



**CONTRACT NO. ED/2020/03
TRUNK ROAD T2-
TRAFFIC CONTROL AND SURVEILLANCE SYSTEM (TCSS) AND ASSOCIATED WORKS
NOISE MITIGATION PLAN**

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AND ASSOCIATED WORKS**

NOISE MITIGATION PLAN

Prepared for

**The Government of the Hong Kong Special Administrative Region
Civil Engineering and Development Department**



Revision History

Date	Rev.	Details of Change	Prepared By	Reviewed By	Approved By																				
01 June 2023	A	- Original Issue	Victor Law	Cicero Cheng	Francis Chan																				
19 Feb 2024	B	<p>Comment from ET&IEC</p> <table border="1"> <tr> <td>Appendix A</td> <td>Reviewed and updated the location plan of Noise Sensitive Receiver including No. 121 Cha Kwo Ling Tsuen.</td> </tr> <tr> <td>Table 1</td> <td>Columns of “Station” and “Environmental Permit” in Table 1 were removed.</td> </tr> <tr> <td>Section 4.1</td> <td>Columns of “Station” and “Environmental Permit” in Table 1 were removed.</td> </tr> <tr> <td>Table 1</td> <td>Columns of “Station” and “Environmental Permit” in Table 1 were removed.</td> </tr> <tr> <td>Table 1</td> <td>Reviewed and updated Noise Sensitive Receivers</td> </tr> <tr> <td>General</td> <td>NSR ID N3104 of No. 121 Cha Kwo Ling Tsuen is the Noise Sensitive Receiver under Environmental Permit EP-451/2013. Section 4.1 Table 1 include No. 121 Cha Kwo Ling Tsuen in the Noise Mitigation Plan and all PME are totally screened inside concrete structure and cannot be viewed by the nearby NSRs.</td> </tr> <tr> <td>Title of Table 1</td> <td>Title of Table 1 was reviewed and revised as “Detail information of the NSRs identified from the work portions”</td> </tr> <tr> <td>Page 10</td> <td>Reviewed and revised.</td> </tr> </table> <p>Comment from EPD</p> <table border="1"> <tr> <td>Section 1</td> <td>The roles of GTECH and its contractual relationship with CEDD under this project is updated in Section 1</td> </tr> <tr> <td>Section 4.1</td> <td>The noise limit in Leq (30mins) for Tin Hau Temple in Cha Kwo Ling is revised to 70 dB(A)</td> </tr> </table>	Appendix A	Reviewed and updated the location plan of Noise Sensitive Receiver including No. 121 Cha Kwo Ling Tsuen.	Table 1	Columns of “Station” and “Environmental Permit” in Table 1 were removed.	Section 4.1	Columns of “Station” and “Environmental Permit” in Table 1 were removed.	Table 1	Columns of “Station” and “Environmental Permit” in Table 1 were removed.	Table 1	Reviewed and updated Noise Sensitive Receivers	General	NSR ID N3104 of No. 121 Cha Kwo Ling Tsuen is the Noise Sensitive Receiver under Environmental Permit EP-451/2013. Section 4.1 Table 1 include No. 121 Cha Kwo Ling Tsuen in the Noise Mitigation Plan and all PME are totally screened inside concrete structure and cannot be viewed by the nearby NSRs.	Title of Table 1	Title of Table 1 was reviewed and revised as “Detail information of the NSRs identified from the work portions”	Page 10	Reviewed and revised.	Section 1	The roles of GTECH and its contractual relationship with CEDD under this project is updated in Section 1	Section 4.1	The noise limit in Leq (30mins) for Tin Hau Temple in Cha Kwo Ling is revised to 70 dB(A)	Deacon Choi	Cicero Cheng	Francis Chan
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NOISE MITIGATION PLAN**

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			in Table 1			
		Section 4.1	121 Cha Kwo Ling Tsuen (NSR ID N3104) is included and Section 4.1 and Appendix A are updated accordingly			
8 March 2024	C	Comment from EPD		Deacon Choi	Cicero Cheng	Francis Chan
		Section 1	The paragraph is updated as "Route 6 will provide an east-west express link between West Kowloon and Tseung Kwan O ..."			
		Section 4.1	Footnote # is added to Table 1 indicating the NSRs which are within 300m with predicted residual noise impact within our construction site boundary.			



TABLE OF CONTENTS

1. PROJECT DESCRIPTION	5
2. REQUIREMENT OF METHOD STATEMENT OF WORKING AND SOUND REDUCING MEASURES	7
3. ABBREVIATION	8
4. DESCRIPTIONS OF CONSTRUCTION WORKS AND NOISE LEVEL PREDICTION WITHIN SITE BOUNDARY	9
4.1 Potential Noise Sensitive Receivers during Construction Phase	9
4.2 Noise Mitigation Consideration during Restricted Hours	11
4.3 Construction Programme	12
5. NOISE MITIGATION STRATEGIES DURING CONSTRUCTION PHASE AND OPERATION PHASE	13
6. CONCLUSION	15
APPENDIX A – LAYOUT DRAWINGS OF CONTRACT ED/2030/03 WORKING PORTIONS AND LOCATION NOISE SENSITIVE RECEIVERS TO BE ASSESSED UNDER ENVIRONMENTAL PERMIT EP-458/2013/C.....	16
APPENDIX B – CONSTRUCTION PROGRAMME	17
APPENDIX C – ENVIRONMENTAL MITIGATION IMPLEMENTATION SCHEDULE (EMIS) (RETRIEVED FROM THE EM&A MANUAL OF EP-458/2013/C)	18



1. Project Description

Project Name	:	TRUNK ROAD T2 – TRAFFIC CONTROL AND SURVEILLANCE SYSTEM AND ASSOCIATED WORKS
Contract Number	:	ED/2020/03
Contract Commencement Date	:	January 2022
Work Completion Date	:	January 2025
Client	:	Hong Kong Special Administrative Region - Civil Engineering and Development Department (CEDD)
Consultant	:	Hyder-Meinhardt Joint Venture (HMJV)
The Contractor	:	GTECH Services (Hong Kong) Limited (GTECH)

This project is executed by the Civil Engineering and Development Department (CEDD). The Trunk Road T2, together with the proposed Central Kowloon Route (CKR) and Tseung Kwan O- Lam Tin Tunnel (TKO-LTT) will form the Route 6 alignment in the Kowloon strategic road network. Route 6 will provide an east-west express link between West Kowloon and Tseung Kwan O and provide the necessary relief to the existing heavily utilized road network in the central and eastern Kowloon areas.

