



FUGRO



5th Post-Translocation Monitoring Report (December 2022)

Northeast New Territories Landfill Extension (NENTX) | Contract No. EP/SP/77/15

0092/22/ED/0295 02 | 15 February 2023

Formal Submission

Veolia Environmental Services Hong Kong Ltd.



Our Ref.: CL/91823/0325-VES
Date: 3 April 2023

By Email

Veolia Environmental Services Hong Kong Limited
40/F, One Taikoo Place
979 King's Road
Quarry Bay
Hong Kong

Attn.: Mr. Alvin Kam

**Meinhardt Infrastructure and
Environment Ltd**
邁進基建環保工程顧問有限公司

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33-35 Wong Chuk Hang Road
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Dear Sir

Re: Contract No. EP/SP/77/15
North-East New Territories Landfill Extension (NENTX)
5th Post-Translocation Monitoring Report (December 2022)

I refer to Conditions 2.8 and 2.10 under Environmental Permit No. EP-292/2007 and Conditions 2.6 and 2.8 under Further Environmental Permit No. FEP-01/292/2007, regarding the submission of Post-Translocation Monitoring Report. I hereby verified the captioned "5th Post-Translocation Monitoring Report (December 2022)" dated 3 January 2023.

Should you have any queries, please do not hesitate to contact the undersigned at 2859 5409.

Yours faithfully
MEINHARDT INFRASTRUCTURE AND ENVIRONMENT LTD



Claudine Lee
Independent Environmental Checker

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Ref: P521530-0000-REV-NN-0031

23 March 2023

By Email

Meinhardt Infrastructure & Environment Ltd.
10/F Genesis
33-35 Wong Chuk Hand Road
Hong Kong

Attn: Ms. Claudine Lee,

Dear Claudine,

Re: Contract No. EP/SP/77/15
Northeast New Territories Landfill Extension
Submission of 5th Post-Translocation Monitoring Report (December 2022)

In accordance with the requirement specified in Conditions 2.8 and 2.10 of Environmental Permit No. EP-292/2007 and Conditions 2.6 and 2.8 of Further Environmental Permit No. FEP-01/292/2007, we are pleased to submit the certified "5th Post-Translocation Monitoring Report (December 2022)" dated on 3 January 2023 for your verification.

Should you require any further information or clarification, please do not hesitate to contact the undersigned or our Mr. Keith Chau on 3664 6788.

Yours faithfully,
For and on behalf of
Aurecon Hong Kong Limited

A handwritten signature in blue ink, appearing to read "Fredrick Leong".

Fredrick Leong
Environmental Team Leader

Encl.

1. 5th Post-Translocation Monitoring Report (December 2022)

cc.

1. IEC - Ms. Claudine Lee (By email: claudinelee@meinhardt.com.hk)
2. IEC Representative - Mr. Jimmy Lui (By email: jimmylui@meinhardt.com.hk)

Document Control

Document Information

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Client Information

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Client Contact	Mr. William Wan
Client Document No.	NENTX-FUG-RP-E-EM-008-I01

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03 Jan 2023	Draft	Awaiting Client's Comments	AY/KJB	FN	CY
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Project Team

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FN	Fenelyn Nabuab	Ecologist
KJB	Kalvin Jay Boregon	Ecologist
SMR	Sheila Marie Rabi	GIS Specialist/ Ecologist
AY	Andy Yuen	Assistant Environmental Consultant
IEC	Meinhardt (Hong Kong) Limited	Independent Environmental Checker
ET	Aurecon (Hong Kong) Limited	Environmental Team

