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

Freshwater Crab Translocation Plan

Wing Tat Civil Engineering Co. Limited

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<u>Verification of Freshwater Crab Translocation Plan</u>

8 February 2024

T +852 2828 5757 F +852 2827 1823 mottmac.com Dear Sir,

We refer to the Freshwater Crab Translocation Plan under the captioned Project, which was certified on 6 February 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

Liz.lo@mottmac.com

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1 Introduction

1.1 Background

The Contract No. DC/2022/02 Drainage Improvement Works at Yuen Long – Stage 2 (hereafter as "The Project") is carried out by 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.

According to the Project's Environmental Permit, The Project includes the following scopes in various sites:

- Sung Shan New Village
 - Upgrading of an approximately 610m long existing stream to a rectangular channel;
- Tai Wo
 - Construction of an approximately 290m long rectangular channel;
- Lin Fa Tei
 - Construction of an approximately 150m long rectangular channel connecting to the Shui Tsan Tin stream;
 - Upgrading of an approximately 780m long existing stream to a rectangular channel;
 - Deepening of an approximately 240m long existing rectangular channel;
 - Construction of an approximately 1,650mm diameter drainage pipe along a section of the Kam Sheung Road;
- Ha Che
 - Upgrading of an approximately 600m existing stream to a rectangular channel;
 - Construction of an additional twin of about 1,500mm diameter drains underneath the Fan Kam Road;
 and
 - Upgrading of an approximately 170m existing stream to a rectangular channel.

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). Two freshwater crab species of conservation importance were recorded within the work sites during the ecological baseline survey. *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 and potentially causing a direct loss of these two species due to their limited mobility.

Due to the ecological significance of the two species, Environmental Permit conditions of the project specified the preparation and implementation of a *Freshwater Crab Translocation Plan* (FCTP) by an Ecologist with relevant experience in freshwater habitats, under the approval of Agriculture, Fisheries and Conservation Department (AFCD). Any aquatic species of conservation importance found during the preconstruction surveys will be translocated to suitable receptor sites outside of the proposed works area, and their condition and number will be monitored to ensure their long-term survivorship after translocation.



2 Methodology / Translocation Proposal

2.1 General

The methodology described in the following sections has been prepared to fulfil the requirements set out under **Sections 25.32** of the Particular Specification of the Contract, section 2.8 of the Environmental Permit (EP-596/2021) Condition as well as sections 5.2.6 and 5.2.7 of the Environmental Monitoring and Audit Manual of the EIA.

2.2 Personnel

As required by **Clause 25.31(6)** of the Particular Specification, the Contractor shall ensure that the ecologist(s) employed shall be certified by the Environmental Team (ET) Leader, verified by the Independent Environmental Checker (IEC) for acceptance by the Project Manager and agreed by AFCD. The ecologist proposed for the required work is Mr. David John Stanton, which possess adequate experience in surveying and handling aquatic fauna. His CV is attached in **Appendix I**.

2.3 Area of Capture Survey and Receptor Sites

Site visits were arranged to the proposed drainage works areas (**Plates 1 & 2**) and potential receptor sites (**Plates 3 & 4**) of Lin Fa Tei and Ha Che on 9 November 2023 and 20 December 2023.

Proposed Drainage Works Area

The proposed drainage works area of Lin Fa Tei and Ha Che are shown in **Plate 1** and **Plate 2** respectively.

Collection Site

Lin Fa Tei

Two existing watercourses are present at Lin Fa Tei. The northern watercourse comprises of a section running under the pavement of Kam Sheung Road (which will not be covered by the pre-construction survey as the section is inaccessible), starting from the intersection of Kam Shui South Road and Kam Sheung Road until it reaches the CLP Lin Fa Tei Substation, where it becomes a narrow channel running through the village houses in the outskirts of Lin Fa Tei village. The vegetation above the pavement section mainly consists of roadside plantations, with exotic *Leucaena leucocephala* and common native trees such as *Ficus microcarpa* and *Ficus hispida* found commonly above the alignment of the proposed drains. Meanwhile, the section of channel that runs through Lin Fa Tei village is only sporadically vegetated by a few *Macaranga tanarius* var. *tomentosa* while herb species such as *Ludwigia hyssopifolia* and *Cyclosorus interruptus* are found directly within the channel.

The southern watercourse is ranges from being channelized on the West end and starts from the split next to the Pat Heung Shui Tsan Tin Tsuen Village Office, flows through the village area between Lin Fa Tei village and Shui Tsan Tin village until it reaches the wastegrounds southeast of Lin Fa Tei village, where it changes into a semi-nautural watercourse and splits into two channels. The vegetation found on the banks and channel walls of the channelised section of the watercourse is covered by a mixture of native shrubs such as *Macaranga tanarius* var. *tomentosa* and *Ficus hispida*, herbs such as *Alocasia macrorrhizos* and *Microstegium ciliatum* and exotic climbers such as *Mikania micrantha*. On the other hand, riparian vegetation of the semi-natural section found next to wastegrounds is dominated by herbs such as *Pennisetum purpureum*, *Crotalaria pallida* var. *obovata* and *Alocasia macrorrhizos* and climbers such as *Ipomoea cairica*.

Plate 1 shows the location and Plate 5 shows the site conditions of the proposed drainage works area.

Ha Che

The existing watercourse in Ha Che comprises both semi-natural and channelised watercourse sections from A Kun Tin to Fu Hing Garden (south of Ha Che), that passes through wasteground, rows of exotic plantation and self-seeded wooded areas (mainly dominated by exotic *Leucaena leucocephala* and common native trees *Celtis sinensis*), villages, open storage and other developed area. Except rows of exotic plantation trees (*Eucalyptus* spp.) that lines along the channelised section to the south of The Arbutus House



in Shui Kan Shek, the remaining semi-natural watercourse section are largely covered by self-sown trees (such as *Celtis sinensis*, *Dimocarpus longan*, *Ficus hispida*, *Sterculia lanceolata*) in the overstorey, and riparian vegetation (such as wetland herbs *Alternanthera sessilis*, *Cyclosorus interruptus*, *Cyperus surinamensis*, *Commelina diffusa*, *Dracaena sanderiana*, and other herbs *Bidens alba*, *Microstegium ciliatum*, *Wedelia trilobata*) along the natural bottom or stream banks. Weedy climbers such as *Ipomoea cairica* and *Mikania micrantha* were sometimes recorded climbing on the riparian trees and groundcover. **Plate 2** shows the location and **Plate 6** shows the site conditions of the proposed drainage works area.

Receptor Site

The EM&A Manual of The Project states that the receptor sites should match with the habitat requirements of the two targeted crab species and to be free of any development pressure.

Somanniathelphusa zanklon is known to prefer slow-flowing low-gradient streams or marshes that are found in the lowlands (Stanton & Leven 2016). *Cryptopotamon anacoluthon* is recorded from shaded shallow streams with unpolluted, fast-flowing waters with rocky substratum and leaf-litters which serves as the shelter and food for the species (Stanton *et. al.* 2017). However, in the same study (Stanton *et. al.* 2017), half of the locations with altitude information available that were studied were sites below an altitude of 100m.

Site conditions for the records of these crabs in the EIA varies a little with the preferred habitat described in literature. Both the streams at Lin Fa Tei and Ha Che with the crabs recorded are in a village setting, running through disturbed areas. All three locations where *C. anacoluthon* was recorded in the EIA were sections of slow-flowing stream at Ha Che (as confirmed during the site visit). In these locations, both *C. anacoluthon* and *S. zanklon* occurs as well, which indicates *C. anacoluthon* also adapts to lowland, slow-flowing streams as well.

Semi-natural or natural water courses within 500m of the proposed drainage works area in both Lin Fa Tei and Ha Che were visited and considered as potential receptor sites. Finally, one site was selected for Lin Fa Tei and two sites were selected for Ha Che.

A shallow slow-flowing semi-natural watercourse with silt and rocky substrate surrounded by agricultural lands is selected as the receptor site of Lin Fa Tei. Riparian vegetation of the stream mainly consists of herb species commonly found in wetland habitats such as *Ipomoea cairica* and *Pennisetum purpureum*. This site matches the habitat preference of *S. zanklon* stated in Stanton and Leven (2016) and thus is considered a suitable receptor site for *S. zanklon* captured at Lin Fa Tei (**Plate 1**). However, as no upland sites are available within proximity to Lin Fa Tei (as shown in **Plate 3**) and as it was demonstrated that *C. anacoluthon* also adapts to lowland, slow-flowing streams, any captured *C. anacoluthon* at Lin Fa Tei is also proposed to be translocated at the same site.

A section of shallow fast-flowing semi-natural watercourse with both riffles and pools present is located within a shrubland at an altitude of around 50m was located south-east of Chuk Hang Village. Riparian vegetation such as *Blechnopsis orientalis* and *Acorus gramineus* were also abundantly recorded in the stream, and rocky substratum is also available within the stream, making the site a suitable receptor site for *C. anacoluthon*.

Further downstream from the receptor site of *C. anacoluthon* is a section of shallow slow-flowing seminatural channel with silt sand and pebble encompassed by a small patch of woodland and village houses. Riparian vegetation of the stream is available in the forms of native shrubs and trees such as *Sterculia lanceolata* and *Cinnamomum camphora*, which are sources of leaf litter that can be found in the stream bed. The above conditions make it a suitable receptor site of *S. zanklon* individuals captured at Ha Che. The locations of both sites at Ha Che are indicated in **Plate 2**.

All three sites are free of immediate development pressure and given that the proposed receptor sites are located within the same drainage basin as the proposed drainage works area, the water chemistry and habitat type is expected to be similar. The stream substrate and riparian vegetation should be suitable for both *S. zanklon* and *C. anacoluthon*. The locations of the receptor sites are shown in **Plate 1** and **2** for Lin Fa Tei and Ha Che respectively, while photos indicating the site conditions of both sites are provided in **Plate 7**.

Other potential receptor sites surveyed at Lin Fa Tei and Ha Che are mostly subjected to human disturbance and pollution, or in the case of the sites at Ha Che, may dry up during the dry season and thus are not considered as suitable receptor sites. Site conditions of the surveyed sites are provided in **Plate 8**.



