

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

Pre-construction Survey and Translocation Report for Lin Fa Tei Section  
CH.A818.86 ~ CH.A500.00

**Wing Tat Civil Engineering Co. Limited**

Reference: P525672

Revision: 0

**19-May-2025**

# Document control record

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|------------------|------------|--|------------------|--------------|---------------------------|---------------|
| Report title     |            | Pre-construction Survey and Translocation Report for Lin Fa Tei Section<br>CH.A818.86 ~ CH.A500.00 |                  |              |                           |               |
| Document code    |            | /  | Project number   |              | P525672                   |               |
| File path        |            |  |                  |              |                           |               |
| Client           |            | Wing Tat Civil Engineering Co. Limited   |                  |              |                           |               |
| Client contact   |            |  | Client reference |              |                           |               |
| Rev              | Date       | Revision details/status  | Author           | Reviewer     | Verifier<br>(if required) | Approver      |
| 0                | 2025-05-19 |  | Jonathan Chan    | Nicholas Tam |                           | David Stanton |
|                  |            |  |                  |              |                           |               |
|                  |            |  |                  |              |                           |               |
|                  |            |  |                  |              |                           |               |
| Current revision |            | 0  |                  |              |                           |               |

| Approval         |   |                    |   |
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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.A 818.86 ~ CH.A 500.00)**

19 May 2025

Dear Sir,

We refer to the Pre-construction Survey and Translocation Report under the captioned Project, which was certified on 19 May 2025 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 5967.

Yours faithfully  
for MOTT MACDONALD HONG KONG LIMITED



Ir. Thomas CHAN  
Deputy Independent Environmental Checker  
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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 2025). 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.A818.86 ~ CH.A500.00 work section of Lin Fa Tei (**Figure 1**) in accordance with the approved FCTP, as construction in the section of drainage was scheduled to commence on 16 May 2025. 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.A818.86 ~ CH.A500.00 work section 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 section CH.A818.86 ~ CH.A500.00 of Lin Fa Tei are scheduled to commence on 16 May 2025. The capture-translocation activities were carried out on 7 to 9 May 2025, 7 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). This arrangement is to prevent 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 water depth, 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, actively searching 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 other 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 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 from previous pre-construction surveys.

## 3 Pre-construction Survey Results

### 3.1 Collection Site Condition

- 3.1.1 The entire section of CH.A818.86 ~ CH.A500.00 is a channelised watercourse that flows between village houses. The flow speed of the section is moderate, and the substrate is dominated with silt. Pools of deeper water are found intermittently throughout the section. No natural banks occur on this section which is channelised along its length by vertical, concrete walls. The sides of the channel were moderately vegetated, with *Commelina diffusa*, *Pueraria montana* and *Neyraudia reynaudiana* being the dominant species.





**Plate 4.** General site condition of CH.A818.86 ~ CH.A500.00.

- 3.1.2 It was noted that the water depth of the section near CH.A818.86 is particularly deep, and could not be surveyed during all three days of the survey due to safety concerns. This section is also overgrown by vegetation, making it difficult to perform hand netting and kick-netting.



**Plate 5.** Site condition near CH.A818.86.

- 3.1.3 The depth of water is noticeably lower around the bridge in Ngau Keng Tuen, and it could also be observed that the bottom of the segment is also constructed of concrete.



**Plate 6.** Site condition of the segment of watercourse near the bridge at Ngau Keng Tsuen.

- 3.1.4 In general, the turbidity of the entire section is relatively high, and for most parts of the section the channel bottom is not visible. Invasive fishes occur in moderate abundance, while bloodworms were recorded in high abundance.
- 3.1.5 The water depth on 7 May 2025 was slightly higher than on 8 May and 9 May, a result of rain on that day. It was considered that that the rainfall did not cause a drastic change to the survey results given the low diversity of fauna within the watercourse.
- 3.1.6 More photos of the site conditions are provided in **Appendix C**.

## 3.2 Freshwater Crab Species and Abundance

- 3.2.1 No freshwater crabs were collected during the survey.
- 3.2.2 This could be a result of the channelised nature of the section and the fact that the watercourse is under frequent anthropogenic disturbance by the surrounding village. These factors may lead the watercourse to be unsuitable for both target crab species, particularly for *C. anacoluthon* given that they are known to occur in clear or unpolluted, fast flowing waters (Stanton *et al.* 2017). As this section is deep and has a soft substrate at some sections, the effectiveness of active search and kick-netting are also inhibited. This is because visibility of open water where the crabs may be active in was reduced, and space available for the placement of the net for kick-netting were also limited, increasing the difficulty of finding the target crabs at the site.

