional monitoring stations at T • PARK office and Tsang Tsui Columbarium are recommended (**Table 3.3** and **Figure 3.2**).

Table 3.3 Additional Construction Dust and VOC Monitoring Stations

Station ID ^[1]	ASR ID	Description	Land Use	Description of Updates
AM(D)6 AM(V)6	A3-1	T • PARK Office	Office	New identified ASRs which are within 500 m of the Project Boundary and hence added. A5-2 is proposed as it is located closer to the Project boundary compared to A5-1.
AM(D)7 AM(V)7	A5-2	Tsang Tsui Columbarium - Garden of Remembrance	Community	

Note:

[1] AM(D) represents monitoring station for construction dust and AM(V) represents monitoring station for Volatile Organic Compounds (VOC) emissions.

3.1.10 The EM&A programme and requirements are generally the same as those recommended in the approved EM&A Manual under the Original Scheme and shall be followed. However, given that 24-hr Total Suspended Particulate (TSP) concentration is no longer a criterion under the Air Quality Objectives (AQOs), only 1-hr TSP monitoring shall be conducted.

3.1.11 For monitoring of VOC, since there is no design change in the LFG collection system, the monitoring requirements recommended in the approved EM&A Manual under the Original Scheme is in general considered applicable and shall be followed.

3.1.12 Apart from the regular monitoring throughout the construction, operation, restoration and aftercare stages of the WENTX, monitoring of the stack emission from Ammonia Stripping Plant (ASP), LFG power generators and LFG flare systems (i.e. for Nitrogen Oxides (NO_x), Sulfur Dioxide (SO₂), Respirable Suspended Particulate (RSP), Non-Methane Organic Compounds (NMOCs), vinyl chloride and benzene) and monitoring of landfill surface gas emissions (i.e. ambient landfill gas monitoring in vicinity of landfill site boundary, details to be established in the landfill monitoring plan by the contractor) as precautionary measures shall also be conducted as recommended in the approved EM&A Manual.

3.1.13 To conclude, with respect to the reduced scale and extent of the Project, the Enhanced Scheme would generally bring a positive air quality impact compared to the Original Scheme. With implementation of good site practices and suitable mitigation measures, it is anticipated that there is no adverse residual air quality impact during its construction, operation, restoration and aftercare stages of the Project.

4 Odour

4.1.1 The changes in the Enhanced Scheme that might have potential odour impacts are presented in **Table 4.1**.

Table 4.1: Changes in the Enhanced Scheme that might have potential odour impacts

Potential Environmental Implication	Changes due to the Enhanced Scheme
Odour from active tipping areas during operation stage	<ul style="list-style-type: none"> Under the Enhanced Scheme, there would be about 50% decrease in the waste filling area, and the design landfill capacity would decrease from 81 Mm³ to 76 Mm³. Subject to the contractor's future design, the landfill will be developed in phases which would lead to change in locations of the odour emissions generated from active tipping, including the possible design development as shown in Figure 2.2. Although the size of landfill cells has been reduced, the size and number of active tipping faces and special trench for special waste remain the same. In addition to the 150 mm thick daily soil cover as per WENTX EP condition, Posi-shell and/or other suitable materials will be applied to cover the active tipping face at the end of each operation day according to the latest design. This would help reduce the odour emission compared to the Original Scheme.
Odour from leachate treatment facilities during operation stage	<ul style="list-style-type: none"> Same as in the approved WENTX EIA, the new landfill infrastructures for WENTX, including leachate treatment facilities, LFG treatment facilities and LFG power generators, will be established at the designated area to the south of the existing T•PARK. However, for the existing WENT Landfill infrastructures which are to be relocated to site together with WENTX infrastructures under the approved WENTX EIA, they will now be retained at the current locations under the Enhanced Scheme. As there are currently no surface covers to the existing leachate treatment facilities and the current operation arrangement will remain unchanged, the odour emission is anticipated to be higher than that in the Original Scheme where covers and de-odourising units are assumed.

4.1.2 The representative ASRs within around 500 m from the boundary of the Project are presented in **Section 3.1.2** above. The FAIs at T • PARK office are located at high level and have already been installed with odour removal filter. Same as the Original Scheme, the major odour emission sources during the operation, restoration and aftercare stages of the Project are the active waste tipping faces and the leachate treatment facilities. Under the Enhanced Scheme, there would be about 50% decrease in waste filling area and with the reduced waste boundary, the distance between the active tipping faces and ASRs are general greater, if not the same as the approved WENTX EIA.

4.1.3 In addition to the 150 mm thick daily soil cover as per the approved WENTX EIA, Posi-shell and/or other suitable materials will be applied to cover the active tipping face at the end of each operation day according to the Enhanced Scheme. Same as the Original Scheme, WENTX will be designed to receive municipal solid waste (MSW), construction waste and other special wastes, including sludge under special circumstances. There will also be immediate cover of 300 mm thick soil on the special trench for special wastes. Moreover, according to the approved WENTX EIA and the WENTX EP, the deodourisers for the new leachate treatment plants for WENTX will be designed with odour removal efficiency of at least 99%

to minimize the odour emission. All these would help further reduce the odour emission.

4.1.4 Furthermore, according to the vision of “Waste Reduction • Resources Circulation • Zero Landfill” promulgated under the “Waste Blueprint for Hong Kong 2035” announced in February 2021, if sufficient waste-to-energy infrastructure with adequate treatment capacity can be in place by around 2035, there would no longer need to rely on landfills for direct disposal of the MSW. Under such a scenario, it is anticipated that the potential odour impact associated with MSW disposal at WENTX would be much lessened.

4.1.5 With the proper site practice and odour control measures in place and based on desktop review of previous studies / assessments, no adverse odour impact due to the operation, restoration and aftercare stages of the proposed WENTX for the Enhanced Scheme is anticipated.

4.1.6 The EM&A programme as specified in the EM&A Manual shall be implemented to detect any odour and rectify the situation in a timely manner. No change on the odour patrol locations as recommended in the approved WENTX EIA is proposed. Due to the reduced waste boundary, two proposed odour patrol locations at the Project boundary need to be adjusted. Additional odour patrol location at Tsang Tsui Columbarium is also recommended (**Table 4.2** and **Figure 4.1**).

Table 4.2: Adjusted and additional odour patrol locations

Patrol ID	ASR ID	Description	Land Use	Description of Updates
AM(O)7	-	Project Boundary		Given the reduced waste boundary, locations of AM(O)7 and AM(O)8 are adjusted to the northern west side of the tipping area.
AM(O)8	-	Project Boundary		
AM(O)10	A5-2	Tsang Tsui Columbarium - Garden of Remembrance	Community	A5-2 is a new ASR within 500 m of the Project and located closer to the Project boundary compared to A5-1. Hence it is added as patrol location.

4.1.7 The odour patrol frequency and requirements shall follow the same as proposed in the approved WENTX EIA for the Enhanced Scheme of the Project.

4.1.8 To conclude, the Enhanced Scheme would generally bring a positive odour impact compared to the Original Scheme. With implementation of good site practices and odour control measures, it is anticipated that there is no adverse residual odour impact during its operation, restoration and aftercare stages of the Project.

5 Noise

5.1.1 The changes in the Enhanced Scheme that might have potential noise impacts are presented in **Table 5.1**.

Table 5.1: Changes in the Enhanced Scheme that might have potential noise impacts

Potential Environmental Implication	Changes due to the Enhanced Scheme
Construction Stage	
Construction noise from operation of Power Mechanical Equipment (PME)	<ul style="list-style-type: none"> Due to the reduced size of waste boundary as well as the exclusion of the construction works for realignment of Nim Wan Road from the Project, it is expected the noise associated construction works at landfill cells would be reduced. Rock and excavated spoil will be transported away from the site to the barging points via trucks / enclosed conveyor belt. Operation of barging facility during construction stage is proposed.
Blasting noise	<ul style="list-style-type: none"> Both blasting and hydraulic rock-breaking had been discussed in the approved WENTX EIA. Mechanical excavation method which involves more equipment (e.g. excavators, hydraulic breakers, etc.) and results in a longer construction period and higher noise emission was considered as a conservative approach in the approved EIA. In the Enhanced Scheme, the construction of landfill site would still involve both blasting and hydraulic rock-breaking. In order to meet the programme in the Enhanced Scheme, blasting is considered as the primary means of construction to meet the revised deep bowl-shaped site formation design for waste filling. As the blasting will last for very short duration, the associated noise impact will be transient. The programme of the entire construction period would also be shortened. There are no statutory procedures and criteria under the NCO and EIAO for assessing the noise impacts of blasting. The administrative and procedural control of all blasting operations in Hong Kong is vested in the Mines Division of the CEDD. As stipulated in Mines Division Practice Note No. 3 (MDPN 3), no person shall prepare any charge for blasting or fire any charge unless in possession of a valid mine blasting certificate issued under regulation 22 of the Mines (Safety) Regulations (Cap. 285B), or is otherwise authorised by the Commissioner of Mines.
Noise due to operation of the rock crushing plants	<ul style="list-style-type: none"> Since blasting is the primary means of construction to meet the revised deep bowl-shaped site formation design for waste filling, rock crushing and processing facilities and conveyor belt system for handling and exporting of rock materials will be provided at Eastern Platform and Tsang Kok Stream Outfall area. The rock crushing processes will be undertaken under an enclosed system. The processed materials will also be exported off-site mainly by using enclosed conveyor belt system and transported to the marine barging points.
Noise associated with operation of the stockpiling areas	<ul style="list-style-type: none"> On-site stockpiling of excavated and processed materials is identified in the Enhanced Scheme. The materials will be transported via trucks (before installation of the conveyor belt) or enclosed conveyor belt by vessels to avoid impact on road traffic.
Noise associated with operation of the barging facilities	<ul style="list-style-type: none"> Barging facilities have been identified in the Enhanced Scheme. Rock and excavated spoil will be transported away from the site to the barging points via trucks (before installation of the conveyor belt) or enclosed conveyor belt by vessels to avoid impact on road traffic. The rock and spoil will be unloaded to the barges directly from the trucks or enclosed conveyor belt system.

Potential Environmental Implication	Changes due to the Enhanced Scheme
	<ul style="list-style-type: none"> Subject to contractor's design, marine vessel may be used for explosive delivery to the berthing facilities at WENT Landfill, with anticipated maximum frequency to be once a day. Due to safety reason, the concerned berth for explosive delivery will need to be cleared of any other irrelevant vessel operation during the berthing time. There is thus no additional loading anticipated due to the explosive delivery via the existing berth.
Operation / Restoration / Aftercare Stages	
Noise associated with landfill site operation during operation stage	<ul style="list-style-type: none"> The design change of the Enhanced Scheme will not change the operation of the WENTX site operation, including the refuse vehicle movement, waste filling activities, the operation of the 6 existing berths of the WENT Landfill, and daily operation hours of the landfill site for waste receiving, as well as the induced road traffic. Same as the Original Scheme, the refuse vehicles and waste filling activities in WENTX can be substantially screened by the natural topography in the surroundings and the topography of the restored WENT landfill, as the maximum waste filling height in the Enhanced Scheme is generally 20 m lower than the Original Scheme.
On-site operation noise associated with operation of landfill infrastructures during operation, restoration and aftercare stages	<ul style="list-style-type: none"> Same as in the approved WENTX EIA, the new landfill infrastructures for WENTX, including LFG treatment facilities, LFG power generators and leachate treatment facilities (including Ammonia Stripping Plant), are proposed to be established at the designated area to the south of the existing T•PARK (refer to Figure 2.2). However, for the existing WENT Landfill infrastructures which are to be removed to co-locate with the WENTX infrastructures under the approved WENTX EIA, these infrastructures will now be retained at the current locations under the Enhanced Scheme. As a result, the operation arrangement and locations of noise sources due to these existing infrastructures will remain unchanged.
Noise from restoration works of the landfill cells during restoration stage	<ul style="list-style-type: none"> Due to the reduced size of waste boundary, it is expected the construction noise associated restoration works at landfill cells would be reduced.

5.1.2 Under the Enhanced Scheme, the noise sensitive receivers (NSRs) are located at least 1 km away from the nearest worksites and landfill cells, and are in general at a distance greater than, if not the same as, that of the approved WENTX EIA. There is no new NSR identified within about 300 m from the Project boundary. The offices of T • PARK and Tsang Tsui Columbarium are provided with central air conditioning and so are not considered as NSR. The Hung Shing Temple at Tsang Tsui was found to be abandoned and therefore not considered as NSR.

5.1.3 Due to the reduced size of waste boundary as well as the exclusion of the proposed Nim Wan Road (South) from the Project, it is expected the noise associated construction works at landfill cells would be reduced. In order to meet the programme, blasting is considered as the primary means of construction of revised deep bowl-shaped site formation for waste filling in the Enhanced Scheme. As the blasting will last for very short duration, the associated noise impact will be transient. The programme of the entire construction period would also be shortened. The proposed rock crushing plants, stockpiling areas and barging points have large separation distance from the NSRs. Given good practices for the control of noise emissions from construction sites as in the approved WENTX EIA are

implemented, no adverse construction noise impacts are anticipated. The good site practices shall include priority use of quieter construction method and use of quiet plant, well-maintained plant, properly fitted and maintained silencers or mufflers on construction equipment, etc.

5.1.4

In addition to the WENT Landfill restoration works assessed in the approved WENTX EIA, potential concurrent projects identified within 300 m of the WENTX are IWMF2 and Nim Wan Road (South). As mentioned in **Section 2.5**, there are no design details available for the development of IWMF2 at the middle TTAL site. The Nim Wan Road (South) was previously named as Nim Wan Road realignment in the WENTX EIA. It has been excluded from the scope of the Enhanced Scheme and will be implemented under a separate project managed by other parties. Both the IWMF and Nim Wan Road (South) projects are still under early stage and separate EIA and environmental assessment study will be conducted to address its environmental impacts. It shall be noted that there are also no NSRs within 300 m of these two concurrent projects and the WENTX. The nearest NSR is Ha Pak Nai on east side of these projects and has a separation distance of more than 1 km from WENTX and 1.5 km from the two concurrent projects. Potential cumulative noise impacts are therefore not anticipated.

5.1.5

Considering that the large separation distance and reduced Project boundary, there is also no adverse residual noise impact arising from operation, restoration and aftercare works. Nevertheless, as a step-up mitigation measure, the 3.5 m high noise bund along the existing eastern seawall of the existing WENT Landfill will be maintained throughout the entire period where construction works are anticipated, i.e. including construction, operation and restoration stages.

