

Your Ref. : -

Our Ref. : YLEPP/(DC/2019/10)/M45/500/(0060)

26 January 2023

**By Hand**

The EIA Ordinance Register Office  
Environmental Protection Department  
27/F., Southorn Centre,  
130 Hennessy Road,  
Wan Chai, Hong Kong

Attn.: Ms. HE Zhongming

Dear Sir,

**Contract No. DC/2019/10**

**Yuen Long Effluent Polishing Plant – Main Works for Stage 1**

**Environmental Permit No. EP-565/2019**

**Submission of Updated Noise Mitigation Measures Plan (Rev. 1)**

In response to your comments provided via an email dated 28 December 2022, I, on behalf of the Permit Holder, Drainage Services Department, resubmit herewith three hard copies of the updated Noise Mitigation Measures Plan (Rev. 1) (NMMP), with a CD containing an electronic copy thereof, to the Director of Environmental Protection.

The submission is for compliance with the requirements as stipulated in Condition 2.12 of the aforementioned Permit. This NMMP supersedes the preceding version submitted under my letter dated 22 August 2022 ref. YLEPP/(DC/2019/10)/M45/500/(0049) and has been certified by the ET Leader and verified by the IEC of the Project accordingly.

If you have any query, please feel free to contact our Senior Resident Engineer, Mr. Patrick Leung at 6124 8838 or the undersigned at 9075 7172.

Yours faithfully,

Simon H. M. Yeung  
Project Manager's Delegate  
AECOM Asia Co. Ltd.

Encl.

c.c. The Client (CE/SP, DSD, HKSAR)  
The Project Manager for this contract, AECOM  
Paul Y. – CREC Joint Venture  
Fugro (ET)  
Mott MacDonald (IEC)

- Attn.: Mr. YIP Tat Ming, Ben (w/o)  
- Attn.: Mr. Robert CHAN (w/o)  
- Attn.: Mr. Wilson TAM (w/o)  
By email (w/o)  
By email (w/o)

  
SY/PL/JKHL/AWPK/II

AECOM Asia Co. Ltd.  
12/F, Grand Central Plaza, Tower 2  
138 Shatin Rural Committee Road  
Shatin, Hong Kong

**Attn: Mr. Simon H.M. YEUNG – CRE(C)**

**Your Reference**

**Contract No. SPW 03/2022**

**Our Reference**

AFK/EC/TC/BW/bw/  
T601100019/02/02/L021

**Independent Environmental Checker for Construction of Yuen Long Effluent Polishing Plant Stage 1 (2022-2023)**

**Environmental Permit No. EP-565/2019**

Mott MacDonald  
3/F Manulife Tower  
348 Kwun Tong Road  
Kwun Tong  
Kowloon  
Hong Kong

**EP Condition 2.12 – Noise Mitigation Measures Plan (Rev 1) for Contract No. DC/2019/10**

9 January 2023

**By Email**

T +852 2828 5757  
F +852 2827 1823  
mottmac.hk

Dear Sir,

I refer to the captioned “Noise Mitigation Measures Plan (Rev 1)” dated 5 January 2023 for Contract No. DC/2019/10 “Construction of Yuen Long Effluent Polishing Plant – Main Works for Stage 1” (document no.: PYCRJV/NMMP/000) which was prepared by the Contractor, received via e-mail on 5 January 2023 and certified by Environmental Team Leader on 9 January 2023 (ref. no.: MCL/ED/0003/2023/C).

I have no comment on the captioned submission and hereby verify that this submission has complied with the relevant requirements set out in Condition 2.12 of Environmental Permit No. EP-565/2019.

Should you have any queries regarding the captioned or require any further information, please contact the undersigned at 2828 5875.

Yours faithfully

for MOTT MACDONALD HONG KONG LIMITED

Brandon WONG  
Independent Environmental Checker  
T +852 2828 5875  
[Brandon.Wong@mottmac.com](mailto:Brandon.Wong@mottmac.com)

c.c. DSD  
Fugro Technical Services Limited  
Paul Y.-CREC Joint Venture

Mr. Wallace CHENG – E/SP 16 By Email  
Mr. YU Lap Bong – ETL By Email  
Mr. Wilson TAM – Project Manager By Email



**FUGRO TECHNICAL SERVICES LIMITED**

Fugro Development Centre  
5 Lok Yi Street, Tai Lam  
Tuen Mun, NT  
Hong Kong

Date 9 January 2023  
Our Ref. MCL/ED/0003/2023/C

Paul Y.-CREC Joint Venture,  
11/F, Paul Y. Centre,  
51 Hung To Road,  
Kwun Tong, Kowloon,  
Hong Kong

BY E-MAIL

Attn: Mr. Wilson TAM

Dear Sir,

**Contract No. SPW 07/2020**

**Environmental Team for Construction of Yuen Long Effluent Polishing Plant Stage 1**

**Environmental Permits: EP-565/2019**

**Contract No. DC/2019/10 - Certification of Noise Mitigation Measures Plan (NMMP)**

We refer to your updated Noise Mitigation Measures Plan (NMMP) (Rev.1) submitted on 5 January 2023 for the captioned project and are pleased to certify the captioned submission pursuant to Environmental Permit No. EP-565/2019 Condition 2.12.