## 3.3 Incidental Catch/Sightings

- 3.3.1 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 summarised in **Table 2** below.

- 3.3.2 One individual of adult Chinese Bullfrog was found during the surveys, but it was a individual released from captivity (as apparent from its damaged snout). As this individual is mobile and able to avoid the construction area once the construction work commences, it was not translocated to the receptor site.

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

| Species   | Conservation and Protection Status <sup>1</sup> | Distribution and Rarity <sup>2</sup>                     |
|---|---|--|
| <b>Herpetofauna</b>                                 |   |  |
| Chinese Bullfrog<br><i>Hoplobatrachus rugulosus</i> | PRC; RLCV(EN); CSMPS(II)                        | Widely distributed in Lantau Island and New Territories. |

**Notes:**

1. 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 (2025), China State Major Protection Status, CITES (2025), Native fish of conservation concern in HK (KFBG 2019), BSAP Marine Fishes Sub-group (2014), Cap. 170 and Cap. 586.
  - a. Conservation status by Red List of China's Vertebrates (RLCV) (Jiang *et al.* 2016): EN = Endangered.
2. Distribution and rarity follow the data of the latest HKBIH (AFCD 2025).

## 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.A818.86 ~ CH.A500.00 on 7 to 9 May 2025. No endemic freshwater crabs were found.

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# Appendices

## Appendix A

Special Permit obtained from AFCD under Cap. 170





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8 January 2025

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

I hereby give permission to:

**CHAN, Lai Ying; CHAN, Lap Hang; CHAN, Wang Leong; CHEUNG, Hin Kit;  
STANTON, David John; LEE, Wing Yau; LI, Hong Man; MA, Chun Ning; RABI,  
Sheila Marie S. 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 2025**.

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

Mr. Nicholas TAM  
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 CHAN, Lai Ying; CHAN, Lap Hang; CHAN, Wang Leong; CHEUNG, Hin Kit; STANTON, David John; LEE, Wing Yau; LI, Hong Man; MA, Chun Ning; RABI, Sheila Marie S. 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 30 December 2024.
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 \*

January 2025  
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>                          | Max Abundance         |
|--|------------------------------------|--|-----------------------|
|  |                                    |  | CH.A818.86~CH.A500.00 |
| Amphibians   |                                    |  |                       |
| Asiatic Painted Frog<br><i>Kaloula pulchra</i>   | -                                  | Widely distributed in Hong Kong.                         | 1                     |
| Chinese Bullfrog <sup>(3)</sup><br><i>Hoplobatrachus rugulosus</i>   | PRC; RLCV(EN); CSMPS(II)           | Widely distributed in Lantau Island and New Territories. | 1                     |
| Reptiles   |                                    |  |                       |
| Bowring’s Gecko<br><i>Hemidactylus bowringii</i>   | -                                  | Distributed throughout Hong Kong                         | 1                     |
| Freshwater Fishes  |                                    |  |                       |
| North African Catfish<br><i>Clarias gariepinus</i>   | -                                  | -  | 7                     |
| Nile Tilapia<br><i>Oreochromis niloticus</i>   | -                                  | Common   | 50                    |
| Mosquito Fish<br><i>Gambusia affinis</i>   | -                                  | Common   | 50                    |
| Guppy<br><i>Poecilia reticulata</i>  | -                                  | Common   | 50                    |
| Variable Platyfish<br><i>Xiphophorus variatus</i>  | -                                  | Common   | 50                    |
| Snakehead Murrel<br><i>Channa striata</i>  | -                                  | Uncommon   | 3                     |
| Dwarf Snakehead<br><i>Channa limbata</i>   | -                                  | -  | 1                     |
| Aquatic Invertebrates  |                                    |  |                       |
| Common Bluetail (Larva)<br><i>Ischnura senegalensis</i>  | -                                  | Abundant   | 2                     |
| Unidentified Skimmer (Larva)<br><i>Orthetrum sp.</i>   | -                                  | -  | 5                     |
| Blood Worm<br><i>Chironomidae sp.</i>  | -                                  | -  | 2000                  |
| Cranefly Larva<br><i>Tipulidae sp.</i>   | -                                  | -  | 5                     |
| Freshwater Snail<br><i>Angulyagra polyzonata</i>   | -                                  | -  | 1                     |
| Freshwater Snail<br><i>Haitia acuta</i>  | -                                  | -  | 50                    |
| Freshwater Snail<br><i>Biomphalaria straminea</i>  | -                                  | -  | 2                     |
| Apple Snail<br><i>Pomacea canaliculata</i>   | -                                  | -  | 1                     |
| Freshwater Snail<br><i>Melanoides tuberculata</i>  | -                                  | -  | 2                     |
| Polychaeta<br><i>Pomacea canaliculata</i>  | -                                  | -  | 50                    |
| Notes:   |                                    |  |                       |
| 1. Conservation and protection status refers to Fellowes et al. (2002), IUCN (2025), RLCV (Jiang et al., 2016), List of National Key Protected Wild Animal (2021), CITES (2025), Cap. 170 and Cap. 586.<br>a. Conservation status by RLCV (Jiang et al., 2016): EN = Endangered. |                                    |  |                       |
| 2. Distribution and rarity follow the data of the latest HKBIH (AFCD, 2025).   |                                    |  |                       |
| 3. The recorded individual is a released individual and thus not considered as a species of conservation importance.   |                                    |  |                       |