5.1.6

The EM&A requirements recommended in the approved WENTX EIA Report are considered still valid and no additional EM&A requirements will be required for the Enhanced Scheme. The EM&A programme to be implemented by the future Contractor will monitor the environmental performance of the respective works and ensure environmental compliance throughout the construction and operation stages of the project. The nature and cause of actual, potential and cumulative environmental impacts shall also be investigated according to the EM&A manual, and where necessary, liaison with relevant parties of the concurrent projects (e.g. WENT Landfill restoration works) on implementation of the mitigation measures is required to ensure no adverse impacts to the NSRs.

6 Water Quality

6.1.1 The changes in the Enhanced Scheme that might have potential water quality impacts are presented in **Table 6.1**.

Table 6.1: Changes in the Enhanced Scheme that might have potential water quality impacts

Potential Environmental Implication	Changes due to the Enhanced Scheme
Surface runoff from site areas	<ul style="list-style-type: none"> Under the Enhanced Scheme, the WENTX will no longer encroach onto the west and middle TTALs. There would be about 50% decrease in the waste filling area. Hence the total amount of surface runoff would also be reduced for all construction, operation, restoration and aftercare stages.
Impacts on Tsang Kok Stream Outfall	<ul style="list-style-type: none"> There is no change in the proposed extent of modification works and the construction method at Tsang Kok Stream Outfall in the Enhanced Scheme. No additional adverse water quality impact would be caused compared to Original Scheme.
Impacts on streams	<ul style="list-style-type: none"> In the approved WENTX EIA, an unnamed stream near middle TTAL across Nim Wan Road (i.e. Stream A) will be encroached and included as waste filling area. In the Enhanced Scheme, the lower section of Stream A and its lower tributaries (to the north of Nim Wan Road) would no longer be encroached by the Enhanced Scheme.
Water quality impact from leachate treatment facilities	<ul style="list-style-type: none"> In the approved WENTX EIA, the existing leachate treatment facilities of WENT Landfill will be rebuilt and co-locate with that the proposed leachate treatment facilities for WENTX. In the Enhanced Scheme, these WENT Landfill infrastructures will be retained at the current location (refer to Figure 2.2). It will not only reduce the interfacing between WENTX and WENT Landfill, but also avoid the construction impacts associated with the relocation works. Effluent discharge licence would be obtained under Water Pollution Control Ordinance (WPCO) with the effluent discharge to be determined by the contractor's future design. The effluent standard will comply with the requirement of the WPCO licence such that no adverse water quality impact is anticipated.

Construction Stage

6.1.1 Due to the reduced size of waste boundary under the Enhanced Scheme, it is expected the surface catchment will be reduced, so the total site runoff during construction stage, resulting in lesser water quality impacts. To control and minimise the water quality impact caused by the potential sources, good site practices and precautionary measures as stated in “Construction Site Drainage ProPECC PN1/94” and Drainage Services Department (DSD)’s Technical Circular No. 1/2017 “Temporary Flow Diversions and Temporary Works Affecting Capacity in Stormwater Drainage Systems” should be implemented.

6.1.2 Since the waste boundary is reduced in the Enhanced Scheme, a surface water drainage plan should be updated by contractor to ensure that the construction runoff discharged from the landfill site could fully comply with the standards, otherwise the discharge shall be collected and conveyed to the on-site leachate treatment and eventually discharged via the existing Urmston Road Submarine Outfall (URSO) as the same approach recommended in the approved EIA.

6.1.3 Tsang Kok Stream and Stream A lies within the boundary of WENTX. As the same in the Original Scheme, some of the catchment at headwater fall into WENTX boundary for the Enhanced Scheme, thus the Tsang Kok Stream Outfall will be decked and replaced by box culvert. For Stream A, the lower section of Stream A

(mainly along the access road of the Columbarium) and its lower tributaries (to the north of Nim Wan Road) would no longer be encroached onto boundary of the Enhanced Scheme, thus the extent of direct impacts on Stream A is smaller compared to the Original Scheme. New drainage systems will be adopted to collect the surface runoff from the encroached catchment area and divert to downstream properly.

Operation, Restoration and Aftercare Stages

6.1.4

Due to the reduced size of waste boundary under the Enhanced Scheme, the surface catchment and so the total surface runoff during operation, restoration and aftercare stages will be reduced. Same as the approved WENTX EIA, the contractor shall devise a soil erosion control plan during the detailed design stage. Proper surface water drainage systems shall be provided to collect the potential surface runoff. The surface flow discharge from the landfill site shall fully comply with the standards, otherwise the contaminated surface flow shall be collected and properly treated at the on-site leachate treatment plant prior to discharge off-site. With the total surface runoff reduced, it is expected that the water quality impacts on the nearby water environment will be lessened. Regular inspection and monitoring would be conducted to ensure the proper performance of the system.

6.1.5

The area of waste boundary and landfill capacity are one of the factors contributing to the leachate generation. In view of the reduction of the waste boundary and landfill capacity of the Enhanced Scheme comparing to the Original Scheme, it is anticipated that less amount of leachate will be generated. As for the water quality impact due to the on-site leachate treatment facilities, same as that for the approved WENTX EIA, the combined flow from the contaminated surface flow, leachate and sewage effluent after treatment will continually be discharged via the existing URSO. Moreover, as the URSO is located at 4 km away and not at the upstream of the Project boundary, there is no anticipated adverse water quality impact on the nearby water environment due to the WENTX discharge via the URSO. As for the water quality impact on the downstream water environment of URSO, in view of the strong dilution effect and assimilative capacity there, no adverse water quality impact is anticipated so long as the discharge could comply with the effluent discharge licence requirements. The WENTX contractor will, according to WENTX EP requirements, prepare the leachate treatment plant design to demonstrate compliance with the WPCO discharge licence conditions before operation of the treatment plant.

6.1.6

The groundwater management facilities including the groundwater monitoring wells and the groundwater collection sumps will be inspected regularly during the routine groundwater monitoring programme. The groundwater monitoring locations of the proposed WENTX have been updated accordingly for the reduced waste boundary of the Enhanced Scheme as shown in **Figure 6.1**. Multi-layer composite liner system will be adopted for the groundwater drainage system in the Enhanced Scheme to further prevent the groundwater contamination, compared to double-layer proposed in the approved WENTX EIA. The existing contingency plan for Accidental Leakage of Leachate and contingency plan for surface water contamination implemented in existing WENT Landfill should also be applied to future WENTX, as the same recommendation in the approved WENTX EIA.

6.1.7

Considering the reduced waste boundary of the WENTX, the Enhanced Scheme would generally bring less water quality impact compared to the Original Scheme. With implementation of good site practice and proper mitigation measures, it is anticipated that there is no adverse residual water quality impact during its construction, operation, restoration and aftercare stages of the Project.

7 Waste Management

7.1.1 The changes in the Enhanced Scheme that might have potential waste management implications are presented in **Table 7.1**.

Table 7.1: Changes in the Enhanced Scheme that might have potential waste management implications

Potential Environmental Implication	Changes in the Enhanced Scheme
Excavated materials generated from construction of landfill	<ul style="list-style-type: none"> Under the Enhanced Scheme, a deep bowl-shaped site formation design is adopted. The site formation level and waste filling level have been changed to +15 mPD and +270 mPD respectively, from the corresponding figures of +5 mPD and +290 mPD in the approved WENTX EIA. To meet the programme in the Enhanced Scheme, blasting is the primary means of construction of bowl-shaped area for waste filling. Large amount of excavated construction material would be generated during the construction and operation stage. Surplus excavated materials will be reused for restoration or exported off-site as far as practicable to minimize and recover the C&D materials.

7.1.2 In the approved WENTX EIA, a balanced cut and fill approach was proposed for the landfill development, with a net import of about 0.2 Mm³ of fill materials throughout the different stages of the project.

7.1.3 In the Enhanced Scheme, a deeper landfill bowl would be constructed. Based on the Construction and Demolition Material Management Plan (C&DMMP), about 76 Mm³ of excavated inert materials will be generated. About 19% of the excavated inert materials including C&D materials and low quality rocks will be reused as fill materials for site formation, daily cover and final capping materials at the landfill site during construction, operation and restoration stages. About 81% of good quality rocks will be processed to aggregate and exported off-site for selling to the local market or for land formation works in reclamation projects such as Central Waters Reclamation and Lung Kwu Tan Reclamation, subject to its availability. Rock crushing plants will be deployed on-site for processing the blasted rocks. To minimise traffic impact and dust impact, conveyor belts will be provided for continuous haulage of the excavated materials.

7.1.4 On the other hand, a total of about 0.29 Mm³ of non-inert C&D waste (i.e. top soil and vegetation) will be generated and disposed of at existing WENT Landfill and the proposed WENTX, which is only a slight increase of 0.09 Mm³ compared to the approved WENTX EIA. Nevertheless, with the implementation of waste management measure, no adverse waste management implication is anticipated.

7.1.5 All of the inert excavated materials generated during construction will be either reused as fill materials in landfill development and/or temporarily stockpiled on-site for future uses. The excess will be processed to aggregate and exported off-site for selling to the local market or for land formation works in other reclamation projects. Other than excavated materials, there will be no waste management implications on other types of wastes (i.e. non-inert C&D waste, chemical waste, general refuse and sludge) during construction, operation, restoration and aftercare stages.

7.1.6 To conclude, with the implementation of good site practices and the mitigation measures recommended in the approved WENTX EIA, no adverse waste management implication during its construction, operation, restoration and aftercare stages of the Project is anticipated. Nonetheless, the contractor should

also consider the reuse and recycling of waste as far as practicable, thereby reducing the amount of generation.

8 Ecology

8.1.1 The changes in the Enhanced Scheme that might have potential ecological impacts are presented in **Table 8.1**.

Table 8.1: Changes in the Enhanced Scheme that might have potential ecological impacts

Potential Environmental Implication	Changes in the Enhanced Scheme
Construction Stage	
Habitat loss	<ul style="list-style-type: none"> Under the Enhanced Scheme, the Project boundary no longer encroach onto the west and middle TTALs. Due to the reduced size of waste boundary as well as the exclusion of the construction works for realignment of Nim Wan Road from the Project, the habitat loss would be reduced. The lower section of Stream A and its lower tributaries (to the north of Nim Wan Road) would no longer be encroached by the Enhanced Scheme, thus the habitat loss would be minimised.
Indirect Impacts due to noise, dust and visual disturbance	<ul style="list-style-type: none"> In Enhanced Scheme, the construction of landfill site would still involve both blasting and hydraulic rock breaking discussed in the approved WENTX EIA. To meet the programme in the Enhanced Scheme, blasting is considered as the primary means of construction to meet the revised deep bowl-shaped site formation design for waste filling. As the blasting will last for very short duration, the associated noise impact will be transient. The programme of the entire construction period would also be shortened. Potential indirect disturbance to the west TTAL which is at 450 m away from the boundary of the Enhanced Scheme could be minimised, given a shorter construction period.
Indirect Impacts due to change in water quality	<ul style="list-style-type: none"> With the reduced waste boundary of the Enhanced Scheme, the surface catchment would be smaller and so the total amount of surface runoff would also be reduced. Therefore, the indirect impacts due to change in water quality would be minimized.
Operation, Restoration and Aftercare Stages	
Permanent loss of habitat for Little Grebe	<ul style="list-style-type: none"> The Enhanced Scheme will totally avoid encroachment onto the west and middle TTALs, thus creation of freshwater pond for Little Grebe is no longer required.
Planting of trees, shrubs and grasses	<ul style="list-style-type: none"> No design change affecting planting of trees, shrubs and grasses. No adverse ecological impact is anticipated.
Indirect Impacts due to noise, dust and visual disturbance	<ul style="list-style-type: none"> As the west TTAL is separated from the WENTX by about 450 m under the Enhanced Scheme, the potential disturbance to the waterbirds using the ash lagoon would be low. No design change affecting the operation of WENTX and induced traffic, thus the indirect impacts due to noise, dust and visual distribution.
Indirect Impacts due to changes in hydrology / water quality	<ul style="list-style-type: none"> The lower section of Stream A and its lower tributaries (to the north of Nim Wan Road) would no longer be encroached by WENTX under the Enhanced Scheme, thus the indirect impacts to hydrology / water quality could be lessened.
Accidental leakage of LFG / leachate and/or other wastewater	<ul style="list-style-type: none"> No design change affecting the LFG leakage, groundwater contamination and surface water contamination.

Habitat Loss

- 8.1.2** The habitat map is illustrated in **Figure 8.1**. The loss of habitats and vegetation would be minimized in the Enhanced Scheme as the extent of WENTX would be much smaller than the Original Scheme. The reduction of the habitat loss is shown in **Table 8.2** below.
- 8.1.3** In the Enhanced Scheme, the middle and west TTALs would be totally avoided, and so no direct impact is anticipated. Most of the habitat to be affected are of low ecological value, except for secondary woodland, and natural stream section which are of low to moderate value. The woodland loss would be reduced significantly from 3.76 ha in the Original Scheme to 0.12 ha in the Enhanced Scheme. The affected extent of Tsang Kok Stream and Tsang Kok Stream Outfall within the Enhanced Scheme is the same as in Original Scheme. The downstream of Stream A would no longer be encroached by the Enhanced Scheme.
- 8.1.4** Another significant benefit of the Enhanced Scheme would be the minimization of the hillside grassland / shrubland habitat loss which is largely reduced by nearly 70 ha as compared with the Original Scheme.
- 8.1.5** In the approved WENTX EIA, creation of a total of 5 ha freshwater compensation ponds was proposed to compensate the loss of 5 ha water body for Little Grebe. Since the Enhanced Scheme could avoid encroachment of any breeding habitat for Little Grebe, the requirements of freshwater compensation ponds would be no longer necessary.
- 8.1.6** A total of 21 ha compensatory woodland planting was also proposed to mitigate the woodland loss of 3.76 ha (ratio = 5.6:1) in the approved WENTX EIA. The approved EIA also stated that the compensatory woodland planting needs to be at a ratio of at least 5:1 in terms of area. The Enhanced Scheme would largely minimize encroachment onto the woodland resulting in a small area of loss only, i.e. 0.12 ha. In line with the same principle as the approved WENTX EIA, the total compensatory woodland planting area should be around 0.60 ha. Details of the compensatory woodland planting including the location, number and plant species etc shall be proposed in the Habitat Creation, Transplantation and Management Plan (HCTMP) and submitted under the EP condition.

Table 8.2: Changes in Habitat Loss between the Original and the Enhanced Scheme of WENTX

Habitat	Original Scheme (ha/km)	Enhanced Scheme (ha/km)
Watercourse	3.5 km	3.5 km ^[1]
Ash Lagoon	28.40	-
Grassland	-	<0.01
Grassland / Shrubland	172.95	103.30
Plantation	3.64	1.92
Secondary Woodland	3.76	0.12
Orchard / Village	1.05	-
Developed Area	27.57	12.30

Note

[1] Loss of Stream A downstream is assumed the same as for the Original Scheme as a worst-case scenario.

