

Application No. : Reference No. : (For official use)
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FORM 5
ENVIRONMENTAL IMPACT ASSESSMENT ORDINANCE
(CHAPTER 499)
SECTION 13(1)

Application for Variation of an Environmental Permit

PART A PREVIOUS APPLICATIONS

<input type="checkbox"/> No previous application for variation of an environmental permit. <input checked="" type="checkbox"/> The environmental permit was previously amended. Application No. : <u>VEP-517/2016</u>

PART B DETAILS OF APPLICANT

B1. Name : (person or company) Highways Department <small>[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.]</small>					
B2. Business Registration No. : (if applicable)	<table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 25%;"> </td> <td style="width: 25%;">- </td> <td style="width: 25%;">- </td> <td style="width: 25%;">- - </td> </tr> </table>		-	-	- -
	-	-	- -		
B3. Correspondence Address : <div style="background-color: black; height: 30px; width: 100%;"></div>					
B4. Name of Contact Person :	B5. Position of Contact Person :				
<div style="background-color: black; height: 20px; width: 100%;"></div>	<div style="background-color: black; height: 20px; width: 100%;"></div>				
B6. Telephone No. :	B7. Fax No. :				
<div style="background-color: black; height: 20px; width: 100%;"></div>	<div style="background-color: black; height: 20px; width: 100%;"></div>				
B8. E-mail Address : (if any)					
<div style="background-color: black; height: 20px; width: 100%;"></div>					

PART C DETAILS OF CURRENT ENVIRONMENTAL PERMIT

C1. Name of the Current Environmental Permit Holder : Highways Department		
C2. Application No. of the Current Environmental Permit : <u>VEP-517/2016</u>		
C3. The Current Environmental Permit was Issued in : month / year <div style="text-align: center;"> <table border="1" style="display: inline-table; margin-right: 10px;"> <tr><td> 0 1 </td></tr> </table> <table border="1" style="display: inline-table;"> <tr><td> 2 0 1 7 </td></tr> </table> </div>	0 1	2 0 1 7
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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.

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>Table 1 – “(f) Type of Mitigation Measures: 7m high semi-enclosure with opening at south; Location: GRF (Ferry Street section) Southbound” “(p) Type of Mitigation Measures: Cantilevered barrier at a height 5m with 2m cantilever inclined at 45°; Location: GRF (Ferry Street section)” “(u) Type of Mitigation Measures: Vertical barrier at a height 3.3m; Location: GRF (Ferry Street section)” “(v) Type of Mitigation Measures: Vertical barrier at a height 3.8m; Location: GRF (Ferry Street section) (central divider)” Figure 5c – Location of Noise Mitigation Measures for Road Traffic Noise (West Portion)</p>	<p>Proposed updates to the list of noise mitigation measures to be implemented at Gascoigne Road Flyover (GRF) prior to the commencement of operation of the Project Please refer to Section 3.1 of the attached Supporting Document for details.</p>	<p>Please refer to Section 3.1 of the attached Supporting Document for details.</p>	<p>Please refer to Section 3.1 of the attached Supporting Document.</p>	<p>Please refer to Section 3.1 of the attached Supporting Document.</p>	<p>Please refer to Section 3.1 of the attached Supporting Document.</p>	<p>Not required</p>

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<p>Condition 2.16 – Submission for Mitigating Landscape and Visual Impact before operation of the Project</p> <p>The landscape and visual mitigation measures shall be implemented in accordance with the recommendations of the Landscape Mitigation Plan(s) deposited under Condition 2.8 above. The Permit Holder shall, at least one month before the commencement of operation of the Project, deposit with the Director four hard copies and one electronic copy of the As-Built Drawing(s) of the Project, which shall be certified by the ET Leader and verified by the IEC as conforming to the recommendations of the Landscape Mitigation Plan(s) deposited under Condition 2.8 above. The landscape and visual mitigation measures shall be properly maintained during operation of the Project.</p>	<p>Condition 2.16 – <u>Submission Measures for Mitigating Landscape and Visual Impact before during operation of the Project</u></p> <p>The landscape and visual mitigation measures shall be implemented in accordance with the recommendations of the Landscape Mitigation Plan(s) deposited under Condition 2.8 above. The Permit Holder shall, at least <u>within one month before after</u> the commencement of operation <u>of the corresponding parts of landscaped works</u> of the Project, deposit with the Director four hard copies and one electronic copy of the As-Built Drawing(s) of the Project, which shall be certified by the ET Leader and verified by the IEC as conforming to the recommendations of the Landscape Mitigation Plan(s) deposited under Condition 2.8 above. The landscape and visual mitigation measures shall be properly maintained during operation of the Project.</p>	<p>Please refer to Section 3.2 of the attached Supporting Document.</p>	<p>Please refer to Section 3.2 of the attached Supporting Document.</p>	<p>Please refer to Section 3.2 of the attached Supporting Document.</p>	<p>Please refer to Section 3.2 of the attached Supporting Document.</p>	<p>Not required</p>

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<p>Condition 2.17 – To mitigate traffic noise impact arising from the Project, the Permit Holder shall implement all noise mitigation measures as shown in Table 1 and Figures 5a to 5d of this Permit before commencement of operation of the Project. All noise mitigation measures implemented shall be properly maintained during operation of the Project.</p> <p>Table 1 – “(z) Type of Mitigation Measures: Full enclosure noise decking; Location: Kowloon City Ferry Pier Public Transport Interchange; Remarks: [1], [2]”</p>	<p>Condition 2.17 – To mitigate traffic noise impact arising from the Project, the Permit Holder shall implement all noise mitigation measures as shown in Table 1 except item (z) and Figures 5a to 5d of this Permit before commencement of operation of the Project. <u>The noise mitigation measures as referred in item (z) of Table 1 would be implemented before the operation of permanent re-provisioned Kowloon City Ferry Pier Public Transport Interchange.</u> All noise mitigation measures implemented shall be properly maintained during operation of the Project.</p> <p>Table 1 – “(z) Type of Mitigation Measures: Full enclosure noise decking; Location: Kowloon City Ferry Pier Public Transport Interchange; Remarks: [1], [2]”</p>	<p>Please refer to Section 3.3 of the attached Supporting Document.</p>	<p>Please refer to Section 3.3 of the attached Supporting Document.</p>	<p>Please refer to Section 3.3 of the attached Supporting Document.</p>	<p>Please refer to Section 3.3 of the attached Supporting Document.</p>	<p>Not required</p>

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<p>Condition 2.20 – The Permit Holder shall, no later than one month before the commencement of operation of the Project, deposit with the Director four hard copies and one electronic copy of the APS Commissioning Test Report, which shall be certified by the ET Leader and verified by the IEC as conforming to the removal efficiency specified under Condition 2.18 above.</p>	<p>Condition 2.20 – The Permit Holder shall, no later than one month before the commencement of operation of the Project, <u>in accordance with the submission schedule as stipulated in the approved APS Commissioning Test Plan described in Condition 2.19 above, or otherwise approved by the Director,</u> deposit with the Director four hard copies and one electronic copy of the APS Commissioning Test Report, which shall be certified by the ET Leader and verified by the IEC as conforming to the removal efficiency specified under Condition 2.18 above.</p>	<p>Please refer to Section 3.4 of the attached Supporting Document.</p>	<p>Please refer to Section 3.4 of the attached Supporting Document.</p>	<p>Please refer to Section 3.4 of the attached Supporting Document.</p>	<p>Please refer to Section 3.4 of the attached Supporting Document.</p>	<p>Not required</p>

