

# **Contract No. DC/2022/02 Drainage Improvement Works at Yuen Long**

Pre-construction Survey and Translocation Report for Lin Fa Tei Section  
CH.A200.00~CH.A500.00 and CH.B0.00~CH.B149.77

**Wing Tat Civil Engineering Co. Limited**

Reference: P525672

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**16-July-2024**

# Document control record

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**Contract No. PM 10/2022 -  
Independent Environmental Checker for Drainage Improvement Works at  
Yuen Long – Stage 2**

**Verification of Pre-construction Survey and Translocation Report  
(Lin Fa Tei Section CH.A200.00~CH.A500.00 and CH.B0.00~CH.B149.77)**

17 July 2024

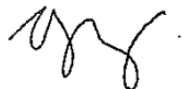
Dear Sir,

We refer to the Pre-construction Survey and Translocation Report under the captioned Project, which was certified on 16 July 2024 by the Ecologist appointed under Condition 2.3 of the Environmental Permit No. EP-596/2021 (hereinafter referred to as "EP").

We would like to inform you that we have no adverse comment on the captioned submission. Therefore, we hereby verify the abovementioned submission in accordance with EP Conditions 1.9 and 2.8.

Should you have any queries regarding the captioned, please contact our Hin Chan at 2828 5764 or the undersigned at 2828 5751.

Yours faithfully  
for MOTT MACDONALD HONG KONG LIMITED



Liz LO  
Independent Environmental Checker  
T 2828 5751  
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# 1 Introduction

## 1.1 Background

- 1.1.1 The Contract No. DC/2022/02 Drainage Improvement Works at Yuen Long – Stage 2 (hereafter as “The Project”) is carried out by the Drainage Services Department (DSD, the Project Proponent) to undertake drainage improvement works near four villages in Yuen Long, namely Sung Shan New Village, Tai Wo, Lin Fa Tei and Ha Che. The Project aims at enhancing the capacity of the existing drainage systems to lower the flood risk to these villages.
- 1.1.2 This Project is a Designated Project (DP) under the Environmental Impact Assessment Ordinance (EIAO) (Cap. 499), with an approved Environmental Impact Assessment (EIA) Report (Register No.: AEIAR-229/2021) and an Environmental Permit (EP-596/2021).
- 1.1.3 An ecological baseline survey was conducted for the Project, during which, two endemic freshwater crab species of conservation importance were recorded within the work sites. *Somanniathelphusa zanklon* was recorded at Lin Fa Tei and Ha Che, while *Cryptopotamon anacoluthon* was recorded in the upstream area at Ha Che. Both species are endemic to Hong Kong and considered to be “Endangered” and “Vulnerable” by the IUCN, respectively (IUCN 2023). The construction activities of the project will disturb their natural habitats thus potentially causing a direct loss of these two species due to their limited mobility.
- 1.1.4 To fulfil the conditions stipulated in Section 25.32 of the Particular Specification of the Contract, Conditions 2.8 of the Environmental Permit (EP-596/2021) as well as Sections 5.2.6 and 5.2.7 of the Environmental Monitoring and Audit Manual of the EIA, a Freshwater Crab Translocation Plan (FCTP) was prepared by the Environmental Team Ecologist such that aquatic species of conservation importance found within the works area will be translocated to selected receptor sites outside of the proposed works area in accordance with the FCTP.
- 1.1.5 Consequently, pre-construction surveys and translocation activities were carried out within the proposed drainage CH.A200.00 ~ CH.A500.00 and CH.B0.00 ~ CHB.149.77 works sections of Lin Fa Tei (**Figure 1**) in accordance with the approved FCTP, as construction in the section of drainage was scheduled to commence on 29 April 2024. Pre-construction survey for other sections will be carried out and reported prior to the commencement of proposed works.
- 1.1.6 As stipulated in Section 2.5 of the approved FCTP, a Pre-construction Survey and Translocation Report will be prepared within 2 weeks after the translocation activities. Accordingly, this Report is prepared to detail the findings of the capture and translocation activities in the affected works areas in proposed drainage CH.A200.00 ~ CH.A500.00 and CH.B0.00 ~ CHB.149.77 works sections of Lin Fa Tei.

## 2 Capture-Translocation Methodology

### 2.1 General

- 2.1.1 The capture and translocation scheme presented in this section is adopted from the FCTP. EPD approval of the methodology and approach detailed in the FCTP was sought prior to the pre-construction surveys and actual translocation activities.