Indirect Impacts to Wetland Birds Utilising the Ash Lagoons

- 8.1.7** The WENTX extent in the Enhanced Scheme has been largely reduced to avoid and further away from the west and middle TTALs with a separation distance of

about 450 m from the two lagoons. The terrain in between the existing Nim Wan Road and the lagoons would serve as a buffer to avoid disturbance from the landfill to the two lagoons. Therefore, the potential indirect impact to waterbirds potentially utilising the ash lagoons would be low. No particular mitigation measures are considered necessary. However, some standard good site practices would be considered as far as practicable. About 30 m tall earth bund would be established along Nim Wan Road which could effectively shield the potential disturbance from the landfill during the operation stage. As stated in the approved EIA, fast growing and fire resistant green belt planting would also be planted around the site perimeter to screen the landfill operation at a certain degree.

Direct Impacts on Flora Species of Conservation Importance

8.1.8

The WENTX EIA has proposed to transplant all identified Pitcher Plants and Bamboo Orchid (if any) from Tsang Kok Stream (located at the eastern side of Project boundary) to Stream B. Under the current review, the same approach to mitigate potential impact to flora of conservation importance is still recommended. All identified flora species of conservation importance would be transplanted except for woody climber *Gnetum luofuense* which is locally common and not feasible for transplantation. Transplantation of tree individuals *Ixonanthes reticulata* has also been regarded as infeasible in both WENTX EIA and the current review, since the tree individuals are often growing within or close to the stream boulders and it is impractical to form proper root balls when transplanting them. They will be mitigated by planting whip tree seedlings in the compensatory planting. Transplantation of shrub *Diospyros vaccinioides* to Stream B is proposed, but its practicality should be reviewed upon the WENTX contract award since these individuals have been growing among the boulders of the stream.

8.1.9

Review of the potential ecological impacts for the Enhanced Scheme during construction and operation stages are summarized in **Table 8.3**.

Table 8.3: Review of ecological impacts during construction and operation stages

Ecological Impacts	Change Under the Enhanced Scheme	Approach to Address Potential Impact
Ash lagoon loss	Totally avoided under the Enhanced Scheme	No specific mitigation measure is required. Compensatory freshwater pond as recommended in the WENTX EIA is no longer required.
Woodland loss	Largely reduced from 3.76 ha in the Original Scheme to about 0.12 ha in the Enhanced Scheme	The Enhanced Scheme would largely minimize encroachment onto the woodland resulting in a small area of loss only, i.e. 0.12 ha. In line with the same principle as the approved WENTX EIA, the total compensatory woodland planting area should be around 0.60 ha.
Watercourse loss	Loss of Tsang Kok Stream would be same as in the Original Scheme. The downstream of Stream A, although would not be encroached by the Enhanced Scheme, the water flow would be diverted and in a worst-case scenario, the downstream of Stream A would be dried. Therefore, it is still considered as direct loss of entire	The ecological impact was rated as low in the approved WENTX EIA and in the current review, no specific mitigation measure is required.

Ecological Impacts	Change Under the Enhanced Scheme	Approach to Address Potential Impact
	Stream A, which is the same as that in the approved WENTX EIA.	
Direct impact on flora species of conservation importance	<i>Aquilaria sinensis</i> and Bamboo Orchid were no longer found within the Enhanced Scheme. <i>Gnetum luofuense</i> and <i>Diospyros vaccinioides</i> were newly recorded in the current review.	Transplantation of the affected species identified as far as practicable, except for <i>Gnetum luofuense</i> which is a woody climber and is not feasible for transplantation.
Indirect impact to wetland birds utilising the ash lagoon(s)	Indirect impact is not anticipated under the Enhanced Scheme, as the loss of lagoons would be avoided.	No specific mitigation measure is required.
Noise, dust and visual disturbance	No significant change as compared with the Original Scheme	No specific mitigation measure is required.
Changes in water quality	No significant change as compared with the Original Scheme	No specific mitigation measure is required.
Accidental leakage of LFG / leachate and/or other wastewater	No significant change as compared with the Original Scheme	Emergency contingency plans for LFG leakage, contingency plan for groundwater contamination, and contingency plan for surface water contamination would be formulated by the contractor.

8.1.10

To conclude, with the reduced boundary of the WENTX, the Enhanced Scheme could totally avoid loss of the breeding habitat for Little Grebe, thus creation of compensatory freshwater pond as recommended in WENTX EIA is no longer required. Besides, the areas of the affected secondary woodland and hillside grassland / shrubland could also be significantly reduced. Transplantation of the affected individuals including Pitcher Plant and Small Persimmon as that recommended in the WENTX EIA will continue to be adopted. In fact, the Enhanced Scheme would generally bring a positive ecological impact compared to the Original Scheme.

9 Other Environmental Aspects

9.1 Landfill Gas Hazard

9.1.1 Due to the reduced size of waste boundary, the extent of 250 m consultation zone has been revised. All the receivers outside WENTX will no longer fall within the 250 m consultation zone of the WENTX (**Figure 9.1**). Potential landfill gas (LFG) hazard impact is therefore not anticipated.

9.1.2 The source, pathway and receivers within the proposed WENTX during construction, operation, restoration and aftercare stages remain unchanged as in the approved WENTX EIA, thus the risk level is unchanged.

9.1.3 With the revised boundary of landfill site, the proposed liner and LFG cut-off trench barrier has been adjusted as illustrated in **Figure 9.2**. The monitoring requirements in the Original Scheme as recommended in the approved WENTX EIA are still valid and the monitoring locations have been updated for the revised boundary as shown in **Figure 9.3**, which are subject to changes depending on the design, phasing and modification by the contractor.

9.1.4 To conclude, the overall risk within the proposed WENTX is anticipated the same whereas no risk is anticipated outside the proposed WENTX. No adverse LFG hazard impact is anticipated during the construction, operation, restoration and aftercare stages of the Project.

9.2 Landscape and Visual

9.2.1 Compared with the approved WENTX EIA, two new visual sensitive receivers (VSRs) within the visual envelop from the boundary of the Project are identified (**Table 9.1**). Other VSRs are the same as the EIA. The locations of the VSRs are illustrated in **Figure 9.4**.

Table 9.1: Concerned VSRs

VSR ID	Description	Number of VSRs	Minimum Viewing Distance (km)
VSR11	Workers and visitors at Columbarium	Medium	0.6
VSR12	Workers at T•PARK	Medium	0.1

9.2.2 Under the Enhanced Scheme, the waste filling area has been diminished from 188 ha in the Original Scheme to 94 ha. It is anticipated that the magnitude of landscape and visual impacts during the construction and operation stages would also be reduced. Besides, the roadside planting would be enlarged, in which a 10 m wide tree planting would be planted along the northern side of the waste boundary of the WENTX adjacent to Nim Wan Road (refer to **Figure 1.2**) and 30m wide tree planting along the western & southern sides of the waste boundary. In addition, a 30 m high earth bund would also be constructed along the northern boundary of the WENTX. The earth bund would provide a barrier intercepting the direct line of sight from the viewing angle of north of Nim Wan Road, workers and visitors at Columbarium and workers at T • PARK. The scale of development, and the physical extent of the impact is smaller, and the compatibility of the project with the surrounding landscape is improved by the proposed tree buffer and earth bund. The significance of landscape and visual impacts after the implementation of mitigation measures would be minimized.

9.2.3 It is envisaged that the WENTX will be restored to blend with the restored environment of the existing WENT Landfill, and that both should blend with the surrounding natural landscape. The restored landfill is intended for low intensity

recreational use. Therefore, the landscape and visual impact during restoration and afteruse stages are considered minimum.

9.2.4 Under the approved WENTX EIA, the landscape planting and maintenance during restoration and aftercare stages requires 21 ha tree seedlings / whips compensatory planting. Based on the Enhanced Scheme of WENTX, it is estimated that number of trees to be felled for this Project would be greatly reduced. By adopting the same approach in WENTX EIA, the compensatory planting required under the Enhanced Scheme will also be reduced accordingly. The number of trees to be planted will fulfil the minimum compensatory requirement as stipulated in DEVB TCW No. 4/2020.

9.2.5 To conclude, due to the reduced size of the Project boundary, it is expected that the magnitude of landscape and visual impacts are lessened. With implementation of suitable mitigation measures, no unacceptable landscape and visual impacts are anticipated during construction, operation, restoration and aftercare stages. In fact, the enlargement of the boundary green belt planting and the earth bund in the Enhanced Scheme are beneficial not only from landscape point of view, but also from visual point of view as the greenery effect of the tree planting and vegetation on the earth bund would come into visualization earlier than that in the approved WENTX EIA. The Enhanced Scheme would generally bring a positive landscape and visual impact to the community as compared to the Original Scheme.

9.3 Cultural Heritage

9.3.1 Under the Enhanced Scheme, the revised boundary will totally avoid encroachment onto the TTAS, graves and temple (**Figure 9.5**). No potential cultural heritage impact due to the Project is anticipated, and thus no mitigation measures are required for the Enhanced Scheme.

9.4 Potential Environmental Impact Associated with Pulverised Fuel Ash

9.4.1 Under the Enhanced Scheme, the Project boundary would totally avoid the west and middle TTALs. The health risk induced by radon emissions associated with pulverized fuel ash at the west and middle TTALs would be minimized compared to Original Scheme. The Enhanced Scheme would generally bring a positive impact.

10 Proposed Variations to the Environmental Permit

10.1.1 In connection with the proposed changes of WENTX as discussed in the previous sections, some amendments to the original EP conditions are proposed in **Table 10.1** below.

Table 10.1: Proposed amendments to original EP conditions

EP Condition/ Reference	Original Conditions in EP-393/2010	Proposed Amendments	Reason for Variations
Part B, Scale and Scope of Designated Project	<p>Construction and operation of a landfill extension on the western side of the existing WENT Landfill of about 200 hectares and a filling capacity of not more than: (i) 81 million cubic metres if the proposed Integrated Waste Management Facilities Phase 1 are to be located in the middle Tsang Tsui Ash Lagoon; or (ii) 88 million cubic metres if the proposed Integrated Waste Management Facilities Phase 1 are not to be located in the middle Tsang Tsui Ash Lagoon, including:</p> <p>(i) Site formation and preparation;</p> <p>(ii) Relocation of existing landfill infrastructures including leachate treatment plant, landfill gas management plant, power generators, workshops and site offices;</p> <p>(iii) Installation of a liner system;</p> <p>(iv) Installation of leachate collection, treatment and disposal facilities;</p> <p>(v) Installation of gas collection, utilization and management facilities;</p> <p>(vi) Realignment of a section of Nim Wan Road;</p> <p>(vii) Provision of utilities and drainage;</p> <p>(viii) Landfilling operation;</p> <p>(ix) Restoration and aftercare in subsequent stages;</p> <p>(x) Implementation of measures to mitigate environmental impacts as well as environmental monitoring and audit; and</p>	<p>Construction and operation of a landfill extension on the western side of the existing WENT Landfill of about 100 hectares and a filling capacity of not more than 76 million cubic metres, including:</p> <p>(i) Site formation and preparation;</p> <p>(ii) Installation of landfill infrastructures including leachate treatment plant, landfill gas management plant, power generators, workshops and site offices;</p> <p>(iii) Installation of a liner system;</p> <p>(iv) Installation of leachate collection and disposal facilities;</p> <p>(v) Installation of gas collection and utilization facilities;</p> <p>(vi) Provision of utilities and drainage;</p> <p>(vii) Landfilling operation;</p> <p>(viii) Restoration and aftercare in subsequent stages; and</p> <p>(ix) Implementation of measures to mitigate environmental impacts as well as environmental monitoring and audit.</p>	<p>The boundary of WENTX is reduced.</p> <p>The reduced boundary will avoid the existing Nim Wan Road. The scope of realignment of a section of Nim Wan Road is not applicable. The construction works for the new road section, i.e. Nim Wan Road (South), will be undertaken by others under a separate project.</p> <p>The reduced WENTX boundary will not include any Pulverized Fuel Ash Lagoons where decommissioning is required before further development.</p>

EP Condition/ Reference	Original Conditions in EP- 393/2010	Proposed Amendments	Reason for Variations
	(xi) Decommissioning of the Pulverized Fuel Ash Lagoons at Tsang Tsui.		
Part C, Condition 2.6	<p>Submission of Habitat Creation, Transplantation and Management Plan (HCTMP)</p> <p>At least 1 month before the commencement of construction of the Project, 3 hardcopies and 1 electronic copy of the HCTMP shall be submitted to the Director for approval. The HCTMP shall contain at least the following details on provision of freshwater ponds and transplantation:</p> <p><i>Detailed specifications for the habitat in the form of freshwater pond(s)</i></p> <p>(i) The size of each freshwater pond shall be at least 0.5 ha and shall contain suitable habitat characteristics for Little Grebe as shown in Figure 2;</p> <p>(ii) The total size of all the freshwater ponds shall be at least 8 ha;</p> <p>(iii) The freshwater ponds shall be established no later than the first year of the commencement of construction of the Project;</p> <p>(iv) The locations of the freshwater ponds shall be clearly shown in a plan with an appropriate scale; and</p> <p><i>Transplantation Details.</i></p> <p>(v) The transplantation details, including transplanting locations and procedures, of Pitcher Plant (<i>Nepenthes mirabilis</i>), Bamboo Orchid (<i>Arundina graminifolia</i>), Incense Tree (<i>Aquilaria sinensis</i>) and other plants of conservation interest to be affected by the Project shall be included.</p> <p>In preparing the HCTMP, the Director of Agriculture,</p>	<p>Submission of Habitat Creation, Transplantation and Management Plan (HCTMP)</p> <p>At least 1 month before the commencement of construction of the Project, 3 hardcopies and 1 electronic copy of the HCTMP shall be submitted to the Director for approval. The HCTMP shall contain at least the following details on provision of freshwater ponds and transplantation:</p> <p><i>Detailed specifications for the habitat in the form of freshwater pond(s)</i></p> <p>(i) The size of each freshwater pond shall be at least 0.5 ha and shall contain suitable habitat characteristics for Little Grebe as shown in Figure 2;</p> <p>(ii) The total size of all the freshwater ponds shall be at least 8 ha;</p> <p>(iii) The freshwater ponds shall be established no later than the first year of the commencement of construction of the Project;</p> <p>(iv) The locations of the freshwater ponds shall be clearly shown in a plan with an appropriate scale; and</p> <p><i>Remark: Subsequent to the avoidance of encroachment of breeding habitat for Little Grebe in the Enhanced Scheme, the above requirements for provision of freshwater pond(s) are no longer applicable.</i></p> <p><i>Transplantation Details.</i></p> <p>(v) The transplantation details, including transplanting locations and procedures, of Pitcher Plant (<i>Nepenthes</i></p>	<p>The requirement on compensatory freshwater ponds for Little Grebe is not applicable, given that there is no loss of the breeding habitat for Little Grebe in the Enhanced Scheme.</p>