Thank you for your attention. Should there be any queries, please contact Mr. Cyrus LAI on 3565-4442 or the undersigned on 3565-4373.

Yours faithfully,  
for and on behalf of  
FUGRO TECHNICAL SERVICES LIMITED

  
\_\_\_\_\_  
Alvin L.B. YU  
Environmental Team Leader

c.c. DSD  
AECOM  
Mott MacDonald HK Limited

Engineer  
ER  
IEC

Attn: Mr. Wallace CHENG (by E-mail)  
Attn: Mr. Simon YEUNG (by E-mail)  
Attn: Mr. Brandon WONG (by E-mail)

Encl.

Response to comments received from EPD on 28 December 2022

Comment	Response
<u><b>AFCD</b></u> S.3 Please revise the following sentence: "In addition, for area within 100m of <b>egretry</b> ... to avoid construction noise impact to <b>the egrettry</b> ."	Noted and revised.



保華-中國中鐵聯營體  
PAUL Y.-CREC JOINT VENTURE

Contract No.: DC/2019/10  
Yuen Long Effluent Polishing Plant  
– Main Works for Stage 1


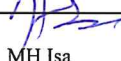



香港特別行政區政府  
渠務署

Drainage Services Department  
The Government of the Hong Kong Special Administrative Region

# NOISE MITIGATION MEASURES PLAN (Rev.1)

Document No. PYCRJV/NMMP/000

1	05 Jan 2023	Update	Diana Lee 	MH Isa 	Wilson Tam 
Rev	Date	Status	Prepared By Environmental Officer	Reviewed By Environmental Specialist	Approved By Project Manager



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Appendix B	Ecological Impacts Mitigation During Construction



**NOISE MITIGATION MEASURES PLAN (REV. 1)**

**Revision History**

Rev. No.	Issue Date	Amendment Section	Content	Amended By
0	30 Jan 2021		First Submission	Iris Ho
0	30 Apr 2021		First Submission (Supplementary Information)	Iris Ho
1	7 Jun 2021	Section 5	Prediction and Evaluation of Noise Level at each NSRs	Iris Ho
		Section 8	Measure for Mitigating Ecological Impacts During Construction of The Project	
		Appendix A	Location Plan of NSRs	
		Appendix D	Construction Plant Inventory (Without Mitigation)	
		Appendix E	Construction Plant Inventory (With Mitigation)	
		Appendix F	Construction Noise Impact Assessment (Without Mitigation)	
		Appendix G	Construction Noise Impact Assessment (With Mitigation)	
		Appendix H	Location Plan for Zone of No Construction Works with PME	
		Appendix I	Ecological Impacts Mitigation During Construction	
1	29 Jul 2021	Section 8	Measure for Mitigating Ecological Impacts During Construction of The Project (included the comments from AFCD through AECOM dated 20 July 2021)	Iris Ho
1	26 Aug 2021	Section 8	Measure for Mitigating Ecological Impacts During Construction of The Project (included the comments from AFCD through AECOM dated 24 August 2021)	Iris Ho
		Appendix C	Summary Programme for Major Works Construction Noise Calculation	
		Appendix F	Construction Noise Impact Assessment (Without Mitigation)	





**NOISE MITIGATION MEASURES PLAN (REV. 1)**

		Appendix G	Construction Noise Impact Assessment (With Mitigation)	
1	28 Sep 2021	Appendix C	Summary Programme for Major Works Construction Noise Calculation	Iris Ho
		Appendix D	Construction Plant Inventory (Without Mitigation)	
		Appendix E	Construction Plant Inventory (With Mitigation)	
		Appendix F	Construction Noise Impact Assessment (Without Mitigation)	
		Appendix G	Construction Noise Impact Assessment (With Mitigation)	
1	18 Mar 2022	Appendix C	Summary Programme for Major Works Construction Noise Calculation	Iris Ho
		Appendix D	Construction Plant Inventory (Without Mitigation)	
		Appendix E	Construction Plant Inventory (With Mitigation)	
		Appendix F	Construction Noise Impact Assessment (Without Mitigation)	
		Appendix G	Construction Noise Impact Assessment (With Mitigation)	
1	09 Aug 2022	The whole document revised to consider minimize construction noise impact on nearby ecological sensitive receivers.		Diana Lee
1	10 Oct 2022	Remove Table 3.1 as it states references to noise standards/requirements under EIAO-TM for sensitive human activities to avoid confusion.		Diana Lee
		Section 6.2	Added 2 paragraphs on Mitigation Measures for Egret	
		Table 6.2.6	Summary of Proposed Mitigation Measures to Mitigate Construction Noise Disturbance on Species of Conservation Importance and Migratory/Overwintering Waterbirds (including egret)	