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1. Introduction

- 1.1.1 The North East New Territories Landfill Extension (the NENTX Project) is a designated project. The Environmental Impact Assessment (EIA) Report was approved with conditions on 20 September 2007 (AEIAR-111/2007) and the Environmental Permit (EP) EP-292/2007 (the "EP") was issued on 26 November 2007. Additionally, a Further Environmental Permit FEP-01/292/2007 (the "FEP") was also issued under the EIA Ordinance on 28 April 2022.
- 1.1.2 In order to fulfil FEP conditions 2.6 and 2.8 on the post-translocation monitoring of the endemic freshwater crab *Somanniathelphusa zanklon*, a survey shall be carried out to monitor the establishment and effectiveness of the measures for the endemic *S. zanklon* community in the translocated site.
- 1.1.3 The post-translocation monitoring methodology shall be in accordance with the approved Revised Translocation Proposal for the Endemic Freshwater Crab *Somanniathelphusa zanklon* (NENTX-FUG-RP-E-EM-I01 Revised Translocation Proposal) (the "approved Proposal"). The approved Proposal was agreed upon with the Environmental Protection Department (EPD) and Agriculture, Fisheries and Conservation Department (AFCD).
- 1.1.4 The NENTX Design-Build-Operate (DBO) Contractor, on behalf of EPD/LDG, is responsible for carrying out the post-translocation monitoring works in accordance with the approved Proposal.
- 1.1.5 The NENTX DBO contract was awarded to Veolia Environmental Services Hong Kong Ltd. (Veolia) and Fugro Technical Services Limited (Fugro) was appointed by Veolia to implement the post-translocation monitoring works in accordance with the approved Proposal.

1.2 Purpose of this Document

- 1.2.1 This Post-Translocation Monitoring Report for the Endemic Freshwater Crab *Somanniathelphusa zanklon* (the "Report") was prepared to detail the findings of the mark-recapture post-translocation activities in fulfilment of Section 4 of the approved Proposal, FEP conditions 2.6 and 2.8, and Conditions of EIAR Approval No. 4 for the NENTX Project.

1.3 Structure of the Report

- 1.3.1 Succeeding this Section 1 Introduction, the remainder of this Report is presented as follows:
- Section 2 details the methodology of the mark-recapture activity;
 - Section 3 presents the survey results of mark-recapture activity;
 - Section 4 details the post-translocation monitoring schedule; and
 - Section 5 presents the summary and conclusion.

2. Mark-Recapture Methodology

2.1.1 This section presents the methodology and approach of the post-translocation mark-recapture monitoring in accordance with Section 4 of the approved Proposal; and in fulfilment of FEP conditions 2.6 and 2.8 and Conditions of EIA Approval No. 4 for the NENTX Project.

2.2 The Monitoring Area

2.2.1 The Recipient Site (the "Monitoring Area") (**Appendix A**) is the site where the eight individuals of *S. zanklon* were translocated during capture-translocation surveys conducted from 21 to 24 July 2022.

2.2.2 The Monitoring Area is located at the middle section of Ping Yuen River tributary, and adjacent to Ping Yuen Road, to the north of Ping Yeung Village. In this tributary, *S. zanklon* was previously recorded during the approved EIA studies (i.e., EIA-133/2007 and EIA-190/2010) (ERM, 2022) suggesting that this watercourse is suitable for *S. zanklon*.

2.2.3 Although channelisation features (e.g., concrete bank and gabions) and an inflatable water dam are present about 100m to the east, the monitoring area is still considered largely natural with a low gradient and low water flow (see **Photo 2.1**). The streambed is mainly covered by soil and stream banks are vegetated with grass. This area meets the habitat requirements of the species. The soft soil stream substrate and the availability of riparian vegetation are ideal for *S. zanklon* to create microhabitat to inhabit. In addition, the natural meander would also reduce the water flow, which is preferred by the *S. zanklon*. It is anticipated that pollution or disturbance would be in a low level in this section, considering there is limited roads and houses (and therefore limited human activities) until the stream reaches Kan Tau Wai and Tong Fong along Ping Che Road.



Photo 2.1: Section of the monitoring area with low gradient and low water flow

2.3 Personnel

2.3.1 The post-translocation monitoring survey team was led by a qualified ecologist with minimum of five years of experience in aquatic ecology or other related experience as accepted by AFCD and EPD. In particular, the survey team leader has the experience in surveys of *S. zanklon*.