In this Noise Mitigation Plan (NMP), the scope of works included but not limited to design, supply and installation, system verification and Site Acceptance Test of all traffic control and surveillance facilities and field equipment, communications system, interfaces and electrical distribution system for the tunnel, tunnel buildings and associated roads of Trunk Road T2 (The Project). The layout of the construction site with portions of construction works and locations of Noise Sensitive Receivers (NSRs) are shown in **Appendix A**.

The system will mainly consist of:

- Traffic Control Devices
 - Three Aspect Lane Control Signals (ALCS)
 - Matrix Lane Control Signals (MLCS)
 - Variable Speed Limit Signs (VSLS)
 - Prismatic Variable Message Signs (PVMS)



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TRUNK ROAD T2-
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NOISE MITIGATION PLAN**

- Turn On Radio' Signs (TOR)
- Traffic Light Signals (TS)
- Traffic Barriers (MB)

- Detection System
 - Over height Vehicle Detector (OHVD)
 - Vehicle Detection Sub-system (VDS)
 - Closed Circuit Television (CCTV) Surveillance
 - Speed Enforcement System
 - Emergency Telephones

- Radio System
 - Radio Distribution Network
 - Operation and Maintenance (O&M) Radio
 - AM & FM Rebroadcast
 - Fire Service Department (FSD) Radio
 - Hong Kong Police Force (HKPF) Radio
 - Other Tunnel Radio Equipment
 - Public Address and Intercom
 - Building Private Automatic Branch Exchange (PABX) System
 - Operation Facilities
 - Communication System
 - Manual Fallback System
 - Power Distribution System
 - All necessary interface provisions including software and hardware for connection of T2 field equipment and sub-systems to the TCSS Communication System and Central System of the TKO – LTT TCSS to form an integrated TCSS with Single User Interface (SUI)
 - Testing and commissioning of T2 TCSS without and with connection to TLO-LTT TCSS and route-wide interface testing and commissioning for all sections of Route 6 include CKR, T2/TKO-LTT and CBL.



2. Requirement of Method Statement of Working and Sound Reducing Measures

In accordance with Environmental Permit Condition 2.5 of EP-458/2013/C, the Permit Holder shall, no later than one month before the commencement of construction of the Project, submit to the Director for approval three hard copies and two electronic copies of Noise Mitigation Plan(s) detailing the temporary and permanent mitigation measures for the construction and operation phases traffic noise impacts arising from the Project. The Permit Holder shall implement all the noise mitigation measures as set out in the Noise Mitigation Plan agreed by the Director during the construction and operation phases of the Project. All noise mitigation measures implemented shall be properly maintained during construction and operation phases of the Project.

The Contractor shall also carry out a detailed review of the construction noise assessment to reconfirm the requirements for construction noise mitigation, using contemporary information regarding construction Plant and construction programme. This submission (The Plan) shall be checked by the Environmental Team (ET) and agreed by the Independent Environmental Checker (IEC) before the submission to the Engineer for agreement on proposed methods of working and sound-reducing measures for all equipment to be used on the Site in Providing the Works. All noise mitigation measures implemented shall be properly maintained during construction of the project.

The Plan includes:

- A layout plan to show the location of major construction activities.
- A layout plan to show the location of Noise Sensitive Receivers (NSRs)
- Noise level limit for each NSR in accordance with the statutory and monthly reports information and mitigation proposals in place
- Consideration of noise level of construction works to be carried out at individual work portion of the Project between notional distance at each work portion and the NSRs.
- An updated powered mechanical equipment (PME) list for the proposed construction works.
- Noise mitigation methodologies for proposed construction works.
- Noise mitigation measures for the NSRs within 300m from the site boundary of the Project

Noise assessment methodology in this plan is made reference from GW-TM and Guidance Note "Preparation of Construction Noise Impact Assessment under the Environmental Impact Assessment Ordinance" (EIAO GN 9/2010). These included: Determination of Noise Assessment Areas, Provision of Background Information, Identification of Noise Source, Construction Noise Level Assessment & Mitigation Measures, etc. All measures recommended in this plan will be fully and properly implemented during the construction and operation phases of the Project.



3. Abbreviation

ANL	-	Acceptable Noise Level
CNP	-	Construction Noise Permit
EIA	-	Environmental Impact Assessment
EM&A	-	Environmental Monitoring and Audit
EP	-	Environmental Permit
ET	-	Environmental Team
GTECH	-	GTECH Services (Hong Kong) Limited
IEC	-	Independent Environmental Checker
NSR	-	Noise Sensitive Receiver
PCW	-	Prescribed Construction Works
PME	-	Powered Mechanical Equipment
PNL	-	Predicted Noise Level
QPME	-	Quality Powered Mechanical Equipment
SWL	-	Sound Power Level
TM	-	Technical Memorandum



4. Descriptions of Construction Works and Noise Level Prediction within site boundary

4.1 Potential Noise Sensitive Receivers during Construction Phase

Refer to **Appendix A**, there are total 6 nos. of NSRs identified under in our work portion. Refer to Table 1 below, only 2 out of 6 nos. of NSRs is within 300m with predicted residual noise impact within our construction site boundary. No quantitative construction noise assessment is needed in this noise mitigation plan as all proposed working areas are completely shielded by the ground and the concrete walls within the tunnels. Detail information of the NSRs as shown below:

