

MTR Corporation Limited

**Shatin to Central Link –  
Hung Hom to Admiralty Section**

Continuous Noise Monitoring Plan (CNMP)

(October 2019)

Verified by: Fredrick Leong



Position: Independent Environmental Checker

Date: \_\_\_\_\_

24.10.2019

MTR Corporation Limited

**Shatin to Central Link –  
Hung Hom to Admiralty Section**

Continuous Noise Monitoring Plan (CNMP)

(October 2019)

Verified by:     Lisa Poon     

Position: Environmental Team Leader

Date:     24. 10. 2019

**MTR Corporation Limited**

**Shatin to Central Link - Hung  
Hom to Admiralty Section**

Continuous Noise Monitoring Plan  
(CNMP)

(October 2019)

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## 1 INTRODUCTION

### 1.1 Background

- 1.1.1 The Shatin to Central Link (SCL) is a 17km extension of the existing Ma On Shan Line (MOL) and East Rail Line (EAL) comprising (i) The East-West Corridor which extends the MOL from Tai Wai to Hung Hom via East Kowloon to connect with the West Rail Line (WRL) at Hung Hom Station (HUH) and Stabling Sidings at Hung Hom Freight Yard (HHS); and (ii) The North-South Corridor which is an extension of the East Rail Line (EAL) at Hung Hom across the harbour to Admiralty Station (ADM).
- 1.1.2 Shatin to Central Link – Hung Hom to Admiralty Section [SCL (HUH – ADM)] (hereafter referred to as “the Project”) is part of the SCL.
- 1.1.3 The Environmental Impact Assessment (EIA) Reports for SCL (HUH-ADM) (Register No.: AEIAR-166/2012) was approved on 17 February 2012 under the Environmental Impact Assessment Ordinance (EIAO). Following the approval of the EIA Report, an Environmental Permit (EP) (EP No.: EP-436/2012) was granted on 22 March 2012 for construction and operation. Variations of environmental permit (VEP) was subsequently applied for EP-436/2012 and the latest Environmental Permit (EP No: EP-436/2012/F) was issued by Director of Environmental Protection (DEP) on 23 January 2019.
- 1.1.4 As per Condition 2.8 of EP-436/2012/F, Continuous Noise Monitoring Plan (CNMP) for the Project is required to be updated and submitted to EPD before commencement of the construction of the Project.

### 1.2 Purpose of this Continuous Noise Monitoring Plan

- 1.2.1 This CNMP is submitted to fulfil the requirements under Condition 2.8 of EP-436/2012/F pertaining to update environmental monitoring and audit (EM&A) requirements for continuous noise monitoring at the noise sensitive receiver (NSR) as mentioned in Condition 2.7 of EP-436/2012/F with exceedance after mitigation in air-borne construction noise impact as predicted in the approved SCL (HUH-ADM) EIA report and as updated in the Construction Noise Mitigation Measures Plan (CNMMP) approved under Condition 2.7 of EP-436/2012/F.
- 1.2.2 To fulfil the requirements of above-mentioned EP Condition, the following information has been included in the CNMP for individual Contracts as prepared by the respective Contractors:
- Updated EM&A requirements for continuous noise monitoring at the corresponding NSR as mentioned in Condition 2.7 of EP-436/2012/F;
  - Drawings in the scale of 1:5,000 showing the proposed locations for conducting continuous noise monitoring;
  - Monitoring methodology and measurement parameters;
  - A system to report the continuous noise monitoring results on a website; and
  - An Event and Action Plan giving details of the immediate active remedial measures in the event that the measured noise levels exceed the worst-case scenario predicted in the EIA Report or the levels as updated by the CNMMP approved under Condition 2.7 of EP-436/2012/F.

## 2 CONTINUOUS NOISE MONITORING PLAN

2.1.1 The construction of SCL has been divided into different civil construction works contracts. The works area of SCL Works Contracts as listed in table below would be located within 300m from the NSR as mentioned in EP-436/2012/F Condition 2.7 (i.e. Causeway Centre, Block A). As such, updated CNMP would be prepared under these Works Contracts to update the EM&A requirement relating to continuous noise monitoring as per EP Condition.

Works Contract	Contract Title
1123	Exhibition Station and Western Approach Tunnel
1126	Reprovisioning of Harbour Road Sports Center and Wan Chai Swimming Pool

2.1.2 The CNMP for Works Contract 1126 and 1123 have been prepared by the respective Contractor's ET and are provided in **Appendix A** and **Appendix B**.

2.1.3 According to the latest CNMMP, since no residual noise impact after mitigation at the identified NSR is predicted throughout the construction period of Works Contract 1126 and 1123, continuous noise monitoring at the NSR is considered not required.

2.1.4 A summary of the proposed continuous noise monitoring plan is presented in **Table 2.1**. Event and Action Plan for the continuous noise monitoring is presented in **Table 2.2**.

**Table 2.1 Summary of Proposed Continuous Noise Monitoring Plan**

NSR ID	NSR Description	Uses	Action/Limit Level / dB(A)	Proposed Continuous Noise Monitoring Location	Measurement Period
Works Contract 1126 & 1123					
EX1 <sup>[1]</sup>	Causeway Centre, Block A <sup>[2]</sup>	Residential	-	-	-

Note:

[1] No continuous noise monitoring is required as no residual impact exceeding noise criteria was predicted in the updated CNMMP.