2.4 Mark-Recapture Activity

2.4.1.1 The fifth mark-recapture activity was conducted last 29th December 2022 during night-time period. Hand netting and kick sampling in the monitoring area were conducted. In addition, direct observation was also conducted along the stream riparian zone to search for *S. zanklon* in their potential hiding spaces (e.g. under rocks and fallen tree branches). Permit under Cap. 170 was obtained from AFCD before the use of nets to collect freshwater fauna in the streams (Appendix B).

2.4.2 Hand Netting

2.4.2.1 Hand netting (see Photo 2.2) was used to search the potential habitats along the watercourse. The sweeping motion of the hand netting scraped the layer of the stream bottom substrate into the net, e.g., soil and leaf litter where possible, as *S. zanklon* is likely to be among these substrates. After taking the hand net out of the water, it was allowed to drain, and the net content was emptied on to a large sorting tray. All caught *S. zanklon*, if any, would be carefully moved to a plastic container for marking.



Photo 2.2: Hand netting at a potential habitat (vegetation) along the watercourse

2.4.3 Kick-netting

2.4.3.1 Kick-netting (see **Photo 2.3**) was done along the watercourse by moving upstream with the net facing the water current. The surveyor disturbed the substrate by kicking the streambed substrate by kicking, such that the *S. zanklon* dislodged from the streambed would be trapped in the net. In order to maximise the survey effort within the stream, the surveyor moved up the stream in a zigzag direction to increase the kick sampling coverage. The net was checked after a maximum of one minute of kick sampling. Additionally, the net was checked more frequently if large amount of substrate was kicked into the net.



Photo 2.3: Surveyor kick-netting the substrate and checking the net's contents

2.4.3.2 Similar to hand netting, the net content was emptied on to a large sorting tray. All caught *S. zanklon*, if any, were carefully moved to a plastic container for post-translocation marking.

2.4.4 Direct Observation

Direct observation (see **Photo 2.4**) to search for *S. zanklon* in their potential hiding spaces was also conducted.



Photo 2.4: Surveyor searching for *S. zanklon* on potential hiding space (under vegetation and rocks) along the watercourse

2.4.5 Marking

All captured *S. zanklon* individuals would be marked prior to releasing them back to the monitoring area. The marker would be an epoxy-resin based paint (Jotamastic Wintergrade) which contains a metallic component and cures in contact with water. Earlier laboratory and field trials had established that crab survival and behaviour was unaffected by paint marking on the carapace and that the marks persisted in field conditions (Eaton et. al., 2001). Recaptures, if any, would be re-marked with black numerals to indicate the month of capture.

3. Survey Results

3.1.1 There was no *S. zanklon* individual that was recaptured nor marked during the monitoring period (**Appendix C**). This could be attributed to human disturbance, i.e., clearing of riparian vegetation in the monitoring area (see **Photo 3.1**). The clearing could have disturbed the habitats of the crabs and caused them to move to the more protected sections of the monitoring area. Moreover, the individuals could have moved to a different area in search for food and habitats.



Photo 3.1: Cleared riparian vegetation in the monitoring area

4. Post-translocation Monitoring Schedule and Area

- 4.1.1 Continued post-translocation monitoring will be conducted to further monitor the establishment and effectiveness of the measures for *S. zanklon* community in the translocated site.
- 4.1.2 As the monthly monitoring for the first three months after the post-translocation activities have been concluded last monitoring period, the succeeding post-translocation monitoring should be, then, carried out quarterly. However, as no individuals were found in the August, September and October monitoring, Fugro has decided to continue the conduction of monthly monitoring until June 2023. This initiative was suggested by Fugro and will be implemented by Fugro. Further monthly monitoring will be conducted continuously until June 2023.
- 4.1.3 Furthermore, the survey area had been extended. As the individuals could have relocated further downstream in search for food and habitats, the revised survey area had been extended further downstream in search for the individuals that could have possibly relocated (**Appendix A**). This initiative was also suggested by Fugro.