**NOISE MITIGATION MEASURES PLAN (REV. 1)**

		Section 6.2.1 & 6.2.2	Paragraph added to reflect raft foundation will be used near egrettry thus minimizing noise and vibration	
1	25 Nov 2022	Section 3	Bullet point 2 revised to include when and which area percussive piling works has restriction.	Diana Lee
		Table 6.1.1	Included Mitigation Measures for egrettry.	
		Section 6.1, 6.2	Included where and when percussive piling and excavator-mounted breaker will be avoided.	
		Table 6.2.6	Emphasis on mitigation for (a) Construction Noise disturbance on Migratory/ Overwintering Waterbirds including egrettry and (b) Vibration disturbance from potential percussive piling works on migratory/overwintering waterbirds including egrettry and included where and when percussive piling and excavator-mounted breaker will be avoided.	
1	05 Jan 2023	Section 3	Bullet point 2 revised to include egrettry.	Diana Lee



## **NOISE MITIGATION MEASURES PLAN (REV. 1)**

### **1 INTRODUCTION**

Pursuant to the Particular Specification – P25.13(A) and Environmental Permit Condition 2.12, Noise Mitigation Measures Plan (NMMP) is required to be prepared by Paul Y. – CREC Joint Venture (PYCRJV) for the Contract No. DC/2019/10: Yuen Long Effluent Polishing Plant – Main Works for Stage 1 to demonstrate clearly the management of construction noise nuisance generated in the execution of works for the Project. The mitigation measures specified in this NMMP will be implemented on site to reduce and/or minimise the nuisance to the publics and nearest Noise and Ecological Sensitive Receivers.

### **2 SCOPE OF WORKS**

The works include civil and electrical and mechanical works for sewage and sludge treatment facilities, including inlet works, primary sedimentation tanks, mainstream bio-reactor system, tertiary treatment system, sludge thickening building, sludge digesters, biogas holding tanks and associated buildings; civil works for sludge dewatering building and administration building; and other ancillary works including road works, drainage works, utility works, architectural and landscaping works etc.

### **3 ENVIRONMENTAL LEGISLATION AND CRITERIA**

PYCRJV will

- Erect noise barriers with absorptive materials of at least 4m high along the northern, eastern and western sides of the Project boundary;
- Ensure that all percussive piling works and demolition using excavator mounted breakers are not carried out during winter season (Nov to Mar) for all site area to avoid construction noise impact to the overwintering/ migratory water-birds. In addition, for area within 100m of egrettry (i.e., Moving Bed Biofilm Reactor (MBBR) and Tertiary Treatment Building (TTB)), all percussive piling works and demolition using excavator mounted breakers are also not carried out during breeding season (Mar to Aug) to avoid construction noise impact to the egrettry;
- Set limitation of time and buffer distance for use of powered mechanical equipment to minimise impact on any ardeid night roost during construction of the Project;
- Ensure all plant and equipment to be used on the Site are in good operating condition and noisy construction activities are effectively sound-reduced by means of low-noise technology and equipment, and provision of silencers, mufflers, acoustic linings or shields, acoustic sheds or screens, noise barriers, acoustic mats and enclosures or other means to minimise construction noise impacts on nearby noise and ecological sensitive receivers;



## **NOISE MITIGATION MEASURES PLAN (REV. 1)**

### **4 NOISE IMPACTS MITIGATION**

Noise barriers with absorptive materials of at least 4m high erected along the North, East and West sides of the Project boundary will achieve a negative correction of 5 dB(A) noise reduction.

The following items of plant will be suitable for implementing the movable noise barriers during operation:

- Excavator;
- Air Compressor;
- Bentonite Plants;
- Concrete Pump;
- Poker Vibrator;
- Hand-held Breaker;
- Breaker, excavated mount; and
- Generator.

Moreover, mitigation measures such as the use of quiet powered mechanical equipment QPME, good site practices or multi-phased construction schedules, which are discussed below will be implemented as far as possible to further lower the noise impact.

#### **4.1 QUIET PME AND QUALITY POWERED MECHANICAL EQUIPMENT (QPME)**

The following QPME listed in the EPD QPME's Inventory will be sourced and considered if necessary.

- Asphalt paver,
- Bulldozer, wheeled,
- Bulldozer, tracked,
- Compactor, vibratory,
- Crane, mobile,
- Excavator, wheeled/tracked,
- Generator,
- Loader, wheel,



### **NOISE MITIGATION MEASURES PLAN (REV. 1)**

- Loader, tracked,
- Power rammer,
- Road roller,
- Vibratory roller, and
- Roller, vibratory.