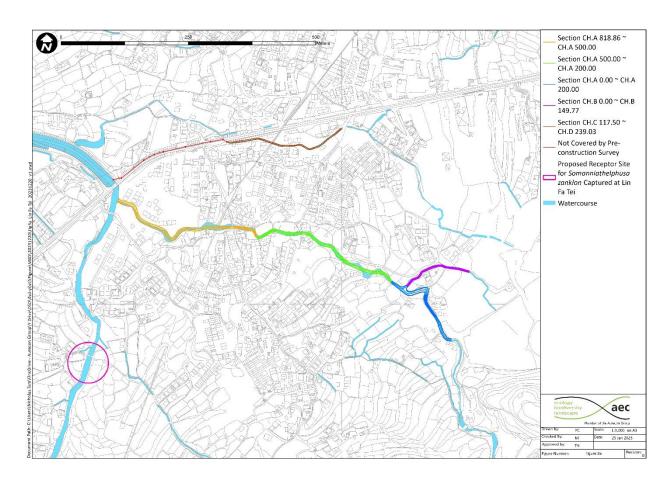


Plate 1. Location of proposed Drainage Works Area and Receptor site at Lin Fa Tei

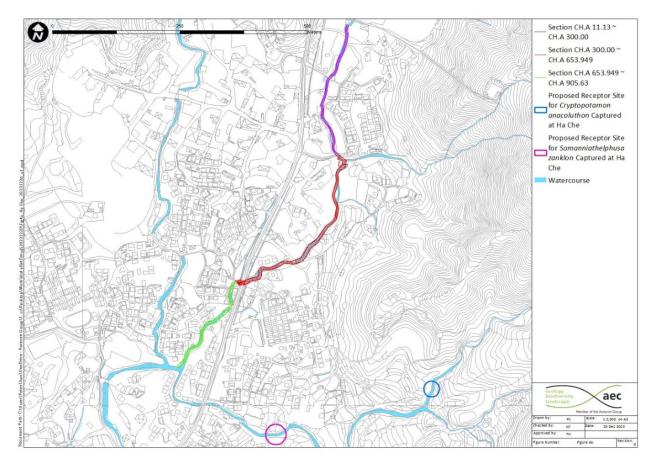


Plate 2. Location of proposed Drainage Works Area and Receptor Site at Ha Che

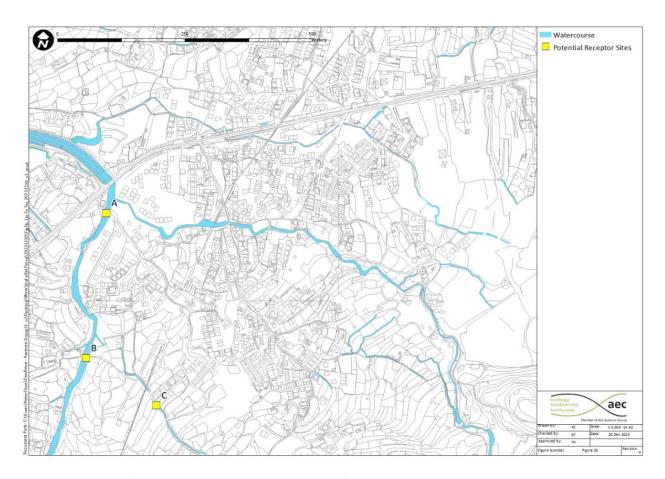


Plate 3. Location of potential receptor sites considered for Lin Fa Tei

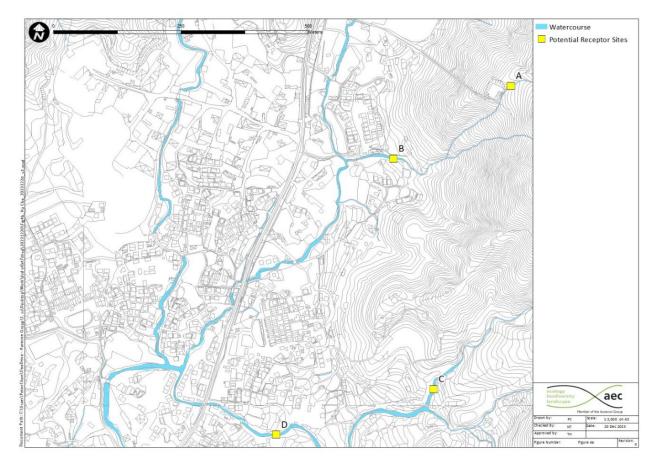


Plate 4. Location of potential receptor sites considered for Ha Che



Proposed Drainage Works Area of Lin Fa Tei (CH.B 0.00 ~ CH.B 149.77) Date taken: 22nd November 2023



Proposed Drainage Works Area of Lin Fa Tei (Downstream) (CH.A 818.86 \sim CH.A 500.00) Date taken: 22^{nd} November 2023

Plate 5. Recent site condition of the Proposed Drainage Works Area of Lin Fa Tei



Proposed Drainage Works Area of Ha Che (CH.A 300.00 ~ CH.A 653.949) Date taken: 22nd November 2023



Proposed Drainage Works Area of Ha Che (CH.A 653.949~ CH.A 905.63) Date taken: 22nd November 2023

Plate 6. Recent site condition of the Proposed Drainage Works Area of Ha Che



Receptor site at Lin Fa Tei Date taken: 9th November 2023



Receptor site for Cryptopotamon anacoluthon at Ha Che Date taken:20th November 2023



Receptor site for Somanniathelphusa zanklon at Ha Che Date taken: 9th November 2023

Plate 7. Recent site condition of proposed Receptor Site





Potential receptor site A at Lin Fa Tei



Potential receptor site B at Lin Fa Tei Date taken: 9th November 2023



Potential receptor site A at Ha Che Date taken: 20th December 2023



Potential receptor site B at Ha Che Date taken: 20th December 2023

Plate 8. Site conditions of potential receptor sites that was not selected

2.4 Capture Methodology

As required in the EM&A Manual for The Project, pre-construction surveys (with the purpose of capturing and translocating the target species) should be undertaken before the commencement of each section of the drainage works, which will be split into different phases. **Table 1** shows the tentative schedule of the construction phases at Ha Che and Lin Fa Tei given by the contractor on 4th November 2023. Note that the schedule is subject to change and the proposed date of pre-construction surveys will be adjusted accordingly.

Table 1 Tentative schedule of construction phases at Ha Che and Lin Fa Tei

Works Location							20	24											20	25								:	2026	3		
		Jan	Feb	Mar	Apr	Мау	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Мау	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Мау	Jun	Jul
d)	CH.A11.13~ CH.A300.00				24	/1/20	24 -	- 7/1	2/20	2024																						
Ha Che	CH.A300.00~ CH.A653.949									2/12/2024 – 27/1/2026																						
	CH A653.949~ CH.A905.63										9/11/2024 – 24/2/2026																					
	CH.A818.86~ CH.A500.00							12	2/5/2	024	- 2/2	2/20:	25	5																		
Tei	CH.A500.00~ CH.A200.00									24/1/2025 – 15/10/2025																						
Fa	CH.A0.00~ CH.A200.00									29/9/2025 – 23/7/2026																						
Li	CH.B0.00~ CH.B149.77																	2	29/9/	202	5 – 2	3/7/	2026	6								
	CH.C117.50~ CH.D239.03																															

Survey Timing

It is planned for pre-construction surveys to be undertaken during night-time for three-consecutive days, all three nights will be chosen in the period between 14 to 7 days before site clearance of the specific section of the works, to avoid the recolonisation of *S. zanklon* and *C. anacoluthon* after the capture survey.

Where possible, capture surveys will also be avoided during or two days after periods of heavy rainfall, both to reduce the health and safety risk to the surveyors, and to allow surveyors to maximise the survey extent (as high-water levels will make some parts of the channel inaccessible).

Capturing

Permit under Cap. 170 will be obtained from AFCD for the use of nets to collect freshwater fauna in the streams. Active visual search will be carried out within the survey area by the proposed personnel with the techniques of hand netting and kick sampling.

Hand netting will be used by actively sweeping the potential micro-habitats and hiding spaces that is 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 will be sorted and collected.

Kick-netting will also be conducted in parallel as the surveyors moves from downstream to upstream, where surveyors will hold hand nets with its opening facing the water current at suitable locations and disturb the streambed substrate in front of the net by kicking, such that aquatic species dislodged by the disturbance will be trapped in the net. Any species of conservation importance caught by this practice will be sorted and collected.

Aside from *S. zanklon* and *C. anacoluthon*, any aquatic faunal species of conservation importance found within the channel will also be caught and translocated. If found, individuals of animals to be translocated will be caught carefully and gently with the aid of hand nets to avoid inflicting injuries to the animals. No excessive force will be applied when capturing, handling or restraining the animals.

Marking and Documentation

Captured Individuals of *S. zanklon* and *C. anacoluthon* will be assigned an individual number, which will be marked on their ventral side of the abdomen. Marking will be done using oil-based resin paint (such as paint offered by Jotamastic Wintergrade or equivalents), that contains metallic component that cures in contact with water, persists in field conditions and does not affect crab survival and behaviour (Bell *et. al.*, 2003).

The date and time of capture, sex and carapace width of each captured individual will then be recorded following the data sheet shown below in **Table 2**.



Table 2 Data sheet for Pre-Construction Capture Survey

Survey Details							
Date			Start	t Time		Finish Time	
Capture Site Recipient Site			•				•
Recipient Site							
Weather							
Surveyor							
Capture Site Cor	ndition						
Recipient Site Co	ondition						
Remarks Capture Record							
Capture Record	ID no	Cantura Tima	Cov	Caranasa Wis	dth (am)	Remarks	
Species	ID no.	Capture Time	Sex	Carapace Wid	ain (cm)	Remarks	
				-			
		-		-			
				<u> </u>			
		1	1				

2.5 Translocation Methodology

Storage and Transport

Once marked, the individual(s) will be placed in sterilised plastic container(s) with a lid. Moist leaf litter will be placed in the containers to maintain a high humidity and provide shelter. Small amount of water will be put into the container(s) to prevent desiccation. The water used will be collected from the same channel where the animals are collected to prevent the possibility of physiological shock. Overcrowding will be avoided when placing the captured animals into the containers.

Transportation time will be kept to a minimum such that the release is performed within 2 hours of the capture.

Contingency in case of Failure of Translocation

Site conditions of the receptor site will also be assessed before the capture survey on the same day. If site conditions do not allow translocation of the newly captured individuals (in cases such as overflow due to heavy rainfall or recent pollution, inaccessibility to the receptor sites), AFCD and the contractor would be notified, such that the commencement of work could be pushed back until alternative receptor sites are found and approved; or until the condition of the receptor site is recovered.

Dead individuals, or injured individuals beyond recovery, will not be released and will be disposed of properly as waste. Such cases should be reported to AFCD within 24 hours.



Reporting

A pre-construction survey and translocation report will be prepared within 2 weeks of the translocation. Abundance of animals translocated, with their sex, approximate size will be reported, along with the time and duration will be reported. Site conditions of the proposed drainage works areas and recipient site will also be reported with relevant photos. Finally a detailed post-translocation monitoring schedule for the captured individuals will be provided. Any deviation from the methodology stated above will also be reported and justified with proper reason(s), e.g. due to site constraints.