EP Condition/ Reference	Original Conditions in EP- 393/2010	Proposed Amendments	Reason for Variations
	<p>Fisheries and Conservation shall be consulted. Before submission to the Director, the HCTMP shall be certified by the ET Leader and verified by the IEC as conforming to the information and recommendations contained in the approved EIA report (Register No. AEIAR-147/2009).</p> <p>All measures recommended in the approved HCTMP shall be fully and properly implemented and thereafter maintained.</p>	<p><i>mirabilis</i>), Bamboo Orchid (<i>Arundina graminifolia</i>), Incense Tree (<i>Aquilaria sinensis</i>) and other plants of conservation interest to be affected by the Project shall be included.</p> <p>In preparing the HCTMP, the Director of Agriculture, Fisheries and Conservation shall be consulted. Before submission to the Director, the HCTMP shall be certified by the ET Leader and verified by the IEC as conforming to the information and recommendations contained in the approved EIA report (Register No. AEIAR-147/2009).</p> <p>All measures recommended in the approved HCTMP shall be fully and properly implemented and thereafter maintained.</p>	
Part C, Condition 2.10	Submission of Archaeological Action Plan	Clause 2.10 to be deleted.	The reduced WENTX boundary will totally avoid TTAS. The requirement for submission of Archaeological Action Plan is not applicable.
Part C, Condition 2.11	<p>Measure to Mitigate Construction Noise Impact</p> <p>To mitigate construction noise impacts, a noise bund of 3.5m tall shall be constructed along the north eastern seafront of the existing landfill as shown in Figure 3 prior to the commencement of construction. The noise bund shall be properly maintained during the construction of the Project.</p>	<p>Measure to Mitigate Noise Impact</p> <p>A noise bund of 3.5m tall shall be constructed along the north eastern seafront of the existing landfill as shown in Figure 3 prior to the commencement of construction. The noise bund shall be properly maintained during the construction, operation and restoration of the Project.</p>	The maintenance period of the noise bund will be extended to cover the construction, operation and restoration stages of the Project.
Part C, Condition 2.15	On-site storage of excavated materials shall be covered with tarpaulin or similar materials.	On-site storage of excavated materials shall be covered with tarpaulin or otherwise agreed by the Director.	It allows more flexibility to suit practical needs and possible development of landfill technology in future.
Part C, Condition 2.21	The size of each active tipping face with ongoing tipping activities shall not	The size of each active tipping face with ongoing tipping activities shall not exceed 60	It encourages beneficial uses of other suitable materials and also allows

EP Condition/ Reference	Original Conditions in EP- 393/2010	Proposed Amendments	Reason for Variations
	exceed 60m x 30m and shall be covered with at least 150mm thick of soil at the end of each working day (i.e. after 8:00pm).	m x 30 m and shall be covered with at least 150 mm thick of soil or otherwise agreed by the Director, at the end of each working day (i.e. after 8:00 pm).	flexibility for possible development of landfill technology in future.
Part C, Condition 2.22	A maximum of two active tipping faces shall be allowed to work simultaneously within the Project site. Should the two active tipping faces be lying entirely within either Phase 1 or Phase 3 or Phase 4 of the Project site, one of these active tipping faces shall be located outside the hatched area of that particular phase as shown in Figures 4, 5 and 6 respectively.	A maximum of two active tipping faces shall be allowed to work simultaneously within the Project site.	The potential odour impacts have been much improved in the Enhanced Scheme. The requirement of distance between the two active tipping faces within the Project site is not applicable.
Part C, Condition 2.24	No sewage sludge shall be disposed of at the Project site.	No sewage sludge shall be disposed of at the Project site or otherwise agreed by the Director.	Sewage sludge is in general diverted and incinerated at sludge treatment facilities (e.g. T-PARK), except due to emergency or other reasons that need to be disposed of at WENT Landfill. The same will also be operated in the WENTX.
Part C, Condition 3.1	The EM&A programme shall be implemented in accordance with the procedures and requirements as set out in the approved EM&A Manual or as approved by the Director. Any changes to the programme shall be justified by the ET Leader and verified by the IEC as conforming to the information and requirements contained in the EM&A Manual before submission to the Director for approval.	The EM&A programme shall be implemented in accordance with the procedures and requirements as set out in the approved EM&A Manual and the application document in the Register or as approved by the Director. Any changes to the programme shall be justified by the ET Leader and verified by the IEC as conforming to the information and requirements contained in the EM&A Manual before submission to the Director for approval.	Textual amendment such that the additional monitoring locations proposed in the VEP supporting document would be addressed in the future EM&A monthly reports.
Figure 1	West New Territories (WENT) Landfill Extensions - Location Plan	See Figure 10.1 of this document	The WENTX boundary has been reduced in the Enhanced Scheme.
Figure 2	Cross-section of Freshwater Pond for Little Grebe	Add a note no. 9 to the figure: 9. Subsequent to the avoidance of encroachment of breeding habitat for Little Grebe in the Enhanced Scheme is revised landfill design, the above	The habitat creation of freshwater pond is not required, given that there is no loss of the breeding habitat for Little Grebe in the Enhanced Scheme.

EP Condition/ Reference	Original Conditions in EP- 393/2010	Proposed Amendments	Reason for Variations
		requirements for provision of freshwater pond(s) are no longer applicable.	
Figure 4	Locations of Tipping Face for Phase 1	To be deleted.	The potential odour impacts have been much improved in the Enhanced Scheme. The requirement of distance between the two active tipping faces within the Project site is not applicable. Figures 4 to 6 are removed.
Figure 5	Locations of Tipping Face for Phase 3		
Figure 6	Locations of Tipping Face for Phase 4		

11 Conclusion

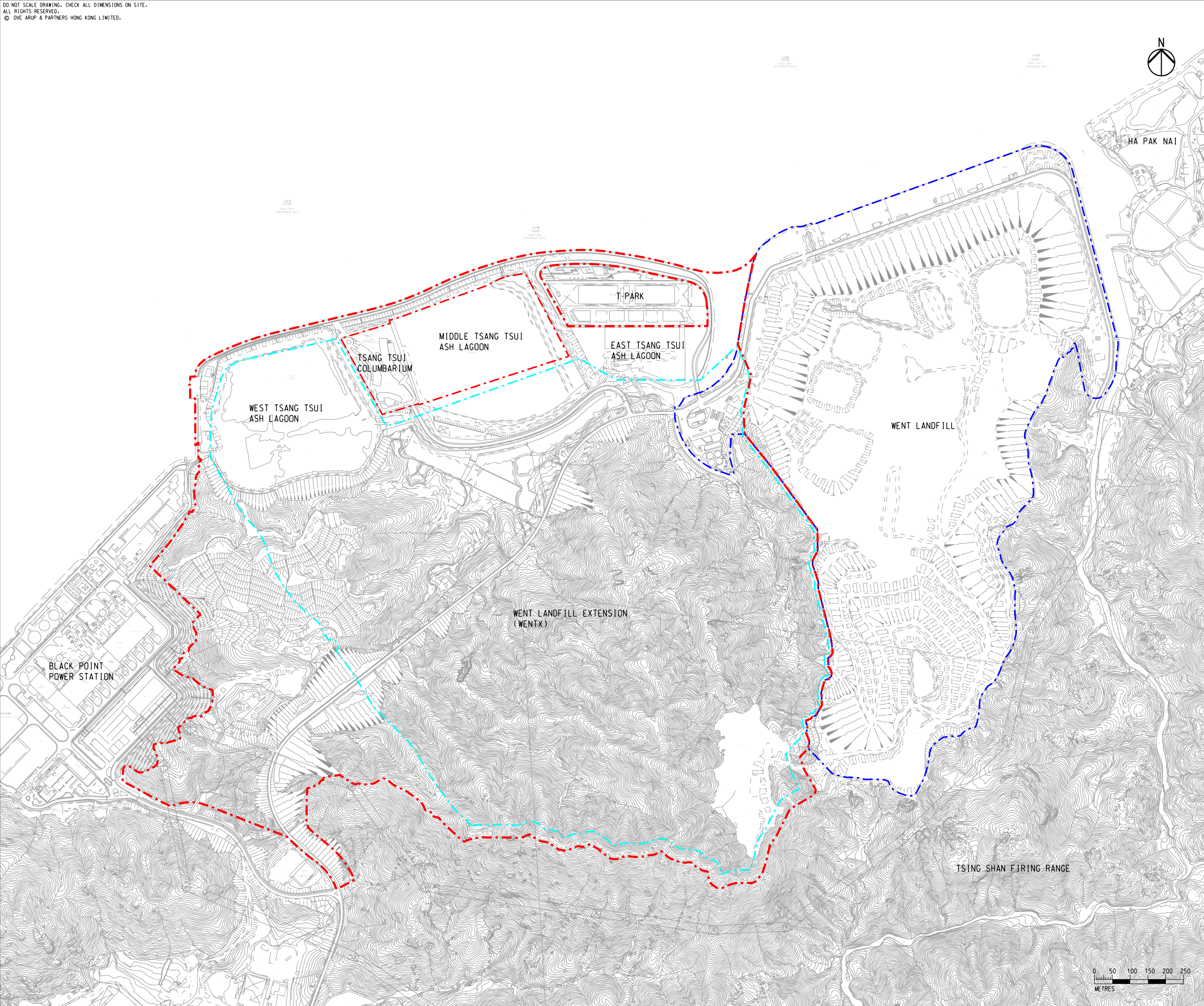
- 11.1.1** Since the approval of the WENTX EIA (AEIAR-147/2009), there are a number of design changes in the Project (i.e. Enhanced Scheme) including reduction of the Project boundary, reduction of waste filling area from 188 ha to 94 ha, enlargement of tree buffer zone, exclusion of the realignment of Nim Wan Road construction works from the Project, retaining the existing infrastructures of the WENT Landfill at the current locations, as well as the changes in development phasing and primary means of construction to meet the revised deep bowl-shaped site formation design for waste filling, etc.
- 11.1.2** An environmental review has been conducted to review and evaluate the potential environmental implication arising from the proposed changes in the Enhanced Scheme of the Project. With the reduced waste filling area, it is anticipated that there are no adverse air quality, odour, noise and water quality impacts arising from the proposed WENTX. As a deep bowl-shape site formation design would be adopted, large quantities of excavated materials will be generated during the construction stage. All excavated C&D materials and low quality rocks will be reused for site formation, daily cover and final capping materials at the landfill site, or temporarily stockpiled for future beneficial reuses; while the good quality rocks will be processed on-site to aggregate and exported off-site for beneficially reuse, such as selling to the local market and reuse in other reclamation projects. There is no potential implication on waste management.
- 11.1.3** The Enhanced Scheme would also bring a number of environmental improvements compared to the Original Scheme. In particular, the entire west and middle TTALs will be excluded from the Project boundary of WENTX, thus encroachment of breeding habitat for Little Grebe could be totally avoided. As such, compensation of the freshwater ponds is no longer required. Besides, the Enhanced Scheme will also exclude the Tsang Tsui area where the TTAS, graves and temple are located, and hence impacts on these cultural heritage resources could be avoided.
- 11.1.4** With the revised boundary of the Enhanced Scheme, there is no receiver falling within the LFG hazard consultation zone of the WENTX. The overall risk within the proposed WENTX is anticipated the same as WENTX EIA, whereas no risk is anticipated outside the proposed WENTX.
- 11.1.5** In addition, the magnitude of landscape and visual impacts are also lessened under the Enhanced Scheme. Enlargement of tree buffer zone will be provided which not only are beneficial from landscape point of view but also serve as a visual relief to the local community and neighbourhood.
- 11.1.6** In conclusion, the proposed changes under the Enhanced Scheme will not constitute a material change to the environmental impact of the WENTX Project. There will also be no adverse environmental impacts anticipated from the proposed changes with respect to the assessment criteria stipulated in the EIAO-TM and relevant environmental legislation. Besides, the EM&A programme shall be implemented in accordance with the EM&A Manual. In case of any deteriorating conditions detected, remedial actions will be timely taken to rectify the situation.


Figures

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LEGEND

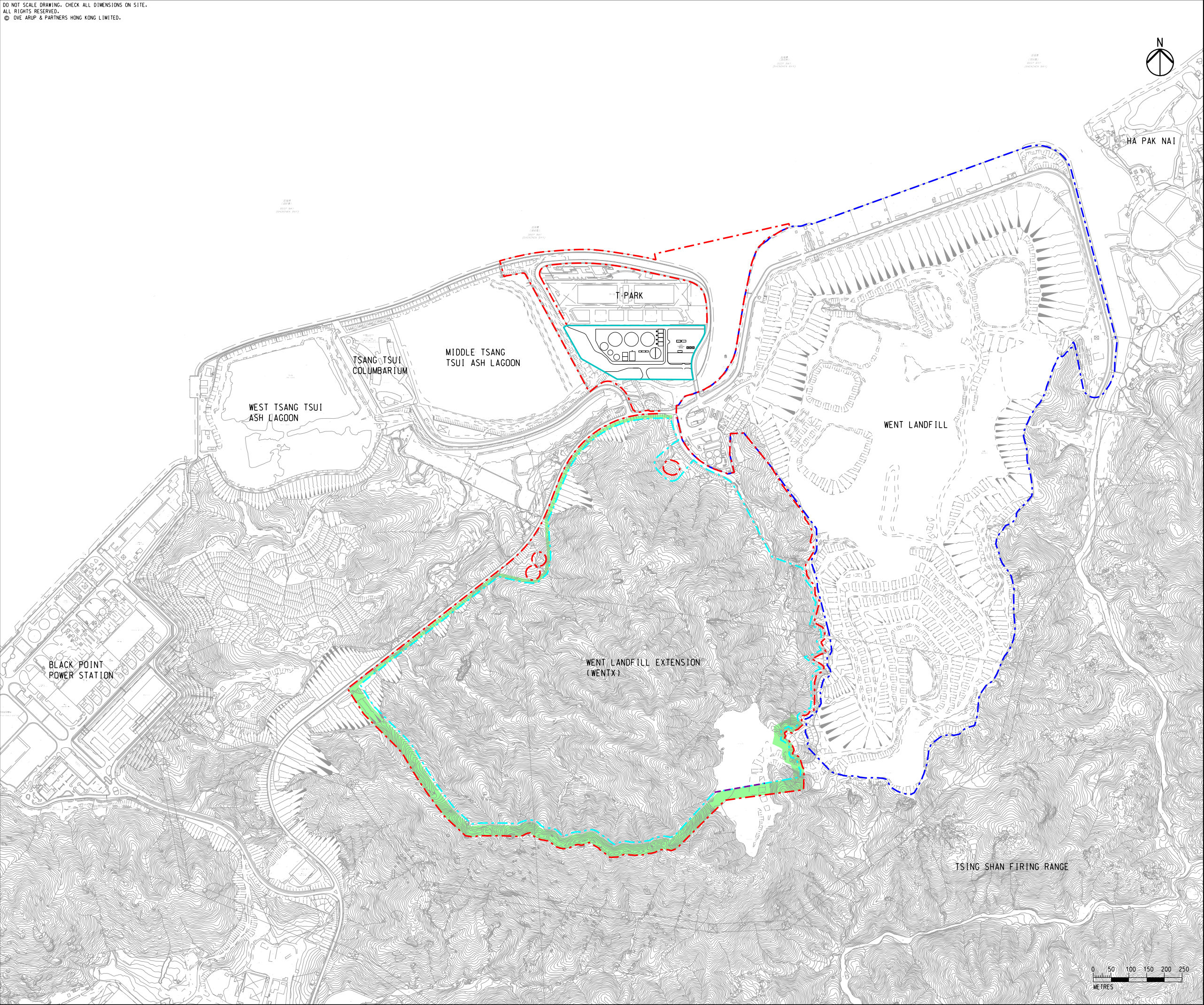
- WENT LANDFILL EXTENSION (WENTX) BOUNDARY
- WENTX WASTE BOUNDARY
- WENT LANDFILL BOUNDARY