[2] The access for impact monitoring to Causeway Centre, Block A was denied before the commencement of the monitoring under Works Contract 1126. Alternative monitoring station was proposed and approved to be located at Harbour Centre, 8/F.

**Table 2.2 Event and Action Plan**

Event	Action			
	Contractor's ET	IEC	ER	Contractor
Action / Limit Level	<ol style="list-style-type: none"> <li>1. Identify source.</li> <li>2. Repeat measurement. If two consecutive measurements exceed Action/Limit Level, the exceedance is then confirmed.</li> <li>3. If exceedance is confirmed, notify IEC, ER and Contractor.</li> <li>4. Investigate the cause of exceedance and check Contractor's working procedures to determine possible mitigation to be implemented.</li> <li>5. Discuss jointly with the IEC, ER and Contractor and formulate remedial measures.</li> <li>6. Assess effectiveness of Contractor's remedial actions and keep IEC and ER informed of the results.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by the ET.</li> <li>2. Check the Contractor's working method.</li> <li>3. Discuss with the ER, ET and Contractor on the potential remedial measures.</li> <li>4. Review and advise the ET and ER on the effectiveness of the remedial measures proposed by the Contractor.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of exceedance in writing.</li> <li>2. Notify the Contractor and IEC.</li> <li>3. In consultation with the ET and IEC, agree with the Contractor on the remedial measures to be implemented.</li> <li>4. Ensure the proper implementation of remedial measures.</li> <li>5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.</li> </ol>	<ol style="list-style-type: none"> <li>1. Identify source with the ET.</li> <li>2. If exceedance is confirmed, investigate the causes of exceedance and take immediate action to avoid further exceedance.</li> <li>3. Submit proposals for remedial measures to the ER with copy to the IEC and ET of notification.</li> <li>4. Implement the agreed proposals.</li> <li>5. Liaise with ER to optimize the effectiveness of the agreed mitigation.</li> <li>6. Revise and resubmit proposals if problem still not under control.</li> <li>7. Stop the relevant portion of works as determined by the ER until the exceedance is abated.</li> </ol>

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**Appendix A**

**Continuous Noise Monitoring Plan for Contract No. 1126 –  
Reprovisioning of Harbour Road Sports Centre and Wan Chai  
Swimming Pool**

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# **Kaden-Leader Joint Venture**

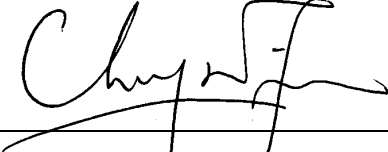
**Shatin to Central Link –**

**Contract 1126  
Reprovisioning of Harbour Road Sports  
Centre and Wan Chai Swimming Pool**

**Continuous Noise Monitoring Plan**

**(Version 3.0)**

**March 2014**

Certified By	 _____ Dr. Priscilla Choy (Environmental Team Leader)
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**REMARKS:**

The information supplied and contained within this report is, to the best of our knowledge, correct at the time of printing.

CINOTECH accepts no responsibility for changes made to this report by third parties.

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## 1 INTRODUCTION

### Background

- 1.1 The Shatin to Central Link – Hung Hom to Admiralty Section (hereafter referred to as SCL (HUH-ADM)) is an approximately 6km extension of the East Rail Line including a rail harbor crossing from Hung Hom across the harbor to Admiralty on Hong Kong Island. It is a Designated Project under the Environmental Impact Assessment Ordinance (Cap. 499) (EIAO).
- 1.2 The Environmental Impact Assessment (EIA) Report of the SCL (HUH-ADM) (Register No. AEIAR-166/2012) was approved by the Environmental Protection Department (EPD) under the EIAO on 17 February 2012. An Environmental Permit (EP-436/2012) has been issued on 22 March 2012.
- 1.3 The construction of the SCL (HUH-ADM) has been divided into a series of civil construction Works Contracts and this Works Contract 1126 comprises of the Demolition Works of Wan Chai Sports Ground (WCSG). This construction contract was awarded to Kaden-Leader Joint Venture (KLJV) in January 2014.

### Purpose of this Continuous Noise Monitoring Plan

- 1.4 According to the Condition 2.8 of the EP-436/2012, Continuous Noise Monitoring Plan shall be prepared and submit to the Director of Environmental Protection (DEP) no later than one month before the commencement of construction of the Project, and the plan should include:
  - (a) updated environmental monitoring and audit requirements relating to continuous noise monitoring at the NSR with exceedance after mitigation in air-borne construction noise impact as predicted in the approved SCL(HUH-ADM) EIA Report (Register No. AEIAR-166/2012) (i.e. Causeway Centre, Block A) and as updated in the CNMMP approved under Condition 2.7;
  - (b) drawings in the scale of 1:5,000 or other appropriate scale as agreed by the Director showing the proposed locations for conducting continuous noise monitoring;
  - (c) monitoring methodology and measurement parameters;
  - (d) a system to report the continuous noise monitoring results on a website within a period of 2 working days after the relevant noise monitoring data are collected or become available; and
  - (e) an Event and Action Plan giving details of the immediate active remedial measures in the event that the measured noise levels exceed the worst-case scenario predicted in the approved SCL(HUH-ADM) EIA Report (Register No. AEIAR-166/2012) or the levels as updated by the CNMMP approved under Condition 2.7.
- 1.5 Before submission to DEP, the CNMP will be certified by the Environmental Team (ET) and verified by the Independent Environmental Checker (IEC) as conforming to the relevant information and recommendations contained in the approved SCL (HUH-ADM) EIA Report (Register No. AEIAR-166/2012) or the updated prediction of