NSR ID	Location	Noise Limit Level, L_{eq} (30mins) dB(A) (at 0700 – 1900 hrs. on any day not being a Sunday or general holiday)
N1102	Nga Lai House, Yau Lai Estate Phase 1, Yau Tong	75 dB(A)
N1204	Bik Lai House, Yau Lai Estate Phase 1, Yau Tong	
N2105	Block S, Yau Lai Estate Phase 5, Yau Tong	
N3101	Tin Hau Temple, Cha Kwo Ling #	70 dB(A)
N4101	CCC Kei Faat Primary School, Yau Tong	70 dB(A) and 65 dB(A)*
N3104	No.121 Cha Kwo Ling Tsuen #	75dB(A)

Table 1: Detail information of the NSRs identified from the work portions

Notes:

* 70 dB(A) and 65 dB(A) for schools during normal teaching periods and school examination periods, respectively. If works are to be carried out during restricted hours, the conditions stipulated in the Construction Noise Permit (CNP) issued by the Noise Control Authority have to be followed.

NSRs which are within 300m with predicted residual noise impact within our construction site boundary.



Construction phase environmental aspects assessed in the approved EIA for Truck Road T2 (The approved EIA report) are listed below and work portion & potential NSRs from work portions under EP-458/2013/C is identified as shown in **Appendix A**.

According to Section 5.5.1.1 of the approved EIA report for T2 Trunk Road, potential construction noise impacts of the Project may arise by other contractors and GTECH from the following major construction activities:

- Construction of at-grade and depressed roads at the South Apron.
- Cut and cover tunnels sections at the South Apron and Cha Kwo Ling.
- Launching and receiving shafts for the TBM at the South Apron and Cha Kwo Ling respectively.
- TBM tunnelling from the South Apron and Cha Kwo Ling; and
- Construction of two ventilation buildings*. It should be noted that the administration building required for the tunnels operations is proposed to be shared with the TKO-LTT tunnel project and, as this building is being constructed by the TKO-LTT proponent, the potential impacts of its construction and operation have been assessed in the TKO-LTT EIA Report and not covered here.

* The East and West Ventilation Buildings are under the scope of EP/451/2013 and not necessary for noise assessment in this Noise Mitigation Plan.

The potential sources of noise impact during the construction phase of the Project would be the use of Powered Mechanical Equipment (PME). Various construction activities such as cable installation at high level in tunnels and buildings, Private Automatic Branch Exchange (PABX) and Close Circuit Television (CCTV) installations at high levels etc. would require the use of PMEs. PMEs likely to be employed during the construction phase are shown in the following Table 2:

PME	GW-TM Ref	No. of PME	Unit SWL, dB(A)
Drill, Handheld (Battery)*	---	6	89
Scissor Platform*	---	2	95
Cherry Picker*	---	4	95
Lorry, with crane/grab, 5.5 tonne < gross vehicle weight \leq 38 tonne	CNP145	2	105

Table 2: Summary table for PMEs that will be used inside tunnels

* References made from "Sound Power Levels of Other Commonly Used PME" prepared by the Environmental Protection Department:



https://www.epd.gov.hk/epd/sites/default/files/epd/english/application_for_licences/guidance/files/OtherSWLe.pdf

The above PME were reviewed, confirmed and allocated by Responsible Engineer to carry out the construction works in each portion. As the line of the sight from the NSRs (i.e., N3101 and N3104) to the proposed works areas are completely shielded by the ground and the concrete wall within the tunnels, and the construction activities only involve the hand-held PMEs in the tunnels, the impacts on the NSRs arising from the works are relatively low. Besides, the NSRs (i.e., N1102, N1204, N2105 and N4101) are not within 300m from the site boundary. Hence, the quantitative construction noise assessment is omitted. The location of the NSRs and the 300m of study area are illustrated in **Appendix A**. Table 3 provides the summary on the assessment of each representative NSRs (Table 1) for the Project.

Communication channels are established with all neighboring facilities to alert any possible noise disturbance and immediate respond in particular of roadside works at various locations by other contractors.

NSR	Work Portion	Remarks
N1102	Tunnels	Out of 300m assessment range
N1204		Out of 300m assessment range
N2105		Out of 300m assessment range
N3101		All PME are totally screened inside concrete structure and cannot be viewed by nearby NSRs
N4101		Out of 300m assessment range
N3104		All PME are totally screened inside concrete structure and cannot be viewed by nearby NSRs

Table 3: Summary table for NSRs assessed from each portion within 300m assessment boundary

4.2 Noise Mitigation Consideration during Restricted Hours

In view of the nature of the works for the Project listed in Section 1, no significant noise impact is anticipated on the existing NSRs during normal working hours 07:00 hrs. to 19:00 hrs. from Monday to Saturday except public holidays. However, GTECH is committed to implement good site practice and good acoustic design for PMEs to minimize the construction noise generated from the Project. The normal working hours during construction will be between 07:00 hrs. and 19:00 hrs. from Monday to Saturday (except public holidays). A Construction Noise Permit (CNP) will be applied from Environmental Protection Department (EPD) if construction works involved PMEs / PCWs will be carried out during restricted hours (i.e., between 19:00 hrs. to 07:00 hrs. of the next day and public holidays between 00:00 hrs. to 24:00 hrs.).



In addition, the conditions set out under the approved CNP will be strictly followed so that the noise level will comply with the legislation and contract's requirement and GTECH is committed to purchase or hire equipment / plant with a lower sound power level as practicable.

4.3 Construction Programme

Refer to **Appendix B**, the construction activities can be adjusted to minimize the noise impact to the nearby NSRs, especially during peak construction work seasons.



