

**Contract No. HY/2012/08
Tuen Mun – Chek Lap Kok Link –
Northern Connection Sub-sea Tunnel
Section**

Specification for Dolphin Exclusion Zone

15 October 2014

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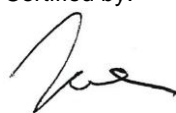


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Specification for Dolphin Exclusion Zone

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		Mr Craig Reid Partner			
		Certified by: 			
		Mr Jovy Tam ET Leader			
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Revision	Description	By	Checked	Approved	Date
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1 INTRODUCTION

1.1 BACKGROUND

According to the findings of the Northwest New Territories (NWNT) Traffic and Infrastructure Review conducted by the Transport Department, Tuen Mun Road, Ting Kau Bridge, Lantau Link and North Lantau Highway (NLH) will be operating beyond capacity after 2016 due to the increase in cross boundary traffic, developments in the NWNT, and possible developments in North Lantau, including the Airport developments, the Lantau Logistics Park (LLP) and the Hong Kong - Zhuhai - Macao Bridge (HZMB). In order to cope with the anticipated traffic demand, two new road sections between NWNT and North Lantau - Tuen Mun - Chek Lap Kok Link (TM-CLKL) and Tuen Mun Western Bypass (TMWB) are proposed.

An Environmental Impact Assessment (EIA) of TM-CLKL ("the Project") was prepared in accordance with the *EIA Study Brief (No. ESB-175/2007)* and the *Technical Memorandum of the Environmental Impact Assessment Process (EIAO-TM)*, which was submitted under the *Environmental Impact Assessment Ordinance (EIAO)* in August 2009. Subsequent to the approval of the EIA (EIAO Register Number AEIAR-146/2009) ⁽¹⁾, an *Environmental Permit (EP-354/2009)* for TM-CLKL was granted by the Director of Environmental Protection (DEP) on 4 November 2009. Applications for two EP variations, *EP-354/2009/A* and *EP-354/2009/B*, were granted on 8 December 2010 and 28 January 2014, respectively.

As per *Clause 3.1* of the *EP* of TM-CLKL (*EP-354/2009/B*), a dolphin exclusion zone (DEZ) of 250m should be implemented around the work areas of the Project for the dredging, reclamation or sheet piling works in order to mitigate the potential acoustic disturbance to dolphins caused by the works. The Environmental Monitoring and Audit (EM&A) Manual of the Project also requires the implementation of DEZ for bored piling works in addition to the aforementioned types of works.

1.2 SCOPE OF THE CONTRACT

Under *Contract No. HY/2012/08*, Dragages-Bouygues Joint Venture (DBJV) is commissioned by the Highways Department (HyD) to undertake the design and construction of the Northern Connection Sub-sea Tunnel Section (the "Northern Connection") of TM-CLKL.

Specifically, the scope of *Contract No. HY/2012/08* includes:

- design and construction of sub-sea TBM tunnels (two tubes with cross passages) across the Urmston Road, connecting Tuen Mun Area 40 and HKBCF, of approximately 4 km in length with dual 2-lane carriageway;

(1) AECOM (August 2009) EIA Report of Tuen Mun - Chek Lap Kok Link (Register No.: AEIAR- 146/2009). Prepared under Agreement No. CE 52/2007 (HY).

- design and construction of cut-and-cover tunnels (two boxes with cross passages) at both the southern landfall and the northern landfall for construction of approach roads to the sub-sea TBM tunnels, of approximately 1.5 km in length;
- construction of northern landfall reclamation of approximately 16.5 hectares and about 2.0 km long seawalls;
- design and construction of ventilation buildings at the southern and northern landfalls;
- design and construction of at-grade roads at the southern and northern landfalls;
- construction of extension of the existing 4-cell box culvert adjacent to the River Trade Terminal (RTT);
- provision of a temporary pontoon for the affected existing Government berths;
- design and construction for modification of a section of vertical seawall of approximately 220m in length at the southern landfall to sloping seawall;
- design and construction of associated civil, structural, building, geotechnical, marine, environmental protection, drainage and sewerage, waterworks and utility works; and
- design and construction of advance SEM provision to facilitate installation of tunnel and route-wide E&M, TCSS and other utilities.

Indicative layout of the Contract components is depicted in *Figure 1.1*.