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<p>Condition 2.21 – The Permit Holder shall, no later than one month before the commencement of operation of the Project, submit to the Director for approval four hard copies and one electronic copy of a APS Performance Monitoring and Contingency Plan, which shall be certified by the ET Leader and verified by the IEC to provide monitoring details of the performance of the APS and the contingency plan for the occasion that the performance of APS during operation could not achieve the removal efficiency specified under Condition 2.18 above. The approved APS Performance Monitoring and Contingency Plan shall be fully and properly implemented.</p>	<p>Condition 2.21 – The Permit Holder shall, no later than one month before the commencement of operation of the Project, <u>or otherwise approved by the Director,</u> submit to the Director for approval four hard copies and one electronic copy of a APS Performance Monitoring and Contingency Plan, which shall be certified by the ET Leader and verified by the IEC to provide monitoring details of the performance of the APS and the contingency plan for the occasion that the performance of APS during operation could not achieve the removal efficiency specified under Condition 2.18 above. The approved APS Performance Monitoring and Contingency Plan shall be fully and properly implemented.</p>	<p>Please refer to Section 3.4 of the attached Supporting Document.</p>	<p>Please refer to Section 3.4 of the attached Supporting Document.</p>	<p>Please refer to Section 3.4 of the attached Supporting Document.</p>	<p>Please refer to Section 3.4 of the attached Supporting Document.</p>	<p>Not required</p>

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.

[Redacted Signature]

Signature of Applicant

[Redacted Name]

Full Name in Block Letters

[Redacted Position]

Position



on behalf of Major Works Project Management Office
Highways Department
Company Name and Chop (as appropriate)

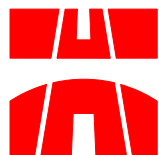
26 May 2021
Date

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.

PWP ITEM NO. 6461TH
CENTRAL KOWLOON ROUTE – MAIN WORKS

**Supporting Document for Application of
Variation of Environmental Permit No. EP-457/2013/C**



**MAJOR WORKS PROJECT MANAGEMENT OFFICE
HIGHWAYS DEPARTMENT**

26 May 2021

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1. INTRODUCTION

- 1.1 The Central Kowloon Route (CKR) is a Designated Project (DP) under Schedule 2 of the Environmental Impact Assessment Ordinance (EIAO) (Chapter 499). After public inspection and consultation with the Advisory Council on the Environment, the EIA report for the Project was approved by the Environmental Protection Department with conditions in July 2013 and Environmental Permit (EP) No. EP-457/2013 was issued under the EIA Ordinance in August 2013.
- 1.2 Subsequently, Variations of Environmental Permit (VEPs) were applied for EP-457/2013 and the latest EP No. EP-457/2013/C was issued by the Director of Environmental Protection (DEP) on 16 January 2017. The following table summarises the list of amendments incorporated into the EP under previous VEP applications.

Records of Previous VEPs

Application No.	Date of Application	List of Amendments Incorporated into the EP	Date of Amendment
VEP-440/2014	9 June 2014	<ul style="list-style-type: none"> • Vary Table 1 and Figure 4c in Part C of the Environmental Permit EP-457/2013. • Vary Part B, Figure 1 of the Environmental Permit EP-457/2013. 	2 July 2014
VEP-473/2015	27 March 2015	<ul style="list-style-type: none"> • Vary Condition 2.5 and add Figure 2 in Part C of the Environmental Permit EP-457/2013/A to specify a 'no works zone' and the implementation period. • Vary Table 1 and Figure 4b in Part C of the Environmental Permit EP-457/2013/A to show the modified noise mitigation measures. • Vary Figure 1 in Part B and Figure 4b in Part C of the Environmental Permit EP-457/2013/A to include the realigned Lin Cheung Road and widened Connection A. • Renumber Figure 2a, Figure 2b, Figure 3 and Figure 4a to Figure 4d in Part C of the Environmental Permit EP-457/2013/A. 	22 April 2015
VEP-517/2016	20 December 2016	<ul style="list-style-type: none"> • Add a new Condition 2.15 in Part C of the Environmental Permit EP-457/2013/B to specify the mitigation measures for the operation of a new barging facility. • Vary Figure 1 in Part B of the Environmental Permit EP-457/2013/B to include new barging facility and construction and demolition material stockpiling area. • Vary Table 1 and Figures 5b and 5c in Part C of the Environmental Permit EP-457/2013/B to show the modified noise mitigation measures. • Vary Condition 2.8 in Part C of the Environmental Permit EP-457/2013/B to address the updates of the landscape and visual mitigation measures. • Renumber Conditions 2.15 – 2.20 in Part C of Environmental Permit No. EP-457/2013/B as Conditions 2.16 – 2.21 in Part C of Environmental Permit No. 457/2013/C. 	16 January 2017

2. PURPOSE OF THIS DOCUMENT

- 2.1 This document has been prepared in complement with the duly-signed submission of Form 5 – “Application for Variation of an Environmental Permit” under the EIAO to discuss the possible environmental changes that may result and confirm that the proposed changes will be within the environmental criteria in accordance with the Technical Memorandum of the EIAO (EIAO-TM). It forms part of the submission to DEP for the application of a variation of the current EP for the Project (EP-457/2013/C).

3. PROPOSED AMENDMENTS

3.1 PROPOSED AMENDMENT NO. 1

Background

- 3.1.1 Notwithstanding the noise mitigation measures at the Gascoigne Road Flyover (GRF) under the CKR project will fully meet the EIAO requirements, some residents of the Prosperous Garden (PG) had been persistently demanding for the construction of additional noise reduction measures (i.e. two sections of additional full noise enclosures) at GRF which are beyond the mitigation measures required under the Environmental Permit EP-457/2013/C (current EP). To secure the support of the Legislative Council (LegCo) for the funding application for CKR, the Government had committed at the Public Works Subcommittee (PWSC) meeting on 24 June 2017 to implement additional noise reduction measures under a separate project (PWP Item No. 6875TH), and to synchronize the construction programme with that of the CKR as far as practicable.
- 3.1.2 As shown in Diagram 1, implementation of the additional noise reduction measures under PWP Item No. 6875TH will in effect bring the following changes to the noise mitigation measures set out in the current EP:-
- (i) replacement of the originally proposed semi-enclosure, cantilevered noise barrier and vertical barrier (namely ID S03, C08 and V06 in the EP) at GRF (Ferry Street Section) with a full noise enclosure of approximately 90-metre (m) long;
 - (ii) extension of the full noise enclosure (ID F02 in EP) northward by approximately 40m, with 30m length of vertical openings on the side farther away from Yaumati Catholic Primary School (YMTCPs); and