5. Summary and Conclusion

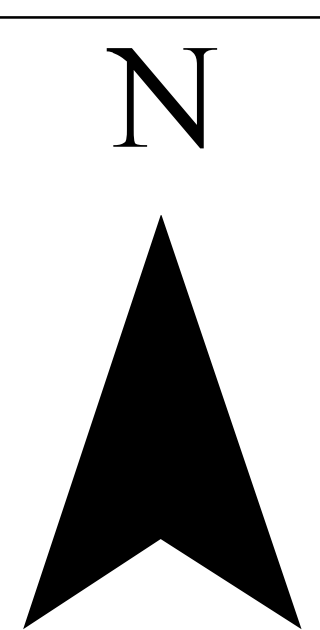
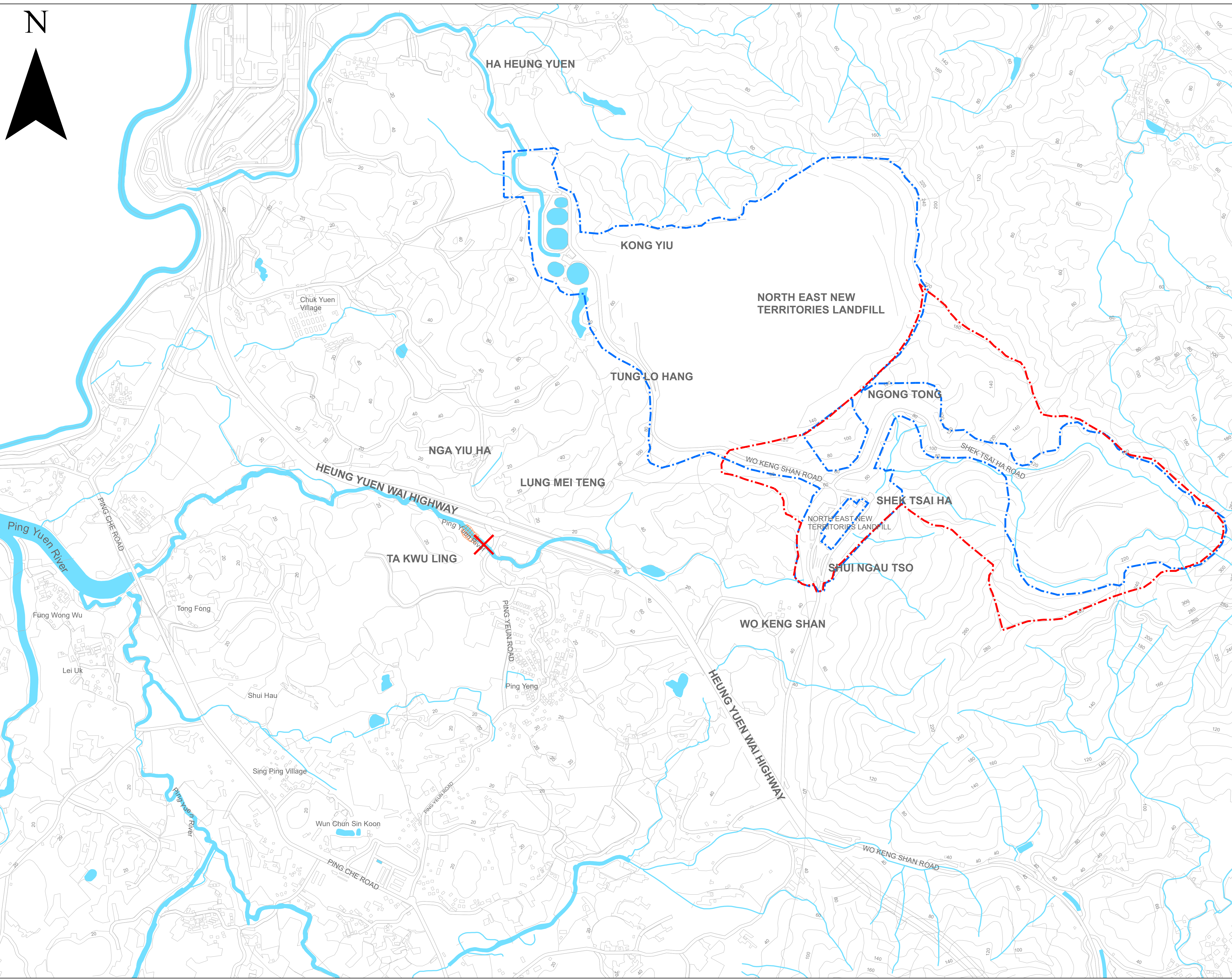
- 5.1.1 No *S. zanklon* individual was recaptured nor marked during the current monitoring period. The result could be due to the disturbance from vegetation clearing in the monitoring area which could have destroyed the habitats of crabs, causing them to move to the more secluded sections of the monitoring area for protection. Moreover, the individuals may have moved to a different area in search for food and habitats. Therefore, the survey area had been extended further downstream in effort to search for possibly relocated *S. zanklon* individuals. Despite the increased effort, still no *S. zanklon* individuals were identified. However, the Monitoring Area will be continuously monitored monthly until June 2023 in accordance to the recommendations of Fugro.