#### **4.2 GOOD SITE PRACTICES**

The following good site practices should be adopted to further ameliorate the noise impacts:

- Only well-maintained plant shall be operated on-site and plant shall be serviced regularly;
- Silencers or mufflers on construction equipment shall be utilized and shall be properly maintained during the construction program;
- Mobile plant, if any, shall be sited as far away from NSRs as applicable;
- Machines and plant (such as trucks) that may be in intermittent use must be shut down between works periods or shall be throttled down to a minimum;
- Plant known to emit noise strongly in one direction shall, wherever possible, be orientated so that the noise is directed away from the nearby NSRs;
- Material stockpiles and other structures shall be effectively utilized, wherever practicable, in screening noise from on-site construction activities;
- Low-noise technology and equipment and provision of noise barriers, acoustic mats and enclosures to minimise construction noise impacts on nearby ecological sensitive receivers; and
- Use of movable noise barriers for excavators mounted with hydraulic breaker

## **5 IMPACT MONITORING DURING CONSTRUCTION**

### **5.1 EXTERNAL MONITORING**

Environmental Monitoring and Audit (EM&A) Manual will serve as a guideline to set up of an EM&A programme for noise monitoring to ensure compliance with the Environmental Impact Assessment (EIA) study recommendations, to assess the effectiveness of the recommended mitigation measures and to identify any further need for additional mitigation measures or remedial action.

The Environmental Team Leader and his team member will be responsible for the set-up, implement



## **NOISE MITIGATION MEASURES PLAN (REV. 1)**

and maintain of EM&A programme.

The Event and Action Plan will be followed in case of non-compliance with the construction noise criteria, or when one documented complaint is received.

### **5.2 INTERNAL MONITORING**

Daily and weekly site monitoring and inspections will be conducted, when necessary, in order to ensure the effectiveness of implemented noise mitigation measures.

## **6 MEASURE FOR MITIGATING ECOLOGICAL IMPACTS DURING CONSTRUCTION OF THE PROJECT**

### **6.1 CONSTRUCTION NOISE DISTURBANCE ON SPECIES OF CONSERVATION IMPORTANCE AND MIGRATORY/OVERWINTERING WATERBIRDS**

In accordance with the EIA Report Section 8.7, higher level of stimuli from construction works, e.g., construction noise, would cause greater level of disturbance.

Demolition works using excavator-mounted breaker and percussive piling works would therefore pose greater impacts on the nearby waterbirds, particular migratory/overwintering waterbirds (including egret). Hence, works involving percussive piling and excavator-mounted breaker for all the site area will avoid the bird winter season (Nov to Mar) (due to EP) and for MBBR and TTB will avoid both the bird winter season (Nov to Mar) and breeding season (Mar to Aug) (due to EP and "YLSTW Egrettry\_mitigation proposal (Consolidated) (8 Oct).pdf").

#### **6.1.1 MITIGATION OF ADVERSE ECOLOGICAL IMPACTS**

According to the EIAO-TM Annex 16 and EIAO Guidance Note. 3/2010, ecological impacts on important habitats and the associated wildlife caused by the proposed Project should be mitigated, in order of priority, avoidance, minimisation, and compensation approaches to the maximum practical extent.

In accordance with Table 8.34 of the EIA Report, the potential ecological impacts arising from the construction noise of the Project and the mitigation measures requirements are tabulated below:

Table 6.1.1 Summary of Potential Ecological Impacts Arising from The Construction Noise of The Project and The Mitigation Measures Requirements



### NOISE MITIGATION MEASURES PLAN (REV. 1)

Impact		Unmitigated Level of Impacts	Mitigation Measures Required (✓ / ✕)
<i>Construction Noise Disturbance</i>	Migratory/overwintering waterbirds including egretty	Moderate	✓
	Waterbirds that are present all year round (e.g. ardeids)	Minor to Moderate	✓
	Ardeid Night roost	Minor to Moderate	✓
<i>Vibration disturbance from potential percussive piling works</i>	Migratory/overwintering waterbirds including egretty	Minor to Moderate	✓
	Nearby resident waterbirds during summer	Minor	✕

As per EIA Report Sections 8.10.2 and 8.10.3, the following measures for mitigating ecological impacts during construction are summarised in the sections below:

## **6.2 MINIMISING CONSTRUCTION NOISE DISTURBANCE IMPACTS**

In view of the presence of sensitive wetland habitats and the abundance of waterbirds (particularly migratory/overwintering ones) within the assessment area, other practicable effective mitigation measures on planning and construction of the Project have also been fully explored and exhausted under this Project as described below to further abate the ecological impacts arising from construction noise disturbance on nearby wetland habitats and associated waterbirds, including careful phasing of construction activities, consideration of alternative construction methods, use of noise barriers, use of Quality Powered Mechanical Equipment (QPME) (Refer to **Appendix B**) and no percussive piling works for

- (a) all the site area during winter season (Nov to Mar) (due to EP); and
- (b) MBBR and TTB during winter season (Nov - Mar) and breeding season (Mar- Aug) (due to EP and "YLSTW Egretty\_mitigation proposal (Consolidated) (8 Oct).pdf").