- (iii) reduction of length of the vertical noise barrier (ID V05 in EP) at GRF (Ferry Street Section) due to (i) above, and realignment of the at-grade cantilevered noise barrier (ID C07 in EP) at Ferry Street due to (ii) above.
- 3.1.3 For the sake of clarity, implementation of the change mentioned in item (i) of paragraph 3.1.2 above will mean that the semi-enclosure ID S03, the cantilevered noise barrier ID C08 as well as the vertical barrier ID V06 in the current EP will no longer be required. About 55m length of the vertical noise barrier ID V05 will also become obsolete. In addition, to cater for the foundation works at the extended section of the full noise enclosure near Yaumati Catholic Primary School (YMTCPs) (i.e. item (ii) of paragraph 3.1.2), a section of Ferry Street and consequentially a section of the at-grade cantilevered noise barrier ID C07 will need to be slightly re-aligned.
- 3.1.4 The scheme and plans for the road works associated with the additional noise reduction measures had been gazetted under the Roads (Works, Use and Compensation) Ordinance (Cap. 370) on 15 and 22 March 2019. With no objection received during the statutory period, the amended scheme and plans for the CKR project as well as that of PWP Item No. 6875TH were authorized on 24 May 2019.
- 3.1.5 With the funding for PWP Item No. 6875TH approved by the Finance Committee of the LegCo in July 2020, the Highways Department is firmly committed to proceed with the construction of the additional noise reduction measures concurrently with the CKR project to achieve commissioning of both projects by 2025.
- 3.1.6 Given that the additional noise reduction measures will be carried out under the separate PWP Item No. 6875TH, these additional works do not belong to the CKR project and hence their implementation shall not form part of the EP conditions for the CKR project. To ensure the environmental compliance of these works, we will ensure that the environmental mitigation measures identified in the Preliminary Environmental Review (PER) for the non-designated project are implemented during their construction and operation.

Proposed Amendment No. 1

- 3.1.7 It is proposed to make the following amendments to Table 1 of the current EP as a result of the implementation of the additional noise reduction measures under PWP Item No. 6875TH.

[Note: Proposed additions are underlined>. Proposed deletions are in strikethrough.]

Table 1 – Noise mitigation measures to mitigate traffic noise impact (referred in Condition 2.17)

	ID	Type of Mitigation Measures	Approximate Length	Location	Remarks	Proposed Amendments
(f)	S03	7m high semi-enclosure with opening at south	85 m	GRF (Ferry Street section) Southbound	[1],[2]	To be deleted from Table 1 due to implementation of additional noise reduction measures in PWP Item No. 6875TH.
(p)	C08	Cantilevered barrier at a height 5m with 2m cantilever inclined at 45°	15 m	GRF (Ferry Street section)	[1],[2]	To be deleted from Table 1 due to implementation of additional noise reduction measures in PWP Item No. 6875TH.
(u)	V05	Vertical barrier at a height 3.3m	110 45 m	GRF (Ferry Street section)	[1],[2]	Part of the vertical barrier (about 55m in length) is no longer required due to implementation of additional noise reduction measures in PWP Item No. 6875TH. The length of the vertical barrier ID V05 will therefore be reduced to 45m.
(v)	V06	Vertical barrier at a height 3.8m	85 m	GRF (Ferry Street section) (central divider)	[1],[2]	To be deleted from Table 1 due to implementation of additional noise reduction measures in PWP Item No. 6875TH.

3.1.8 Accordingly, Figure 5c of the current EP will also be amended to reflect these changes. Please refer to Diagram 2 highlighting the proposed amendments (with remarks) and Diagram 3 showing the amended Figure 5c to be adopted in the revised EP.

Reasons for Proposed Amendment No. 1

3.1.9 Since the additional noise reduction measures will be implemented under the standalone PWP Item No. 6875TH which is not a designated project under the EIAO, an EP is not required for their construction and operation. Moreover, the proposed additional noise reduction measures are beyond the mitigation measures required under the EIAO, and do not belong to the scope of works of the CKR project. For this reason, it is not necessary to include them into the list of noise mitigation measures to be implemented (i.e. Table 1 and Figure 5c) in the revised EP. Nevertheless, to highlight the inter-relationship between both projects, it is proposed to set out the location of the additional noise reduction measures in Figure 5c for public information, albeit their implementation would not form part of the conditions of the revised EP.

Environmental Changes and Performance Arising From Amendment No. 1

3.1.10 A Preliminary Environmental Review (PER) had been conducted for PWP Item No. 6875TH and the report had been approved by the Director of Environmental Protection (DEP) in June 2019. The PER Study had concluded that the additional noise reduction measures, in combination with other noise mitigation measures and low noise surfacing set out in the varied EP of the CKR Project, will achieve environmental benefits beyond the requirements under the EIAO. Based on the noise assessment modelling results, the road traffic noise level at nearby

dwelling will be further mitigated with the implementation of the additional noise reduction measures. The PER Study had also demonstrated that no long-term unacceptable environmental impacts (including noise, air, water and waste) is anticipated due to this proposed amendment.

- 3.1.11 It is also concluded in the PER Study that with the proper implementation of the recommended mitigation measures and good site practice in place, the environmental impacts associated with the additional noise reduction measures could be contained within established standards, and the adverse impacts during the construction phase would be minimized.
- 3.1.12 In terms of environmental performance, with the implementation of the revised noise mitigation measures and additional noise reduction measures, this proposed variation will not result in material change leading to adverse residual impact to the environment and the community. The environmental performance requirements as set out in the approved EIA report for the CKR project will remain valid after the proposed amendment. No additional measures and change to the current environmental monitoring and audit requirements are therefore required.

3.2 PROPOSED AMENDMENT NO. 2

Background

- 3.2.1 As stipulated in Condition 2.16 of Environmental Permit EP-457/2013/C (current EP), the landscape and visual mitigation measures shall be implemented in accordance with the recommendations of the Landscape Mitigation Plan(s) deposited under Condition 2.8 of the current EP. The Permit Holder shall, at least one month before the commencement of operation of the Project, deposit with the Director four hard copies and one electronic copy of the As-Built Drawing(s) of the Project, which shall be certified by the ET Leader and verified by the IEC as conforming to the recommendations of the Landscape Mitigation Plan(s) deposited under Condition 2.8 of the current EP. The landscape and visual mitigation measures shall be properly maintained during operation of the Project.
- 3.2.2 As stipulated in Condition 2.10 of the current EP, the Permit Holder shall incorporate more innovative designs and greening features in the detailed planning of the landscape features on deckings and ventilation buildings, e.g. planting of trees, preferably scented trees, to provide greening in Kowloon area, tree planting arranged in east-west orientation to create wind corridor effect and use of roof garden/vertical green walls to enhance aesthetic effect. The Permit Holder shall monitor performance of the contractors to ensure that sufficient and suitable soil substrates will be provided for the planting and that there shall be good and sustained

horticultural management/maintenance.

- 3.2.3 This section aims to propose the submission time of the as-built drawings of the landscape mitigation measures of the corresponding sections of the CKR project for clarity and clarify the timeframe of maintaining the measures to mitigate the landscape and visual impact on deckings and ventilation buildings.

Proposed Amendment No. 2

- 3.2.4 It is proposed to make the following amendments to Condition 2.16 of the current EP:

[Note: Proposed additions are underlined. Proposed deletions are in strikethrough.]

“~~Submission~~ Measures for Mitigating Landscape and Visual Impact ~~before~~ during operation of the Project

2.16 The landscape and visual mitigation measures shall be implemented in accordance with the recommendations of the Landscape Mitigation Plan(s) deposited under Condition 2.8 above. The Permit Holder shall, at least within one month ~~before~~ after the commencement of operation of the corresponding parts of landscaped works of the Project, deposit with the Director four hard copies and one electronic copy of the As-Built Drawing(s) of the Project, which shall be certified by the ET Leader and verified by the IEC as conforming to the recommendations of the Landscape Mitigation Plan(s) deposited under Condition 2.8 above. The landscape and visual mitigation measures shall be properly maintained during operation of the Project.”