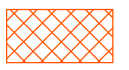



6. References

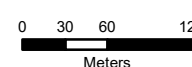



- Eaton, D.R., J.T. Addison, S.P. Milligan, J. Brown and L.J. Fernand. 2001. Larvae surveys of edible crab (*Cancer pagurus*) off the east coast of England: implications for stock structure and management. ICES CM 2001/J:14. 10pp.
- ERM. 2022. Aquatic Fauna Survey Findings included in previous Translocation Proposal (version 4.0).
- Hong Kong Observatory (HKO). 2022.
https://www.hko.gov.hk/en/wxinfo/climat/warndb/warndb1.shtml?opt=1&sgnl=1.or.higher&start_ym=202208&end_ym=202208&submit=Submit+Query

Appendix A

Monitoring Area



- Legend**
-  Monitoring Area
 -  Survey Area Extension
 -  NENT Landfill Extension (NENTX)
 -  Existing NENT Landfill
 -  Hydrographic features

No.	Date	Description	Designed	Checked
		Name		Date
Drawn		SMR		14 FEB 2023
Checked		FMN		14 FEB 2023
Project No.		0092-22		
Project Title				
NORTHEAST NEW TERRITORIES LANDFILL EXTENSION (NENTX)				
Figure title				
Recipient Site (outside NENTX) for the Endemic Freshwater Crab <i>Somanniathelphusa zanklon</i>				
Drawing No.	Revision	Scale		
0092-22/002				
Client				
 VEOLIA ENVIRONMENTAL SERVICES HONG KONG LTD.				
Environmental Team				
 AURECON HONG KONG LTD.				
Sub-consultant				
 FUGRO TECHNICAL SERVICES LIMITED				

Appendix B

Special Permit under Cap. 170

漁農自然護理署
長沙灣道 303 號
長沙灣政府合署 7 樓



AGRICULTURE, FISHERIES AND
CONSERVATION DEPARTMENT
Cheung Sha Wan Government Offices
303 Cheung Sha Wan Road, 7th Floor
Kowloon, Hong Kong.