noise levels as contained in the Construction Noise Mitigation Measures Plan (CNMMP) approved under EP Condition 2.7. All measures recommended in the CNMMP will be fully and properly implemented during construction.

1.6 This CNMP is prepared to comply with the above-mentioned requirements.

## 2 UPDATED ENVIRONMENTAL MONITORING AND AUDIT REQUIREMENTS

2.1 With reference to the findings and recommendations of the latest Construction Noise Mitigation Measures Plan (CNMMP) of Works Contract 1126 (version 3.0, in March 2014), the identified NSR in the vicinity of Works Contract 1126 is summarized in **Table 2.1**.

**Table 2.1 Identified NSR (Extracted from Works Contract 1126 CNMMP (version 3.0))**

NSR ID in EIA Report	Monitoring Station ID in EM&A Manual	Description	Noise Criteria dB(A)	SCL (HUH-ADM) EIA Prediction <sup>(1)</sup>		CNMMP Prediction <sup>(2)</sup>	
				Max Noise Level, dB(A)	Exceedance Duration (Month)	Max Noise Level, dB(A)	Exceedance Duration (Month)
EX1	NM2	Causeway Centre, Block A	75	76	2	75	0

Notes:

(1) Extracted from Table 9.21 of SCL (HUH-ADM) EIA – Cumulative Residual Construction Noise Impact

(2) Cumulative impact arisen from other projects including WDII and CWB is considered.

2.2 The works area under Works Contract 1126 and the proposed location for noise monitoring are shown in **Figure 1**.

2.3 According to the latest CNMMP, since no residual noise impact after mitigation at the identified NSR is predicted throughout the construction period of Works Contract 1126, continuous noise monitoring at the NSR is considered not required.

2.4 Where there is further update on the CNMMP for Works Contract 1126, the associated CNMP will be revised according to the updated findings and predictions in the latest CNMMP. In case residual air-borne construction noise impact is predicted at the NSR, continuous noise monitoring will be conducted at the NSR and the proposed monitoring requirement in the below section will be followed.

2.5 The ET of Works Contract 1126 will confirm the measurement period 2 weeks before the commencement of the continuous noise monitoring, if any, and will notify the Contractor, MTRC, IEC and EPD the latest measurement period.

### 3 CONTINUOUS NOISE MONITORING LOCATION

- 3.1 As mentioned in Section 2.3, no residual noise impact is predicted at the identified NSR as presented in the CNMMP for Works Contract 1126 and therefore continuous noise monitoring is not required. In case residual air-borne construction noise impact is predicted at the NSR for Works Contract 1126, continuous noise monitoring will be conducted at the NSR as continuous noise monitoring location.
- 3.2 The monitoring position should normally be at a point 1m from the exterior of the proposed monitoring location building façade and be at a position 1.2m above local ground.
- 3.3 If there is problem with access to the monitoring positions at the proposed NSR predicted to have residual air-borne construction noise impact exceeding noise criteria, an alternative position will be proposed and a correction to the measurements will be made.
- 3.4 The alternative continuous noise monitoring location will be chosen based on the following criteria:
- Monitoring at NSRs close to the major site activities of the Project that are likely to arise noise impacts;
  - Monitoring as close as possible to the NSRs as defined in the EIAO-TM; and
  - Assurance of minimal disturbance to the occupants and working under a safe condition during monitoring.
- 3.5 A façade correction of +3 dB(A) will be made to the free field measurements.
- 3.6 The ET of Works Contract 1126 will seek approval from the Engineer Representative (ER) and agreement from the IEC and EPD on the alternative monitoring position and the corrections to be adopted.

## **4 CONTINUOUS NOISE MONITORING PARAMETERS**

- 4.1 Continuous noise level will be measured in terms of the A-weighted equivalent continuous sound pressure level ( $L_{eq}$ ).  $L_{eq}(30min)$  will be used as the continuous noise monitoring parameter for the time period between 0700 and 1900 hours on normal working hours (i.e. Mondays to Saturdays) during the construction period that residual noise impacts exceeding noise criteria are predicted at the identified NSR after exhausting all possible mitigation measures assessed in the CNMMP.