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

| Chinese Bullfrog (released individual)  |
|---|
|  A photograph of a Chinese Bullfrog (released individual) resting on a rock. The frog is yellowish-brown with dark spots and is positioned on a light-colored, textured rock surface. Some green leaves and dry twigs are visible in the background. |



# Appendices

## Appendix C

Site Photos of Collection Sites





Collection Site CH.A818.86 ~ CH.A500.00



Collection Site CH.A818.86 ~ CH.A500.00



Collection Site CH.A818.86 ~ CH.A500.00





# Appendices

## Appendix D

Survey Data Sheet



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)  
**Job Ref.: 23/2208/613 DSD-YL(ET)**

## Pre-Construction Survey Data Sheet

| Survey Details          |   |            |       |             |       |
|-------------------------|---|------------|-------|-------------|-------|
| Date                    | 7/5/2025  | Start Time | 20:07 | Finish Time | 21:32 |
| Capture Site            | Lin Fa Tei; CH.A 818.86 ~ CH.A 500.00   |            |       |             |       |
| Receptor Site           | Lin Fa Tei  |            |       |             |       |
| Weather                 | Cloudy  |            |       |             |       |
| Surveyor                | NT, SR, AL  |            |       |             |       |
| Capture Site Condition  | Rainfall during morning and afternoon of the survey date, high waterflow and turbidity, especially near the end of the chinage (CH.A 818.86). Watercourse is near to and subjected to the discharge of nearby settlements and is visibly polluted, with waste and large patches chironomid larvae observed. |            |       |             |       |
| Receptor Site Condition | ✓   |            |       |             |       |
| Remarks                 | ✓   |            |       |             |       |

[illegible]



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)  
**Job Ref.: 23/2208/613 DSD-YL(ET)**

## Pre-Construction Survey Data Sheet

| Survey Details          |   |            |       |             |       |
|-------------------------|---|------------|-------|-------------|-------|
| Date                    | 8/5/2025  | Start Time | 19:26 | Finish Time | 20:55 |
| Capture Site            | Lin Fa Tei CH.A 818.86 ~ CH.A 500.00  |            |       |             |       |
| Receptor Site           | Lin Fa Tei  |            |       |             |       |
| Weather                 | Clear   |            |       |             |       |
| Surveyor                | NT, MM, JC  |            |       |             |       |
| Capture Site Condition  | Depth of water is noticeably lower than previous day due to lack of rainfall however, some sections are still too deep and with substrate that is too soft to enter and survey. |            |       |             |       |
| Receptor Site Condition | /   |            |       |             |       |
| Remarks                 | /   |            |       |             |       |

[illegible]

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)  
**Job Ref.: 23/2208/613 DSD-YL(ET)**

## Pre-Construction Survey Data Sheet

| Survey Details          |   |            |       |             |       |
|-------------------------|---|------------|-------|-------------|-------|
| Date                    | 9/5/2025  | Start Time | 19:52 | Finish Time | 21:24 |
| Capture Site            | Lin Fa Tei CH. A 818.86 ~ CH.A 500.00   |            |       |             |       |
| Receptor Site           | Lin Fa Tei  |            |       |             |       |
| Weather                 | Clear   |            |       |             |       |
| Surveyor                | NT, SR, RC  |            |       |             |       |
| Capture Site Condition  | Depth of water further decreased compared to the second day of the survey. more parts of the stream became accessible. Turbidity of water remained very high. |            |       |             |       |
| Receptor Site Condition | /   |            |       |             |       |
| Remarks                 | /   |            |       |             |       |