A		FIRST ISSUE		GL	02/22
Rev	Description	By	Date		
Consultant					
ARUP					
Project title					
Agreement No. CE 6/2015 (EP)					
West New Territories (WENT)					
Landfill Extension					
- Design and Construction					
Drawing title					
GENERAL PLAN OF ORIGINAL SCHEME					
Drawing no.				Rev.	
FIGURE 1.1				A	
Drawn	Date	Checked	Approved		
GL	02/22	IL	FC		
Scale	Status		PRELIMINARY		
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Filename : \\hkngts27\c:\env\env\project\245706\13 Drawing Deliverables\report\06 Supporting Document\Figure 1.2.dgn



LEGEND

- WENT LANDFILL EXTENSION (WENTX) BOUNDARY
- WENTX WASTE BOUNDARY
- LANDFILL INFRASTRUCTURE FOR WENTX
- WENT LANDFILL BOUNDARY
- TREE PLANTING BUFFER

NOTE:
FIGURE IS PREPARED UNDER THE LATEST ENHANCED SCHEME WHICH IS SUBJECT TO CONTRACTOR'S DESIGN

B	SECOND ISSUE	GL	07/22
A	FIRST ISSUE	GL	04/22
Rev	Description	By	Date

Consultant

ARUP

Project title

Agreement No. CE 6/2015 (EP)
West New Territories (WENT)
Landfill Extension
- Design and Construction

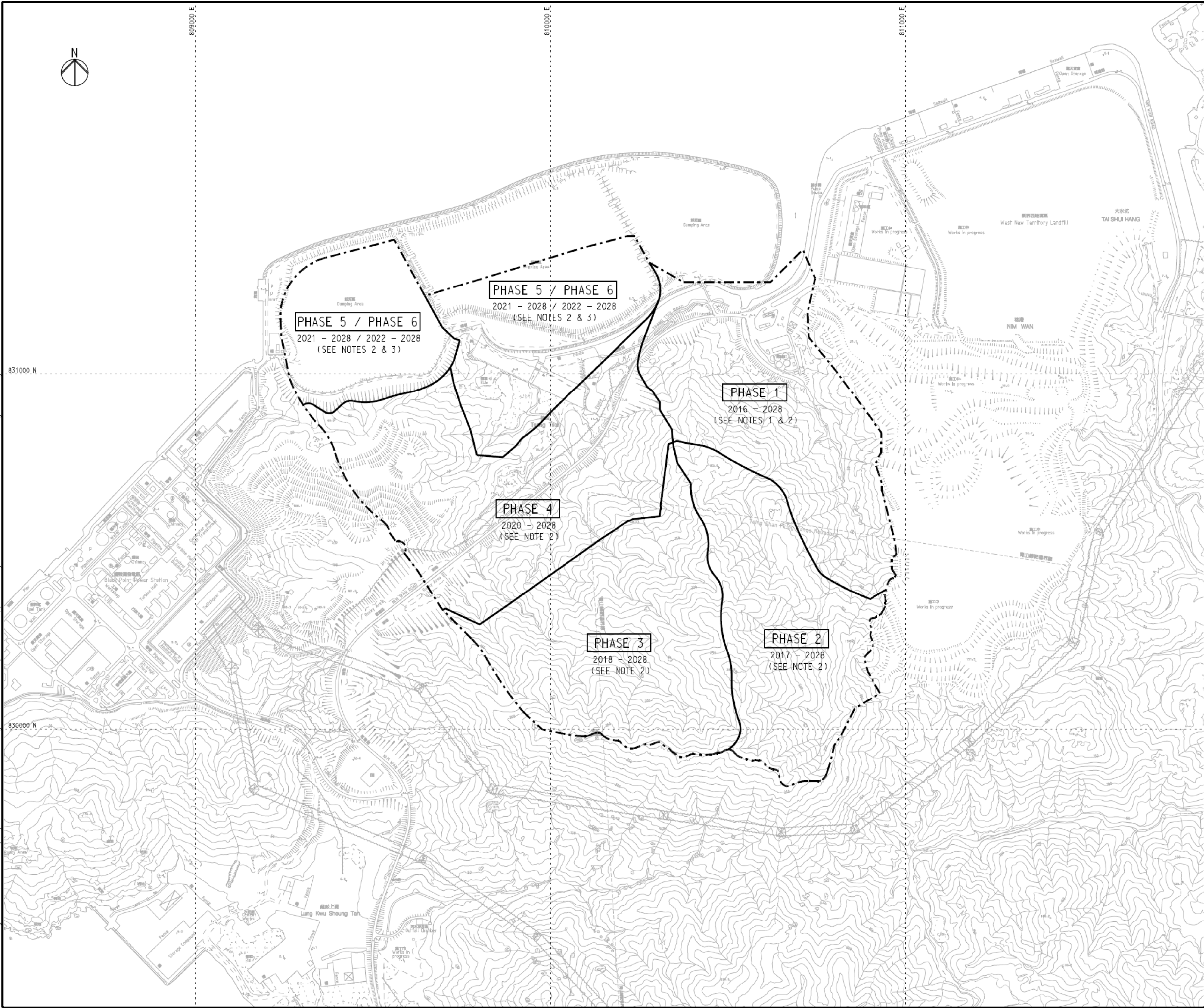
Drawing title

**GENERAL PLAN
OF ENHANCED SCHEME**

Drawing no.		Rev.	
FIGURE 1.2		B	
Drawn	Date	Checked	Approved
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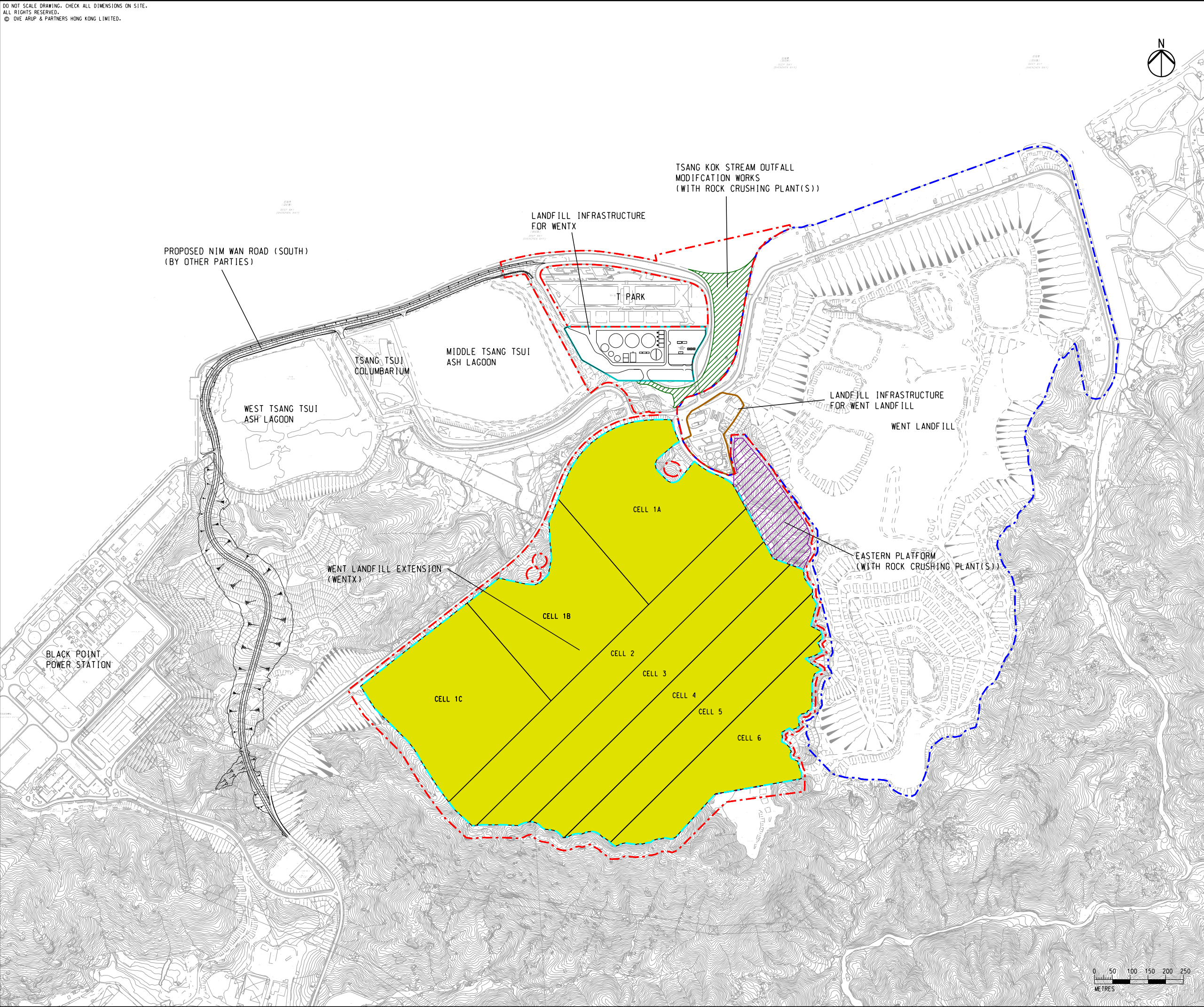
LEGEND

 WASTE BOUNDARY OF WENT LANDFILL EXTENSION

NOTES

1. IT IS ESTIMATED THAT EXISTING WENT LANDFILL WILL BE FULL BY THE END OF 2018. THE SITE CLEARANCE, SITE FORMATION AND OTHER PREPARATION WORKS HAVE TO BE STARTED IN EARLY 2016.
2. THE STATED PERIOD INCLUDES SITE CLEARANCE, SITE FORMATION AND OTHER PREPARATION WORKS.
3. PHASES 5 & 6 CAN BE EXCHANGED. THE PHASING DEPENDS ON THE TIME REQUIRED FOR THE LAND RESUMPTION / CLEARANCE OF WEST LAGOON AND CLAN GRAVE.
4. THE YEARS SHOWN ON THIS FIGURE ARE DERIVED BASED ON THE PRELIMINARY PROGRAMME AND ACTUAL PROGRAMME SHOULD DEPEND ON THE ACTUAL WASTE RECEIVED.

A	FIRST ISSUE	GL	03/22
Rev	Description	By	Date
Consultant		ARUP	
Project title		Agreement No. CE 6/2015 (EP) West New Territories (WENT) Landfill Extension - Design and Construction	
Drawing title		PHASING OF LANDFILL CELLS IN ORIGINAL SCHEME	
Drawing no.		FIGURE 2.1	Rev. A
Drawn	Date	Checked	Approved
GL	03/22	IL	FC
Scale	Status		
AS SHOWN	PRELIMINARY		



LEGEND

- WENT LANDFILL EXTENSION (WENTX) BOUNDARY
- WENTX WASTE BOUNDARY
- PROPOSED NIM WAN ROAD (SOUTH) (BY OTHER PARTIES)
- EASTERN PLATFORM (WITH ROCK CRUSHING PLANT(S))
- TSANG KOK STREAM OUTFALL MODIFICATION WORKS (WITH ROCK CRUSHING PLANT(S))
- LANDFILL INFRASTRUCTURE FOR WENTX
- WENT LANDFILL BOUNDARY
- LANDFILL INFRASTRUCTURE FOR WENT

NOTE:
FIGURE IS PREPARED UNDER THE LATEST ENHANCED SCHEME WHICH IS SUBJECT TO CONTRACTOR'S DESIGN

A	FIRST ISSUE	GL	04/22
Rev	Description	By	Date

Consultant
ARUP

Project title
Agreement No. CE 6/2015 (EP)
West New Territories (WENT)
Landfill Extension
- Design and Construction