## **5 MONITORING EQUIPMENT**

- 5.1 As referred to in the Technical Memorandum (TM) issued under the Noise Control Ordinance (NCO), sound level meters in compliance with the International Electrotechnical Commission Publications 651:1979 (Type 1) and 804: 1985 (Type 1) specifications will be used for carrying out the noise monitoring. Immediate prior to the noise measurement, the accuracy of the sound level meter will be checked using an acoustic calibrator generating a known sound pressure level at a known frequency. The accuracy of the sound level meter will also be checked on regularly basis. Measurements will be accepted as valid only if the calibration level before and after the noise measurement agrees to within 1.0 dB.
- 5.2 Noise measurements will be made in accordance with standard acoustical principles and practices in relation to weather conditions.
- 5.3 The ET of Works Contract 1126 is responsible for the provision, installation, operation, maintenance, dismantle of the monitoring equipment. He/she will ensure that sufficient noise measuring equipment and associated instrumentation are available for carrying out the impact continuous noise monitoring. All the equipment and associated instrumentation will be clearly labeled.

## **6 MONITORING METHODOLOGY**

- 6.1 Continuous monitoring of  $L_{eq}$  30min noise levels will be carried out at the proposed NSR(s) predicted to have residual air-borne construction noise impact exceeding noise criteria during the normal construction working hours (0700 – 1900 Monday to Saturday). The duration of the continuous noise monitoring will be limited to the period when the NSRs were predicted with residual impact exceeding noise criteria in the CNMMP. The monitoring data will be downloaded from the sound level meter once a week and reported onto the dedicated SCL Project website within 2 working days after the data is collected. If works are to be carried out during restricted hours, the conditions stipulated in the construction noise permit issued by the Noise Control Authority have to be followed.

## 7 EVENT AND ACTION PLAN

- 7.1 Under this CNMP, there will be no Action/Limit Level as continuous noise monitoring is not required. In case residual air-borne construction noise impact is predicted at the NSR for Works Contract 1126, the maximum noise level predicted in the latest CNMMP will be used to set the Action/Limit Level for the continuous noise monitoring programme.
- 7.2 Should exceedance of the Action/Limit Levels occur, actions in accordance with the Event and Action Plan (EAP) given in **Table 7.1** will be carried out.



**Table 7.1 Event and Action Plan**

Event	Action			
	Works Contract 1126 ET	IEC	ER	Contractor
Action /Limit Level	<ol style="list-style-type: none"> <li>1. Identify source</li> <li>2. Repeat Measurement. If two consecutive measurements exceed Action/Limit Level the exceedance is then confirmed</li> <li>3. If exceedance is confirmed, notify IEC, ER and Contractor</li> <li>4. Investigate the cause of exceedance and check Contractor's working procedures to determine possible mitigation to be implemented.</li> <li>5. Discuss jointly with the IEC, ER and Contractor and formulate remedial measures.</li> <li>6. Assess effectiveness of the Contractor's remedial actions and keep IEC and ER informed of the results.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by the Works Contract 1126 ET.</li> <li>2. Check the Contractor's working method.</li> <li>3. Discuss with the ER, Works Contract 1126 ET and Contractor on the potential remedial measures.</li> <li>4. Review and advise the Works Contract 1126 ET and ER on the effectiveness of the remedial measures proposed by the Contractor.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of exceedance in writing.</li> <li>2. Notify the Contractor and IEC.</li> <li>3. In consultation with the Works Contract 1126 ET and IEC, agree with the Contractor on the remedial measures to be implemented.</li> <li>4. Ensure the proper implementation of remedial measures.</li> <li>5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.</li> </ol>	<ol style="list-style-type: none"> <li>1. Identify source with Works Contract 1126 ET.</li> <li>2. If exceedance is confirmed, investigate the cause of exceedance and take immediate action to avoid further exceedance.</li> <li>3. Submit proposals for remedial measures to the ER with copy to the IEC and ET of notification.</li> <li>4. Implement the agreed proposals.</li> <li>5. Liaise with ER to optimize the effectiveness of the agreed mitigation.</li> <li>6. Revise and resubmit proposals if problem still not under control.</li> <li>7. Stop the relevant portion of works as determined by the ER until the exceedance is abated.</li> </ol>