5. Noise Mitigation Strategies during Construction Phase and Operation Phase

In order to minimize the noise level, even the noise impact to nearby NSRs (i.e., the 2 nos. of NSRs stated in Section 4.1) is small compared with other contracts in the Project, GTECH will implement the following good site practices during the construction phase:

- Only well-maintained plant will be operated on site and plant should be serviced regularly during the construction programme.
- Mobile plant, if any, will be sited as far from NSRs as possible.
- Machines and plant (such as trucks) that may be under intermittent use will be shut down between work periods or will be throttled down to a minimum.
- Plants known to emit noise strongly in one direction will, wherever possible, be orientated so that the noise is directed away from the nearby NSRs; and
- Material stockpiles and other structures will be effectively utilized, wherever practicable, in screening noise from on-site construction activities; and
- Scheduling of construction activities especially during school examination periods.

In addition, the following mitigation measures will also be implemented to further reduce the construction noise level if necessary:

- Use silencers or mufflers on construction equipment if possible, during the construction works;
- GTECH will provide an acoustic screen or enclosure to shield the public or NSRs from the noisy activity at source or adopt quiet process/plant including the use of “quality powered mechanical equipment” (QPME) under CNP / contract conditions / requirements, except for works under emergency. The acoustic screen or enclosure will be made of incombustible, sound insulating material with performance such that the noise level measured at the NSR do not exceed the limits as mentioned above. The acoustic screen or enclosure will be securely fixed at the base to avoid overturning. Notwithstanding any certification given, GTECH will be fully liable for the design in all respects;
- Where a QPME is used, the plant will be registered with EPD, and the label issued by EPD from such registration will be affixed on the plant at all times and kept legible. GTECH will also establish a register to record all QPME used on Site; and
- The IEC and the Engineer will have the power to inspect the QPME if they have doubt on its compliance with the QPME requirements. The constructional plant will deem to be non-QPME if it does not have the registration label issued by EPD so affixed.

With reference to the EIA report and the nature of work under Contract ED/2020/03, only PA



equipment, road sign and over-head electronic road sign boards etc. are expected to be operated during the operation phase. No noise emission is expected and therefore no mitigation measures will be required during operational phase.

Table 4 shows the mitigation measures for the PME's inside tunnels. The Sound Power Levels (SWL) for the PME's is extracted from EPD's Technical Memorandum on Noise from Construction Work Other than Percussive Piling (GW-TM) and "Sound Power Levels of Other Commonly Used PME" prepared by EPD.

PME	GW-TM Ref	Mitigation Methodology	Noise Level Reduction, dB(A)
Drill, Handheld (Battery)	---	Acoustic Enclosure*	-10
Scissor Platform	---	N/A	0
Cherry Picker	---	N/A	0
Lorry, with crane/grab, 5.5 tonne < gross vehicle weight ≤ 38 tonne	CNP145	N/A	0

Table 4: Proposed Mitigation Measures for PME's inside tunnels

* This Acoustic Enclosure is an optional mitigation measure. This will be used under the condition proposed by EPD under specific Construction Noise Permit.

The acoustic enclosure comprised of minimum 50mm thick sound absorbing lining and 10mm thick plywood (or 1 mm thick steel) backing so that no part of equipment is visible from any nearby NSRs. The figure below shows the appearance of the acoustic enclosure:



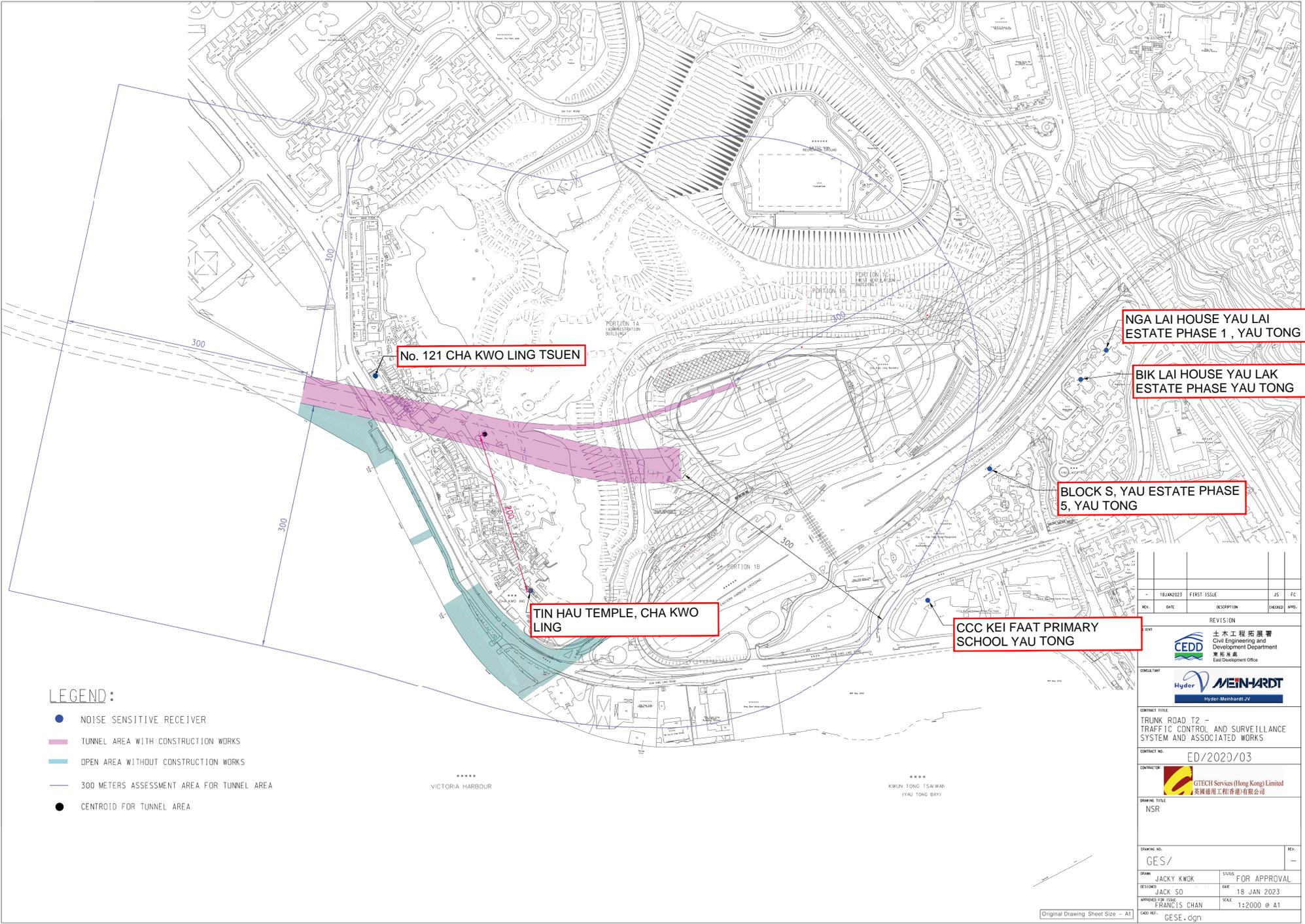
Figure 1: Acoustic Enclosure for Dill, Hand-held (Battery), Circular Steel Saw (Battery) & Grinder, Hand-Held (Battery)