Drawing title
**PHASING OF LANDFILL CELLS
IN ENHANCED SCHEME**

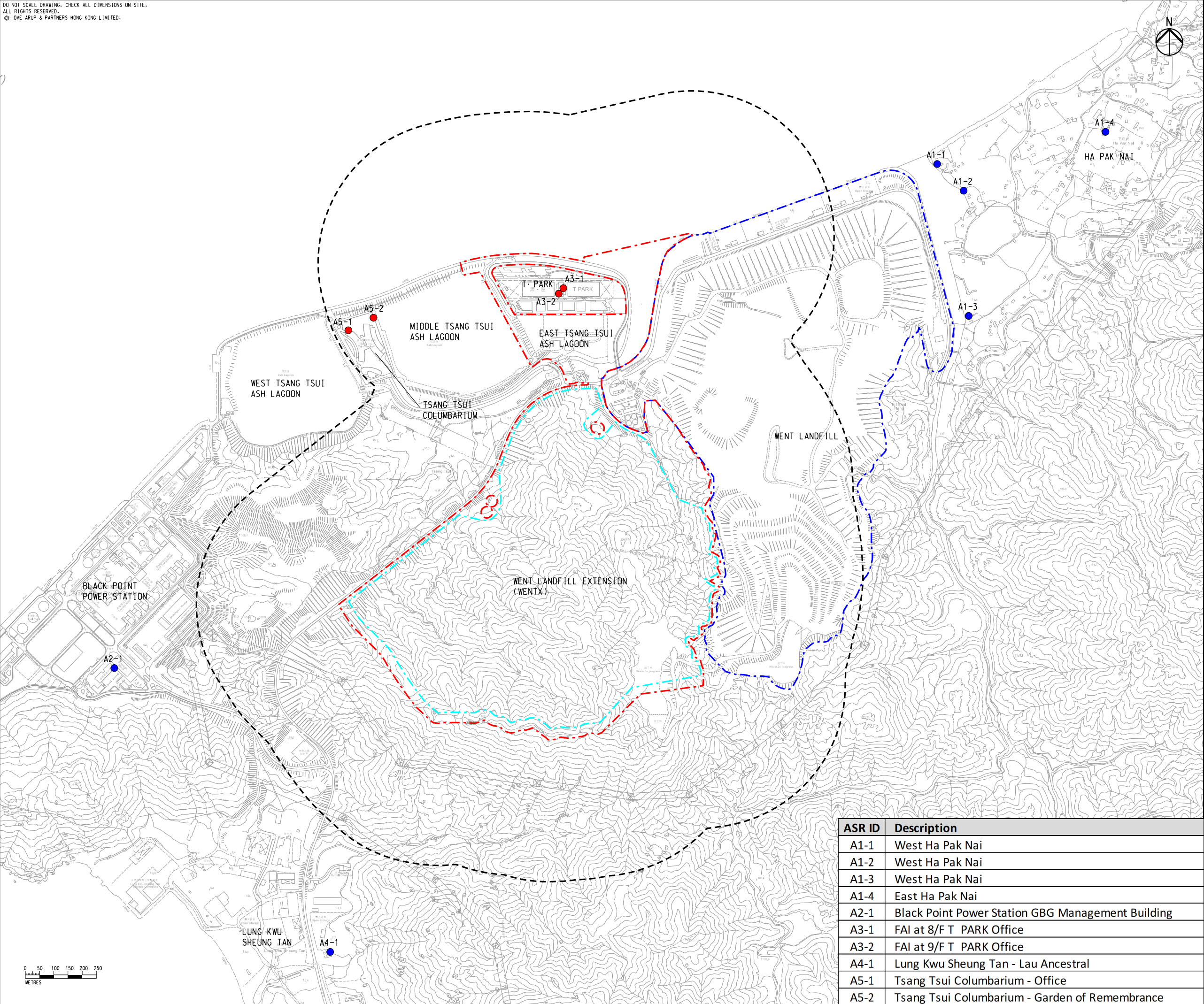
Drawing no.			FIGURE 2.2		Rev.		A	
Drawn		Date		Checked		Approved		
GL		04/22		IL		FC		
Scale				Status		PRELIMINARY		
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LEGEND

- WENT LANDFILL EXTENSION (WENTX) BOUNDARY
- WENTX WASTE BOUNDARY
- 500m FROM WENTX BOUNDARY
- WENT LANDFILL BOUNDARY
- NEW REPRESENTATIVE AIR SENSITIVE RECEIVER (WITHIN 500m)
- REPRESENTATIVE AIR SENSITIVE RECEIVER ASSESSED IN WENT LANDFILL EXTENSION (WENTX) ENVIRONMENTAL IMPACT ASSESSMENT REPORT (AEIAR-147/2009)

NOTE:
FIGURE IS PREPARED UNDER THE LATEST ENHANCED SCHEME WHICH IS SUBJECT TO CONTRACTOR'S DESIGN

A	FIRST ISSUE	GL	04/22
Rev	Description	By	Date

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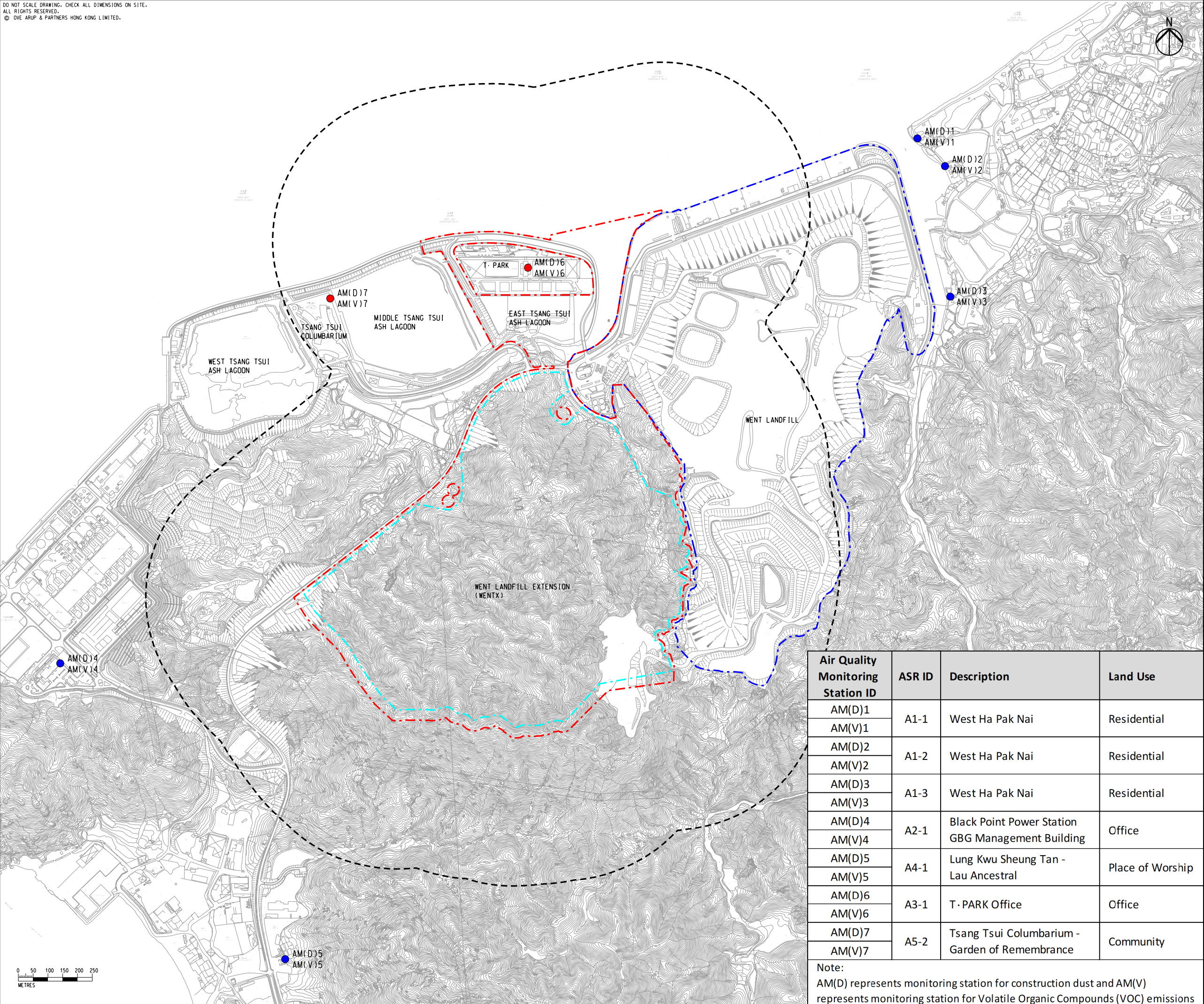
Project title
Agreement No. CE 6/2015 (EP)
West New Territories (WENT)
Landfill Extension
- Design and Construction

Drawing title
LOCATIONS OF REPRESENTATIVE AIR SENSITIVE RECEIVERS

Drawing no. FIGURE 3.1		Rev. A	
Drawn GL	Date 04/22	Checked IL	Approved FC
Scale AS SHOWN		Status PRELIMINARY	


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ASR ID	Description
A1-1	West Ha Pak Nai
A1-2	West Ha Pak Nai
A1-3	West Ha Pak Nai
A1-4	East Ha Pak Nai
A2-1	Black Point Power Station GBG Management Building
A3-1	FAI at 8/F T PARK Office
A3-2	FAI at 9/F T PARK Office
A4-1	Lung Kwu Sheung Tan - Lau Ancestral
A5-1	Tsang Tsui Columbarium - Office
A5-2	Tsang Tsui Columbarium - Garden of Remembrance



LEGEND

- WENT LANDFILL EXTENSION (WENTX) BOUNDARY
- WENTX WASTE BOUNDARY
- WENT LANDFILL BOUNDARY
- AIR QUALITY MONITORING LOCATIONS IN WENTX EIA
- NEW AIR QUALITY MONITORING LOCATIONS

A		FIRST ISSUE		GL	04/22
Rev	Description	By	Date		
Consultant		ARUP			
Project title					
Agreement No. CE 6/2015 (EP) West New Territories (WENT) Landfill Extension - Design and Construction					
Drawing title					
LOCATIONS OF PROPOSED AIR QUALITY MONITORING STATIONS					
Drawing no.		FIGURE 3.2		Rev. A	
Drawn	Date	Checked	Approved		
GL	04/22	IL	FC		
Scale	AS SHOWN		Status	PRELIMINARY	
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Air Quality Monitoring Station ID	ASR ID	Description	Land Use
AM(D)1	A1-1	West Ha Pak Nai	Residential
AM(V)1			
AM(D)2	A1-2	West Ha Pak Nai	Residential
AM(V)2			
AM(D)3	A1-3	West Ha Pak Nai	Residential
AM(V)3			
AM(D)4	A2-1	Black Point Power Station GBG Management Building	Office
AM(V)4			
AM(D)5	A4-1	Lung Kwu Sheung Tan - Lau Ancestral	Place of Worship
AM(V)5			
AM(D)6	A3-1	T. PARK Office	Office
AM(V)6			
AM(D)7	A5-2	Tsang Tsui Columbarium - Garden of Remembrance	Community
AM(V)7			

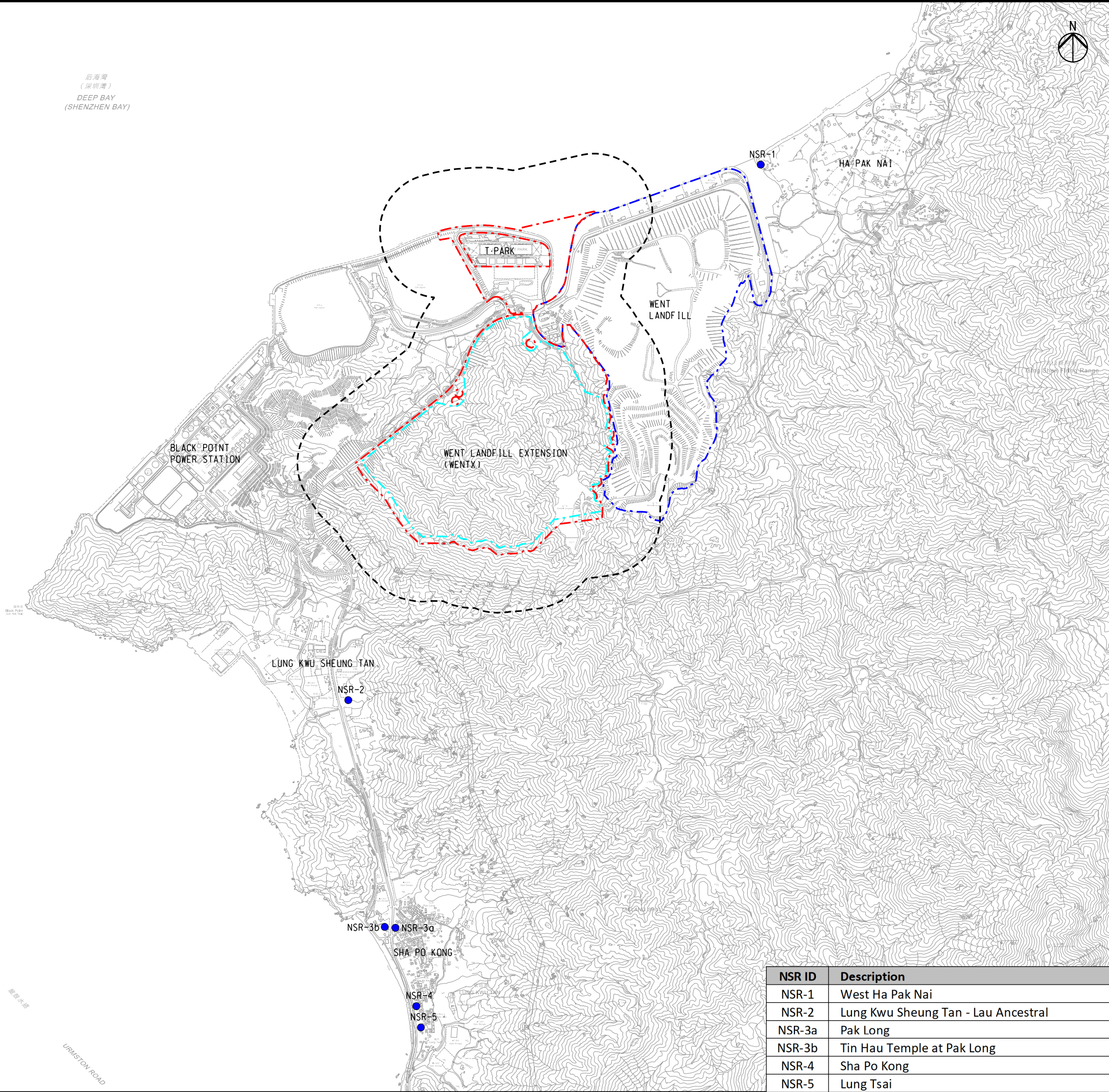
Note:
AM(D) represents monitoring station for construction dust and AM(V)
represents monitoring station for Volatile Organic Compounds (VOC) emissions

后海湾
(深圳湾)
DEEP BAY
(SHENZHEN BAY)



LEGEND

- WENT LANDFILL EXTENSION (WENTX) BOUNDARY
- WENTX WASTE BOUNDARY
- 300m FROM WENTX BOUNDARY
- WENT LANDFILL BOUNDARY
- REPRESENTATIVE NOISE SENSITIVE RECEIVER ASSESSED IN WENT LANDFILL EXTENSION (WENTX) ENVIRONMENTAL IMPACT ASSESSMENT REPORT (AEIAR-147/2009)



NOTE:
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A	FIRST ISSUE	GL	06/22
Rev	Description	By	Date

Consultant

ARUP

Project title

Agreement No. CE 6/2015 (EP)

West New Territories (WENT)

Landfill Extension

- Design and Construction

Drawing title

LOCATIONS OF REPRESENTATIVE NOISE SENSITIVE RECEIVERS

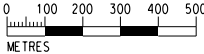
Drawing no.	FIGURE 4.1	Rev.	A
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GL	06/22	IL	FC
Scale	AS SHOWN	Status	PRELIMINARY