By registered mail

本處檔號 OUR REF.: (83) in AF GR CON 09/50 pt. 38
來函檔號 YOUR REF.:
電話 TEL NO.: 2150 6921
電郵地址 E-mail Address: tony_kt_chan@afcd.gov.hk
圖文傳真 Faxline No.: 2377 4427

27 September 2022

Fenelyn Nabuab
Fugro Technical Services Limited,
13/F, Fugro House – KCC2,
1 Kwai On Road,
Kwai Chung, NT, Hong Kong

Dear Fenelyn Nabuab,

Permission to Possess Hand Nets for the Surveys of Aquatic Fauna

Thank you for your emails of 19 and 22 September 2022.

I enclose a permit for your retention. You are requested to observe the conditions of the permit. Please contact the undersigned should you have any queries.

Yours sincerely,

(K. T. CHAN)

for Director of Agriculture, Fisheries and Conservation

Encl.

覆函請寄交「漁農自然護理署署長」

Please address all replies to Director of Agriculture, Fisheries and Conservation

漁農自然護理署
九龍長沙灣道三〇三號
長沙灣政府合署五樓



覆函請寄交
「漁農自然護理署署長」
Please address all replies to
Director of Agriculture, Fisheries and Conservation

AGRICULTURE, FISHERIES AND
CONSERVATION DEPARTMENT

Cheung Sha Wan Government Offices
5th floor, 303 Cheung Sha Wan Road
Kowloon, Hong Kong

本署檔號 Our Ref. : (112) in AF GR CON 09/51 Pt.8
來函檔號 Your Ref. :
電話 Tel. No. : / For enquiries: 2150 6921
電郵地址 E-mail Address : mailbox@afcd.gov.hk
圖文傳真 Faxline No. : (852) 2311 3731

26 September 2022

Permission to Possess Hand Nets for the Surveys of Aquatic Fauna

I hereby give permission to:

LI, Kwok Shing Ray; BOREGON, Calvin Jay; TAM, Chun Yiu Jacky; TILLO, Jhomar Tillo; YUEN, Lok Hang Andy; RABI, Sheila Marie and NABUAB, Fenelyn of Fugro Technical Services Limited to possess hand nets to capture freshwater macro-invertebrates for surveys, subject to the conditions on the reverse side of this permit.

The Special Permit is given in accordance with Section 15 of the Wild Animals Protection Ordinance (Cap.170).

This Special Permit expires on **31 July 2023**.

(Chan Kin Fung)

for Director of Agriculture, Fisheries and Conservation

Fenelyn NABUAB
Fugro Technical Services Limited
13/F, Fugro House – KCC2,
1 Kwai On Road,
Kwai Chung, N.T.
Hong Kong

Conditions of Permission to Possess Hand Nets for the Surveys of Aquatic Fauna

1. This permission is limited to the possession of hand nets by LI, Kwok Shing Ray; BOREGON, Calvin Jay; TAM, Chun Yiu Jacky; TILLO, Jhomar Tillo; YUEN, Lok Hang Andy; RABI, Sheila Marie and NABUAB, Fenelyn of Fugro Technical Services Limited to capture freshwater macro-invertebrates for surveys at Ta Kwu Ling under the project “*North East New Territories Landfill Extension*” (Contract No. EP/SP/77/15) as proposed to this department on 19 and 22 September 2022.
2. This permission does not exempt the permit holders from having to acquire any other necessary permission under the Laws of Hong Kong.
3. This permission does not authorise the entry to any leased land or licensed area or the collection or disturbance of the flora or fauna therein, in which case the prior approval of the lessees or the licence holders would be necessary.
4. The permit holders shall release the captured target species at the capture localities immediately after marking and identification.
5. The permit holders shall handle the animals humanely and in a manner that will avoid their suffering.
6. The permit holders shall produce a copy of this permit for inspection on demand by any officer of this Department or police officer.
7. The permit holders shall provide a report on the location, quantity and species of specimens surveyed to this Department upon request.
8. The Director of Agriculture, Fisheries and Conservation reserves the right to recall or cancel this permission at any time.

* End of Conditions *

September 2022
Agriculture, Fisheries and Conservation Department

Appendix C

Fieldwork Datasheet