6. Conclusion

This plan identifies the potential noise sources associated with the construction works of the Project. Several practical and effective noise mitigation measures will be implemented to minimize the noise impacts arising from the construction activities. With the implementation of the proposed mitigation measures, the potential noise impacts would comply with EIA noise criteria. Where necessary, further review and update will be performed during the construction phase.



**Appendix A – Layout drawings of Contract ED/2030/03
Working Portions and Locations of Noise Sensitive
Receivers to be assessed under Environmental Permit EP-
458/2013/C**



LEGEND:

- NOISE SENSITIVE RECEIVER
- TUNNEL AREA WITH CONSTRUCTION WORKS
- OPEN AREA WITHOUT CONSTRUCTION WORKS
- 300 METERS ASSESSMENT AREA FOR TUNNEL AREA
- CENTROID FOR TUNNEL AREA

NGA LAI HOUSE YAU LAI ESTATE PHASE 1, YAU TONG

BIK LAI HOUSE YAU LAK ESTATE PHASE YAU TONG

BLOCK S, YAU ESTATE PHASE 5, YAU TONG

TIN HAU TEMPLE, CHA KWO LING

CCC KEI FAAT PRIMARY SCHOOL YAU TONG

No. 121 CHA KWO LING TSUEN

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CONTRACT TITLE
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CONTRACT NO.
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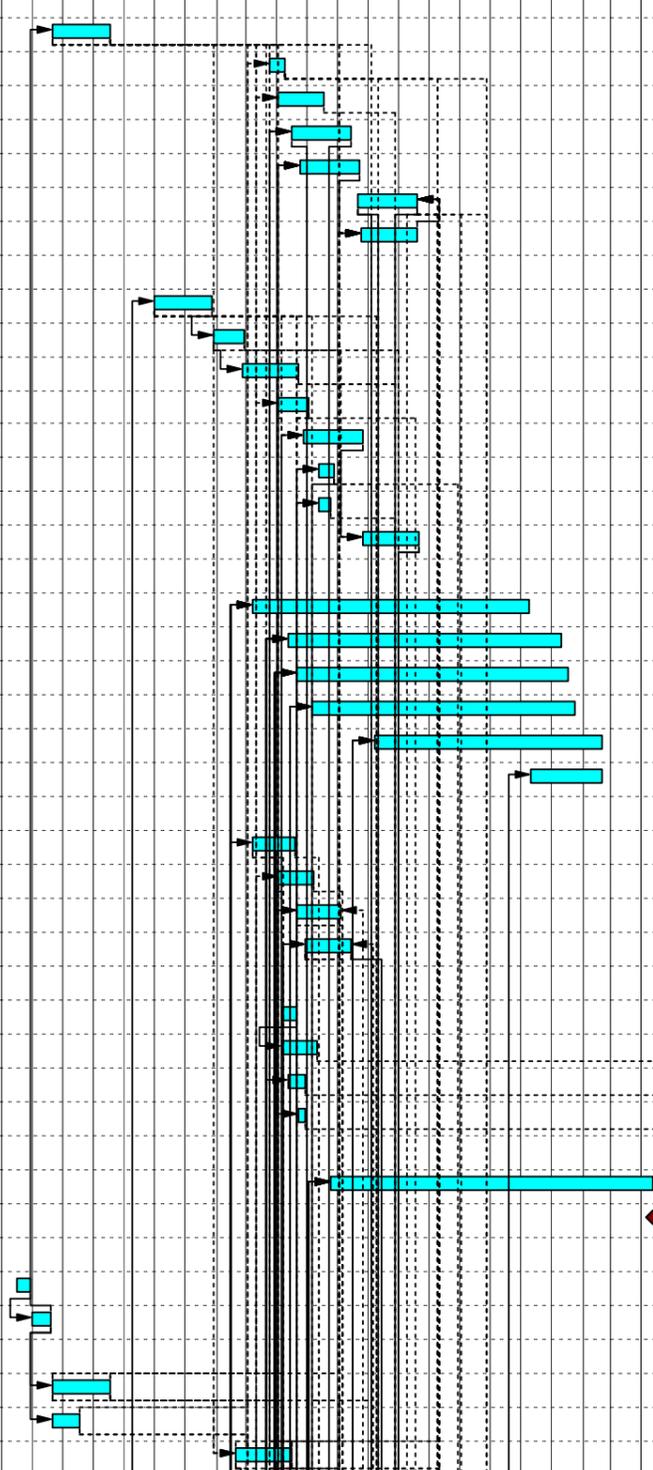
Original Drawing Sheet Size - A1