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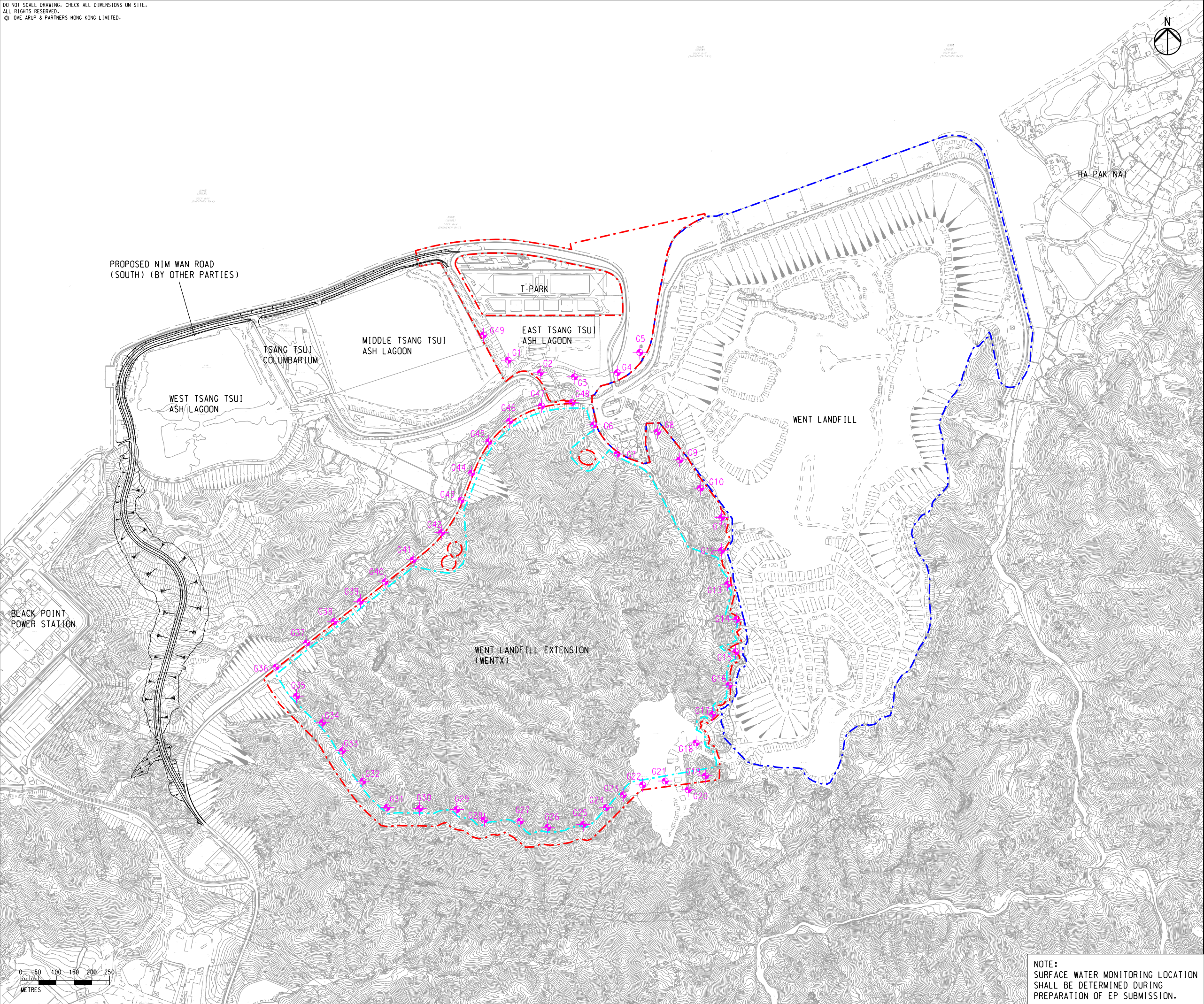
NSR ID	Description
NSR-1	West Ha Pak Nai
NSR-2	Lung Kwu Sheung Tan - Lau Ancestral
NSR-3a	Pak Long
NSR-3b	Tin Hau Temple at Pak Long
NSR-4	Sha Po Kong
NSR-5	Lung Tsai



URMISTON ROAD

龍鼓水塘

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- LEGEND
- WENT LANDFILL EXTENSION (WENTX) BOUNDARY
 - WENTX WASTE BOUNDARY
 - WENT LANDFILL BOUNDARY
 - PROPOSED NIM WAN ROAD (SOUTH) (BY OTHER PARTIES)
 - TENTATIVE LOCATIONS FOR BOREHOLES FOR GROUNDWATER MONITORING PROPOSED G1 - G49

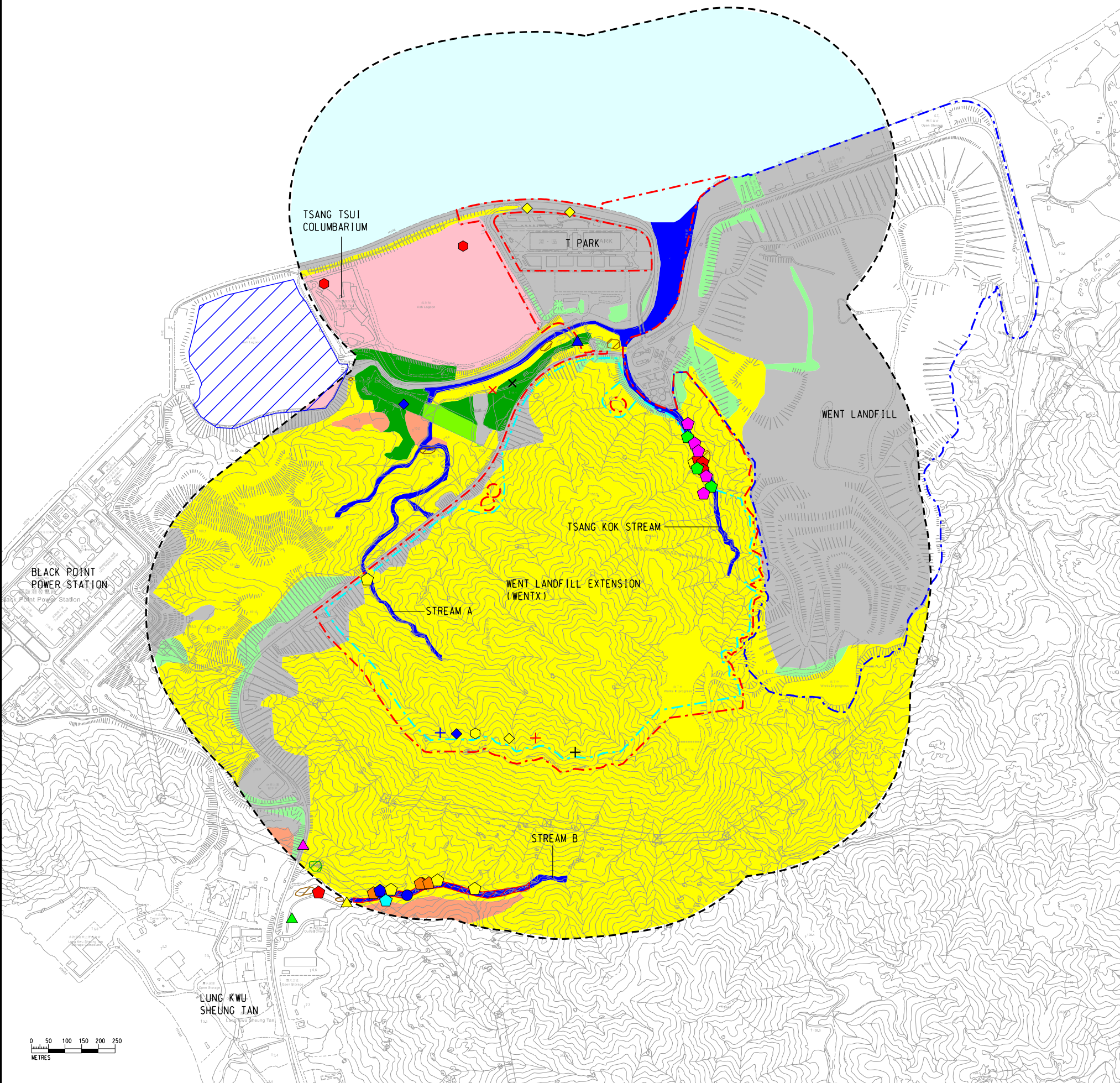
B	SECOND ISSUE	GL	07/22
A	FIRST ISSUE	GL	06/22
Rev	Description	By	Date
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ARUP			
Project title			
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West New Territories (WENT)			
Landfill Extension			
- Design and Construction			
Drawing title			
TENTATIVE WATER MONITORING LOCATIONS FOR WENTX			
Drawing no.			
FIGURE 6.1			Rev.
			A
Drawn	Date	Checked	Approved
GL	07/22	IL	FC
Scale	Status		
1:10000 @A3	PRELIMINARY		

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NOTE:
SURFACE WATER MONITORING LOCATION
SHALL BE DETERMINED DURING
PREPARATION OF EP SUBMISSION.



PLANT

- Nepenthes mirabilis*
- Nepenthes mirabilis* Pitcher Plant (Major Colony)
- Arundina graminifolia* (Bamboo Orchid)
- Diospyros vaccinioides*
- Ixonanthes reticulata* (Ixonanthes)
- Acampe rigida* (Banana Orchid)
- Diospyros vaccinioides*
- Brainea insignis*
- Diospyros vaccinioides*
- Camellia oleifera* (Oil-te a Cam e Ilia)
- Gnetum luofuense* (Luofushan Joint-fir)

MAMMAL

- Leopard Cat (Scats)
- Small Indian Civet (Scats)

Herpetofauna

- Chinese Bullfrog
- Lesser Spiny Frog (Tadpole)
- Spotted Narrow-mouthed Frog
- Common Rat Snake
- Copperhead Racer

Butterfly

- Peacock Royal
- Plain Hedge Blue
- Small Grass Yellow

Odonate

- Coastal Glider
- Tawny Hooktail

Bird

- Brown Fish Owl
- Collared Crow
- Little Grebe (Breeding)
- Common Moorhen
- Eurasian Coot

LEGEND

- WENT LANDFILL EXTENSION (WENTX) BOUNDARY
- WENTX WASTE BOUNDARY
- 500m FROM WENTX BOUNDARY
- WENT LANDFILL BOUNDARY
- ASH LAGOON
- DEVELOPMENT AREA
- GRASSLAND
- GRASSLAND/ SHRUBLAND
- MANGROVE/ MUDFLAT
- ORCHARD/ VILLAGE
- PLANTATION
- POND
- SEA
- SECONDARY WOODLAND
- WATERCOURSE

NOTE:
FIGURE IS PREPARED UNDER THE LATEST
ENHANCED SCHEME WHICH IS SUBJECT TO
CONTRACTOR'S DESIGN

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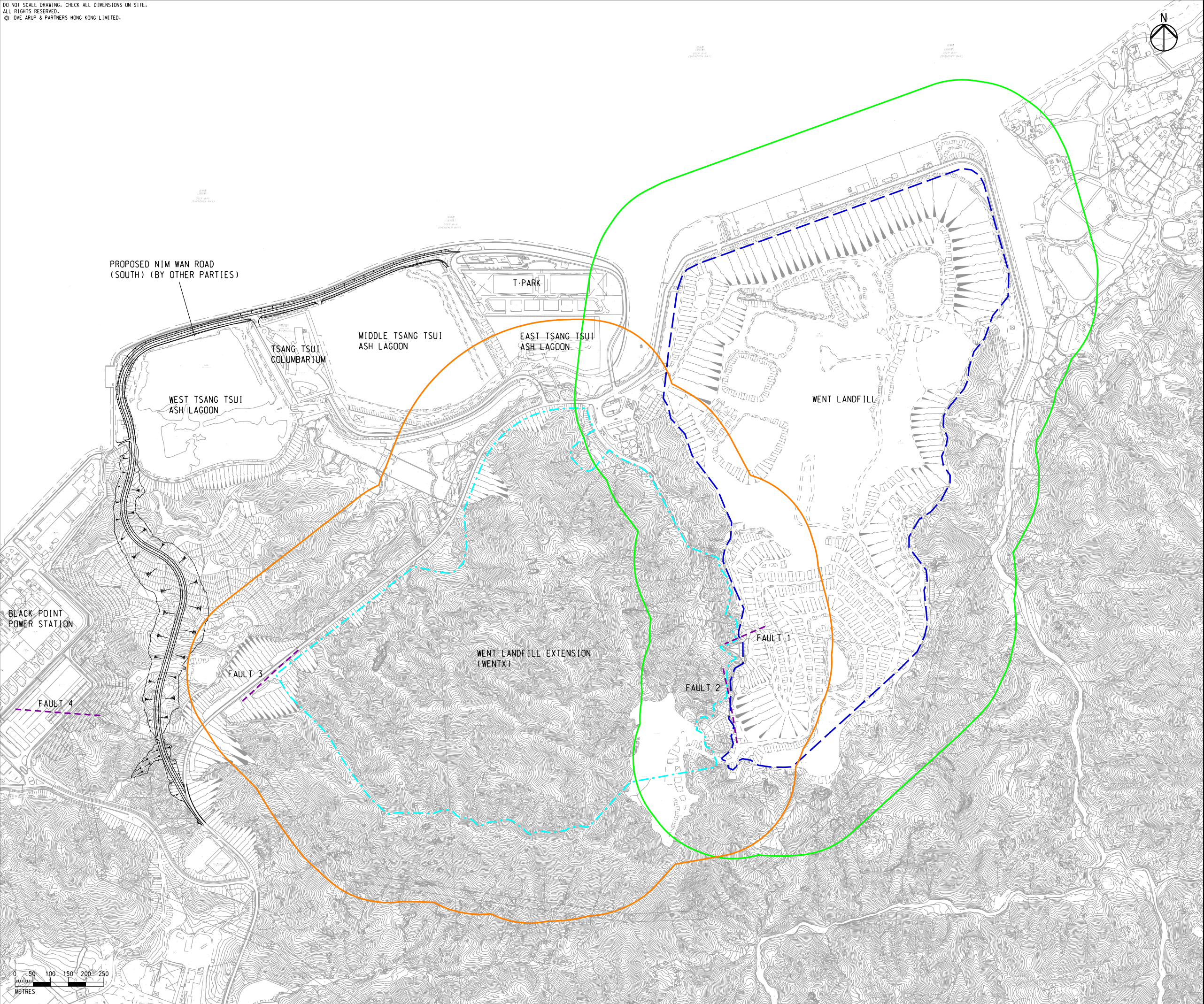
Drawing title
**HABITAT MAP WITH
LOCATIONS OF SPECIES OF
CONSERVATION IMPORTANCE**

Drawing no.	FIGURE 8.1	Rev.	A
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Scale	AS SHOWN	Status	PRELIMINARY