2.6 Post-Translocation Monitoring

According to the EM&A Manual of The Project, post-translocation monitoring of the translocated freshwater crabs should cover at least 12 months. Hence, post-translocation monitoring will be conducted one night a month, every month after the date of the pre-construction survey, as indicated in **Table 3** below. Note that the schedule is subject to change and the proposed post-translocation monitoring period will be adjusted accordingly.

2024 2025 2026 Works Location Feb Aug Feb Feb Sep š Jun Jan Mar May Jun Aug oct Dec Jan Mar May Jun Sep ö è 96 Jan Mar Мау Apr 3 Apr ₹ ₹ CH.A11.13~ CH.A300.00 Monitoring Period CH.A300.00~ 2/12/2024 - 27/1/2026 CH.A653.949 Monitoring Period CH A653.949 9/11/2024 - 24/2/2026 CH.A905.63 Monitoring Period 12/5/2024 - 2/2/2025 CH.A818.86 CH.A500.00 Monitoring Period 24/1/2025 - 15/10/2025 CH.A500.00~ CH.A200.00 Monitoring Period CH.A0.00~ 29/9/2025 - 23/7/2026 Fa CH.A200.00 Monitoring Period CH B0 00~ 29/9/2025 - 23/7/2026 CH.B149.77 Monitoring Perio CH.C117.50~ 19/2/2024 - 26/8/2025

Table 3 Tentative Capture and Monitoring Schedule Ha Che and Lin Fa Tei

Notes: * = Tentative date of Pre-construction Survey

During the monitoring, active visual search by hand netting and kick sampling for aquatic fauna species would be performed at the respective receptor sites. Potential micro-habitats and hiding spaces that is favoured by the crabs such as rocks, organic debris, leaf litter, and riparian vegetation etc., will also be overturned or raked.

Upon discovery of any marked individuals from the pre-construction survey, date and time of capture, size and health condition of the individual will also be recorded once again.

The practice of mark and recapture of the translocated population of *S. zanklon* and *C. anacoluthon* at the receptor site can then be used to estimate population size, as well as inform the health and survival status of the translocated population.

A Capture-and-Translocation Final Report summarizing the findings of both the pre-construction survey and post-translocation monitoring will then be produced within two months of the completion of the final post-translocation monitoring.



3 References

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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



Appendices

Appendix I

Curriculum Vitae of the Proposed Personnel



Nationality

British / Irish / Hong Kong Permanent Resident

Qualifications

IUCN Red List Assessor Training Workshop, 2018

M. Sc. Ecology and the Management of the Natural Environment, University of Bristol, 01/2006

B. Sc. (Hons) Science and the Environment, De Montfort University, Leicester, 06/1997

Professional Memberships

HKIEIA 06/2018

AMP - HKIEIA 08/2017

HKIQEP 2016,

International Society of Arboriculture Member (ISAHK0140) of International Society of Arboriculture Hong Kong Chapter, since 2015

TRAQ 06/2015

Certified Arborist (CA no. HK-656A), 03/2011 onwards

HKIEIA 06/2010

International Society of Arboriculture, Licensed Bird Ringer in Hong Kong (Cap. 170) since 2007

CEnv 10/2005

Ringing in UK under the British Trust for Ornithology between 2003 - 2006

CIEEM 06/2003

Profession

Professional Ecologist

Specialisation

Ecological Surveys, Impact Assessment and Design and Implementation of Mitigation Measures

STANTON David John (David)

Director of Operations, AEC

David has worked as a professional ecologist for over 25 years and has been working in Hong Kong since 2006. David strengthens aec's team on ecological surveys, impact assessment and design and implementation of mitigation measures. In particular, he has expertise in survey and analysis of impacts on mammals (including bats), herpetofauna and stream fauna as well as translocation of herpetofauna and fish. He has experience with surveys of a wide variety of faunal groups, and has been involved in Environmental and Ecological Impact Assessments involving terrestrial, freshwater and marine habitats. David is also experienced in Fisheries Impact Assessments for both freshwater and marine systems. From experience gained throughout his academic and professional career, David is familiar with a range of survey and sampling techniques in terrestrial, freshwater and marine environments. Selected Professional Experience as a Tree and Landscape Specialist (2002) - Present). Outside of aec, David has been a member of the Impact Assessment Focus Group (IAFG) in order to support the formulation of the Biodiversity Strategy and Action Plan (BSAP) for Hong Kong. He is a reviewer for fish as part of the development of the Hong Kong List of Threatened Species and a Commission Member of the IUCN SSC Heron Specialist Group. David also sits on the Executive Committee for the Hong Kong Institute of Environmental Impact Assessment (HKIEIA) and is also part of the Environment and Energy Committee for the British Chamber of Commerce in Hong Kong.

Project Experience

Ove Arup & Partners HK Ltd. [CEDD] / [PlanD] | Agreement No. CE 31/2022 (CE) Land Use Review Study for Lau Fau Shan, Tsim Bei Tsui and Pak Nai Areas - Feasibility Study | Hong Kong | 08/2022 - 12/2023 (Anticipate) | Project Director

The Project mainly looks to provide a preliminary demarcation of a Coastal Protection Park and a PODP for the Lau Fau Shan, Tsim Bei Tsui and Pak Nai Areas as part of the Northern Metropolis Development Strategy. Ecological advices and impact prediction/assessment are provided for both key tasks.

Responsible for overseeing project implementation and survey programme.

AECOM [HyD] | Agreement No. CE 17/2022 (HY) Widening of Yuen Long Highway (Section between Lam Tei Quarry and Tong Yan San Tsuen Interchange) - Investigation, Design and Construction | Hong Kong | 12/2022 - 12/2023 (Anticipate) | Project Director

The Project looks to increase the traffic flow of the section of Yuen Long Highway between Lam Tei Quarry and Tong Yan San Tsuen Interchange by road widening. Ecological advices were provided, with ecological baseline surveys and impact assessments carried out as part of the statutory EIA.

Responsible for overseeing project implementation and survey programme.



Director of Operations, AEC

Meinhardt Infrastructure and Environment Ltd. [HyD] | Agreement No. CE 4/2022 (HY) Upgrading of Nim Wan Road (North) - Investigation, Design and Construction | Hong Kong | 07/2022 - 03/2024 (Anticipated) | Project Director

The Project serves as the IDC study following the Agreement No. CE 4/2015 (HY) West New Territories Landfill - Study of Road Access (Upgrading of Nim Wan Road and Deep Bay Road) - Feasibility Study, with a view to increase the capacity of vehicular access to and from the WENT Landfill by upgrading of Nim Wan Road and Deep Bay Road. Ecological advices were provided, with ecological baseline surveys and impact assessments carried out as part of the statutory EIA.

Responsible for overseeing project implementation and survey programme.

Atkins China Ltd. [WSD] | Agreement No. CE 87/2021 (WS) Relocation of Tsuen Wan No. 2 Fresh Water Service Reservoir to Caverns - Investigation, Design and Construction (Contract No. PMS 01/2022 Ecological Baseline Survey for Relocation of Tsuen Wan No.2 Fresh Water Service Reservoir to Caverns) | Hong Kong | 08/2022 - 07/2023 (Anticipate) | Project Director

The Project looks to relocate the existing Tsuen Wan No. 2 Fresh Water Service Reservoir into a cavern system to be developed near Shing Mun and Kam Shan Country Parks. Ecological baseline surveys were carried out for the Ecological Impact Assessment as part of the Preliminary Environmental Review.

Responsible for overseeing project implementation and survey programme.

CEDD | Agreement No. CE 15/2020 (CE) Artificial Islands in the Central Waters - Investigation (Service Contract No. SLO 27/202 Terrestrial Ecological Surveys for the Central Waters) | Hong Kong | 09/2021 - 08/2023 (Anticipated) | Ecological Project Director

The Project serves as the early ecological baseline studies for the development of the artificial islands in the central waters. Ecological baseline surveys were carried out.

Responsible for overseeing project implementation and survey programme. Also conducting seabird and egretry surveys.

DSD | Agreement No. CE 54/2020 (DS) Drainage Improvement Works in Mui Wo - Investigation: Contract No. PM 03/2021 Ecological Survey in Mui Wo | Hong Kong | 09/2021 - 09/2023 (Anticipate) | Project Director

The Project looks to improve drainage network in the lower Mui Wo area. Ecological baseline surveys were carried out for Ecological Impact Assessment as part of the statutory EIA.

Responsible for overseeing project implementation and survey programme.

Ove Arup & Partners HK Ltd. [WSD] | Agreement No. CE 78/2020 (WS) Ngai Tam Mei Water Treatment Works and Primary Service Reservoir Extension - Investigation, Design and Construction | Hong Kong | 06/2021 - 12/2023 (Anticipated) | Project Director

The Project looks to increase the water treatment capacity of the existing Ngai Tam Mei Water Treatment Works and Primary Service Reservoir. Ecological Impact Assessment was carried out as part of the statutory EIA process.

Responsible for overseeing project implementation and survey programme. Technical input to the Environmental Impact Assessment.



Director of Operations, AEC

Ove Arup & Partners HK Ltd. [CEDD] | Agreement No. CE 1/2020 (CE) - Hung Shui Kiu / Ha Tsuen New Development Area Package A Works for Second Phase Development - Design and Construction | Hong Kong | 02/2021 - 01/2024 (Anticipate) | Project Director

The Project mainly looks to increase the population capacity of the HSK/HT NDA by revising the development parameters following the approval of the HSK NDA EIA study. Ecological/fisheries advices and impact assessment were provided.

Providing technical input to the preliminary environmental review.

Ove Arup & Partners HK Ltd. [HyD] | Agreement No. CE 6/2020 (HY) Upgrading of Deep Bay Road - Investigation | Hong Kong | 09/2020 - 12/2023 (Anticipate) | Ecological Project Director

The Project serves as the IDC study following the Agreement No. CE 4/2015 (HY) West New Territories Landfill - Study of Road Access (Upgrading of Nim Wan Road and Deep Bay Road) - Feasibility Study, with a view to increase the capacity of vehicular access to and from the WENT Landfill by upgrading of Nim Wan Road and Deep Bay Road. Ecological advices were provided, with ecological baseline surveys and impact assessments carried out as part of the statutory EIA.

Responsible for overseeing ecological & fisheries surveys for terrestrial, freshwater and intertidal faunal species, project implementation and survey programme.

Binnies HK Ltd. [CEDD] | Agreement No. CE 10/2020 (CE) - Site Formation and Infrastructure Works for Proposed Public Housing Developments at Sha Po, Shap Pat Heung and Tai Kei Leng, Yuen Long - Feasibility Study | Hong Kong | 09/2020 - 12/2023 (Anticipate) | Project Director

The Project is the feasibility study of the captioned public housing development in northwest New Territories. Ecological/fisheries advices and impact assessment were provided.

Responsible for overseeing project implementation and survey programme.