[illegible]

# Figures

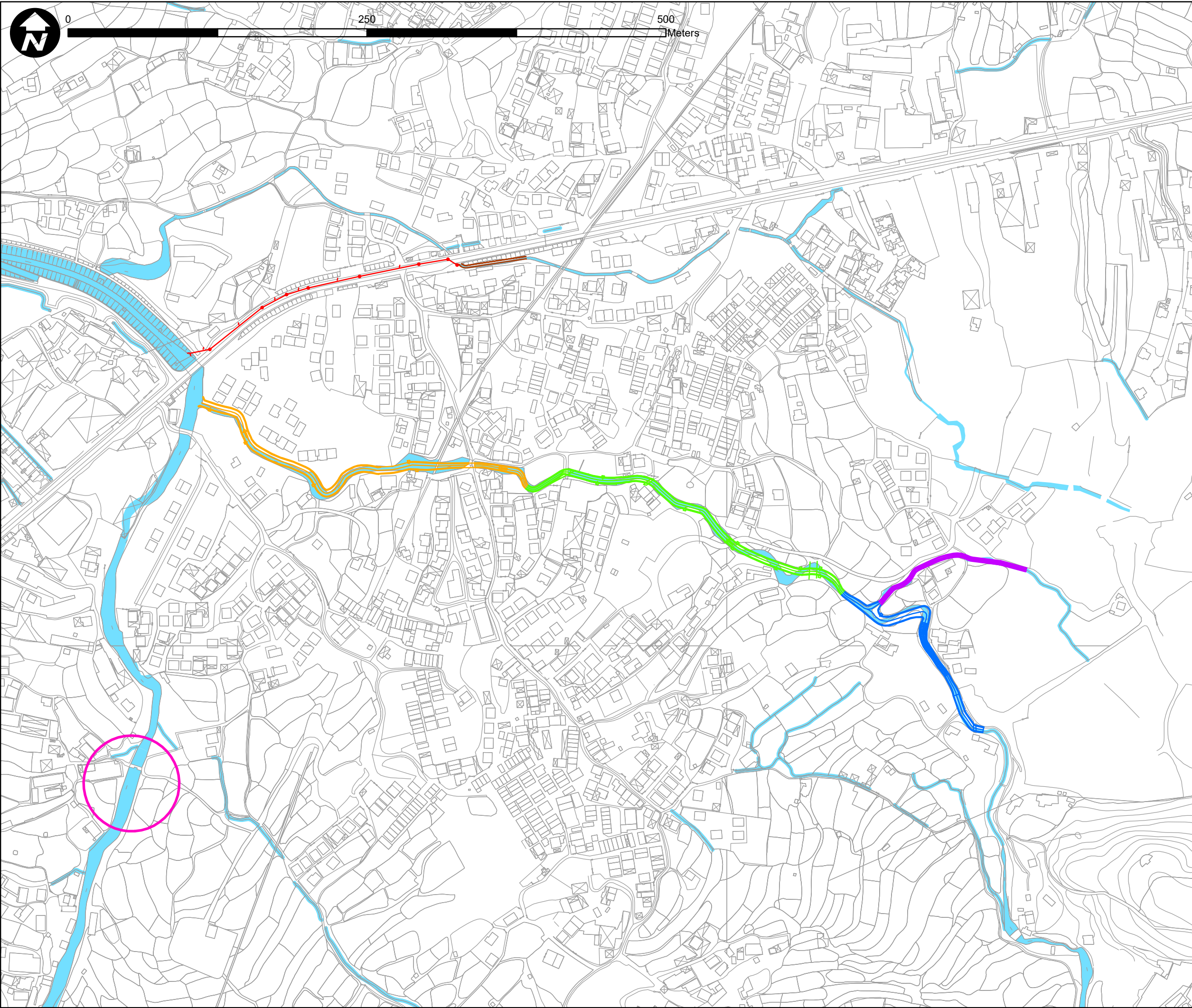
## Figure 1

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 Lin Fa Tei

ecology  
biodiversity  
landscape

aec

Member of the Aurecon Group

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