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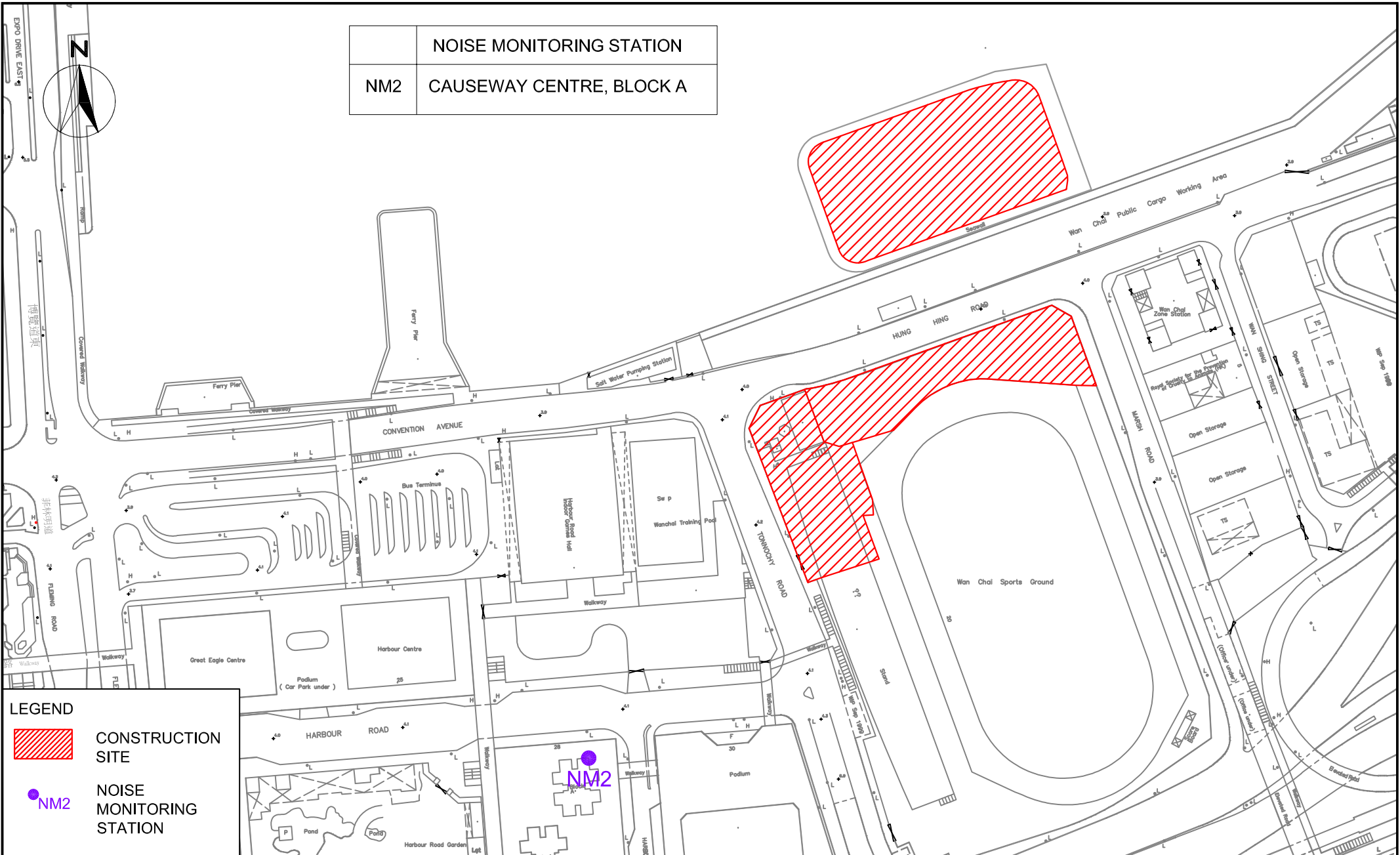
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## FIGURES



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	NOISE MONITORING STATION
NM2	CAUSEWAY CENTRE, BLOCK A



**LEGEND**

	CONSTRUCTION SITE
	NOISE MONITORING STATION



MTR 1126 REPROVISIONING OF HARBOUR ROAD SPORTS CENTRE AND WAN CHAI SWIMMING POOL

**LOCATION OF PROPOSED CONTINUOUS NOISE MONITORING STATION**

SCALE	1:2000 @ A4	DATE	APR 2014	
CHECK	JF	DRAWN	JW	
JOB No.	MA14009	FIGURE NO.	1	REV
				-

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**Appendix B**

**Continuous Noise Monitoring Plan for Contract No. 1123 –  
Exhibition Station and Western Approach Tunnel**

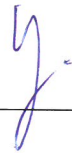
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**AECOM Asia Company Limited**

**Contract SCL1123 –  
Exhibition Station & Western Approach Tunnel**

**Continuous Noise Monitoring Plan  
(CNMP)**

**(September 2017)**

Certified by: Y W Fung 

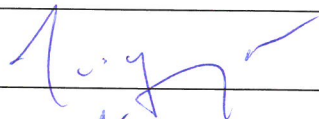

Position: Environmental Team Leader

Date: 21 September 2017

Leighton – China State Joint Venture

**Shatin to Central Link  
Works Contract 1123  
Exhibition Station and Tunnels  
Continuous Noise Monitoring Plan**

Sep 2017

	Name	Signature
Prepared & Checked:	Joanne Tsoi	
Reviewed & Approved:	Y W Fung	

Version: A

Date: 21 September 2017

This Plan is prepared for Leighton – China State Joint Venture and is given for its sole benefit in relation to and pursuant to SCL1123 and may not be disclosed to, quoted to or relied upon by any person other than Leighton – China State Joint Venture without our prior written consent. No person (other than Leighton – China State Joint Venture into whose possession a copy of this plan comes may rely on this plan without our express written consent and Leighton – China State Joint Venture may not rely on it for any purpose other than as described above.