Noise barrier should be set up outside egretty breeding seasons, demolition of existing tanks at the proposed Mainstream Bioreactor, Ancillary Facilities and Tertiary Treatment System should be avoided during egretty breeding season (March to August), activities using excavator-mounted breaker should be avoided within 100m of egretty during breeding season (March-August), Powered Mechanical Plant shall be placed away from the egretty as far as practicable.





## **NOISE MITIGATION MEASURES PLAN (REV. 1)**

During breeding season, acoustic shield/ noise enclosure at ground level shall be in place for partial cover of the excavated area to mitigate noise generated by underground construction activities. Extent of acoustic shield/ noise enclosure should be 20 m from the northern edge of the excavated area and at least 10 m from the eastern edge.

For construction of above ground structures near egrettry during breeding season, soundproof curtain shall be erected, for construction works above 4 m from ground, to surround the building or structure using scaffolding or other means as an additional noise abatement measure.

### **6.2.1 CONSIDERATION OF ALTERNATIVE CONSTRUCTION METHODS**

Demolition using concrete crusher is quieter than demolition using breakers mounted on excavators that its construction noise level is comparable to other general construction activities. Concrete crusher also generates less vibration and dust than breakers during demolition works. However, concrete crusher is less efficient than breaker (approximate 50% slower) and its demolition rate would be more unreliable. In view of the tight programme, concrete crusher would be used for demolition works to be undertaken during dry season months and demolition using breakers mounted on excavators should only be undertaken during wet season when the wetland habitats nearby the Project site are less sensitive outside the peak overwintering season. Other quieter demolition methods including non-explosive demolition agent and the use of thermal lance and/or high-pressure water jets have also been considered but their demolition rate is also unreliable as well and thus not viable for the Project.

Various construction methods for foundation works, including the conventional percussive piles, bored piles by reverse circulation drill, box rafts and shallow foundation, have been explored for this Project. The foundation options are highly subject to the ground conditions. While box rafts, bored piling by reverse circulation drill and shallow foundation typically cause less disturbances (including noise, vibration and dust etc.), the application of these methods for this Project is comparatively limited, given the site and engineering constraints, including deep bed rocks (over 150 m below ground) of the Project site, additional ground treatment (e.g. grouting) required for foundation works and large excavation volume, that could cause other environmental issues such as water pollution and adverse waste management implication. Due to ground conditions and programme constraints, percussive piling works would likely be unavoidable. In light of the presence of sensitive overwintering waterbirds in the wetland habitats nearby the Project site and programme limitation, percussive piling works would only be undertaken during the wet seasons to minimise the construction noise impacts on sensitive wetland habitats and associated waterbirds. In considering the construction noise, ecological impact and other environmental constraints, the quieter foundation methods, including raft foundation and shallow foundation, would be adopted as far as possible.





### **NOISE MITIGATION MEASURES PLAN (REV. 1)**

Therefore, the project will "adopt alternative foundation type design (box raft) instead of traditional percussive piling at Aerobic Granular Sludge (AGS) and Tertiary Treatment Building which are near egretty thus minimizing noise and vibration. Nevertheless, no percussive piling works near egretty would be carried out during breeding season.

#### **6.2.2 CAREFUL PHASING OF CONSTRUCTION ACTIVITIES**

The programme and phasing of the construction activities have been carefully planned to localise the construction disturbance within and to reduce the duration of high level of disturbances on sensitive wetland habitats and associated waterbirds nearby each construction zone of the new or upgraded facilities. Demolition works using breakers mounted on excavators and percussive piling at each construction zone would typically be completed over two wet seasons and these two activities would not be undertaken in the same zone at the same time.

Furthermore, the facilities in the eastern side of the Project site which are located closest to Shan Pui River, i.e. inlet works/primary treatment and biological/tertiary treatment, are planned to be developed first during early stage of construction so that the new structures could "fence off" construction of other facilities from Shan Pui River. The demolition works using breakers mounted on excavators and percussive piling works for the Inlet works/primary treatment and biological/tertiary treatment would be finished in wet season and outside the breeding season in 2022 and construction of these facilities would be completed by around 2025. The new structures of these facilities could serve as "barriers" to further screen the works in the middle and western parts of the site in later stage of the construction phase, i.e. construction period after arounds 2025 of construction when the structures in inlet works/primary treatment and biological/tertiary treatment are completed, hence minimising the construction noise and human disturbance on sensitive wetland habitats adjacent to the Project site in Shan Pui River, including the confluence of Shan Pui River and Kam Tin River and ardeid night roost to the immediate east of the Project site.