Appendix B – Construction Programme

Activity ID	Activity Name	Original Duration	Early Start	Early Finish	Late Start	Late Finish	2023												2024												2025																												
							Jan	F	M	Apr	M	Jun	Jul	A	S	Oct	N	D	Jan	F	M	Apr	M	Jun	Jul	A	S	Oct	N	D	Jan	F	M	Apr	M	Jun	Jul	Aug	S	Oct	N	Dec																	
							13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48																	
Trunk Road T2 - Traffic Control & Surveillance System & Associated Works							665	17-Jul-23	29-Sep-25	23-May-24	31-Oct-26																																																
Site Installation and Testing & Commissioning							665	17-Jul-23	29-Sep-25	23-May-24	31-Oct-26																																																
Installation & Testing Related to Stage 2 of Works							493	21-Aug-23	11-Apr-25	28-Jun-24	31-Oct-26																																																
Installation							451	21-Aug-23	20-Feb-25	28-Jun-24	31-Oct-26																																																
Portion 4 - TKO-LTT (LT Interchange)							300	21-Aug-23	19-Aug-24	28-Jun-24	16-Jan-25																																																
SW1930	Install Cable Containments	48	21-Aug-23	17-Oct-23	28-Jun-24	23-Aug-24																																																					
SW1960	Install Equipment in Kiosk C	12	25-Mar-24	08-Apr-24	06-Nov-24	19-Nov-24																																																					
SW1940	Install CCTV Camera	36	03-Apr-24	17-May-24	04-Dec-24	16-Jan-25																																																					
SW1980	Laying of Leaky Cable	48	16-Apr-24	13-Jun-24	16-Oct-24	10-Dec-24																																																					
SW1950	Laying of Signal Cable - the 1st Section	48	25-Apr-24	22-Jun-24	23-Sep-24	19-Nov-24																																																					
SW1990	Laying of Signal Cable - the 3rd Section	50	21-Jun-24	19-Aug-24	18-Nov-24	16-Jan-25																																																					
SW1970	Laying of Signal Cable - the 2nd Section	48	24-Jun-24	19-Aug-24	20-Nov-24	16-Jan-25																																																					
Portion 1 - South Apron Up to SUS							217	01-Dec-23	21-Aug-24	03-Jul-24	17-Feb-25																																																
SW2000	Install Cable Containments - the 1st Section	48	01-Dec-23	27-Jan-24	03-Jul-24	27-Aug-24																																																					
SW2050	Install Cable Containments - the 2nd Section	24	29-Jan-24	28-Feb-24	07-Oct-24	04-Nov-24																																																					
SW2060	Laying of Leaky Cable	48	27-Feb-24	23-Apr-24	02-Nov-24	28-Dec-24																																																					
SW2010	Install CCTV Camera	24	03-Apr-24	02-May-24	21-Aug-24	17-Sep-24																																																					
SW2020	Signal Cable Laying - the 1st Section	48	27-Apr-24	25-Jun-24	04-Sep-24	01-Nov-24																																																					
SW2030	Install Equipment in Kiosk F	12	13-May-24	27-May-24	04-Feb-25	17-Feb-25																																																					
SW2040	Install Radio Antenna	10	13-May-24	24-May-24	06-Jan-25	16-Jan-25																																																					
SW2070	Signal Cable Laying - the 2nd Section	48	26-Jun-24	21-Aug-24	02-Nov-24	28-Dec-24																																																					
Portion 2 - Tunnel Section, Service Gallery, WVB & EVB							287	08-Mar-24	20-Feb-25	09-Sep-24	31-Oct-26																																																
SW2080	Install Cable Containments	229	08-Mar-24	09-Dec-24	09-Sep-24	31-Oct-26																																																					
SW2090	Install CCTV Camera	224	13-Apr-24	09-Jan-25	17-Oct-24	31-Oct-26																																																					
SW2100	Install ET	224	20-Apr-24	16-Jan-25	28-Dec-24	31-Oct-26																																																					
SW2110	Install Radio System in Service Gallery	218	06-May-24	23-Jan-25	24-Oct-24	31-Oct-26																																																					
SW2120	Signal Cable Laying	188	08-Jul-24	20-Feb-25	13-Nov-24	31-Oct-26																																																					
SW2130	Laying of Leaky Cable	58	10-Dec-24	20-Feb-25	16-Dec-24	31-Oct-26																																																					
Portion 3 - CKL Branch Tunnel in TKO-LTT Site							80	08-Mar-24	13-Jun-24	28-Jan-25	22-Apr-25																																																
SW2230	Install Cable Containments	36	08-Mar-24	19-Apr-24	07-Feb-25	20-Mar-25																																																					
SW2220	Install CCTV Camera	29	03-Apr-24	08-May-24	28-Jan-25	05-Mar-25																																																					
SW2250	Signal Cable Laying	36	20-Apr-24	03-Jun-24	11-Mar-25	22-Apr-25																																																					
SW2240	Laying of Leaky Cable	36	30-Apr-24	13-Jun-24	14-Feb-25	27-Mar-25																																																					
Underpass S21							30	05-Apr-24	10-May-24	26-Apr-25	03-Jun-25																																																
SW2260	Install Cable Containment	14	05-Apr-24	20-Apr-24	26-Apr-25	14-May-25																																																					
SW2280	Laying of Leaky Cable	30	05-Apr-24	10-May-24	26-Apr-25	03-Jun-25																																																					
SW2290	Laying of Power Cable From TCSS Cabinet in T2 Area	14	13-Apr-24	29-Apr-24	17-May-25	03-Jun-25																																																					
SW2270	Install YAGI Antenna	7	22-Apr-24	29-Apr-24	26-May-25	03-Jun-25																																																					
Testing							265	25-May-24	11-Apr-25	06-Jan-25	31-Oct-26																																																
TC1590	Testing of FS-related TCSS Equipment	265	25-May-24	11-Apr-25	06-Jan-25	31-Oct-26																																																					
TC1610	Issue Notice of Stage 2 Completion to the Engineer	0		11-Apr-25		19-Jun-25																																																					
Portion 4 - TKO-LTT (LT Interchange)							443	17-Jul-23	03-Jan-25	23-May-24	19-Jun-25																																																
SW1020	Inspect Civil Provisions & Submit Inspection Report	12	17-Jul-23	29-Jul-23	23-May-24	05-Jun-24																																																					
SW1030	Rectify Civil Provision Defects by Others	18	31-Jul-23	19-Aug-23	06-Jun-24	27-Jun-24																																																					
Installation Works							300	21-Aug-23	19-Aug-24	28-Jun-24	16-Jan-25																																																
SW1040	Install Cable Containments	48	21-Aug-23	17-Oct-23	28-Jun-24	23-Aug-24																																																					
SW1050	Install Equipment Racks	24	21-Aug-23	16-Sep-23	07-Sep-24	07-Oct-24																																																					
SW1110	Install Traffic Control Devices	48	19-Feb-24	15-Apr-24	17-Aug-24	15-Oct-24																																																					