Ove Arup & Partners HK Ltd. [HyD] | Agreement No. CE 4/2015 (HY) West New Territories Landfill - Study of Road Access (Upgrading of Nim Wan Road and Deep Bay Road) - Feasibility Study | Hong Kong | 01/2016 - 02/2021 | Ecological Project Director

The Project looks to increase the capacity of vehicular access to and from the WENT Landfill by upgrading of Nim Wan Road and Deep Bay Road. Ecological advices were provided, with ecological baseline surveys and impact assessments carried out as part of the statutory EIA.

Responsible for conducting/overseeing ecological baseline surveys for terrestrial, freshwater and intertidal faunal species groups in the coastal area from Sheung Pak Nai to Nim Wan and review of impact assessment reports.

Meinhardt Infrastructure and Environment Ltd. [CEDD] | Agreement No. CE 22/2020 (GE) Revitalization of Lin Ma Hang Lead Mine Caves - Investigation, Design and Construction | Hong Kong | 04/2021 - 11/2022 | Project Director and Bat Specialist

The Project looks to stabilise and revitalise the Lin Ma Hang Lead Mine Caves as a tourist attraction of the planned Robin's Nest Country Park in northeast New Territories. Ecological advices and impact assessment were provided.

Providing technical input to the preliminary environmental review.



Director of Operations, AEC

Playright Children's Play Association [DSD] | Agreement No. HATS 01/2020 Review and Enhancement for Children's Play Area and Rooftop Open Space on the Landscape Deck of Kwun Tong Sewage Pumping Station | Hong Kong | 08/2020 - 11/2022 | Fauna Specialist

Landscaped and play area is planned on the rooftop of the Kwun Tong Sewage Pumping Station. Ideas on biodiversity enhancement e.g. ecological planting, water treatment wetland, bird nest box, dragonfly spring are provided. Rapid ecological baseline survey was also conducted.

Responsible for carrying out fauna survey and providing technical advice on biodiversity landscaping.

DSD | Agreement No. CE 15/2019 (DS) Drainage Improvement Works in Sha Tin and Sai Kung - Investigation: Contract No. DP 02/2020 Baseline Ecological Survey for Drainage Improvement Works at Sha Tin and Sai Kung | Hong Kong | 06/2020 - 06/2022 | Project Director

The Project looks to improve drainage network in a number of sites in Sha Tin and Sai Kung. Ecological baseline surveys were carried out for Ecological and Fisheries Impact Assessments as part of the Preliminary Environmental Review.

Responsible for overseeing project implementation and survey programme.

Otherland [WSD] | Environmental Study for the Project - Water Supply to Remote Village - Tai Long, Chi Ma Wan Peninsula, South Lantau (Ecological Impact Assessment) | Hong Kong | 05/2020 - 02/2023 | Project Director

The Project looks to provide potable water supply to Tai Long, Chi Ma Wan Peninsula, South Lantau, via minor upgrading works. Ecological baseline surveys were carried out for the Ecological Impact Assessment as part of the Preliminary Environmental Review

Responsible for overseeing project implementation and survey programme.

Ove Arup & Partners HK Ltd. [CEDD] | Agreement No. CE 28/2019 (CE) Study on Phase One Development of New Territories North - San Tin / Lok Ma Chau Development Node - Feasibility Study | Hong Kong | 10/2019 - 12/2022 | Project Director

The Project serves as the next stage of studies focusing on the ST/LMC development node following the Preliminary Feasibility Study of Developing New Territories North, with the aim of producing a PODP for the Node. Ecological, agricultural and fisheries advices and impact assessment were provided, with early baseline ecological field surveys conducted.

Responsible for overseeing project implementation and survey programme.

WWF-HK | Specific Mitigation for Bat Roosts for WWF Hong Kong's Peter Scott Field Studies Centre at Mai Po Prior to Demolition | Hong Kong | 04/2019 - 11/2019 | Bat Specialist

The Peter Scott Field Studies Centre at Mai Po is required to be upgraded for meeting the needs of Mai Po Community, and the centre has to be demolished and re-built. Prior to the demolishment works, bat roosts were identified in the vicinity of this centre, as well as in the noticeboard and in the bicycle shed at the centre. AEC conducted bat surveys, propose and implement mitigation strategies to minimise the construction impact on the bat colonies.

Responsible to developing and implementing mitigation strategies for bat roosts, with close liaison with AFCD and following good ecological practice and demonstrate due diligence.

WWF-HK | Precautionary Ecological Checks for WWF Hong Kong's Peter Scott Field Studies Centre at Mai Po Prior to Demolition | Hong Kong | 05/2019 - 05/2021 | Specialist Ecologist

The Peter Scott Field Studies Centre at Mai Po is required to be upgraded for meeting the needs of Mai Po Community, and the centre has to be demolished and re-built. Prior to the demolishment works, specific site



Director of Operations, AEC

checks of any breeding and roosting birds, bat surveys and assessment were conducted, and relevant mitigation strategies were proposed to minimise the demolishment impact.

Responsible for conducting site checks, bat surveys and assessment of breeding and roosting birds.

CEDD | Agreement No. CE 85/2017 (GE) Technical Study on the Potential Quarry Site at Tsing Yi Southwest - Feasibility Study: Contract No. TYQ 01/2019 Ecological Survey of Potential Quarry Site at Tsing Yi Southwest | Hong Kong | 06/2019 - 11/2020 | Ecological Project Director

The Project looks to develop a quarry site in Tsing Yi Southwest for government facilities. Ecological baseline surveys were carried out for the Ecological Impact Assessment that forms part of the Preliminary Environmental Review.

Responsible for overseeing terrestrial and freshwater ecological surveys and reviewing technical assessments.

DSD | Agreement No. CE 93/2017 (DS) Yuen Long Barrage Scheme - Investigation, Design and Construction: Contract No. PM 04/2019 Ecological Survey in Yuen Long | Hong Kong | 06/2019 - 09/2021 | Ecological Project Director and Fauna Specialist

The Project looks to develop a tidal barrage at Yuen Long and provide other drainage improvement in Kam Tin River and Shan Pui River. Ecological baseline surveys were carried out for Ecological and Fisheries Impact Assessments as part of the Preliminary Environmental Review.

Overseeing fisheries assessments and ecological surveys (incl. terrestrial, freshwater, intertidal and benthic surveys) in Kam Tin River and Shan Pui River; and providing technical input to the relevant EcolA report.

Urbis Ltd. [HKU] | Planning Consultancy Service for Western Expansion of Main Campus for the University of Hong Kong - Provision of Ecological Support | Hong Kong | 11/2018 - 12/2021 | Project Director

The Project identifies the development constraints and opportunities of the Site from an ecological perspective, to broadly assess ecological impacts that may potentially arise from the proposed expansion, and to facilitate the development of the optimum Site boundaries and development option.

Responsible for overseeing terrestrial and freshwater ecological surveys at the site and providing input to a preliminary ecological assessment.

DSD | Agreement No. CE 65/2017 (DS) Feasibility Study on Extension of Siu Ho Wan Sewage Treatment Works: Contract No. SPW 17/2018 Ecological Survey for Siu Ho Wan Sewage Treatment Works | Hong Kong | 09/2018 - 03/2020 | Project Director

The Project looks to increase the sewage treatment capacity of the existing Siu Ho Wan Sewage Treatment Works in view of the further development on north Lantau. Ecological baseline surveys were carried out for Ecological Impact Assessment as part of the Preliminary Environmental Review.

Responsible for overseeing project implementation, surveys and ecological impact assessments.

Ove Arup & Partners HK Ltd. [CEDD] | Agreement No. CE 1/2013 (CE) Site Formation and Associated Infrastructural Works for Development of Columbarium, Crematorium and Related Facilities at Sandy Ridge Cemetery - Design and Construction | Hong Kong | 07/2013 - 08/2016 | Project Manager and Ecologist

The Project looks to develop columbarium, crematorium and related facilities all-inclusively at the existing Sand Ridge Cemetery. Ecological advices were provided, with ecological baseline surveys and impact assessments carried out as part of the statutory EIA.



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Responsible for conducting all major fauna surveys, including targeted turtle surveys and fireflies, and preparing ecological and fisheries impact assessment.

SMEC [HKHS] | Consultancy Services for Ecological and Development Feasibility Study of Identified Sites on the Periphery of Country Parks | Hong Kong | 12/2017 - 10/2021 | Project Director and Ecologist

This is a high-profile Project that looks to investigate the feasibility of providing public housing at two selected sites at Tai Lam and Shui Chuen O, both located immediately next to Country Parks. Ecological baseline surveys were carried out for the Ecological Impact Assessment

Responsible for overseeing project and providing technical input to the relevant ecological feasibility study report.

China Road and Bridge Corporation [DSD] | DC/2013/03 - Reconstruction and Rehabilitation of Kai Tak River from Tung Kwong Road to Prince Edward Road East - Ecological Survey for Kai Tak River (Wong Tai Sin Section) | Hong Kong | 03/2018 - 12/2019 | Project Ecologist

The Project is to reconstruct and rehabilitate Kai Tai River (Wong Tai Sin Section).

Responsible for overseeing survey programme, coordinating and conducting ecological surveys, and providing technical input to the relevant survey reports.

Galaxy Entertainment Group | Galaxy Macau in Cotai City Macau - Contract No. NCA(P3C)040, NCA(P4)040 - Phase 3C Lot 3 Development and Phase 4 Lot 4 Development - Consultancy for Expert Ecological (Ornithologist) Services for Phase 3C and Phase 4 Lot 4 Development | Macau | 03/2018 - 02/2022 | Project Director

The Project involves the development of vacant lots with a proposal of a new mixed use development of a two level podium with five hotel towers facing the Taipa-Coloane Wetland Reserve. An ecological impact assessment with specific reference to birds and impacts to this species group was carried out.

Responsible for providing technical input and participating in liaisons with the Environmental Protection Bureau (DSPA) of the Macau SAR Government.

PlanPlus Consultancy Limited | Section 16 Planning Application for a Temporary Cold Store for Poultry and Distribution Centre - Provision of Ecological Consultancy Services | 03/2018 - 02/2021 | Project Director

The Project is a Section 16 Town Planning Application for the development of the temporary cold storage for poultry and distribution centre at Man Kam To Road, Sandy Ridge. Four-month ecological baseline surveys and impact assessment were carried out by AEC.

Responsible for conducting ecological surveys, and providing technical input to the relevant ecological impact assessment in support of the planning application.

DSD | Agreement No. CE 54/2016 (DS) Drainage Improvement Works at North District - Packages A and C - Investigation: Contract No. DP 02/2018 Baseline Ecological and Fisheries Surveys | Hong Kong | 03/2018 - 03/2020 | Project Director and Ecologist

The Project looks to provide drainage improvement in the Ng Tung River drainage basin. Ecological baseline surveys were carried out for Ecological and Fisheries Impact Assessments as part of the Preliminary Environmental Review.