### 2.2 Personnel

- 2.2.1 The pre-construction surveys and the translocation activities were carried out by a team of ecologists and supervised by the qualified ecologist with adequate relevant experience and whose credentials were certified by the Environmental Team (ET) Leader and verified by the Independent Environmental Checker (IEC).

### 2.3 Permit

- 2.3.1 A special permit (**Appendix A**) in compliance with Sections 7 and 15 of the Wild Animals Protection Ordinance (Cap. 170) was obtained from AFCD as the pre-construction survey and translocation works involved the use of “appliance” i.e., hand nets to collect freshwater fauna in the streams.

### 2.4 Capture Activities

#### Collection Site and Survey Timing

- 2.4.1 As confirmed by the Contractor, the proposed drainage works in sections CH.A200.00 ~ CH.A500.00 and CH.B0.00 ~ CHB.149.77 of Lin Fa Tei are scheduled to commence on 29 April 2024. Consequently, the capture-translocation activities were carried out on 17 to 19 April 2024, 11 days before the actual commencement of the drainage works, (which is in line with the 14 to 7 days before actual commencement as stated in the FCTP) to avoid the recolonisation of *S. zanklon* and *C. anacoluthon* in this section after the pre-construction survey.
- 2.4.2 Pre-construction surveys were scheduled at time with lower surface water, avoiding periods of heavy rainfall to maximise the survey extent as well to ensure the safety of the surveyors.

#### Capture Methodology

- 2.4.3 Standard survey methodology as indicated in the approved FCTP were adopted during the pre-construction surveys.
- 2.4.4 Hand netting was used by actively sweeping the potential micro-habitats and hiding spaces that are favoured by the crabs (Stanton & Leven 2016, Stanton *et. al.* 2017) such as rocks, organic debris, leaf litter, and riparian vegetation. Any species of conservation importance flushed or caught by this practice were sorted and collected.

- 2.4.5 Kick-netting was also conducted moving parallel from downstream to upstream, where hand net opening was positioned facing the water current at suitable locations. Using the toe or heel, the streambed substrate in front of the net was disturbed by kicking such that aquatic species dislodged by the disturbance were trapped in the net. All species with conservation importance captured were identified, measured, and photographed.



**Plate 1.** Size measurement of a captured *C. anacoluthon* from previous pre-construction surveys.

#### Marking

- 2.4.6 Using an ink marker, dorsal side of the carapace of the captured individuals of *S. zanklon* and *C. anacoluthon* were marked with their assigned individual number/code. Earlier laboratory and field trials had established that crab survival and behaviour was unaffected by paint marking on the carapace (Bell et. al. 2003). However, no individuals of *S. zanklon* and *C. anacoluthon* were captured during this survey.



**Plate 2.** Marking the carapace of captured *C. anacoluthon* from previous pre-construction surveys.

## 2.5 Translocation Activities

- 2.5.1 To avoid translocated individuals from re-entering the streams within the works area, suitable receptor sites outside and far from the affected sections were selected. However, no individuals of *S. zanklon* and *C. anacoluthon* were captured during this survey.



**Plate 3.** Releasing of *C. anacoluthon* to the receptor site.

## 3 Pre-construction Survey Results

### 3.1 Collection Site Condition

- 3.1.1 The upper course section of CH.A200.00 – CH.A500.00 is a narrow channel with a steep sandy bund and sandy bottom, situated within a piece of waste ground. The sides of the channel are moderately vegetated with *Ludwigia erecta*, *Panicum maximum* and *Ipomoea aquatica* being the dominant species. The flow speed is fast and water depth low in this section, as the source of water of this section is reduced, as it is from the water bypass created after the commencement of work in CH.A0.00 – CH.A200.00. A small amount of dragonfly larvae and a few native *Channa striata* were recorded in this section.
- 3.1.2 The lower course section of CH.A200.00 – CH.A500.00 is a channelized ditch that flows between the some village houses and is noticeably wider. The bottom of this section is filled with black coloured silt and is hard bottomed, water depth is generally low with the exception of a few pools. Fauna recorded in this section is mostly invasive fishes, while polychaetes and chironomid larvae were recorded in moderate abundance.