#### **6.2.3 USE OF NOISE BARRIERS/ACOUSTIC SCREENS**

In order to further minimise the overall impacts on the nearby wetland habitats and associated waterbirds, particularly to the wetland habitats adjacent to the Project site, noise barriers with absorptive materials of at least 4m high will be erected along the northern, eastern and western sides of the site, throughout the construction phase. The purpose is to screen the construction noise and human disturbance from the waterbirds foraging in ponds in Fung Lok Wai and Shan Pui River during construction phase.



## **NOISE MITIGATION MEASURES PLAN (REV. 1)**

Adequate noise barriers should also be provided for the demolition using breakers mounted on excavators and percussive piling works, to further minimise the construction noise disturbance from these construction activities. Movable noise barriers should be provided to breakers mounted on excavator used for demolition works and acoustic mat should be provided to the piling plants around the rig.

PYCRJV would provide enclosure for construction equipment, especially static plants (e.g., generator), as appropriate to minimise the noise disturbance as far as practicable.

### **6.2.4 USE OF QUALITY POWERED MECHANICAL EQUIPMENT**

The Quality Powered Mechanical Equipment (QPME) system was developed by EPD to benchmark construction equipment items that are new, notably quieter, more environmentally friendly and efficient by QPME Labels.

PYCRJV would source QPMEs for construction as far as practicable to further minimise the overall construction noise and other disturbance to the nearby wetland habitats and associated waterbirds to the maximum practical extent.

### **6.2.5 RESTRICTION OF CONSTRUCTION HOURS**

Ardeid night roost was recorded nearby the Project site. Noise barriers with absorptive materials of at least 4m high erected along the eastern side would screen human disturbance and noise disturbance to the night roost. The structures of the facilities at the eastern side of the Project site, i.e., inlet works/primary treatment and biological/tertiary treatment could also screen the roosting ardeids from other construction activities within the Project site upon their completion. A continued implementation of monthly Ardeid Night Roost monitoring for areas within 100m from the project boundary throughout the construction phase in accordance with the EM&A Manual Sections 7.3.10 and 7.3.11; and EIA Report Section 8.12.1.3 will be done.

### **6.2.6 SUMMARY OF PROPOSED MITIGATION MEASURES TO MITIGATE CONSTRUCTION NOISE DISTURBANCE ON SPECIES OF CONSERVATION IMPORTANCE AND MIGRATORY/OVERWINTERING WATERBIRDS**

The summary of proposed mitigation measures to mitigate construction noise disturbance on species



### NOISE MITIGATION MEASURES PLAN (REV. 1)

of conservation importance and migratory/overwintering waterbirds is summarised below:

Table 6.2.6 Summary of Proposed Mitigation Measures to Mitigate Construction Noise Disturbance on Species of Conservation Importance and Migratory/Overwintering Waterbirds (including egret)

Impact	Unmitigated Overall Impact	Relevant Measures Proposed	Mitigated Overall Impact
<b><u>Indirect Impacts</u></b>			
<b>Construction Noise disturbance on Migratory/Overwintering Waterbirds including egret</b>	Moderate	<ul style="list-style-type: none"> <li>• <u>Avoidance of Percussive Piling and Demolition Using Breakers Mounted on Excavators for</u> <ul style="list-style-type: none"> <li>(a) <u>All site area</u> <ul style="list-style-type: none"> <li>- Percussive piling and excavator-mounted breaker will avoid the bird winter season (Nov to Mar) (due to EP).</li> </ul> </li> <li>(b) <u>MBBR and TTB</u> <ul style="list-style-type: none"> <li>- Percussive piling and excavator-mounted breaker will avoid both the bird winter season (Nov to Mar) and breeding season (Mar to Aug) (due to EP and "YLSTW Egrettry_mitigation proposal (Consolidated) (8 Oct).pdf").</li> </ul> </li> </ul> </li> <li>• <u>Consideration of Alternative Construction Methods</u> <ul style="list-style-type: none"> <li>- Demolition using crusher, which is quieter than using breaker mounted on</li> </ul> </li> </ul>	<p>Construction activities with high noise levels have been avoided in winter season for all site area and both winter season and breeding season for MBBR and TTB.</p> <p>Further noise mitigation measures have also been exhausted to reduce the construction noise levels and screen the affected habitats from construction noise and any human disturbances from the general activities, hence minimising the magnitude of the impacts.</p> <p>The disturbance impacts are expected to be effectively controlled.</p>



**NOISE MITIGATION MEASURES PLAN (REV. 1)**

		<p>excavator, will be adopted for demolition works during dry season;</p> <ul style="list-style-type: none"><li>- The quieter foundation methods, including bored piling, raft foundation and shallow foundation, would be adopted as far as possible.</li></ul> <ul style="list-style-type: none"><li>• <u>Careful Phasing of Construction Activities</u><ul style="list-style-type: none"><li>- Facilities in the eastern side of the Project site are scheduled to be developed first that the new structures could “fence off” other construction works from Shan Pui River, further minimising the noise impacts on MW1, MW2, MW3, active ponds of P4 and MG adjacent to Project site in the later stage of the construction.</li></ul></li><li>• <u>Use of Noise Barriers/Acoustic Screens</u><ul style="list-style-type: none"><li>- Noise barriers with absorptive materials of about 4m high will be erected along the northern, eastern and western sides of the site;</li><li>- PYCRJV should also provide noise enclosure for construction equipment, particularly on static plants, as far as practicable.</li></ul></li></ul>	
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**NOISE MITIGATION MEASURES PLAN (REV. 1)**