Responsible for overseeing project implementation and survey programme; coordinating and conducting terrestrial and aquatic ecological surveys; and providing technical input to the relevant reports



Director of Operations, AEC

Allied Environmental Consultants Ltd. | Provision of Ecological Consultancy Services for a Potential Section 12A Rezoning Application at Sheung Kwai Chung - Environmental Due Diligence Study | Hong Kong | 01/2018 - 02/2018 | Project Director

For a potential development site in Sheung Kwai Chung, a preliminary ecological review, appraisal of habitats, and a rapid ecological survey were carried out to provide input into an Ecological Due Diligence Report.

Responsible for carrying out a rapid ecological assessment and preparing the Environmental Due Diligence Report.

Ove Arup & Partners HK Ltd. | Section 16 Planning Application for a CDA zone at Sai Sha - Provision of Ecological Consultancy Services | Hong Kong | 01/2018 - 07/2020 | Project Ecologist

The Project is a planning application for seeking approval for a comprehensive development area with large-scale residential development and wetland restoration scheme in Sai Sha. AEC provides ecological baseline surveys to update the ecological resources and habitat conditions of the Project Site, and prepare an ecological impact assessment.

Responsible for conducting primarily bat detector surveys; and providing technical input to the relevant EcolA report in support of the planning application.

Meinhardt Infrastructure and Environment Ltd. [CEDD] | Agreement No. CE 12/2017 (CE) Improvement Works at Tai O, Phase 2 Stage 2 - Design and Construction | Hong Kong | 01/2018 - 12/2019 | Plant Ecologist of the Ecological Impact Assessment

The Project is to design and construct footbridges at Yim Tin and Po Chue Tam, open space for community and cultural events at Yim Tin, improvement works at Yeung Hau Temple and landscaping and other associated works.

Responsible for overseeing survey programme, coordinating and conducting terrestrial and aquatic ecological surveys, and providing technical input to the environmental review and environmental impact assessment.

SMEC Asia Ltd. | Three Proposed Sites in Hong Kong for Development of Solar Farms - Feasibility Study | Hong Kong | 12/2017 - 11/2018 | Project Director

The Project studies the feasibility of developing solar farms at Black Point, Castle Peak and Penny's Bay.

Responsible for providing ecological technical input to the Land/Planning and Environmental/Ecology Feasibility Study Reports.

Allied Environmental Consultants Ltd. | Provision of Ecological Consultancy Services for a Potential Section 16 Application at Tin Shui Wai - Environmental Due Diligence Study | Hong Kong | 11/2017 - 01/2018 | Project Director

For a potential development for a site in Tin Shui Wai, a preliminary ecological review, appraisal of habitats, and a rapid ecological survey were carried out to provide input into an Ecological Due Diligence Report.

Responsible for carrying out a rapid ecological assessment and preparing the Environmental Due Diligence Report.



Director of Operations, AEC

Master Trend Development Limited | Proposed International School in D.D. 20, Lo Lau Uk, Pun Shan Chau, Tai Po, New Territories - Provision of Ecological and Landscape Consultancy Services for a Section 12A Rezoning Application or a Section 16 Planning Application/Ecological and Landscape & Visual impact Assessment under the EIAO | Hong Kong | 11/2017 - 02/2021 | Project Director

The Project is to provide preliminary design and to submit planning applications for a proposed international school in Tai Po.

Responsible for conducting terrestrial and freshwater ecological baseline surveys; and providing technical input to the relevant EcolA report for the rezoning/planning application.

AFCD | Contract Ref. AFCD/SQ/111/17 Provision of Service for Field Trial on Pond-wiring to Reduce Cormorant Predation in Commercial Fishponds 2017-18 | Hong Kong | 10/2017 - 03/2019 | Project Ecologist

The Project is to study the use of pond-wiring system in reducing the fish predation by Great Cormorant in the selected fish pond network system in Northwest New Territories.

Responsible for conducting avifaunal surveys and field inspections in commercial fishponds in the Mai Po Inner Deep Bay Ramsar Site.

Arcadis-ESA JV [CEDD] | Agreement No. CE 40/2015 (GE) Landslip Prevention and Mitigation Programme, 2015, Package F, Landslip Prevention and Mitigation Works - Investigation Design and Construction | Hong Kong | 10/2019 - 12/2023 (Anticipated) | Project Director

The Project is to design and implement landscape prevention and ecological mitigation works for a range of slopes/ natural hillside under the Assignment.

Responsible for overseeing rapid ecological survey at the site and reviewing the preliminary ecological appraisal report.

Over Arup & Partners Hong Kong Limited [CEDD] | Agreement No. CE 11/2017 (CE) Site Formation and Infrastructure Works for Public Housing Developments at Tseung Kwan O - Investigation, Design and Construction | Hong Kong | 10/2017 - 12/2023 (Anticipated) | Project Director and Ecologist

The Project consists of site formation and infrastructure works for the public housing developments at North of Tseung Kwan O Village, Northwest of Ying Yip Road, West of Yau Yue Wan Village and East of Movie City.

Responsible for overseeing project implementation and survey programme; coordinating and conducting terrestrial and freshwater ecological baseline surveys in four selected public housing sites; and reviewing preliminary EcolA reports and mitigation plans.

DSD | Agreement No. CE 79/2014 (DS) Energizing Kowloon East - Revitalization of Tsui Ping River - Investigation: Contract No. DP 02/2017 Ecological Survey for Revitalization of Tsui Ping River | Hong Kong | 03/2017 - 01/2018 | Project Director

The Project looks to revitalise the polluted Tsui Ping River and develop the river into a blue-green infrastructure that could benefit both wildlife and the community. Ecological baseline surveys were carried out for Ecological Impact Assessment as part of the Preliminary Environmental Review.

Responsible for overseeing project implementation and survey for terrestrial and aquatic ecological surveys.



Director of Operations, AEC

Confidential | Ecological Baseline Survey and Impact Assessment for Green Belt Sites | Hong Kong | 01/2017 - 11/2019 | Project Director and Project Ecologist

This Project looks to investigate the feasibility of providing private residential land at three Green Belt sites along Nam Fung Road, Hong Kong Island. Ecological baseline surveys and impact assessment were carried out.

Responsible for overseeing project implementation and survey for terrestrial and aquatic ecological surveys

CEDD | Agreement No. CE 49/2015 (GE) Technical Study on Potential Quarry Sites at Tuen Mun West - Feasibility Study: Contract No. TMWQ/01 Ecological Surveys in Lung Kwu Tan | Hong Kong | 12/2016 - 01/2019 | Project Director and Ecologist

This Project looks to develop a quarry site in Lung Kwu Tan for government facilities. Ecological baseline surveys were carried out for the Ecological Impact Assessment that forms part of the Preliminary Environmental Review.

Responsible for overseeing project implementation and survey programme; coordinating and conducting terrestrial and freshwater ecological baseline surveys for main faunal species groups in two selected sites in Black Point and Lung Kwu Tan.

SMEC Asia Limited [WWF] | WWF Hong Kong - Mai Po Nature Reserve Infrastructure Upgrade Project, Environmental & Ecological Consultancy Services for the 21st Century Nature Classroom | 11/2016 - 06/2022 | Hong Kong | Project Ecologist

The Project aims to create a 21st Century Nature Classroom that provides the facilities needed by students, teachers, public visitors, families, community groups, and those interested in wetlands research and wetlands training in Mai Po Nature Reserve. The proposed upgrade works include construction of new tower hides for bird watching, upgrading of existing footpath and refurbishment of Mai Po Education Centre.

Responsible for conducting terrestrial ecological baseline surveys in the Mai Po Nature Reserve and its vicinity.

DSD | Agreement No. CE 3/2015 (DS) Yuen Long Effluent Polishing Plant - Investigation, Design and Construction: Contract No. SPW 8/2016 Ecological Survey for Yuen Long Effluent Polishing Plant | 08/2016 - 11/2017 | Project Director

The Project looks to increase the sewage treatment capacity of the existing Yuen Long Effluent Polishing Plant in view of the ongoing and expect population increase in Yuen Long. Ecological baseline surveys were carried out for Ecological Impact Assessment as part of the Preliminary Environmental Review.

Responsible for overseeing terrestrial and freshwater ecological baseline surveys, including fireflies, in the Study Area covering Fung Lok Wai and Nam Sang Wai. Review of habitat evaluations and impact assessment reports.

DSD | Agreement No. CE 78/2014 (DS) Drainage Improvement Works at North District - Package B - Investigation: Contract No. DP 02/2016 Provision of Services of Ecological Baseline Survey (Contract B) | Hong Kong | 06/2016 - 12/2018 | Project Director and Ecologist

The Project looks to provide drainage improvement in the Lok Ma Chau area. Ecological baseline surveys were carried out for Ecological and Fisheries Impact Assessments as part of the Preliminary Environmental Review.

Responsible for overseeing project implementation and survey programme; coordinating and conducting terrestrial and freshwater ecological baseline surveys in three selected sites near Lok Ma Chau; and providing technical input to the relevant ecological baseline reports.



Director of Operations, AEC

Airport Authority Hong Kong | RFQ No. PRO/Q702/15/HL Supply and Delivery of Bird Trapping Services and Equipment in Terminal 2 at Hong Kong International Airport | Hong Kong | 01/2016 - 06/2016 | Project Ecologist

The Project is to carry out bird (Tree Sparrows) trapping services in Terminal 2 at the Hong Kong International Airport.

Responsible for carrying out bird trapping of Tree Sparrows.

Ove Arup & Partners HK Ltd. | Hoi An South Comprehensive Development (Phase 1), Vietnam - ecological baseline studies and eco-enhancement schemes for hotel and residential development | Hong Kong | 04/2016 - 12/2022 | Project Director

The Project involves the development of a Hotel Resort with golf course facility in Hoi An, Vietnam. Ecological assessment of the ecological resources and habitat characteristics of the Project Site was carried out, and provided technical review on the landscape design of the Project.

Responsible for overseeing project implementation and survey programme; ecological input to enhance landscape design and golf course to provide opportunities for local wildlife.

Ove Arup & Partners HK Ltd. [EPD] | Agreement No. CE 4/2015 (HY) West New Territories Landfill - Study of Road Access (Upgrading of Nim Wan Road and Deep Bay Road) - Feasibility Study | Hong Kong | 01/2016 - 02/2021 | Project Director and Ecological

The Project looks to increase the capacity of vehicular access to and from the WENT Landfill by upgrading of Nim Wan Road and Deep Bay Road. Ecological advices were provided, with ecological baseline surveys and impact assessments carried out as part of the statutory EIA.

Responsible for conducting/overseeing ecological baseline surveys for terrestrial, freshwater and intertidal faunal species groups in the coastal area from Sheung Pak Nai to Nim Wan and review of impact assessment reports.