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- LEGEND
- WENTX WASTE BOUNDARY
 - WENT LANDFILL WASTE BOUNDARY
 - PROPOSED NIM WAN ROAD (SOUTH) (BY OTHER PARTIES)
 - LANDFILL GAS CONSULTATION ZONE OF WENTX
 - LANDFILL GAS CONSULTATION ZONE OF WENT LANDFILL
 - FAULT

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Drawing title			
LANDFILL CONSULTATION ZONE			
Drawing no.			Rev.
FIGURE 9.1			A
Drawn	Date	Checked	Approved
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Scale	Status		
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LEGEND

- WENT LANDFILL EXTENSION (WENTX) BOUNDARY
- WENTX WASTE BOUNDARY
- WENT LANDFILL WASTE BOUNDARY
- PROPOSED NIM WAN ROAD (SOUTH) (BY OTHER PARTIES)
- LANDFILL GAS CONSULTATION ZONE OF WENTX
- LANDFILL GAS CONSULTATION ZONE OF WENT LANDFILL
- LANDFILL GAS CUT-OFF TRENCH BARRIER

PROPOSED NIM WAN ROAD
(SOUTH) (BY OTHER PARTIES)

T-PARK

EAST TSANG TSUI
ASH LAGOON

MIDDLE TSANG TSUI
ASH LAGOON

TSANG TSUI
COLUMBARIUM

WEST TSANG TSUI
ASH LAGOON

WENT LANDFILL

WENT LANDFILL EXTENSION
(WENTX)

BLACK POINT
POWER STATION

0 50 100 150 200 250
METRES

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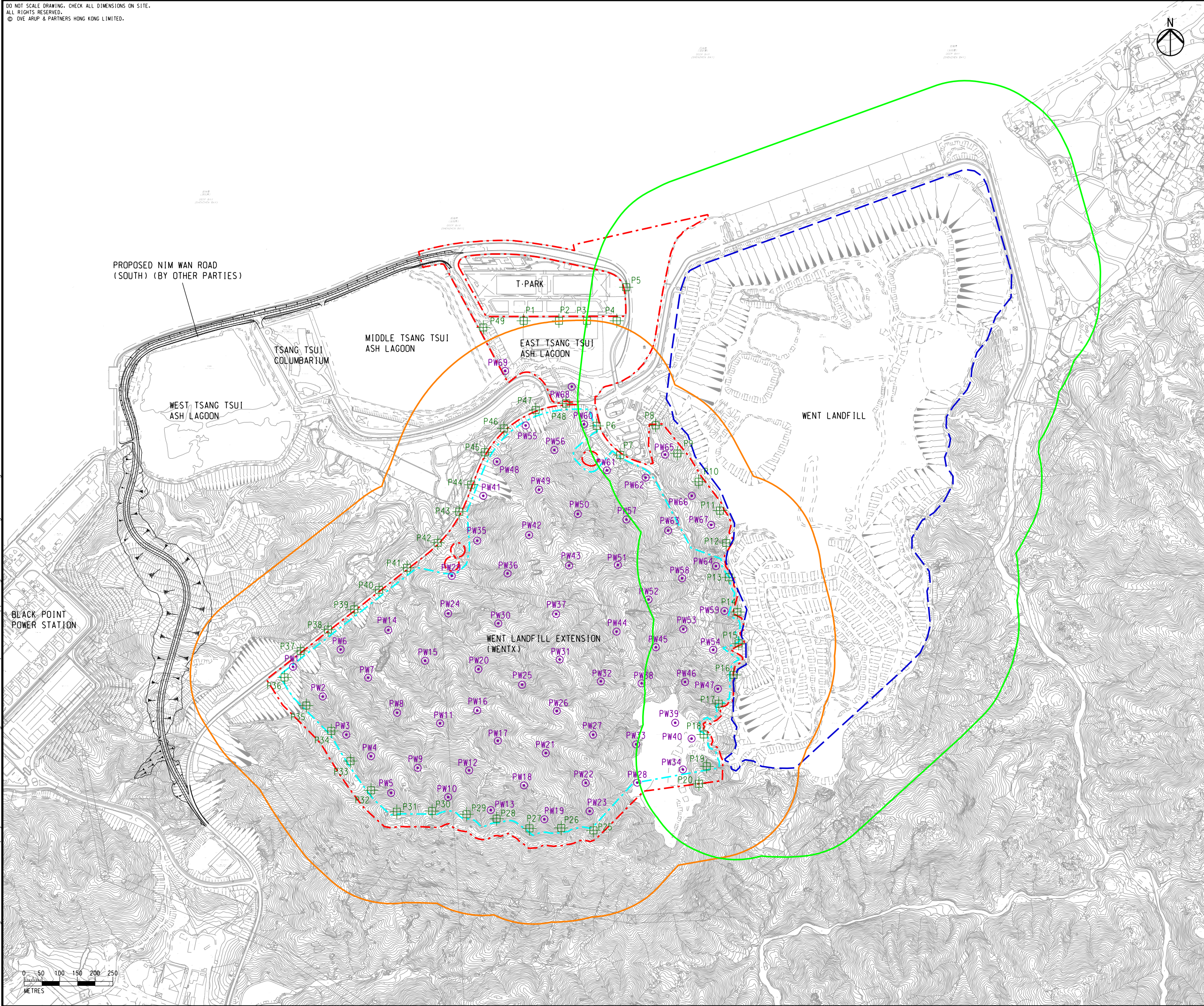
Drawing title
**LANDFILL GAS CUT-OFF
TRENCH BARRIER**

Drawing no. FIGURE 9.2		Rev. A	
Drawn GL	Date 04/22	Checked IL	Approved FC
Scale 1:10000 @A3		Status PRELIMINARY	

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LEGEND

- WENT LANDFILL EXTENSION (WENTX) BOUNDARY
- WENTX WASTE BOUNDARY
- WENT LANDFILL WASTE BOUNDARY
- PROPOSED NIM WAN ROAD (SOUTH) (BY OTHER PARTIES)
- LANDFILL GAS CONSULTATION ZONE OF WENTX
- LANDFILL GAS CONSULTATION ZONE OF WENT LANDFILL
- FIXED LOCATIONS FOR GAS MONITORING PROPOSED P1 - P49
- FIXED LOCATIONS FOR GAS WELLS PROPOSED PW1 - PW69

Rev	Description	By	Date
B	SECOND ISSUE	GL	07/22
A	FIRST ISSUE	GL	04/22

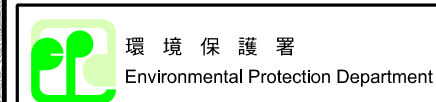
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Drawing title
**LANDFILL GAS MONITORING
LOCATIONS FOR WENTX**

Drawing no. FIGURE 9.3		Rev. B	
Drawn GL	Date 07/22	Checked IL	Approved FC
Scale 1:10000 @A3		Status PRELIMINARY	

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VSR 4

832000 N



809000 E

810000 E

811000 E

812000 E

831000 N

831000 N

830000 N

809000 E

810000 E

811000 E

0 50 100 150 200 250
METRES
1 : 5000

PROPOSED NIM WAN ROAD (SOUTH)
(BY OTHER PARTIES)

TSANG TSUI
COLUMBARIUM

EXISTING CLP QUAY

WEST TSING TSUI
ASH LAGOON

MIDDLE TSING TSUI
ASH LAGOON

VSR 12
T-PARK

VSR 2

VSR 5

VSR 6

VSR 3

WENT LANDFILL EXTENSION
(WENTX)

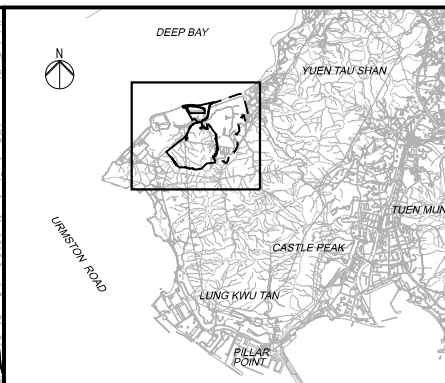
WENT LANDFILL

BLACK POINT
POWER STATION

TSING SHAN FIRING RANGE

LUNG KWU SHEUNG TAN

VSR 7



KEY PLAN

LEGEND

- BOUNDARY OF WENT LANDFILL
- WASTE BOUNDARY OF WENTX
- PROJECT BOUNDARY OF WENTX
- BOUNDARY OF TSING SHAN FIRING RANGE
- VISUAL SENSITIVE RECEIVERS IDENTIFIED IN WENTX ENVIRONMENTAL IMPACT ASSESSMENT REPORT (AEIAR-147/2009)
- NEW VISUAL SENSITIVE RECEIVERS IDENTIFIED IN THE ENVIRONMENTAL REVIEW

C	THIRD ISSUE	CC	04/22
B	SECOND ISSUE	CC	02/22
A	FIRST ISSUE	IC	01/17
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DRAWING TITLE

LOCATIONS OF VISUAL SENSITIVE RECEIVER PLAN

Drawing no.	FIGURE 9.4	Rev.	C
Drawn	CN	Date	01/17
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Scale	1:5000 @A1	Status	PRELIMINARY

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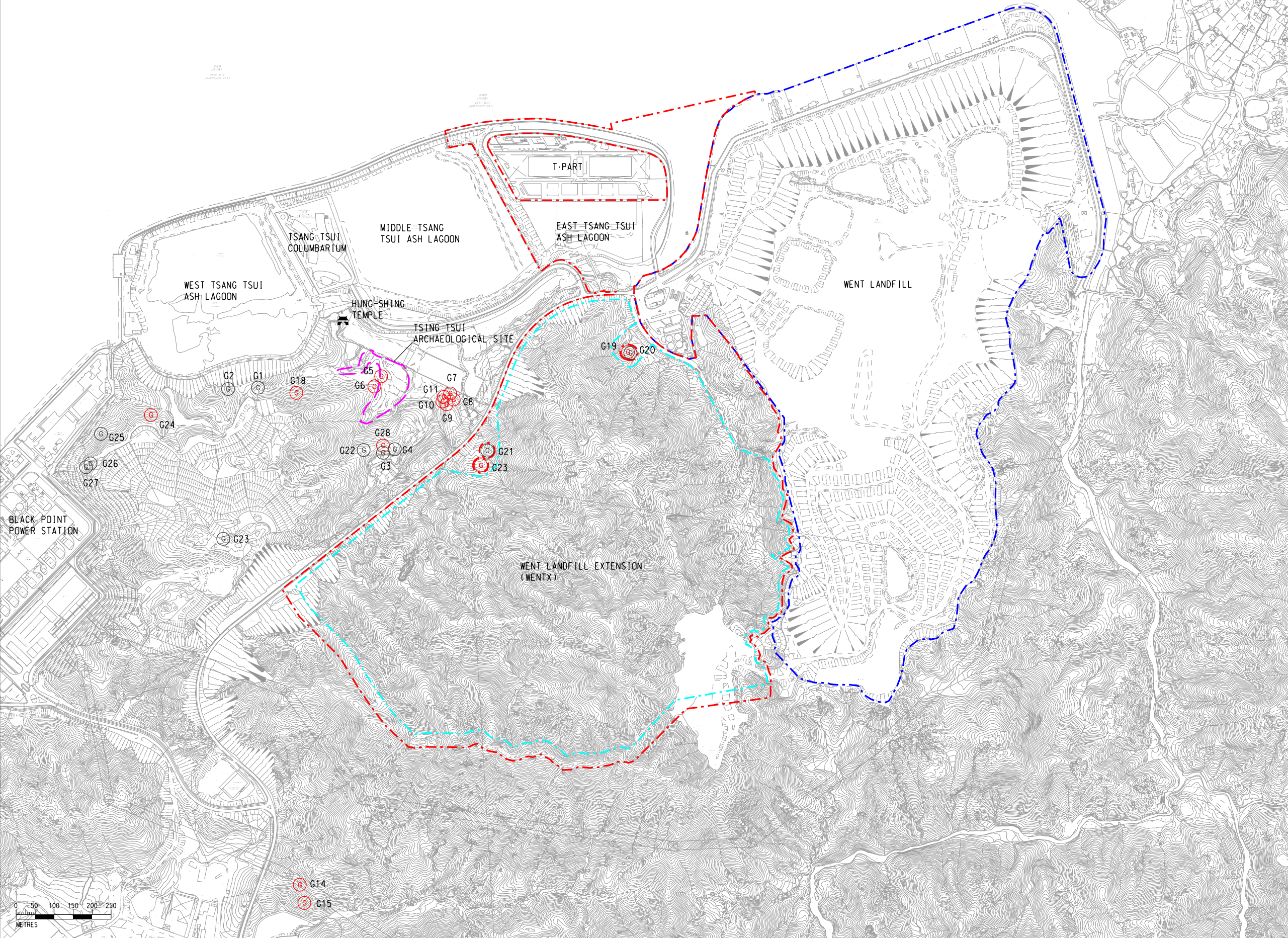
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EXISTING VSR POINT	
VSR1	USERS OF BLACK POINT POWER STATION
VSR2	USERS OF WENT LANDFILL SITE
VSR3	HIKERS OF CASTLE PEAK (ADJACENT TO TSING SHAN FIRING RANGE)
VSR4	PASSENGERS OF FERRY SERVICES
VSR5	ROAD USERS OF NIM WAN ROAD
VSR6	RESIDENTS OF HA PAK NAI
VSR7	RESIDENTS OF LUNG KWU TAN
UPDATED VSR POINT	
VSR11	WORKERS AND VISITORS AT PROPOSED COLUMBARIUM
VSR12	WORKERS AT T-PARK

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- LEGEND
- WENT LANDFILL EXTENSION (WENTX) BOUNDARY
 - WENTX WASTE BOUNDARY
 - WENT LANDFILL BOUNDARY
 - TSING TSUI ARCHAEOLOGICAL SITE
 - GRAVE/URNS IDENTIFIED
 - GRAVE/URNS CANNOT BE IDENTIFIED
 - EXISTING TEMPLE



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LOCATION OF TSING TSUI
ARCHAEOLOGICAL SITE
AND BUILT HERITAGE

Drawing no.		Rev.	
FIGURE 9.5		A	
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DEEP BAY

URMSTON ROAD

TUEN MUN

HA PAK NAI

EXISTING T-PARK

EXISTING WENT LANDFILL

PROPOSED WENT
LANDFILL EXTENSION

BLACK POINT
POWER STATION

LUNG KWU SHEUNG TAN

黑角咀
Black Point
Lung Koo Tsui

大塘咀
TAI TANG SHUI



LEGEND

- WENT LANDFILL EXTENSION (WENTX) BOUNDARY
- WENT LANDFILL BOUNDARY

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Drawing title			
FIGURE 1 FOR VARIATIONS OF ENVIRONMENTAL PERMIT FOR WENT LANDFILL EXTENSION			
Drawing no.			Rev.
FIGURE 10.1			A
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Scale	Status		
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