■ Planned Activities ◆ Milestone
■ Actual Work
■ Critical Activity

Date	Revision	Checked	Approved
18-Apr-23	Rev. D	FC	
10-May-23	Rev. E	FC	
07-Jul-23	Rev. F	MY	

Activity ID	Activity Name	Original Duration	Early Start	Early Finish	Late Start	Late Finish	2023												2024												2025																												
							Jan	F	M	Apr	M	Jun	Jul	A	S	Oct	N	D	Jan	F	M	Apr	M	Jun	Jul	A	S	Oct	N	D	Jan	F	M	Apr	M	Jun	Jul	A	S	Oct	N	D																	
							13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48																	
Installation Works							54	07-Jun-24	10-Aug-24	25-Oct-24	17-Jan-25																																																
SW2510	Install Cable Containment	24	07-Jun-24	06-Jul-24	25-Oct-24	21-Nov-24																																																					
SW2520	Install VLSL	18	22-Jun-24	13-Jul-24	28-Nov-24	18-Dec-24																																																					
SW2530	Install PA in Service Gallery	24	22-Jun-24	20-Jul-24	15-Nov-24	12-Dec-24																																																					
SW2540	Install Traffic Control Devices	24	29-Jun-24	27-Jul-24	29-Nov-24	27-Dec-24																																																					
SW2550	Install CCTV Camera	18	08-Jul-24	27-Jul-24	12-Dec-24	03-Jan-25																																																					
SW2560	Install PABX in Service Gallery	24	08-Jul-24	03-Aug-24	29-Nov-24	27-Dec-24																																																					
SW2570	Install Radio System in Service Gallery	24	15-Jul-24	10-Aug-24	06-Dec-24	04-Jan-25																																																					
SW2580	Install Detection Camera	18	22-Jul-24	10-Aug-24	27-Dec-24	17-Jan-25																																																					
SW2590	Install ET	12	29-Jul-24	10-Aug-24	28-Dec-24	11-Jan-25																																																					
Tunnel Section - CH 8+100 to CH 8+750							78	13-Aug-24	14-Nov-24	04-Oct-24	28-Apr-25																																																
SW2920	Inspect Civil Provisions & Submit Inspection Report	3	13-Aug-24	15-Aug-24	04-Oct-24	07-Oct-24																																																					
SW2930	Rectify Civil Provision Defects by Others	6	16-Aug-24	22-Aug-24	08-Oct-24	15-Oct-24																																																					
Installation Works							69	23-Aug-24	14-Nov-24	16-Oct-24	28-Apr-25																																																
SW2600	Install Cable Containment	24	23-Aug-24	20-Sep-24	16-Oct-24	12-Nov-24																																																					
SW2610	Install VLSL	18	06-Sep-24	27-Sep-24	28-Nov-24	18-Dec-24																																																					
SW2620	Install PA in Service Gallery	24	06-Sep-24	05-Oct-24	15-Nov-24	12-Dec-24																																																					
SW2630	Install Traffic Control Devices	24	13-Sep-24	14-Oct-24	29-Nov-24	27-Dec-24																																																					
SW2640	Install CCTV Camera	18	21-Sep-24	14-Oct-24	12-Dec-24	03-Jan-25																																																					
SW2650	Install PABX in Service Gallery	24	21-Sep-24	21-Oct-24	29-Nov-24	27-Dec-24																																																					
SW2700	Install GOFS (CH 7+600 to CH 8+750)	45	21-Sep-24	14-Nov-24	06-Mar-25	28-Apr-25																																																					
SW2710	Signal Cable Laying and Termination (CH 7+600 to CH 8+750)	45	21-Sep-24	14-Nov-24	13-Nov-24	06-Jan-25																																																					
SW2660	Install Radio System in Service Gallery	24	28-Sep-24	28-Oct-24	06-Dec-24	04-Jan-25																																																					
SW2670	Install Detection Camera	18	07-Oct-24	28-Oct-24	27-Dec-24	17-Jan-25																																																					
SW2680	Install ET	12	15-Oct-24	28-Oct-24	28-Dec-24	11-Jan-25																																																					
SW2690	Install SEC Camera	18	22-Oct-24	11-Nov-24	03-Mar-25	22-Mar-25																																																					
Tunnel Section - CH 8+750 to CH 9+250							86	07-Nov-24	20-Feb-25	07-Nov-24	07-May-25																																																
SW2940	Inspect Civil Provisions & Submit Inspection Report	1	07-Nov-24	07-Nov-24	07-Nov-24	07-Nov-24																																																					
SW2950	Rectify Civil Provision Defects by Others	4	08-Nov-24	12-Nov-24	08-Nov-24	12-Nov-24																																																					
Installation Works							81	13-Nov-24	20-Feb-25	13-Nov-24	07-May-25																																																
SW2720	Install Cable Containment	23	13-Nov-24	09-Dec-24	13-Nov-24	09-Dec-24																																																					
SW2730	Install VLSL	13	10-Dec-24	24-Dec-24	02-Jan-25	16-Jan-25																																																					
SW2740	Install PA in Service Gallery	19	10-Dec-24	02-Jan-25	04-Jan-25	25-Jan-25																																																					
SW2750	Install Traffic Control Devices	19	10-Dec-24	02-Jan-25	11-Jan-25	05-Feb-25																																																					
SW2780	Install GOFS (CH 7+600 to CH 8+750)	58	10-Dec-24	20-Feb-25	19-Feb-25	28-Apr-25																																																					
SW2790	Signal Cable Laying and Termination (CH 7+600 to CH 8+750)	58	10-Dec-24	20-Feb-25	10-Dec-24	20-Feb-25																																																					
SW2850	Laying of Leaky Cable	58	10-Dec-24	20-Feb-25	16-Dec-24	26-Feb-25																																																					
SW2760	Install CCTV Camera	18	18-Dec-24	09-Jan-25	10-Jan-25	03-Feb-25																																																					
SW2770	Install PABX in Service Gallery	22	20-Dec-24	16-Jan-25	15-Jan-25	12-Feb-25																																																					
SW2800	Install Radio System in Service Gallery	22	28-Dec-24	23-Jan-25	22-Jan-25	19-Feb-25																																																					
SW2810	Install Detection Camera	18	03-Jan-25	23-Jan-25	12-Feb-25	04-Mar-25																																																					
SW2820	Install ET	12	03-Jan-25	16-Jan-25	06-Feb-25	19-Feb-25																																																					
SW2830	Install SEC Camera	18	10-Jan-25	03-Feb-25	15-Apr-25	07-May-25																																																					
SW2840	Install PVMS	12	17-Jan-25	03-Feb-25	22-Apr-25	07-May-25																																																					
West Ventilation Building							279	04-Sep-23	08-Aug-24	07-Sep-24	26-Feb-25																																																
SW1360	Inspect Civil Provisions & Submit Inspection Report	12	04-Sep-23	16-Sep-23	07-Sep-24	21-Sep-24																																																					
SW1370	Rectify Civil Provision Defects by Others	18	18-Sep-23	10-Oct-23	23-Sep-24	15-Oct-24																																																					
Installation Works							249	11-Oct-23	08-Aug-24	16-Oct-24	26-Feb-25																																																
SW1650	Install Cable Containments	24	11-Oct-23	08-Nov-23	16-Oct-24	12-Nov-24																																																					
SW1660	Position Equipment Rack	12	09-Nov-23	22-Nov-23	23-Nov-24	06-Dec-24																																																					
SW1690	Install PABX Equipment	20	10-Nov-23	02-Dec-23	06-Nov-24	28-Nov-24																																																					
SW1670	Install Network Equipment	36	25-Mar-24	07-May-24	07-Dec-24	20-Jan-25																																																					
SW1710	Install Radio Equipment	12	13-Apr-24	26-Apr-24	29-Nov-24	12-Dec-24																																																					