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## **1 INTRODUCTION**

### **1.1 Background**

- 1.1.1 Shatin to Central (SCL) is 17 km of new urban railway line that stretches from Tai Wai to Admiralty, connecting several existing railway lines and passing through multiple districts in Hong Kong.
- 1.1.2 The Environmental Impact Assessment (EIA) Report for SCL – Hung Hom to Admiralty Section [SCL (HUH-ADM)] (Register No.: AEIAR-166/2012) was approved on 17 February 2012 under the Environmental Impact Assessment Ordinance (EIAO). Following the approval of the EIA Report, an Environmental Permit (EP) was granted on 22 March 2012 (EP No.: EP-436/2012) for the construction and operation. Variation of EP (VEP) (VEP-467/2015) was applied on 18 February 2015, and the latest EP (EP-436/2012/E) was issued by the Director of Environmental Protection (DEP) on 23 November 2016.
- 1.1.3 The construction of the SCL had been divided into different civil construction works contracts. Works Contract 1123 involves the construction of an underground station (Exhibition Station) and 300 m of cut and cover tunnel (Western Approach Tunnel) along Convention Avenue (hereafter referred to as “the Project”). This Works Contract was awarded to Leighton – China State Joint Venture.
- 1.1.4 As per EP Condition 2.8, a Continuous Noise Monitoring Plan (CNMP) for the Project is required to update environmental monitoring and audit requirements in relation to continuous noise monitoring.

### **1.2 Purpose of this Continuous Noise Monitoring Plan (CNMP)**

- 1.2.1 This Continuous Noise Monitoring Plan (CNMP) is submitted to fulfil Condition 2.8 of EP No.: EP-436/2012/E, pertaining to update environmental monitoring and audit (EM&A) requirements for continuous noise monitoring at the noise sensitive receiver (NSR) with exceedance after mitigation in air-borne construction noise impact as predicted in the Approved SCL(HUH-ADM) EIA Report, and as updated in the Construction Noise Mitigation Measures Plan (CNMMP) approved under the EP. This plan included:
- (a) updated environmental monitoring and audit requirements relating to continuous noise monitoring at the NSR with exceedance after mitigation in air-borne construction noise impact as predicted in the EIA Report (i.e. Causeway Centre, Block A) and as updated in the CNMMP approved under Condition 2.7;
  - (b) drawings in the scale of 1:5,000 or other appropriate scale as agreed by the Director showing the proposed location for conducting continuous noise monitoring;
  - (c) monitoring methodology and measurement parameters;
  - (d) a system to report the continuous noise monitoring results on a website as required under Condition 4.2, within a period of 2 working days after the relevant noise monitoring data are collected or become available; and
  - (e) an Event and Action Plan giving details of the immediate active remedial measures in the event that the measured noise levels exceed the worst-case scenario predicted in the EIA Report or the levels as updated by the CNMMP approved under Condition 2.7.



**2 UPDATED ENVIRONMENTAL MONITORING AND AUDIT REQUIREMENTS**

- 2.1.1 With reference to the findings and recommendations of the CNMMP, no residual air-borne construction noise impact exceeding noise criterion is anticipated at Causeway Centre, Block A during the construction of SCL(HUH-ADM) under Works Contract 1123. The summary of the findings in the Approved SCL(HUH-ADM) EIA Report and the CNMMP is presented in **Table 2.1**.

**Table 2.1 Cumulative Mitigated Noise Levels Predicted in the Approved EIA Report and the CNMMP at EX1**

NSR ID	NSR Description	Noise Criterion, $L_{eq}$ (30-min), dB(A)	Prediction in the Approved SCL(HUH-ADM) EIA Report		Prediction in the CNMMP	
			Noise Level, $L_{eq}$ (30-min), dB(A) <sup>[1]</sup>	Duration of Exceedance, month (Exceedance, dB)	Noise Level, $L_{eq}$ (30-min), dB(A) <sup>[1]</sup>	Duration of Exceedance, month (Exceedance, dB)
EX1	Causeway Centre, Block A	75	57 - <b>76</b>	2 (1)	65 - 75	0 (0)

Note:

[1] The bolded noise level exceeds the noise criterion.

- 2.1.2 According to Condition 2.8 of EP No.: EP-436/2012/E, continuous noise monitoring should be conducted at the NSR with residual air-borne noise impact exceeding noise criteria predicted. Since no exceedance is anticipated at EX1 with the implementation of the proposed mitigation measures according to the CNMMP, continuous noise monitoring at EX1 is considered not required.
- 2.1.3 Where there is any update on the CNMMP for Works Contract 1123, the associated CNMP will be revised accordingly. In case residual air-borne construction noise impact is predicted at the NSR, continuous noise monitoring will be conducted at the NSR and the proposed monitoring requirement in the following sections will be followed.

### 3 CONTINUOUS NOISE MONITORING LOCATIONS

- 3.1.1 The monitoring position will normally be at a point 1 m from the exterior of the proposed monitoring location building façade and be at a position 1.2 m above local ground. The access to EX1 was denied before the commencement of the monitoring under Works Contract 1126. Owing to the inaccessibility of EX1, the monitoring for NM2 under Works Contract 1126 was conducted at walkway across Harbour Road / Harbour Centre in July 2014 and then moved to an alternative monitoring location at Harbour Centre from August 2014 onwards. The alternative monitoring location at Harbour Centre was approved by the ER, agreed by IEC and EPD's formal approval is awaited. The alternative monitoring location at Harbour Centre will be adopted as the monitoring station for NM2 under this Project. The location of the proposed continuous noise monitoring station is presented in **Table 3.1** and shown in **Figure 1**.