**Plate 4.** Site condition of CH.B0.00 – CH.B149.77 on 18 April 2024.

- 3.1.3 CH.B0.00 – CH.B149.77 is also a narrow channel situated within a waste ground with sandy bottom, but has a more gentle slope compared to CH.A200.00 – CH.A500.00. In contrast to the site visits conducted for the creation of the FCTP in November 2023, the section is now overgrown by *Ludwigia erecta*, to the point where the water channel is not visible, as seen in **Plate 4**. It is also noted since the site visits in November 2023 that a portion of CH.B0.00 – CH.B149.77 had been covered and filled by an unknown party (**Plate 5**) making the part of the channel inaccessible. Incidentally, the covered section was also one of the locations where *C. anacoluthon* and *S. zanklon* were recorded from the EIA.



**Plate 5.** Covered portion of CH.B0.00 – CH.B149.77 on 22 November 2023.

- 3.1.4 A large rainfall event occurred during the daytime of 18 April 2024, however, no freshwater crab species or species of conservation importance were recorded during the survey on 17 April, it is believed that the rainfall would not cause a drastic change to the survey results and thus the surveys were continued on 18 and 19 April 2024. It was noticed during the survey of 18 April that the waterflow had increased slightly for all sections, while the waterflow returned to normal during the survey on 19 April 2024. However, turbidity of the water in the upper section of CH.A200.00 – CH.A500.00 was visibly higher during both surveys on 18 and 19 April, however, this did not affect the survey results as the method of kick sampling was also used during the survey.
- 3.1.5 More photos of the site conditions are provided in **Appendix C**.

## 3.2 Freshwater Crab Species and Abundance

- 3.2.1 No freshwater crab were collected during the survey. This is to be expected for CH.A200.00 – CH.A500.00, which is more polluted.
- 3.2.2 The area where the freshwater crabs were expected to likely occur is in section CH.B0.00 – CH.B149.77, due to the relative low level of anthropogenic disturbance. Furthermore, both *C. anacoluthon* and *S. zanklon* were recorded within this section in the EIA.
- 3.2.3 However, as this section is currently overgrown, the effectiveness of active search and kick-netting are both inhibited. Visibility of open water where the crabs may be active in is greatly reduced, and space available for the placement of the net for kick-netting is also limited. Moreover, the dense vegetation also provided more hiding spaces to the crabs, such that even if crabs are present at the site, they would be difficult to find.

## 3.3 Incidental Catch/Sightings

- 3.3.1 Albeit the pre-construction surveys only targeted *S. zanklon* and *C. anacoluthon*, several fauna species were also unintentionally caught during the pre-construction surveys (**Appendix B**). Species of conservation importance incidentally observed is summarized in **Table 2** below.
- 3.3.2 Two individuals of adult Spotted Narrow-mouthed Frog were found during the surveys. As this specimen is mobile and able to avoid the construction area once the construction work commences, it was not translocated to the receptor site. The specimens were brought to nearby agricultural lands instead, which is the preferred habitat of the species.

**Table 2** Other Species of Conservation Importance Captured during the Pre-construction Surveys

Species	Conservation and Protection Status <sup>1</sup>	Distribution and Rarity <sup>2</sup>
<b>Herpetofauna</b>		
Spotted Narrow-mouthed Frog <i>Kalophrynus interlineatus</i>	RLCV(NT)	Widely distributed from low to moderate altitudes in northern and central New Territories.

**Notes:**

- Conservation and protection status refers to Fellowes *et al.* (2002), Red List of China's Vertebrates (Jiang *et al.* 2016), China Species Red List (Wang & Xie 2004), IUCN (2024), China State Major Protection Status, CITES (2024), Native fish of conservation concern in HK (KFBG 2019), BSAP Marine Fishes Sub-group (2014), Cap. 170 and Cap. 586.
  - Conservation status by Red List of China's Vertebrates (RLCV) (Jiang *et al.* 2016): NT = Near Threatened.
- Distribution and rarity follow the data of the latest HKBIH (AFCD 2024).

## 4 Post-translocation Monitoring

- 4.1.1 According to Section 5.2.5 of EM&A Manual for the Project, monthly post-translocation monitoring shall be conducted for at least 12 months after pre-construction surveys to monitor their establishment.
- 4.1.2 However, as no freshwater crabs were translocated during the surveys, post-translocation monitoring for this set of pre-construction surveys is not necessary.