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**Appendix C – Environmental Mitigation
Implementation Schedule (EMIS) (Retrieved from the
EM&A Manual of EP-458/2013/C)**

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	When to implement the measures?	What requirements or standards for the measure to achieve
	maximum possible distance from ASRs. <ul style="list-style-type: none"> • Every stock of more than 20 bags of cement or dry pulverised fuel ash (PFA) should be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides. • Instigation of an environmental monitoring and auditing program to monitor the construction process in order to enforce controls and modify method of work if dusty conditions arise. 					
Noise Impact						
<i>Construction Phase</i>						
S4.8	Use of quiet PME. Use of movable noise barriers for Excavator, Lorry, Dump Truck, Mobile Crane, Compactor, Concrete Mixer Truck, Concrete Lorry Mixer, Breaker, Mobile Crusher, Backhoe, Vibratory Poker, Saw, Asphalt Paver, Vibratory Roller, Vibrolance, Hydraulic Vibratory Lance and Piling (Vibration Hammer). Use of full enclosure for Air Compressor, Compressor, Bar Bender, Generator, Drilling Rig, Chisel, Large Diameter Bore Piling, Grout Mixer & Pump and Concrete Pump.	To minimize construction noise impact arising from the Project at the affected NSRs	Contractor	Work Sites	Construction Phase	EIAO-TM, NCO
S4.9	Good Site Practice:	To minimize construction noise	Project	Work Sites	Construction	EIAO-TM,

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measure	When to implement the measures?	What requirements or standards for the measure to achieve
	<ul style="list-style-type: none"> • Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction program. • Silencers or mufflers on construction equipment should be utilized and should be properly maintained during the construction program. • Mobile plant, if any, should be sited as far away from NSRs as possible. • Machines and plant (such as trucks) that may be in intermittent use should be shut down between works periods or should be throttled down to a minimum. • Plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs. • Material stockpiles and other structures should be effectively utilized, wherever practicable, in screening noise from on-site construction activities. 	impact arising from the Project at the affected NSRs	Proponent		Period	NCO
S4.9	Scheduling of Construction Works during School Examination Period	To minimize construction noise impact arising from the Project at the affected	Contractor	Work Site near school	Construction Period	EIAO-TM, NCO