		<ul style="list-style-type: none"> <li>• <u>Use of QPME</u> <ul style="list-style-type: none"> <li>- PYCRJV should deploy QPMEs for construction as far as practicable</li> </ul> </li> </ul>	
<b>Construction Noise disturbance on Ardeid night roost east to Project site</b>	Minor to Moderate	<ul style="list-style-type: none"> <li>• <u>Restriction of Construction Hours</u> <ul style="list-style-type: none"> <li>- No construction works with PME should be conducted within 100m from any night roost confirmed by the pre-construction survey after 18:00 during wet season and after 17:30 during dry season.</li> </ul> </li> <li>• <u>Careful Phasing of Construction Activities</u> <ul style="list-style-type: none"> <li>- Facilities in the eastern side of the Project site are scheduled to be developed first that the new structures could “fence off” other construction works from Shan Pui River, further minimising the noise impacts in the later stage of the construction.</li> </ul> </li> <li>• <u>Use of Noise Barriers/Acoustic Screens</u> <ul style="list-style-type: none"> <li>- Noise barriers with absorptive materials of about 4m high will be erected along the northern, eastern and western sides of the site;</li> </ul> </li> </ul>	<p>The interfacing of construction activities using PME with roosting hours of the ardeids night roost at the mangrove strip adjacent to the Project site has been avoided as far as practicable by restricting the construction hours within 100m from the night roost after 18:00 during wet season and 17:30 during dry season.</p> <p>Further noise mitigation measures have also been exhausted to reduce the construction noise levels and screen the affected habitats from construction noise and any human disturbances from the general activities, hence minimising the magnitude of the noise levels and associated impacts.</p> <p>No unacceptable ecological impacts are expected.</p>



**NOISE MITIGATION MEASURES PLAN (REV. 1)**

		<ul style="list-style-type: none"> <li>- Contractor should also provide noise enclosure for construction equipment, particularly on static plants, as far as practicable.</li> <li>• <u>Use of QPME</u> <ul style="list-style-type: none"> <li>- PYCRJV should deploy QPMEs for construction as far as practicable.</li> </ul> </li> </ul>	
<b>Vibration disturbance from potential percussive piling works on migratory/overwintering waterbirds including egret</b>	Minor to Moderate	<ul style="list-style-type: none"> <li>• <u>Avoidance of Percussive Piling for</u> <ul style="list-style-type: none"> <li>(a) <u>All site area</u> <ul style="list-style-type: none"> <li>- Percussive piling and excavator-mounted breaker will avoid the bird winter season (Nov to Mar) (due to EP).</li> </ul> </li> <li>(b) <u>MBBR and TTB</u> <ul style="list-style-type: none"> <li>- Percussive piling and excavator-mounted breaker will avoid both the bird winter season (Nov to Mar) and breeding season (Mar to Aug) (due to EP and "YLSTW Egrettry_mitigation proposal (Consolidated) (8 Oct).pdf").</li> </ul> </li> </ul> </li> </ul>	No adverse impacts as avoided.