**Table 3.1 Summary of Proposed Continuous Noise Monitoring Location**

NSR ID	Monitoring Station ID	Original Monitoring Location	Alternative Monitoring Station Proposed under Works Contract 1126
EX1	NM2	Causeway Centre, Block A	Harbour Centre (8/F)

- 3.1.2 The Environmental Team (ET) of Works Contract 1123 will confirm and notify the Contractor, MTR Corporation Limited (MTRC), Independent Environmental Checker (IEC) and Environmental Protection Department (EPD) the measurement period before the commencement of the continuous noise monitoring.

### 4 CONTINUOUS NOISE MONITORING PARAMETERS

- 4.1.1 A-weighted equivalent continuous sound pressure level (SPL) for 30 minutes ( $L_{eq, 30 \text{ min}}$ ) will be adopted as the parameter for the continuous noise monitoring. The monitoring will be conducted between 0700 and 1900 hours on normal working hours (i.e. Monday to Saturday) during the construction period that residual noise impacts exceeding the noise criterion are predicted after exhausting all possible measures assessed in the CNMMP.

### 5 MONITORING EQUIPMENT

- 5.1.1 As referred to in the Technical Memorandum (TM) issued under the Noise Control Ordinance (NCO), sound level meters in compliance with the *International Electrotechnical Commission Publications 651:1979 (Type 1)* and *804:1985 (Type 1)* specifications will be used for carrying out the noise monitoring. Immediate prior to the noise measurement, the accuracy of the sound level meter will be checked using an acoustic calibrator generating a known sound pressure level at a known frequency. The accuracy of the sound level meter will also be checked on regularly basis. Measurements will be accepted as valid only if the calibration level before and after the noise measurement agrees to within 1.0 dB. Noise measurements will be made in accordance with standard acoustical principles and practices in relation to weather conditions. The ET of Works Contract 1123 is responsible for the provision, installation, operation, maintenance, dismantle of the monitoring equipment. The ET will ensure that sufficient noise measuring equipment and associated instrumentation are available for carrying out the impact continuous noise monitoring. All the equipment and associated instrumentation will be clearly labelled.

### 6 MONITORING METHODOLOGY

- 6.1.1 Continuous monitoring of  $L_{eq, 30 \text{ min}}$  noise levels will be carried out at the proposed monitoring location predicted to have residual air-borne construction noise impact exceeding noise criterion during the normal construction working hours (0700 – 1900 Monday to Saturday) in the CNMMP. The monitoring data will be downloaded from the sound level meter once a week and reported onto the dedicated SCL Project website within two working days after the data is

collected. If works are to be carried out during restricted hours, the conditions stipulated in the construction noise permit issued by the Noise Control Authority have to be followed.

## 7 EVENT AND ACTION PLAN

- 7.1.1 The maximum noise levels predicted in the CNMMP submitted under Condition 2.7 of EP No.: EP-436/2012/E will be used to set the Action/Limit Levels for the continuous noise monitoring programme. Measurement will be taken continuously 24 hours a day throughout the month with residual impact exceeding noise criteria predicated at the NSR in the corresponding CNMMP. Summary of proposed continuous noise monitoring plan is presented in **Table 7.1**. The event and action plan for the continuous noise monitoring is presented in **Table 7.2**. Should exceedance of the Action/Limit Levels occur, actions in accordance with the Event and Action Plan will be carried out.

**Table 7.1 Summary of Proposed Continuous Noise Monitoring Plan**

NSR ID	Monitoring Station ID	Monitoring Location	Action / Limit Level, dB(A)	Measurement Period
EX1	NM2	Harbour Centre (8/F)	75	N/A

Note:

N/A – Not applicable

**Table 7.2 Event and Action Plan**

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
<b>Action/Limit Level</b>	<ol style="list-style-type: none"> <li>1. Identify source;</li> <li>2. Repeat measurement. If two consecutive measurements exceed Action/Limit Level, the exceedance is then confirmed;</li> <li>3. If exceedance is confirmed, notify IEC, ER and Contractor;</li> <li>4. Investigate the cause of exceedance and check Contractor’s working procedures to determine possible mitigation to be implemented;</li> <li>5. Discuss jointly with the IEC, ER and Contractor and formulate remedial measures; and</li> <li>6. Assess effectiveness of Contractor’s remedial actions and keep IEC and ER informed of the results.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by the Works Contract 1123 ET;</li> <li>2. Check the Contractor’s working method;</li> <li>3. Discuss with the ER, Works Contract 1123 ET and Contractor on the potential remedial measures; and</li> <li>4. Review and advise the Works Contract 1123 ET and ER on the effectiveness of the remedial measures proposed by the Contractor.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of exceedance in writing;</li> <li>2. In consultation with the Works Contract 1123 ET and IEC, agree with the Contractor on the remedial measures to be implemented;</li> <li>3. Ensure the proper implementation of remedial measures; and</li> <li>4. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.</li> </ol>	<ol style="list-style-type: none"> <li>1. Identify source with the Works Contract 1123 ET;</li> <li>2. If exceedance is confirmed, investigation the cause of exceedance and take immediate action to avoid further exceedance;</li> <li>3. Submit proposals for remedial measures to the ER with copy to the IEC and ET of notification;</li> <li>4. Implement the agreed proposals;</li> <li>5. Liaise with ER to optimize the effectiveness of the agreed mitigation;</li> <li>6. Revise and resubmit proposals if problem still not under control; and</li> <li>7. Stop the relevant portion of works as determined by the ER until the exceedance is abated.</li> </ol>