## 5 Conclusion

- 5.1.1 To avoid/minimise potential direct impacts to the local population of the endemic freshwater crab species, *Cryptopotamon anacoluthon* and *Somanniathelphusa zanklon* were searched for during the pre-construction surveys in Lin Fa Tei for section CH.A200.00 ~ CH.A500.00 and CH.B0.00 ~ CH.B149.77 on 17 to 19 April 2024. However, no endemic freshwater crabs were found.
- 5.1.2 As a conservation measure, an individual of Spotted Narrow-mouthed Frog incidentally captured throughout the survey period was released into agricultural lands near the survey location.

## 6 References

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Stanton, D.J. & M.R. Leven. 2016. Distribution, habitat utilisation and conservation status of the freshwater crab, *Somanniathelphusa zanklon* Ng & Dudgeon, 1992 (Crustacea: Brachyura: Gecarcinucidae) endemic to Hong Kong. *Journal of Threatened Taxa* 8(3): 8564–8574; <http://dx.doi.org/10.11609/jott.2070.8.3.8564-8574>

Stanton, D.J., M.R Leven & T.C.H. Hui. 2017. Distribution of *Cryptopotamon anacoluthon* (Kemp, 1918) (Crustacea: Brachyura: Potamidae), a freshwater crab endemic to Hong Kong. *Journal of Threatened Taxa* 9(2): 9786–9794; <http://doi.org/10.11609/jott.3007.9.2.9786-9794>

Wang & Xie. 2004. China Species Red List (CSRL). Higher Education Press.

# Appendices

## Appendix A

Special Permit obtained from AFCD under Cap. 170

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

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CONSERVATION DEPARTMENT

Cheung Sha Wan Government Offices  
5<sup>th</sup> floor, 303 Cheung Sha Wan Road  
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圖文傳真 Faxline No. : (852) 2311 3731

22 December 2023

**Permission to Possess Hand Nets for the Surveys  
and Translocation of Aquatic Fauna**

I hereby give permission to:

**HUI, Chung Hong; CHAN, Lai Ying; CHAN, Lap Hang; CHEUNG, Hin Kit;  
HUNG, Pak Yam; LEE, Wing Yau; MA, Chun Ning; TAM, Hoi Yan and TAM, Sze  
Hon of Aurecon Hong Kong Limited** to possess hand nets to capture freshwater  
macro-invertebrates for surveys and translocation, 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 December 2024.**

(Chan Kin Fung)  
for Director of Agriculture, Fisheries and Conservation

Mr. Tommy HUI  
Aurecon Hong Kong Limited  
122-127 Commercial Centre,  
Palm Springs,  
Yuen Long,  
New Territories,  
Hong Kong

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

1. This permission is limited to the possession of hand nets by HUI, Chung Hong; CHAN, Lai Ying; CHAN, Lap Hang; CHEUNG, Hin Kit; HUNG, Pak Yam; LEE, Wing Yau; MA, Chun Ning; TAM, Hoi Yan and TAM, Sze Hon of Aurecon Hong Kong Limited to capture freshwater macro-invertebrates for surveys and translocation at Lin Fa Tei and Ha Che in Yuen Long under the project "Drainage Improvement Works at Yuen Long" (Contract No. DC/2022/02) as proposed to this department on 5 December 2023.
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 to the approved receptor sites.
5. The permit holders shall handle the animals humanely and in a manner that will avoid their suffering.
6. The permit holders shall release all the accidentally captured animals other than the target species on site immediately. The permit holders shall hand over any protected wild animals listed under Schedule 2 to the Wild Animals Protection Ordinance or scheduled species under the Protection of Endangered Species of Animals and Plants Ordinance accidentally hurt by the nets and deemed unsuitable for immediate release to this Department as soon as possible.
7. The permit holders shall produce a copy of this permit for inspection on demand by any officer of this Department or police officer.
8. The permit holders shall provide a report on the location, quantity and species of specimens surveyed to this Department upon request.
9. The Director of Agriculture, Fisheries and Conservation reserves the right to recall or cancel this permission at any time.