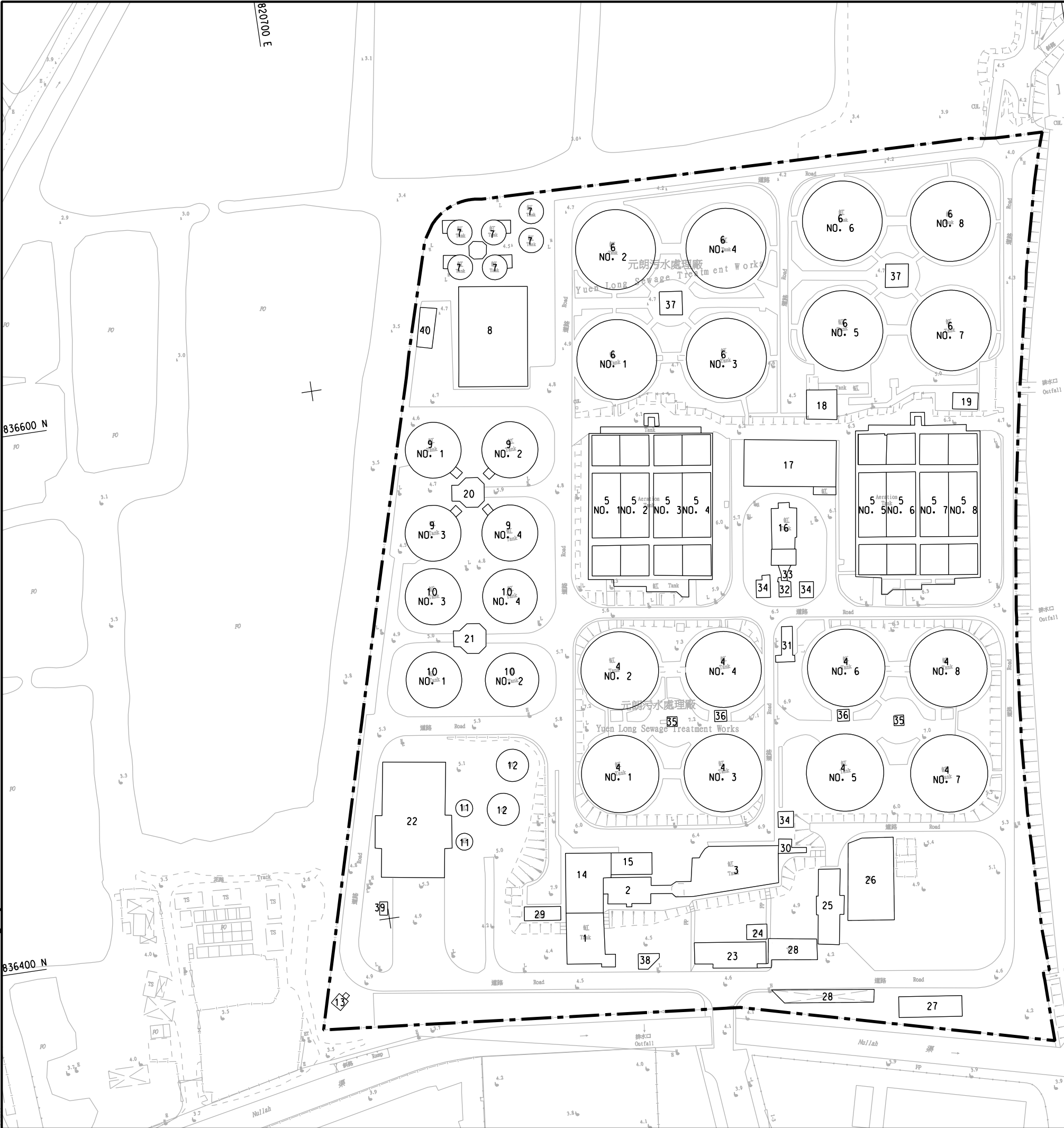
**保華-中國中鐵聯營體**  
**PAUL Y.-CREC JOINT VENTURE**

Contract No.: DC/2019/10  
Yuen Long Effluent Polishing Plant  
– Main Works for Stage 1

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**NOISE MITIGATION MEASURES PLAN (REV. 1)**

Appendix A – Location Plan







**保華-中國中鐵聯營體**  
**PAUL Y.-CREC JOINT VENTURE**

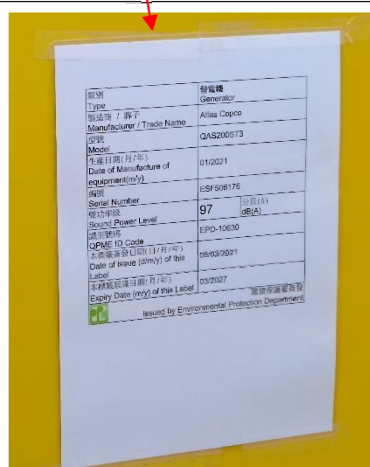
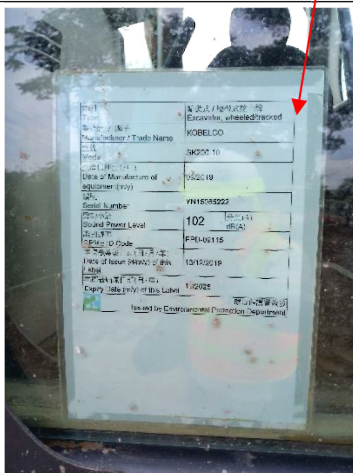
Contract No.: DC/2019/10  
Yuen Long Effluent Polishing Plant  
– Main Works for Stage 1

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**NOISE MITIGATION MEASURES PLAN (REV. 1)**

Appendix B – Ecological Impacts Mitigation During Construction

**NOISE MITIGATION MEASURES PLAN (REV. 1)**



Plant with QPME (Quality Powered Mechanical Equipment) label used on site



Acoustic material wrapped around the piling head



Acoustic material wrapped around to breaker head



**NOISE MITIGATION MEASURES PLAN (REV. 1)**



Rigid noise barriers

Acoustic mats placed along the fencing to San Pui River and rigid noise barriers in front of acoustic mats



Use of movable noise barriers and fixed noise barriers