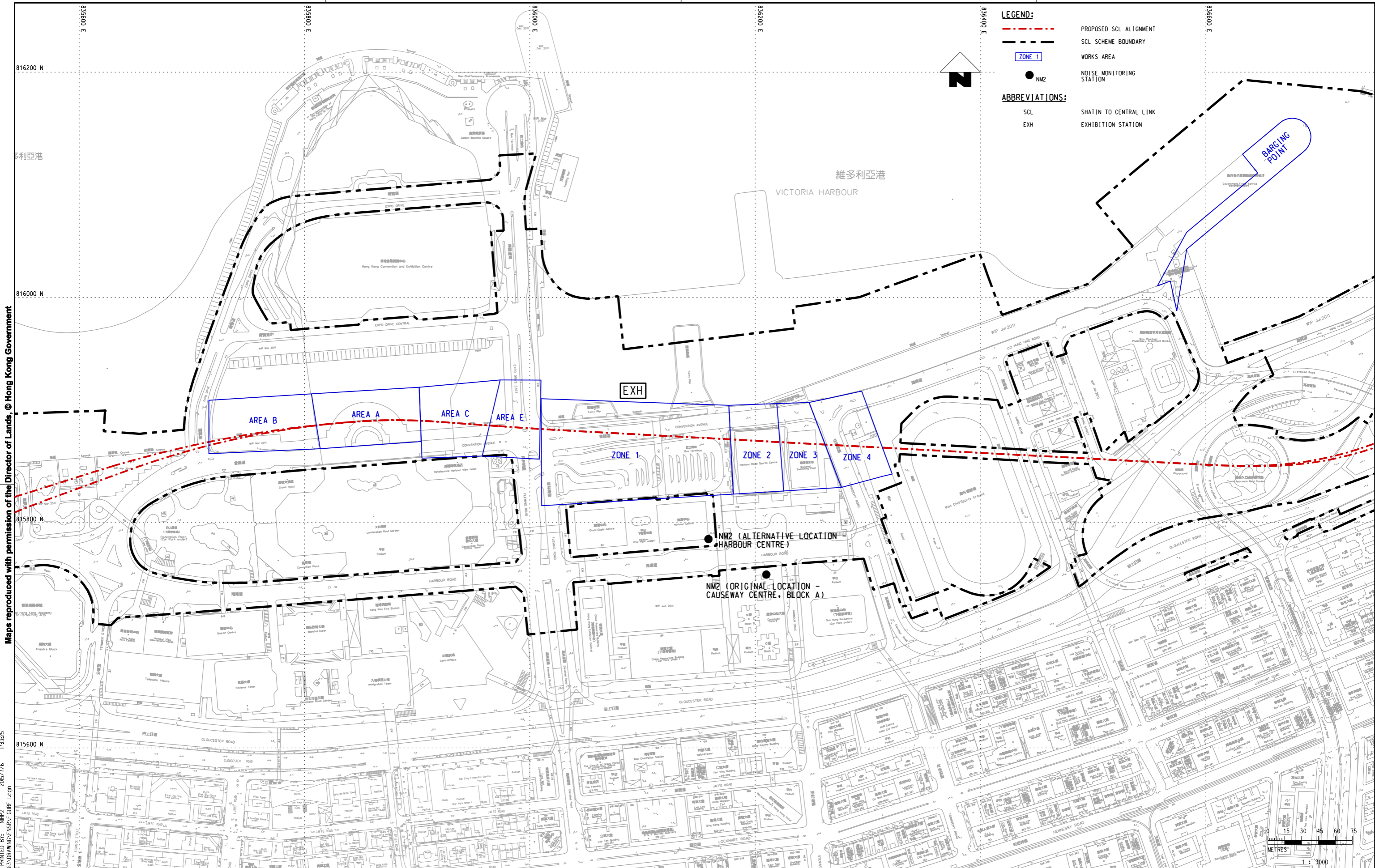
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**Figure**

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- LEGEND:**
- PROPOSED SCL ALIGNMENT
  - - - SCL SCHEME BOUNDARY
  - ZONE 1 WORKS AREA
  - NM2 NOISE MONITORING STATION
- ABBREVIATIONS:**
- SCL SHATIN TO CENTRAL LINK
  - EXH EXHIBITION STATION

REV	DESCRIPTION	BY	DATE	APPROVED	REV	DESCRIPTION	BY	DATE	APPROVED

DRAWN	NHP
DESIGNED	---
CHECKED	LCR
APPROVED	---
DATE	30/MAR/2015

**MTR**

SHATIN TO CENTRAL LINK

**AECOM**

ORIGINATOR

CADD REF. FIGURE 1.dgn

TITLE

**SHATIN TO CENTRAL LINK - CONTRACT 1123**  
**EXHIBITION STATION AND TUNNELS**  
**WORKS AREA AND LOCATION OF REPRESENTATIVE**  
**LOCATION OF NOISE MONITORING STATION**

SCALE 1 : 3000 (A3)

FIGURE NO. FIGURE 1

REV. -