\* End of Conditions \*

December 2023  
Agriculture, Fisheries and Conservation Department

# Appendices

## Appendix B

Incidental Catch/Sightings during the Pre-construction Surveys

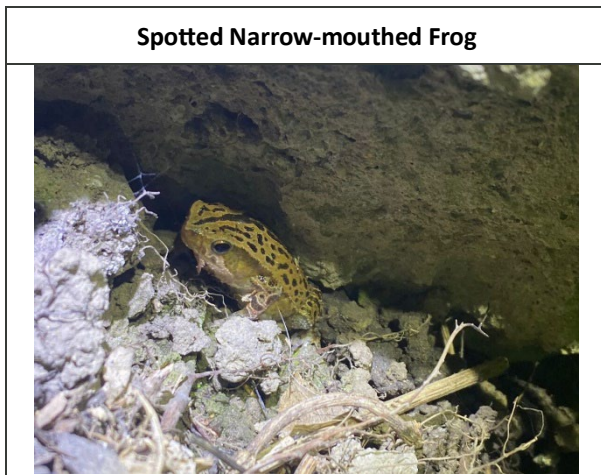




**Table 1.** Incidental Catch/Sightings during the Pre-construction Capture Surveys

Species Name	Conservation Status <sup>(1)</sup>	Hong Kong Status <sup>(2)</sup>	Abundance	
			CH.A200.00~ CH.A500.00	CH.B0.00 CH.B149.77
<b>Amphibians</b>				
Asian Common Toad <i>Duttaphrynus melanostictus</i>	-	Widely distributed in Hong Kong.	1	
Spotted Narrow-mouthed Frog <i>Kalophrynus interlineatus</i>	RLCV(NT)	Widely distributed from low to moderate altitudes in northern and central New Territories.	1	1
Asiatic Painted Frog <i>Kaloula pulchra</i>	-	Widely distributed in Hong Kong.	1	3
Günther's Frog <i>Sylvirana guentheri</i>	-	Widely distributed throughout Hong Kong.	1	
Brown Tree Frog <i>Polypedates megacephalus</i>	-	Widely distributed throughout Hong Kong.	2	5
Greenhouse Frog <i>Eleutherodactylus planirostris</i>	-	(Introduced species)	1	
<b>Reptiles</b>				
Bowring's Gecko <i>Hemidactylus bowringii</i>	-	Distributed throughout Hong Kong		6
<b>Freshwater Fishes</b>				
North African Catfish <i>Clarias gariepinus</i>	-	-	8	
Mosquito Fish <i>Gambusia affinis</i>	-	Common	35	6
Guppy <i>Poecilia reticulata</i>	-	Common	10	
Variable Platyfish <i>Xiphophorus variatus</i>	-	Common	2	
Dwarf Snakehead <i>Channa gachua</i>	-	-		1
Snakehead Murrel <i>Channa striata</i>	-	Uncommon	7	6
<b>Aquatic Invertebrates</b>				
Orange-tailed Sprite (Larva) <i>Ceriagrion auranticum</i>	-	Abundant		5
Common Bluetail (Larva) <i>Ischnura senegalensis</i>	-	Abundant	8	2
Common Blue Skimmer (Larva) <i>Orthetrum glaucum</i>	-	Abundant	7	9
Blood Worm <i>Chironomidae sp.</i>	-	-	130	
Housefly Larva <i>Muscidae sp.</i>	-	-	5	
Polychaeta <i>Pomacea canaliculata</i>	-	-		20
<b>Notes:</b>				
1. Conservation and protection status refers to Fellowes et al. (2002), IUCN (2023), RLCV (Jiang et al., 2016), List of National Key Protected Wild Animal (2021), CITES (2023), Cap. 170 and Cap. 586. a. Conservation status by RLCV (Jiang et al., 2016): NT = Near Threatened.				
2. Distribution and rarity follow the data of the latest HKBIH (AFCD, 2024).				