Reasons for Proposed Amendment No. 2

- 3.2.5 Due to the actual completion time of corresponding sections of the CKR project, the completion of landscape works (implemented according to the respective landscape mitigation plans submitted under different further Environmental Permits) at corresponding sections of the CKR will be different and will not be completed at the same time. Moreover, details in the as-built drawing of landscape works will be varied after liaisons with different maintenance parties or stakeholders and will require several rounds of changes before the completed landscape works can be handed over to corresponding maintenance parties and the as-built drawings can be finalized. After handing over, the landscape operation works by the maintenance party will commence. Hence, it is more practicable to submit the as-built drawings of corresponding sections of CKR within one month after the commencement of operation of the corresponding parts of landscape works of CKR project and these landscape and visual mitigation measures under Condition 2.8 of current EP shall be properly maintained upon commencement of the operation of corresponding parts of landscape works during operation of the Project.

Environmental Changes and Performance Arising From Amendment No. 2

3.2.6 Measures to mitigate the landscape and visual impact on deckings and ventilation buildings will be properly maintained upon completion of the mitigation measures.

3.2.7 The landscape and visual mitigation measures for operation recommended in the EIA report (AEIAR-171/2013) will be implemented without changes. Hence, there will be no additional or significant landscape and visual impact on the Visual Sensitive Receivers (VSRs).

3.3 PROPOSED AMENDMENT NO. 3

Background

3.3.1 As stipulated in Condition 2.17 of Environmental Permit EP-457/2013/C (current EP), the Permit Holder shall implement all noise mitigation measures as shown in Table 1 and Figures 5a to 5d of this Permit before commencement of operation of the Project to mitigate traffic noise impact arising from the project. All noise mitigation measures implemented shall be properly maintained during operation of the Project.

Table 1 – Noise mitigation measures to mitigate traffic noise impact (referred in Condition 2.17)

	ID	Type of Mitigation Measures	Approximate Length	Location	Remarks
(z)	N/A	Full enclosure noise decking	N/A	Kowloon City Ferry Pier Public Transport Interchange	[1],[2]

3.3.2 As shown in Diagram 4, there is a full enclosure noise decking in the shadowed area highlighted in blue.

3.3.3 Due to the actual site planning of the CKR project, the current temporary Public Transport Interchange would be maintained before the operation of the CKR and the full enclosure noise decking was designed for mitigating the noise generated by the permanent re-provisioned PTI, we therefore propose to complete the full enclosure noise decking with the permanent re-provisioned Kowloon City Ferry Pier Public Transport Interchange in place.

Proposed Amendment No. 3

3.3.4 It is proposed to make the following amendments to Condition 2.17 and Table 1 of the current EP:

[Note: Proposed additions are underlined. Proposed deletions are in strikethrough.]

2.17 To mitigate traffic noise impact arising from the Project, the Permit Holder shall implement all noise mitigation measures as shown in Table 1 except item (z) and Figures 5a to 5d of this Permit before commencement of operation of the Project. **The noise mitigation measures as referred in item (z) of Table 1 would be implemented before the operation of permanent re-provisioned Kowloon City Ferry Pier Public Transport Interchange.** All noise mitigation measures implemented shall be properly maintained during operation of the Project.

Table 1 – Noise mitigation measures to mitigate traffic noise impact (referred in Condition 2.17)

	ID	Type of Mitigation Measures	Approximate Length	Location	Remarks	Proposed Amendment
(z)	N/A	Full enclosure noise decking	N/A	Kowloon City Ferry Pier Public Transport Interchange	H [2]	To delete remark [1] since it is not applicable to item (z)

Reasons for Proposed Amendment No. 3

3.3.5 The current temporary PTI stage would be maintained upon the operation of the CKR. The permanent re-provisioned PTI with landscape decking would be constructed in the remaining works CKR contract after the commissioning of CKR.

3.3.6 As the CKR near Ma Tau Kwok Area is a road tunnel with its traffic running beneath the PTI, the full enclosure noise decking is not designed to mitigate the noise generated by operation of CKR but the permanent re-provisioned PTI. We therefore considered to complete the construction of full enclosure noise decking with the permanent re-provisioned PTI is a more cost effective and environmental friendly optimized schemes to avoid the abortive works.

Environmental Changes and Performance Arising From Amendment No. 3

3.3.7 No noise circumstance is expected to be changed and the environmental and the community will not be affected by the proposed variation.

3.4 PROPOSED AMENDMENT NO. 4

Background

3.4.1 As stipulated in Condition 2.18 of Environmental Permit EP-457/2013/C (current EP), an air purification system (APS), with a removal efficiency of at least 80% for particulate and at least 80% for NO₂, shall be adopted to filter the pollutant inside the CKR tunnel before discharging

to the atmosphere via the ventilation buildings.

- 3.4.2 Condition 2.19 of the current EP requires that the Permit Holder shall, no later than three months before the commencement of operation of the Project, submit to the Director for approval four hard copies and one electronic copy of a APS Commissioning Test Plan, which shall be certified by the ET Leader and verified by the IEC, to provide schedule and methodology for the commissioning test of the adopted APS described under Condition 2.18 of the current EP.
- 3.4.3 Condition 2.20 of the current EP sets out that the Permit Holder shall, no later than one month before the commencement of operation of the Project, deposit with the Director four hard copies and one electronic copy of the APS Commissioning Test Report, which shall be certified by the ET Leader and verified by the IEC as conforming to the removal efficiency specified under Condition 2.18 of the current EP.

Proposed Amendment No. 4

3.4.4 In practice, the testing and commissioning of the APS will be implemented in stages spanning across the Construction and Operation phases of the Project. Drawing from the previous experience from the Central – Wanchai Bypass project, it is recognized that some testing procedures of the APS, such as the efficiency tests for verifying the removal efficiency as well as the routine testing on the denitrification media of the APS, could only be conducted until after the opening of the tunnel. Instead of specifying a fixed deadline of submission of the APS Commissioning Test Report as in Condition 2.20 in the current EP, it would be more practical and realistic to devise the submission timeframe based on the actual completion of the individual testing tasks. We will require the contractor to set out the proposed submission schedule in the APS Commissioning Test Plan for DEP’s approval, and adhere to the agreed timeframe for submission of the APS commissioning testing results.

3.4.5 It is proposed to make the following amendments to Conditions 2.20 and 2.21 of the current EP:

[Note: Proposed additions are underlined. Proposed deletions are in strikethrough.]

2.20 The Permit Holder shall, ~~no later than one month before the commencement of operation of the Project,~~ in accordance with the submission schedule as stipulated in the approved APS Commissioning Test Plan described in Condition 2.19 above, or otherwise approved by the Director, deposit with the Director four hard copies and one electronic copy of the APS Commissioning Test Report, which shall be certified by the ET Leader and verified by the IEC as conforming to the removal efficiency specified under Condition 2.18 above.