Ove Arup & Partners HK Ltd. [CEDD] | Agreement No. CE 26/2015 (CE) Site Formation and Infrastructural Works for the Development at Long Bin, Yuen Long - Feasibility Study | Hong Kong | 01/2016 - 04/2016 | Project Director

The Project looks to investigate the feasibility of providing public housing and its associated infrastructural development in Long Bin, Yuen Long. AEC conducted a 4-month ecological baseline surveys and impact assessment to support in the Preliminary Environmental Review.

Responsible for overseeing ecological baseline surveys and impact assessment reporting.

Ove Arup & Partners HK Ltd. [CEDD] | Agreement No. CE62/2014 (CE) Site Formation and Infrastructural Works for Proposed Public Housing Developments at Pokfulam South - Feasibility Study | 02/2015 - 10/2017 | Faunal ecologist

The Project looks to investigate the feasibility of providing public housing at several sites in Pok Fu Lam South. Ecological baseline surveys and impact assessment were carried out as part of the Preliminary Environmental Review.

Responsible for conducting terrestrial ecological baseline survey and preparing the environmental impact assessment report.



Director of Operations, AEC

Ove Arup & Partners HK Ltd. [CEDD] / [PlanD] | Agreement No. CE 10/2015 (CE) Preliminary Feasibility Study of Cable Car System from Ngong Ping to Tai O, and Spa and Resort Development at Cheung Sha and Soko Islands - Feasibility Study | Hong Kong | 07/2015 - 05/2019 | Faunal ecologist

The Project looks to strategically develop and enhance tourism and recreation in the Lantau South and Soko Islands. Ecological advices were provided during land use planning, and baseline surveys and impact assessments that forms part of the Preliminary Environmental Review were conducted.

Responsible for conducting terrestrial ecological baseline survey and preparing the environmental impact assessment report.

HOK | Ecological Input to a Landscape Master Plan on Hainan Island | 10/2015 - 12/2015 | Project Ecologist

AEC provides ecological input and review for a Landscape Master Plan (LMP) for a private development project on Hainan Island. Technical assessment and ecological review of the existing and proposed habitats within the proposed design themes for LMP were carried out, and recommendation on plant species for suitable habitats were made.

Responsible for providing the technical assessment and ecological review of the LMP.

Ove Arup & Partners HK Ltd. [EPD] | Agreement No. CE 6/2015 (EP) West New Territories (WENT) Landfill Extension - Design and Construction | Hong Kong | 10/2015 - 12/2023 (Anticipated) | Project Ecologist

The Project looks to increase the capacity of the WENT Landfill. Ecological advices were provided, with ecological baseline surveys and impact assessments carried out as part of the statutory EIA.

Responsible for conducting fauna survey.

Ove Arup & Partners HK Ltd. [DSD] | Agreement No. CE 1/2015 (DS) North East New Territories Sewerage Upgrade and North District Sewerage - Investigation, Design and Construction | Hong Kong | 09/2015 - 03/2022 | Project Director

The Project looks to provide drainage improvement in the Ng Tung River drainage basin and other sites in northeast New Territories. Ecological baseline surveys were carried out for Ecological Impact Assessment as part of the Preliminary Environmental Review.

Responsible for overseeing ecological baseline surveys and impact assessment reporting.

C M Wong & Associates Ltd. [CEDD] | Agreement No. CE 28/2013 (GE) Landslip Prevention and Mitigation Programme, 2013, Package B, Landslip Prevention and Mitigation Works - Investigation, Design and Construction: Provision of Ecological Survey | Hong Kong | 09/2015 - 09/2016 | Project Director

The Project is to design and implement landslip prevention and mitigation works to a number of slope features under the Agreement.

Responsible for overseeing the rapid ecological surveys and ecological appraisal report.

Jacobs China Limited [CEDD] | Agreement No. CE34/2013(GE) Landslip Prevention and Mitigation Programme, 2013, Package H, Landslip Prevention and Mitigation Works - Investigation, Design and Construction: Provision of Rapid Ecological (Flora/Fauna) Surveys Services | Hong Kong | 08/2015 - 10/2015 | Project Director and Bird Ecologist

The Project is to design and implement landslip prevention and mitigation works for a range of slope features/ natural terrains under the Agreement.



Director of Operations, AEC

Responsible for conducting the bird survey, overseeing the rapid ecological surveys and ecological appraisal report.

Hutchison Whampoa Property Management | 23 Coombe Road: assessment of impact on Black Kite roost | Hong Kong | 08/2015 - 04/2017 | Project Ecologist

The Project is to construct a low-rise development at 23 Coombe Road. An ecological assessment is required to assess potential impact on the Magazine Gap Black Kite roost and any rare/ protected plant species at the site.

Responsible for conducting the Black Kite surveys and assessing any impacts on this bird species from the proposed development.

Kwong Hing Investment (HK) Ltd. | Proposed Residential Development in Nam Sang Wai and Nature Reserve at Lut Chau: EIAO and Section 16 Submissions - Summer 2015 Firefly Surveys | Hong Kong | 04/2015 - 09/2015| Project Ecologist

The Project involves a series of consultancy contracts in conducting Ecological Impact Assessment and providing detailed wetland design for the wetland systems in Nam Sang Wai and Lut Chau under the large-scale comprehensive residential development. This contract involves ecological baseline surveys of light levels and distribution at known sites of the Mai Po Bent-winged Firefly *Pteroptyx maipo*.

Responsible for conducting the fireflies survey and preparing the relevant survey report to support in the Town Planning Application.

Lands Department | LD/DLO/TP/TI/2015/1 Provision of Arboricultural Services for Tree-related Complaints/Referrals to District Lands Office/Tai Po, Lands Department Study | Hong Kong | 07/2015 - 02/2016 | Project Team Leader

The Project /is to handle tree-related complaints/ referrals received by DLO/TP office.

Responsible for overseeing the project progress, conducting tree risk assessments, providing recommendations for tree remedial works and supervision/ verification of completed tree works.

Ove Arup & Partners Hong Kong Limited [CEDD] | Agreement No. CE 61/2014 (CE) Site Formation and Infrastructural Works for Nine Housing Sites in Tseung Kwan O - Feasibility Study: Preliminary Environmental Study | Hong Kong | 08/2015 - 04/2017 | Project Director and Ecologist

The purpose of the PES is to evaluate the environmental performance of the proposed site formation and associated infrastructure, including the on-site, off-site and cumulative environmental implications of relevant development within and in the vicinity of the nine housing sites in Tsuen Kwan O.

Responsible for overseeing project implementation and survey programme; terrestrial and freshwater ecological surveys for main faunal species groups in nine selected potential housing sites in the Tseun Kwan O area.

DSD | Agreement No. LD 06/2014 Eco-Hydraulics Study on Green Channels - Stage 2 (Contract No. 09/LD/2015 Provision of Services of Ecological Field Survey) | Hong Kong | 06/2015 - 03/2018 | Project Director and Project Ecologist

The Project looks to assess the existing conditions and potential for revitalisation works in a total of 22 selected watercourses on Hong Kong Island, Lantau Island and New Territories. Extensive ecological baseline surveys were carried out for the Study.

Responsible for overseeing project implementation and survey programme; terrestrial and freshwater ecological surveys for main faunal species groups in twenty-two selected streams and rivers across Hong Kong; as part of a baseline study for stream enhancements works



Director of Operations, AEC

SMEC Asia [EPD] | Study of Access Options to Lap Sap Wan in Shek O for Removal of Marine Refuse (Quotation Ref. 18-00999) - Provision of Ecological Consultancy Services | Hong Kong | 03/2019 - 03/2021 | Project Director

The Project investigated the feasibility of providing land-based vehicular access to Lap Sap Wan in Shek O for Removal of Marine Refuse that have built up at the bay. Ecological baseline surveys and impact assessment were conducted as part of the Preliminary Environmental Review.

Responsible for overseeing the ecological baseline surveys, project implementation and reviewing the relevant PER report.

Mott MacDonald [CEDD] | Agreement No. CE 31/2014 (CE) Engineering Study for Police Facilities in Kong Nga Po - Feasibility Study | Hong Kong | 03/2015 - 12/2015 | Project Director

The Project looks to develop a new police training school and associated facilities in Kong Nga Po, northeast New Territories. Ecological baseline surveys and impact assessment were carried out as part of the statutory EIA process.

Responsible for overseeing the ecological baseline surveys, project implementation and providing technical input to the Ecological Impact Assessment Report.

DSD | Agreement No. CE 50/2007 (DS) North District Sewerage Stage 2 (Remainder) and Sewerage to Chuen Lung, Kau Wa Keng Old Village and Lo Wai - Investigation, Design and Construction: Ecological Survey for the Proposed Site of Lin Ma Hang Sewage Treatment Plant | Hong Kong | 01/2015 - 01/2017 | Project Director

The Project looks to provide sewerage improvement in selected locations in central and eastern New Territories. Ecological baseline surveys were carried out for Ecological Impact Assessment as part of the Preliminary Environmental Review.

Responsible for overseeing ecological baseline surveys, project implementation and providing technical input to the relevant survey reports.

DSD | Agreement No. CE 22/2013 (DS) Drainage Improvement Works in Yuen Long, Stage 1 - Investigation, Design and Construction: Contract No. PM 10/2014 - Ecological Baseline Survey for Drainage Improvement Works in Yuen Long, Stage 1 | Hong Kong | 01/2015 - 02/2016 | Project Director

The Project looks to provide drainage improvement in eight selected watercourses located in Shek Kong, Kam Tin, Pat Heung and Shap Pat Heung areas. Ecological baseline surveys were carried out for Ecological Impact Assessment as part of the Preliminary Environmental Review.

Responsible for overseeing ecological baseline surveys for terrestrial and aquatic community surveys, project implementation and providing technical input to the relevant survey reports.

Lands Department | Contract No.: LD/DLO/YL/STI/2014/1 Provision of Services for Tree Assessment for Village Access Roads/Footpaths within the administration boundary of District Lands Office, Yuen Long | Hong Kong | 08/2014 - 03/2017 | Project Team Leader

The Project is to handle tree-related complaints/ referrals received by DLO/YL office.

Responsible for overseeing the whole project, conducting tree risk assessments, providing recommendations for tree remedial works and supervision/ verification of completed tree works.



Director of Operations, AEC

Ove Arup & Partners Hong Kong Limited [CEDD] / [PlanD] | Agreement No. CE42/2013 (CE) Preliminary Feasibility Study on Developing the New Territories North | Hong Kong | 01/2014 - 03/2018 | Project Ecologist

The Study aims to formulate a Concept Plan (CP) for the NTN and strategic infrastructure requirements, examine the Broad Land Use Concept Plans (BLCPs) and their preliminary feasibility on individual Potential Development Area (PDA) and Optional Development Area (ODA) identified. The findings and recommendations of this Study form the basis for detailed P&E Studies for the PDAs and the ODA in the future.