**Table 2.** Photos of captured aquatic species of conservation importance



# Appendices

## Appendix C

Site Photos of Collection Sites



**Collection Site CH.A200.00 ~ CH.A500.00 (upper course)**



**Collection Site CH.A200.00 ~ CH.A500.00 (lower course)**



**Collection Site CH.B0.00 ~ CH.B149.77**



# Appendices

## Appendix D

Survey Data Sheet











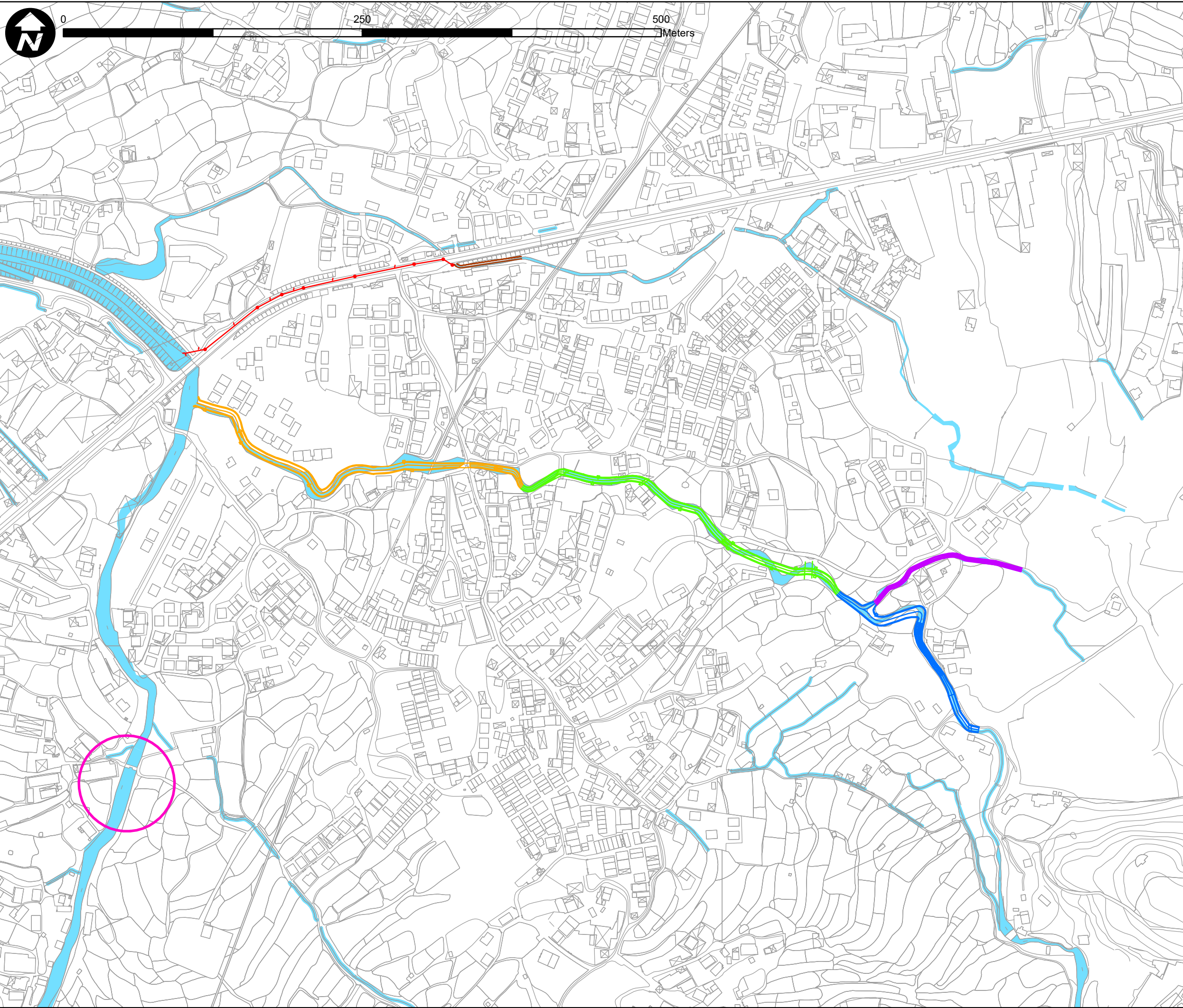
# Figures

## Figure 1

Collection and Receptor Sites of *C. anacoluthon* and *S. zanklon*

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- Not Covered by Pre-construction Survey
- Section CH.A 818.86 ~ CH.A 500.00
- Section CH.A 500.00 ~ CH.A 200.00
- Section CH.A 0.00 ~ CH.A 200.00
- Section CH.B 0.00 ~ CH.B 149.77
- Section CH.C 117.50 ~ CH.D 239.03
- Proposed Receptor Site for *Cryptopotamon anacoluthon* and *Somanniathelphusa zanklon* Captured at Lin Fa Tei
- Watercourse

Project Title:  
 Contract No. DC/2022/02 Drainage Improvement Works at Yuen Long - Stage 2 (Subcontract No. DC/2022/02/SC/004 Provision, Operation and Maintenance of Environmental Services)

Figure Title:  
 Collection and Receptor Sites of *C. anacoluthon* and *S. zanklon* In Fa Tei



Drawn by:	PC/NT	Scale:	1:3,000 on A3
Checked By:	NT	Date:	19 Mar 2024
Approved by:	TH		
Figure Number:	Figure 1	Revision:	0