*2.21 The Permit Holder shall, no later than one month before the commencement of operation of the Project, **or otherwise approved by the Director**, submit to the Director for approval four hard copies and one electronic copy of a APS Performance Monitoring and Contingency Plan, which shall be certified by the ET Leader and verified by the IEC to provide monitoring details of the performance of the APS and the contingency plan for the occasion that the performance of APS during operation could not achieve the removal efficiency specified under Condition 2.18 above. The approved APS Performance Monitoring and Contingency Plan shall be fully and properly implemented.*

Reasons for Proposed Amendment No. 4

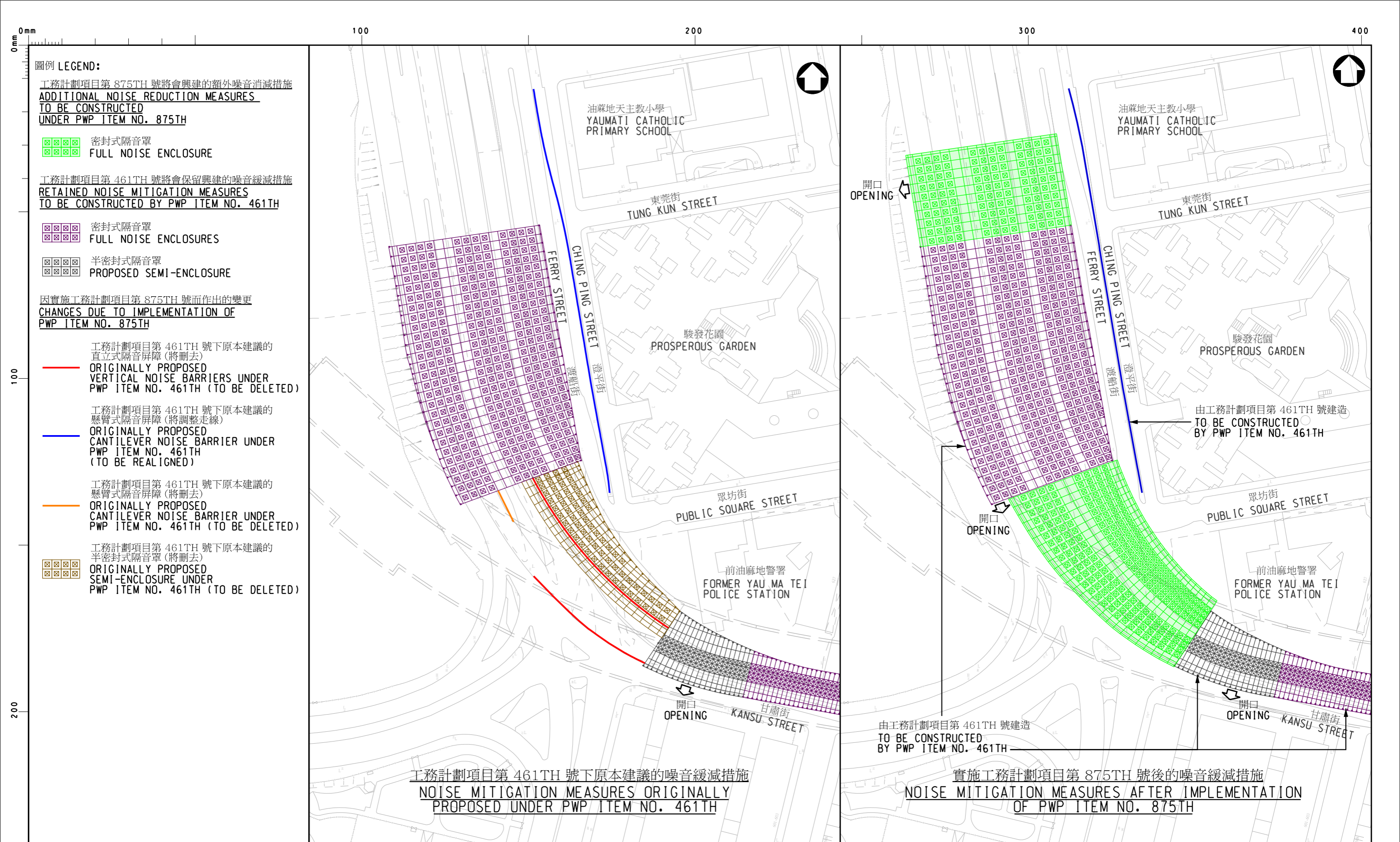
3.4.6 According to the Particular Specifications (PS) of “Contract No. HY/2019/13 Central Kowloon Route – Buildings, Electrical and Mechanical Works”, the testing of the APS will be implemented in various stages, including manufacturing quality checks and inspections, factory acceptance testing (FAT), site acceptance testing (SAT), commissioning tests and efficiency tests etc. Given that the implementation of some APS testing such as efficiency tests and routine testing will extend beyond the opening date of the CKR tunnel, it is considered more reasonable, from an operational point of view, to schedule the submission of testing results as and when the respective testing are completed.

3.4.7 Extract of the relevant PS on the testing and commissioning requirements of the APS is enclosed in the Annex for reference.

Environmental Changes and Performance Arising From Amendment No. 4

3.4.8 The proposed variation would refine the submission timeframe of the testing results in order to suit with the staged completion of the APS commissioning tests. No circumstance is expected to be changed on the environmental conditions and performance requirements of the APS as a result of the proposed variation.