Responsible for the multi-fauna survey and impact assessment and evaluation for the Ecological Impact Assessment of the SEA Study.

SMEC Asia Ltd. | The University of Chicago | University of Chicago Centre in Hong Kong - Mount Davis: Ecological surveys and Assessment Report to Support Section 16 Planning Application | Hong Kong | 05/2014 - 04/2015 | Project Manager and Bat Ecologist

The Project involves a Section 16 Planning Application for The University of Chicago for developing a site at Mount Davis as a purpose-built campus "University of Chicago Centre in Hong Kong". Parts of the proposed Project Site are occupied by the former Jubilee Battery (a wartime structure) and a bat roost has been identified in one of these disused underground magazine underneath the Project Site. AEC conducted 12-month bat survey (May 2014 to April 2015) to summarise the species present and estimate the overall number of bats within the surveyed colony.

Responsible for conducting the monthly bat surveys and reporting the bat survey findings, final Bat Survey Report and proposing mitigation recommendations to be included in the Environmental Assessment Report for the Town Planning Application.

In Yam Development Ltd. | Sun Hung Kai Properties Ltd. | Proposed Residential Development in "R(D)" and "U" Zones at Various Lots in DD 115 and Adjoining Government Land, Tung Shing Lei, Yuen Long | Hong Kong | 04/2014 - 02/2021 | Project Ecologist

The Project involves residential development with the wetland enhancement management scheme for S16 Planning Application.

Responsible for conducting bird survey and preparing the ecological impact assessment report.

SMEC Asia Ltd. [CEDD] | Agreement No. CE42/2012 (EP) Liantang/ Heung Yuen Wai Boundary Control Point and Associated Works - Independent Environmental Checker for the mitigation measures for landscape & visual and ecological impacts | 05/2013 - 12/2024 (Anticipated) | Project Director

The Project includes site formation works and construction of facilities/ buildings and associated road works for Heung Yuen Wai Boundary Control Point which is a Designated Project under EIAO. AEC provides ecological and landscape & visual support for the Independent Environment Checker Team

Responsible for overseeing the review and audit job conducted by the IEC (ecology, landscape & visual) aspects.



Director of Operations, AEC

Ove Arup & Partners Hong Kong Limited [CEDD] | Agreement No. CE 1/2013 (CE) Site Formation and Associated Infrastructural Works for Development of Columbarium, Crematorium, and Related Facilities at Sandy Ridge Cemetery - Design and Construction (Ecological Input for the Application for VEP due to Changes of the Crematorium Design) | Hong Kong | 04/2018 - 08/2019 | Project Director

The Project (a Designated Project under EIAO) comprises site formation works and infrastructural works for the development of columbarium facilities at Sandy Ridge Cemetery. AEC provides additional ecological surveys to support the application of a VEP due to the changes of the crematorium design.

Responsible for overseeing survey programme, coordinating and conducting ecological surveys, and providing technical input to the relevant reports.

Other Projects

- Agreement No. CE 18/2012 (CE) Development at Anderson Road Quarry Investigation: Ecological Impact Assessment
- Agreement No. CE 19/2007 (HY) Hiram's Highway Improvement Stage 2 Investigation, Ecological Input into Option 4 - Tunnel: Ecological Impact Assessment. All major fauna groups and Fireflies.
- Provision of Arboricultural Services in the General Tree Inspection and Detailed Tree Risk Assessment of Problematic Trees to Tree Unit, lands Department, 2013 - 2014
- Agreement No. CE 5/2012 (HY) Widening of 2 Sections of Lin Ma Hang Road (Sections between Ping Yuen River and Ping Che Road and between Tsung Yuen Ha and Lin Ma Hang) - Investigation: Ecological and Fisheries Impact Assessment
- Ecological Consultancy Services for Dongshan Urban Forest Park, Suining, Sichuan, 2013: Ecological Assessment and Arboricultural Consultancy Services
- Ecological Monitoring for Construction of Light Rapid Transit (LRT) System on the Taipa Island, Macau (2012-13): Ecological Monitoring of Black-faced Spoonbill Platalea minor
- Agreement No. GEO 05/2012 Consultancy Services for Submission under Section 16 of the Town Planning Ordinance (Cap. 131) for Development of a Precasting Yard at Nam Sang Wai, Yuen Long (2012 -2013): Ecological Support and specific avifauna surveys
- Agreement No. CE 35/2012 (CE) Planning and Engineering Study for Housing Sites in Yuen Long South
 Investigation: Ecologist and Freshwater Specialist conducting surveys and impact assessment for the
 Project. Input into Fisheries Impact Assessment
- BEAM Plus Consultancy Services for the Proposed Redevelopment on No. 62 76 Main Street, Ap Lei Chau: Ecological Impact Assessment under BEAM Plus (SA 5)
- BEAM Plus Consultancy Services for the Proposed Redevelopment on No. 196 202 Ma Tau Wai Road, Kowloon: Ecological Impact Assessment under BEAM Plus (SA 5)
- Shatin to Central Link (SCL) Consultancy Agreement No. C11032 Independent Environmental Checker for Shatin to Central Link: Ecological Specialist to support the IEC work
- Hong Kong Housing Authority, Planning and Engineering Study for the Public Housing Site and Yuen Long Industrial Estate Extension at Wang Chau
- BEAM Plus Consultancy Services for Residential Development at No. 50-64 Ma Tau Kok Road & 162-168 Pau Chung Street: Ecological Impact Assessment under BEAM Plus (SA5)



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- BEAM Plus Consultancy Services for Residential Development on 19 33 Shing On Street, Sai Wan Ho, Hong Kong: Ecological Impact Assessment under BEAM Plus (SA5)
- Agreement No. CE 3/2012 (HY) Cycle Track between Tsuen Wan and Tuen Mun (Advance and Stage 1 Works) Design and Construction. Project director and ecologist conducting terrestrial and freshwater surveys and review reports. Responsible for conducting and compiling the Fisheries Impact Assessment (ongoing).
- SP Quotation Ref: PLNQ 73/2011 Ecological Field Survey of Hoo Hok Wai (Planning Department)
 Responsible for bird, bat and flightline surveys in the assessment area and report writing
- Agreement No. CE 30/2009 (GE) Landslip Prevention and Mitigation Programme, 2009, Package D, Natural Terrain Hazard Mitigation Works, Hong Kong Island and Sai Kung Investigation, Design and Construction: Preparation of Project Profiles for Direction Application of Environmental Permits for Slope Works within Country Park Areas (Ecological Impact Assessment and Landscape and Visual Impact Assessment). Project ecologist conducting terrestrial and freshwater surveys and review reports.
- Provision of Service for Baseline Environmental Survey and Testing for EIA for Drainage Improvement Works at Ngong Ping (December 2011 - March 2012). Project director and ecologist conducting terrestrial and freshwater surveys and review reports.
- Case No. 324_P106811-03 Ecological Consultancy Services for Section 16 Planning Application Submission and EIAO for OU(CDWRA) Development at D.D. 104 Wing Kei Tsuen, Yuen Long (1) Ecological Input and Ecological Impact Assessment (2) Fisheries Input and Fisheries Impact Assessment Project ecologist responsible for co-ordinating and conducting terrestrial and freshwater surveys, conducting surveys for all main species groups and reporting by way of impact assessment and mitigation measures. Responsible for conducting and compiling the Fisheries Impact Assessment
- Case No. 312_P106812-05 Ecological Consultancy Services for Section 16 Planning Application Submission and EIAO for OU(CDWRA) Development at Various Lots in DD99, 101 & 105 Lin Barn Tsuen, Yuen Long (1) Ecological Input and Ecological Impact Assessment (2) Fisheries Input and Fisheries Impact Assessment Project manager and ecologist responsible for co-ordinating and conducting terrestrial and freshwater surveys, conducting surveys for all main species groups and reporting by way of impact assessment and mitigation measures. Responsible for conducting and compiling the Fisheries Impact Assessment
- Agreement No. CE 33/2011 (CE) Planning and Engineering Study on Future Land Use at Ex-Lamma Quarry Are at Sok Kwu Wan, Lamma Island Feasibility Study (Ecological Impact Assessment and Fisheries Impact Assessment) Project ecologist responsible for co-ordinating and conducting terrestrial, freshwater and marine surveys, conducting surveys for all main species groups and reporting by way of impact assessment and mitigation measures. Marine surveys conducted include marine mammal, intertidal surveys, along with specific coral and benthic grab surveys in areas off of Lamma Island. Also responsible for Fisheries Impact Assessments.
- Menglun Tourism Resort Environmental Consultancy Services for Conceptual Planning Project in Xishuangbanna, China Project Manager and ecologist responsible for co-ordinating and conducting Rapid ecological Assessments in order to help guide conceptual masterplan for a tourist town in SW Yunnan.
- South Island Line (East) Consultancy Agreement No. C912C Ecologist responsible for monitoring of ardeid night roost during the construction of SIL(E).
- Environmental Impact Assessment for Shatin to Central Link Tai Wai to Hung Hom Section Ecological Baseline: Project Manager and ecologist responsible for co-ordinating terrestrial, freshwater and marine surveys, conducting surveys for all main species groups and reporting by way of impact assessment and



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mitigation measures. Marine surveys conducted included intertidal surveys along with specific coral and benthic grab surveys in areas of Victoria Harbour, around Kai Tak and Hoi Sum Park, as with investigations at Tseung Kwan O and Tsing Yi.