Diagrams



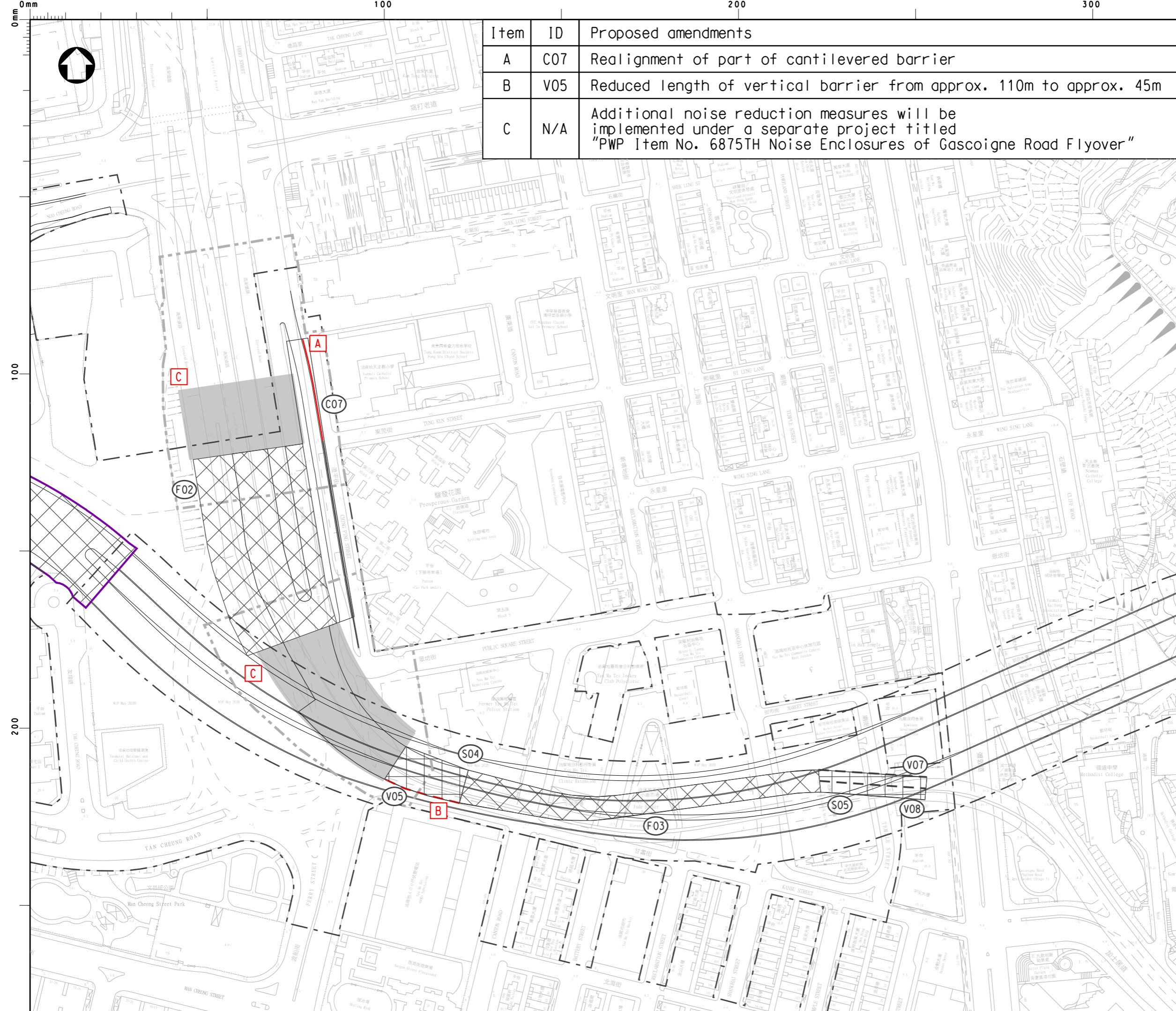
- 圖例 LEGEND:**
- 工務計劃項目第 875TH 號將會興建的額外噪音消減措施
ADDITIONAL NOISE REDUCTION MEASURES
TO BE CONSTRUCTED
UNDER PWP ITEM NO. 875TH**
- 密封式隔音罩
FULL NOISE ENCLOSURE
- 工務計劃項目第 461TH 號將會保留興建的噪音緩減措施
RETAINED NOISE MITIGATION MEASURES
TO BE CONSTRUCTED BY PWP ITEM NO. 461TH**
- 密封式隔音罩
FULL NOISE ENCLOSURES
 - 半密封式隔音罩
PROPOSED SEMI-ENCLOSURE
- 因實施工務計劃項目第 875TH 號而作出的變更
CHANGES DUE TO IMPLEMENTATION OF
PWP ITEM NO. 875TH**
- 工務計劃項目第 461TH 號下原本建議的
直立式隔音屏障 (將刪去)
ORIGINALLY PROPOSED
VERTICAL NOISE BARRIERS UNDER
PWP ITEM NO. 461TH (TO BE DELETED)
 - 工務計劃項目第 461TH 號下原本建議的
懸臂式隔音屏障 (將調整走線)
ORIGINALLY PROPOSED
CANTILEVER NOISE BARRIER UNDER
PWP ITEM NO. 461TH
(TO BE REALIGNED)
 - 工務計劃項目第 461TH 號下原本建議的
懸臂式隔音屏障 (將刪去)
ORIGINALLY PROPOSED
CANTILEVER NOISE BARRIER UNDER
PWP ITEM NO. 461TH (TO BE DELETED)
 - 工務計劃項目第 461TH 號下原本建議的
半密封式隔音罩 (將刪去)
ORIGINALLY PROPOSED
SEMI-ENCLOSURE UNDER
PWP ITEM NO. 461TH (TO BE DELETED)

工務計劃項目第 461TH 號下原本建議的噪音緩減措施
NOISE MITIGATION MEASURES ORIGINALLY
PROPOSED UNDER PWP ITEM NO. 461TH

實施工務計劃項目第 875TH 號後的噪音緩減措施
NOISE MITIGATION MEASURES AFTER IMPLEMENTATION
OF PWP ITEM NO. 875TH

圖則名稱 plan title
 工務計劃項目第 875TH 號
 加士居道天橋隔音罩 - 與工務計劃項目第 461TH 號原本建議的噪音緩減措施的比對
 PWP ITEM NO. 875TH
 NOISE ENCLOSURES AT GASCOIGNE ROAD FLYOVER - COMPARISON WITH NOISE MITIGATION MEASURES ORIGINALLY PROPOSED UNDER PWP ITEM NO. 461TH

圖則編號 plan no. Diagram 1	比例 scale 示意圖 DIAGRAMMATIC
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HIGHWAYS DEPARTMENT HONG KONG 路 香港 政 署	



Item	ID	Proposed amendments
A	C07	Realignment of part of cantilevered barrier
B	V05	Reduced length of vertical barrier from approx. 110m to approx. 45m
C	N/A	Additional noise reduction measures will be implemented under a separate project titled "PWP Item No. 6875TH Noise Enclosures of Gascoigne Road Flyover"

Legend

- CKR Alignment
- Gazette Boundary for CKR Project
- Gazette Boundary for PWP Item No. 6875TH
- Landscape Deck

Noise Mitigation Measures in EP (EP-457/2013/C)

- (F01) Full-enclosure
- (S01) Semi-enclosure
- (V01) Vertical Barrier
- (C01) Cantilevered Barrier

Proposed Amendments in VEP4

- Additional noise reduction measures to be implemented under PWP Item No. 6875TH (not forming part of the condition of this EP)
- (A) Cantilevered Barrier
- (B) Vertical Barrier

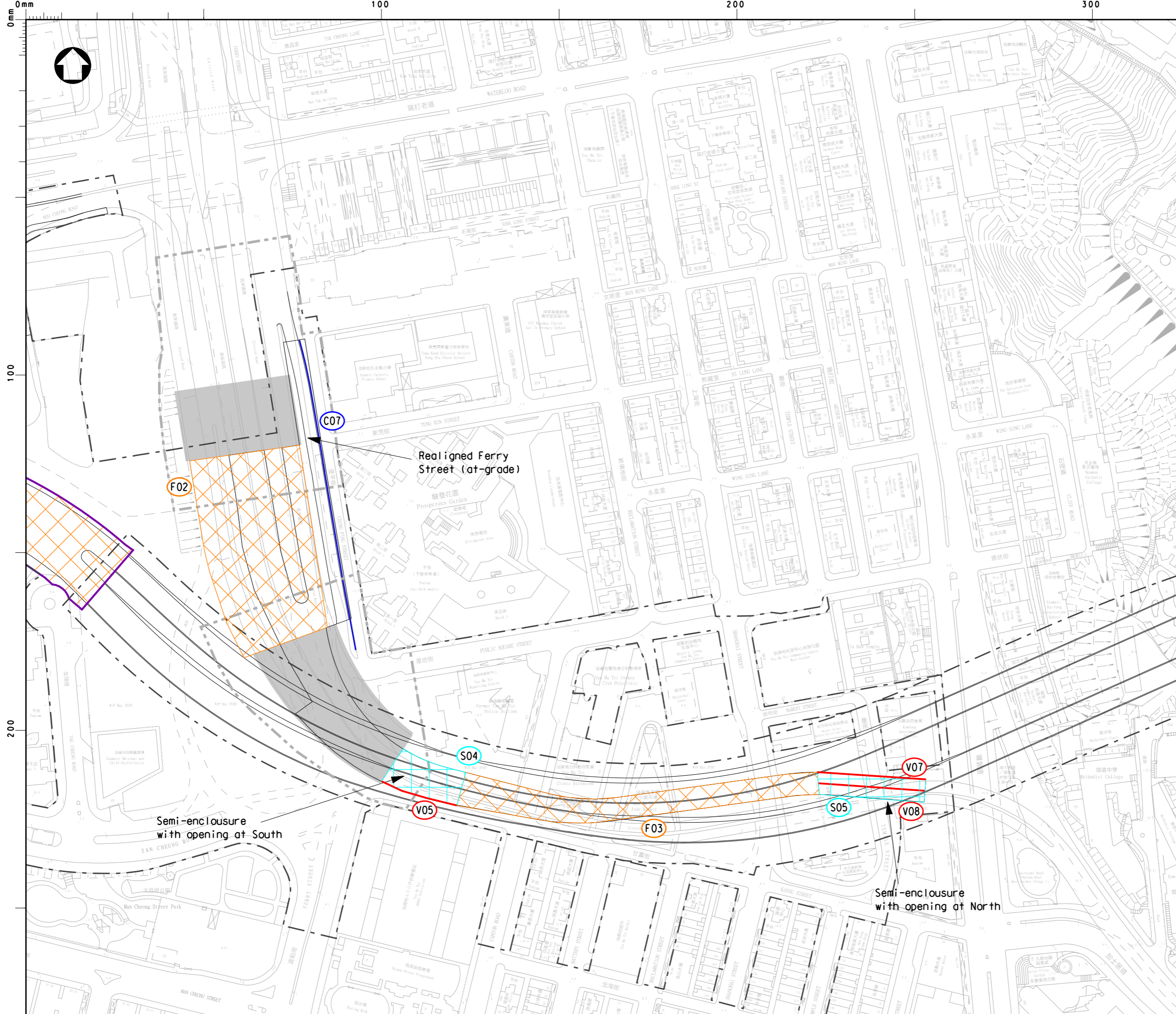
drawing title
Proposed Amendments on Configuration of Noise Mitigation Measures

drawing no. scale
 Diagram 2 1:2000

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HIGHWAYS DEPARTMENT HONG KONG



Legend

- CKR Alignment
- Gazette Boundary for CKR Project
- Gazette Boundary for PWP Item No. 6875TH
- Landscape Deck
- Full-enclosure
- Semi-enclosure
- Vertical Barrier
- Cantilevered Barrier

Remarks

- Additional noise reduction measures to be implemented under PWP Item No. 6875TH (not forming part of the condition of this EP)

drawing title

Revised Overall Noise Barrier Configuration

drawing no.	scale
Diagram 3	1:2000

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Printed by : 3/2/2013
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- Legend**
- NSRs
 - ▭ Proposed Landscape Deck (with vent facing seafront)
 - ➔ Opening

Solid wall with pedestrian access (subject to detailed design)

C	THIRD ISSUE	GL	03/13
B	SECOND ISSUE	GL	06/12
A	FIRST ISSUE	GL	02/12
Rev	Description	By	Date

Consultant

ARUP

Project title
Agreement No. CE 43/2010 (HY)
Central Kowloon Route - Design and Construction

Drawing title
Proposed Landscape Deck for Permanent Kowloon City Ferry Pier PTI

Drawing no. Diagram 4		Rev. C	
Drawn GL	Date 03/13	Checked FC	Approved ST
Scale 1:1000 ON A3		Status PRELIMINARY	

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The layout of PTI is subject to detailed design.

Annex

Contract No. HY/2019/03

Extract from Particular Specifications on
Air Purification Systems (APS)

TESTING AND COMMISSIONING

General

37.22 (1) General.

- (i) Inspection, type and factory testing of the APS equipment shall be carried out as specified below.
- (ii) An inspection and testing program shall be submitted to the *Project Manager* for acceptance.
- (iii) Certificate of conformance for each APS equipment (referencing its serial number) shall be provided, certifying each equipment meets the requirements of the specification.

- (iv) All tests shall meet the requirements of the relevant standards referenced in the specification. All test records including individual TVF performance, individual component/system of the APS, three-phase HV transformer, ESP performance, individual monitoring and control instrument, signal and control loop check, CCMS and other associated equipment shall be finalised and agreed with the *Project Manager* prior to the commencement of the testing and commissioning.
 - (v) The *Contractor* shall allow and arrange visits for the *Project Manager's* Representative to witness the factory acceptance tests of the APS, within and/or outside Hong Kong at the expense of the *Contractor*. The *Employer's* staff may join such visits at the expenses of the *Employer*. The details and numbers of visits shall be discussed and agreed with the *Project Manager*.
- (2) Inspection and Test Plan.
- (i) All relevant aspects of the *works* including manufacture, fabrication, testing and commissioning shall be documented on Inspection and Test Plans (ITPs). The ITPs shall include, but not be limited to, manufacturing quality checks and inspections, the factory acceptance testing (FAT), site acceptance testing (SAT) and commissioning tests.
 - (ii) All ITPs shall be submitted to the *Project Manager* for acceptance 120 calendar days after the Contract Date.
 - (iii) The *Contractor* and its APS manufacturer shall not proceed with the *works* associated with any ITP until such *works*, and any associated procedures and checklists, have been accepted by the *Project Manager*.
 - (iv) The *Contractor* and its APS manufacturer shall not waive any inspection or test shown on the accepted Inspection and Test Plan without the written acceptance of the *Project Manager*.
- (3) Production quality checks and inspection
- Production quality checks and inspections shall be performed as per the manufacturer quality procedures. Production quality checks and inspections shall include but not be limited to the following items:
- (i) Visual Testing.
 - (a) The products shall be without noticeable defects.
 - (b) The dimension, tolerances and details shall conform

to fabrication drawings.

(ii) Routine Test.

- (a) The following routine tests shall be carried out for the denitrification media at a rate of one (1) 1.5 kg sample per 25,000kg of materials, to ensure consistency. In case, activated carbon is used as the denitrification media, it shall be tested to meet the following standard or other equivalence subject to the agreement of the *Project Manager*:

Test Requirements	Relevant Standard
Carbon Tetrachloride Adsorption CTC	ASTM D3467
Moisture	ASTM D2867
Hardness	ASTM D3802
Bulk density	ASTM D2854
Ignition temperature	ASTM D3466
Ash content	ASTM D2866
Surface area	BET nitrogen adsorption (See note below)
Particle size	Sieve analysis, with reported value for each sub-size.

(Note: BET adsorption is a theory on the physical adsorption of gas molecules on a solid surface. If alternative technology or impregnated carbon is proposed by the *Contractor*, the *Contractor* shall propose the associated routine test to the *Project Manager* for acceptance.)

The deviation of the test results shall be within the limits of the relevant standards. The *Contractor* shall submit the test reports to the *Project Manager* for acceptance within 21 calendar days after the test and before the bulk order of the materials.

The *Contractor* shall arrange an independent laboratory and/or university to verify the details of the material content of De-NO₂ media and compare the result with the specification provided by the *Contractor* in association with the APS supplier to the *Project Manager* for information.

- (b) The following routine tests shall be carried out for the ESP to ensure conformity:
- Continuity and insulation tests for all filters.
 - Energised test for 10% of the filters.

The deviation of the test results shall be within the limits of the relevant standards. The *Contractor* shall develop and submit the test

plan and the test procedure to the *Project Manager* for acceptance which shall include acceptance criteria and contingency measures in the event that individual ESPs do not pass the test.

- (c) Test records shall be submitted for the *Project Manager's* acceptance.

Factory Acceptance Tests

37.23 (1) General.

- (i) Performance and electrical property tests shall be conducted for the ESP together with the selected HV electrical equipment as an integrated system. One specimen shall be produced for the tests.
- (ii) The *Contractor* shall develop and submit the test plan and the test procedure to the *Project Manager* for acceptance.
- (iii) The *Contractor* shall provide a minimum of 20 working days' notice to the *Project Manager* of the intention to conduct the tests. Failure to achieve the performance requirement will result in rejection of the products. The *Contractor* shall propose remedies including but not be limited to improve the product design and re-test for the products. All additional costs including witnessing the retesting shall be borne by the *Contractor*.