- Proposed Comprehensive Development in Lots 43s.A.R.P (Part) and 50 in D.D.101, Lots 1266R.P. (Part), 1267 (Part) and 1268 (Part) in D.D.105 and Adjoining Government Land, Wo Shang Wai, Mai Po, Yuen Long, New Territories. Responsible for bird surveys during construction stages and detailed mitigation wetland design.
- Provision of Services for Survey of Terns in Hong Kong (2011). Responsible for conducting boat surveys for nesting terns and seabirds on the open sea of western, southern & eastern waters of Hong Kong.
- Proposed Residential and Golf Course Development at Nam Sang Wai and Nature Reserve at Lut Chau: Avifauna, Ardeid Flight-line Surveys, herpetofauna, butterfly, firefly and dragonfly surveys and development of detail habitat creation and management plan for mitigation wetland design.
- Agreement No. CE 27/2009 (CE) Improvement Works at Tai O Design and Construction: Project Manager and ecologist responsible for co-ordinating terrestrial, and intertidal surveys, and reporting by way of impact assessment and mitigation measures. Specific surveys involved egretry, bird flightline and odonate surveys.
- Planning and Engineering Study on Development of Lok Ma Chau Loop: Avifauna flightline and trapping surveys and Fisheries Impact Assessment.
- EIA for Comprehensive Residential and Recreational Development at Sai Sha: Project Manager and ecologist responsible for co-ordinating terrestrial, and intertidal surveys, and reporting by way of impact assessment and mitigation measures. Specific surveys involved egretry, bird flightline and odonate surveys.
- Tai O Salt-Pan Restoration (PER): Project Manager and ecologist responsible for co-ordinating terrestrial, and intertidal surveys, and reporting by way of impact assessment and mitigation measures. Specific surveys involved egretry, bird flightline and odonate surveys (2009).
- Trial Trapping of House Crow at identified Sites in Hong Kong bird trapping services to AFCD in order to control exotic, invasive bird species in Hong Kong.
- Provision of bird control professional services at HK International Airport at Chek Lap Kok Bird Surveys within controlled areas of airport and surrounding habitats.
- Ecological Assessment (BEAM Plus) for Residential Development at Seymour Road, Mid-levels Hong Kong- Nature Outlook Assessment for BEAM Plus Accreditation.
- Ecological Assessment (BEAM Plus) for Residential Development at Caine Road, Mid-levels Hong Kong-Nature Outlook Assessment for BEAM Plus Accreditation.
- Ecological Surveys for CLP Pylons within Protected Areas: Rapid ecological assessments of remote electricity pylons to assess ecological value of sites with proposed upgrading works.
- Proposed Residential Development at Argyle Street, Kowloon Nature Outlook Assessment For BEAM Plus Accreditation.
- Consultancy Services for Ecological Surveys and studies for Eco-garden design at Au Tau: Project
 Director conducting and overseeing ecological surveys and providing conceptual design input into the
 eco-gardens for a residential development
- Nim Wan Sludge Treatment Works: Project Manager conducting and overseeing ecological surveys during construction stages and detailed mitigation wetland design.



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- Drainage Improvement Works in Shuen Wan, Tai Po baseline surveys for avifauna and other terrestrial fauna.
- Improvement Works at Tai O Design and Construction Ecological and Tree Survey Support: Project manager responsible for overseeing wide range of faunal and botanical surveys
- Agreement No. WD 10/2009 Improvement and Extension of Kam Pok Road Design: Responsible for avifauna surveys
- Ma Hang Headland Park (Hong Kong Housing Authority): Avifauna surveys, 2009 2010.
- Preliminary Environmental Review (PER): Ecology for Cycle Track from Tsuen Wan to Tuen Mun: Project Manager and ecologist responsible for co-ordinating terrestrial and inter-tidal surveys and completing avifauna surveys, 2008 - 2010
- HK-Zhuhai-Macao Bridge HK Link Road Verification Survey for Eco baseline: responsible as project manager and ecologist co-ordinating marine, intertidal and terrestrial surveys in North Lantau and Chek Lap Kok, 2008 - 2009.
- Provision of trapping and Veterinary Service for the Wild Monkeys Contraception Project in Kam Sham and Lion rock Country Parks: responsible for project management for macaque surveys in two country parks and advice on optimum trapping periods, 2008 - 2009.
- North East New Territories New Development Areas Planning and Engineering Study for Civil Engineering and Development Department, Hong Kong Government: assessment of potential Ecological and Fisheries impacts of areas to be developed for housing and logistics industry with associated infrastructure and community facilities and design of mitigation measures, 2008 - 2013
- Satellite Tracking of Duck wintering in Hong Kong: Coordinator of an international study researching the migration of Hong Kong wintering ducks using satellite telemetry.
- Ecological Monitoring and Adaptive Management Advice for Lok Ma Chau Ecological Compensation Area for KCRC: responsible for herpetofauna and odonate surveys and reporting, 2008 - 2010.
- Ecological Monitoring and Adaptive Management Advice for Wetland Mitigation Areas at KCRC West Rail: responsible for herpetofauna and odonate surveys and reporting. Trapping and marking of Greater Painted-snipe for radio tracking studies, 2008 - 2010.
- Ecological Impact Assessment for residential development at Yau Mei San Tsuen: herpetofauna and dragonfly surveys, 2008.
- Sha Po Residential Development Ecological Impact Assessment and Wetland Management Plan: herpetofauna and odonate surveys and development of habitat management plan and wetland design
- Ecological Monitoring for Main Drainage Projects (PWP Items Nos. 70CD and 73CD) at Northwest New Territories: project manager co-ordinating surveys for birds, herpetofauna, odonate, benthic invertebrates and reporting
- Proposed Comprehensive Development at Wo Shang Wai, Yuen Long: Avifaunal surveys, 2008.

Atkins China Ltd. | 10/2006 - 02/2008 | Ecologist

Ecological Baseline Assessment - Restricted Project and Client: Project Manager and Ecologist responsible for production of baseline ecological survey for a currently restricted project in HKSAR involving the co-ordination of large-scale habitat mapping, botanical surveys, along with fauna observations and assessments of localized areas in order to foresee any future potential restrictions by way of ecological resources on the potential project, prior to the EIA stage in order to plan for future surveys and potential mitigation. Responsible for development of the project scope and methodologies



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used for the study, along with managing a team to provide the final detailed habitat maps and ecological surveys, with recommendations for further detailed studies in specific locations and suggestions for avoidance/mitigation where appropriate.

- Asia-America gateway (AAG) Cable Project, South Lantau: Project Manager and Ecologist; project for the installation and laying of two submarine fibre optic cables off of Tong Fuk. Responsible for the environmental assessments of noise, water quality, waste, marine archaeology along with the interpretation of coral, intertidal and terrestrial surveys. Responsible also for producing the documentation to implement the FS(R)O Gazettal Process and Planning Application for the relevant parts of the study, and extensive liaison with various Government organizations in order to attain necessary permits within a short timescale.
- CEDD Ecological Monitoring for Main Drainage Projects (PWP Items Nos. 70CD and 73CD) at Northwest New Territories: Project Manager and Ecologist responsible for the ecological monitoring of three wetland mitigation areas, which have been created as a result of the constructed of two Main Drainage Channels in San Tin and Yuen Long. Monitoring involves varies techniques for several species groups including bats, birds, amphibians, reptiles, fish, freshwater invertebrates, dragonflies and botanical surveys. Additional water quality, hydrology and pedology surveys are also required. Regular reporting on the ecological use of the three sites are required as well as advice on management techniques and feedback on any anomalies or exceedance of target levels to relevant government departments when required.
- CLP Route Alignment North West New Territories: review of several routes proposed for new electricity supply in the North West New Territories covering a linear distance of more than 30km. Habitat assessment and ecological considerations applied when assessing potential routes for a new electricity power supply for the Territory. Desktop reviews and site visits to assess potential routes through various habitats and terrains in order to assess route with least environmental and ecological impact.
- DSD Drainage Tseun Wan Drainage Tunnel Alignment and Portal Location: advice to contractor during pre-qualification stage and tender design for drainage tunnel and intakes to be constructed. Key environmental aspects include the presence on some intake sites of protected species and habitat protection.
- WSD Fresh Water Mains Alignment, Kowloon: ecological and environmental review of freshwater mains alignment through Kowloon. Review of impacts to trees and appropriate mitigation proposals.
- CEDD Cycle Tracks Connecting NWNT and NENT: EIA and ER for Designated Project section of cycle track passing through ecologically sensitive areas and wetland conservation area in NWNT. Extensive ecological review involved conducting several winter bird surveys in the Wetland Conservation Area and Long Valley, habitat mapping and ecological literature review for project. Responsible for conducting and compiling the Fisheries Impact Assessment.
- DSD Drainage Hong Kong West Drainage Tunnel Alignment and Portal Location: advice to contractor during pre-qualification stage and tender design for 10.5km drainage tunnel to be constructed. Key environmental aspects included the presence on some drop shaft sites of protected species (Hong Kong Cascade Frog and Lesser Spiny Frog) and tree protection, transplantation, and felling considerations at shaft and portals.
- Review of Latest Practices on Environmental Evaluation of Tourism Policies and Proposals: Project environmentalist for review of latest international practices in Europe, Australasia, North America and Development Co-operations UNDP, UNEP, UNWTO and UNESCO and reporting on approach for evaluation of ecotourism projects.



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Hill-top Transponder Station Expansion at Castle Peak, Kowloon Peak, Cloudy Hill and Lamma Island EIA: review of Ecological Work conducted at four sites throughout the territory looking at habitat and botanical issues of the proposed sites.

CSa Environmental Planning, United Kingdom | 10/2004 - 08/2006 | Senior Ecologist

- Providing ecological services and undertaking a wide range of ecological survey and assessment work, largely for the development system.
- Work includes input to EIA, EcolA, habitat and protected species survey, consultee discussions, mitigation and ecological enhancement work, preparation of management plans, post-development monitoring.
- Protected species license holder for bats, great crested newts and white-clawed crayfish.
- Project management and survey for work including Commercial and Housing Developments; Road, Rail and Waterways; Airports; Utilities and Pipelines; Canal Restoration Projects and Marinas; Quarries and Mineral Extraction.
- Involved in conducting ecological appraisals as part of BREEAM Assessments for developers wanting to provide sustainable buildings and housing schemes.

British Waterways, United Kingdom | 02/2003 - 09/2004 | Conservation Ecologist

- Undertaking a full range of ecological survey and assessment work.
- Working in a multi-disciplinary team including engineers, hydrologists, water quality scientists, landscape architects, waste management specialists and heritage specialists.
- Project work involved on-going canal operations, restoration schemes, urban regeneration schemes and eco-enhancements, maintenance of built structures and water resources management i.e. reservoirs and feeders, development of Biodiversity Action Plan for company.

United Kingdom | 03/2000 - 03/2003 | Freelance Ecologist

- Undertaking a full range of ecological survey, monitoring and assessment work for protected species and habitats.
- Work includes input to EIA, EcoIA, habitat and protected species survey, consultee discussions, mitigation and ecological enhancement work, preparation of management plans, post-development monitoring.
- Project work including Commercial and Housing Developments; Road and Waterways; Airports; Utilities and Pipelines; Canal Restoration Projects and Marinas.

Freshwater Research Department, DeMontfort University, Leicester | 09/1996 - 08/1997 | Research Ecologist

Undertaking laboratory and field studies of native UK amphibians and invertebrates.



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Employment record

03/2008 - Present: Aurecon Hong Kong Limited - Director of Operations, AEC (01/2023 - Present);

Former AEC Limited - Director (03/2008 - 12/2022)

10/2006 - 02/2008: Atkins China Limited - Ecologist

10/2004 - 08/2006: CSa Environmental Planning, United Kingdom - Senior Ecologist

02/2003 - 09/2004: British Waterways, United Kingdom - Conservation Ecologist

03/2000 - 03/2003: Self-employed - Freelance Ecologist

09/1996 - 08/1997: Freshwater Research Department, DeMontfort University - Research Ecologist

Languages

English mother tongue.



Appendices

Appendix II

Photos of Freshwater Crab Species of Conservation Concern



Plate A Somanniathelphusa zanklon



Plate B Cryptopotamon anacoluthon

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