(2) ESP (together with the proposed HV Power Supply electrical equipment)

- (i) The overall size of the ESP tested shall not be less than 2m(W)x2m(H), with supporting framing and modules consistent with the equipment proposed by the *Contractor*.
- (ii) Electrical Testing
- (a) Full electrical tests with the proposed HV supply of the ESP filter specimen meeting the manufacturer's design and EMSD's CoP requirement.
- (iii) Performance Testing
- (a) The ESP shall be subject to a particulate removal efficiency test. The test shall be performed in 3 stages: 1) PM10 alone, 2) PM10 and PM2.5 and 3) PM10, PM2.5 and PM1 at concentrations which simulate realistic concentrations in the tunnel exhaust environment. The ESP shall meet the system performance requirements in all cases. Adsorption efficiency shall be calculated based

on the PM10 level before and after the ESP.

- (b) The PM10 detection system used to monitor the performance during the tests shall have a lower level of detection value of $\leq 0.001 \text{ mg/m}^3$.
 - (c) The test shall be conducted in an environment similar to the APS plenum in terms of temperature, humidity and the design airflow velocity.
 - (d) Pressure drop test for ESP filter and its assembly and fittings shall be conducted based on the proposed filter arrangement. The test shall be conducted in an environment similar to the APS plenum in terms of temperature, humidity and the design airflow velocity.
 - (e) The performance of the proposed washdown system including the effectiveness of removing the accumulated particulates and demonstrating that the total washdown and drying cycle time required to dry the ESP filter using the compressed air system does not exceed 4 hours with conditions within the APS plenum of 15°C and 90% RH and 35°C and 90% RH.
- (3) De-NO₂ Filters
- (i) Size of Denitrification Media Module for Testing.
 - (a) For confirmation of NO₂ removal efficiency, the specimen size of the denitrification media for a laboratory scale test under controlled and isolated environment shall be proposed by the *Contractor*.
 - (b) The size of the denitrification media module and its assembly and fittings as derived from the *Contractor's* design for confirmation of pressure drop shall not be less than 2m(W)x2m(H), with supporting framing and module construction consistent with the equipment proposed by the *Contractor*.
 - (ii) Performance Tests.
 - (a) The denitrification media shall be subject to a NO₂ adsorption test. The test shall be carried out in a totally concealed environment in meeting the local Health Safety and Environmental requirements. The test shall be performed in 3 stages: 1) NO₂ alone, 2) NO₂ and ozone (approx. 0.5ppm) and 3) NO₂ and toluene (approx. 10ppm) to simulate realistic gas

concentrations in the tunnel exhaust environment. The media shall meet the system performance requirements in all cases. Adsorption efficiency shall be calculated based on the NO₂ level before and after the denitrification media.

- (b) The NO₂ detection system used to monitor the performance during the tests shall have a lower level of detection value of \leq 1.0 parts per billion.
 - (c) The test shall be conducted in an environment similar to the APS plenum in terms of temperature, humidity and the design airflow velocity.
 - (d) The concentration of the test gas shall be similar to the tunnel conditions but in no case be more than 1ppm NO₂.
 - (e) Pressure drop test for De-NO₂ filter and its assembly and fittings shall be conducted based on the proposed filter arrangement. The test shall be conducted in an environment similar to the APS plenum in terms of temperature, humidity and the design airflow velocity.
- (4) Integrated ESP and De-NO₂ Filters FAT
- (i) Performance tests of an integrated ESP filter, together with the proposed HV Power Supply electrical equipment, and the De-NO₂ filters as an integrated system shall be carried out in a pre-approved testing environment and witnessed by the *Project Manager*. The size of the ESP shall not be less than ten (10) elements ESP of size consistent with the *Contractor's* design with the size of the De-NO₂ filter module used being sized proportionally based on the *Contractor's* design.
 - (ii) The FAT should perform some simulated tests with different operation scenarios to ensure the system operability before APS installation. Besides the operation scenarios, this FAT shall include re-start up test after the simulation of system wash down and compressed air drying. The complete process shall demonstrate the performance of 80% removal efficiency and subsequent normal resumption after automatic wash down.
 - (iii) The *Contractor* shall develop and submit the test plan and the test procedure to the *Project Manager* for acceptance.

Site Acceptance Tests 37.24 (1) General.

- (i) The site acceptance testing for APS shall cover installation inspection and electrical testing. It shall cover the tests on wash down plant, water recycling plant, regeneration plant where applicable, pneumatic system, sensors, verification of waste, integration with other E&M systems e.g. CCMS, TVS etc, etc. The *Contractor* shall develop and submit the test plan, test procedure, format of the test report and acceptance QC criteria etc. to the *Project Manager* for acceptance before the test can be carried out.
 - (ii) The *Contractor* shall provide a minimum of fourteen (14) calendar days' notice to the *Project Manager* of the intention to conduct the tests.
 - (iii) Except the Efficiency Test as mentioned in Clause 37.24(4), all site acceptance testes shall be completed without any faults/outstanding defects by the *Contractor* and accepted by the *Project Manager* before the tunnel is open.
- (2) Installation inspection.
- (i) On completion of equipment installation at site, and prior to testing/commissioning, an inspection is to be performed by the *Contractor* in the presence of the *Project Manager*, to demonstrate that all APS equipment systems are properly installed, connected and safely powered.
 - (ii) The inspection shall confirm or otherwise in writing to the *Project Manager* that the equipment is.
 - (a) Satisfactorily installed to the specification and project requirements
 - (b) Ready for full site testing and commissioning.
- (3) Electrical Testing
- (i) Electrical testing shall include, but not be limited to, measurement and record of voltage, current and capacity and also the EMSD's CoP requirement.
- (4) Washdown System Testing
- (i) The performance of the proposed washdown system including the effectiveness of removing the accumulated particulates and demonstrating that the total washdown and drying cycle time required to dry the ESP filter using the compressed air system does not exceed 4 hours with conditions within the APS plenum of 15°C and 90% RH and 35°C and 90% RH.

(5) Efficiency Testing

- (i) Efficiency Test for the APS shall be conducted as per Clause 37.07 to demonstrate the efficiency of the APS can achieve the design criteria as stipulated in Clauses 37.2(1)(i) and (ii). For the APS in the HVB, the *Contractor* shall utilise temporary generators or other such plant to generate pollution representative of the design conditions for the purposes of the efficiency test conducted as part of the SAT.
- (ii) The *Contractor* shall meet the requirements for Efficiency Test as stated in Clause 37.02(4) and Clause 37.07.

Records

- 37.25
- (1) The *Contractor* shall provide test records including but not be limited to those required for FAT and SAT.
 - (2) The *Contractor* shall provide three (3) sets of testing records including test results and test certificates for the *Project Manager's* acceptance within 21 calendar days after the test.
 - (3) A copy of the test records shall also be included in the Operation and Maintenance manuals.

**Testing &
Commissioning
Procedures**

- 37.26
- (1) Testing and Commissioning procedures shall be submitted to the *Project Manager* for acceptance at least 30 calendar days prior to the relevant *works* being carried out.
 - (2) The testing and commissioning results shall be recorded and submitted to the *Project Manager* for acceptance.