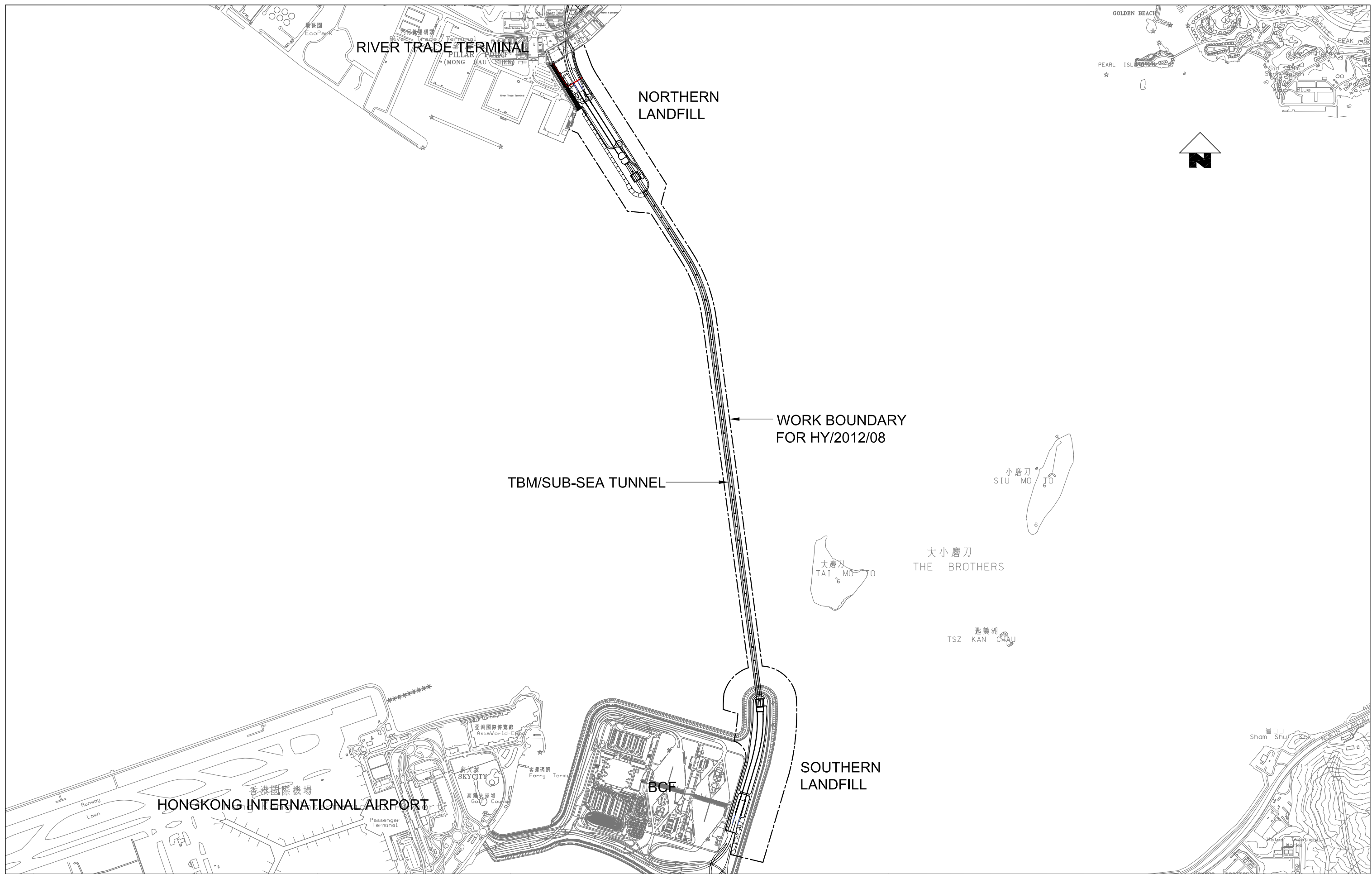
The above scope of works would only include dredging, reclamation and sheet piling works at the northern landfall only. There will not be any marine bored piling works under the Contract.

1.3 **PURPOSE OF THIS SPECIFICATION**

This Specification for Dolphin Exclusion Zone has been prepared by ERM-Hong Kong, Limited (ERM) on behalf of DBJV to present the methodology of implementation of DEZ for daylight hours ⁽¹⁾ under the Contract, including dredging, reclamation and sheet piling works, in accordance with *Section 6.3.1.1* of the EM&A Manual ⁽²⁾.

⁽¹⁾ Daylight hours will be defined in accordance with definitions provided by the Hong Kong Observatory.

⁽²⁾ AECOM (August 2009) EM&A Manual of Tuen Mun – Chek Lap Kok Link (Register No.: AEIAR- 146/2009). Prepared under Agreement No. CE 52/2007 (HY).



Designed By	PKV		
Drawn By	DAI		
Approved By	SPo		
Date	11SEP2013	PKV	
Rev.	Description	Date	Checked
A	FIRST ISSUE	11SEP13	PKV

Main Contractor

Dragages - Bouygues Joint Venture 寶嘉 - 布依格聯營

Client

HIGHWAYS DEPARTMENT

Contractor's Designer

Arup Ove Arup & Partners Hong Kong Limited

Project

Contract No. HY/2012/08
Tuen Mun - Chek Lap Kok Link -
Northern Connection Sub-Sea Tunnel Section

Drawing Title

Figure 1.1

Drawing no.	TMCLKL8-DBJ-GEN-DWG-00174
Scale	1:25000 @ A3
CADD Ref.	TMCLKL8-DBJ-GEN-DWG-00174-DFT-A
Issue Status	DFT (DRAFT)
Revision	A

2.1 RELEVANT REQUIREMENTS OF DEZ

According to recommendation of the approved EIA Report, a dolphin exclusion zone should be implemented in order to alleviate the potential acoustic disturbance to Chinese White Dolphins (*Sousa Chinensis*). Requirements on the implementation of DEZ during daylight hours are presented in the approved EIA Report ⁽¹⁾, EM&A Manual ⁽²⁾ and subsequently *Clause 3.1* of EP-354/2009/B, which are summarized below:

- A dolphin exclusion zone of 250m should be implemented around the work areas. The dolphin exclusion zone should be monitored by an independent dolphin observer with an unobstructed, elevated view of the area. Dredging, reclamation and sheet piling works would not be allowed to begin until the observer certifies that the area is continuously clear of Chinese White Dolphins for a period of 30 minutes
- Works should, also, cease if Chinese White Dolphins move into the exclusion zone/area during these activities and works should not start again until the observer has confirmed that the area is continuously clear of Chinese White Dolphins for a period of 30 minutes.
- The observers must be suitably trained in biology and should be independent of the Contractor and should form part of the independent Environmental Team (ET) to be employed by the Contractor. An Independent Environmental Checker (IEC) would be required to audit the work of the ET. An important aspect of applying this mitigation technique effectively is that the observer should have the power to call-off construction activities to monitor the exclusion zone.

The above requirements are taken into account for the development of methodology of DEZ monitoring presented in *Section 2.2* below.

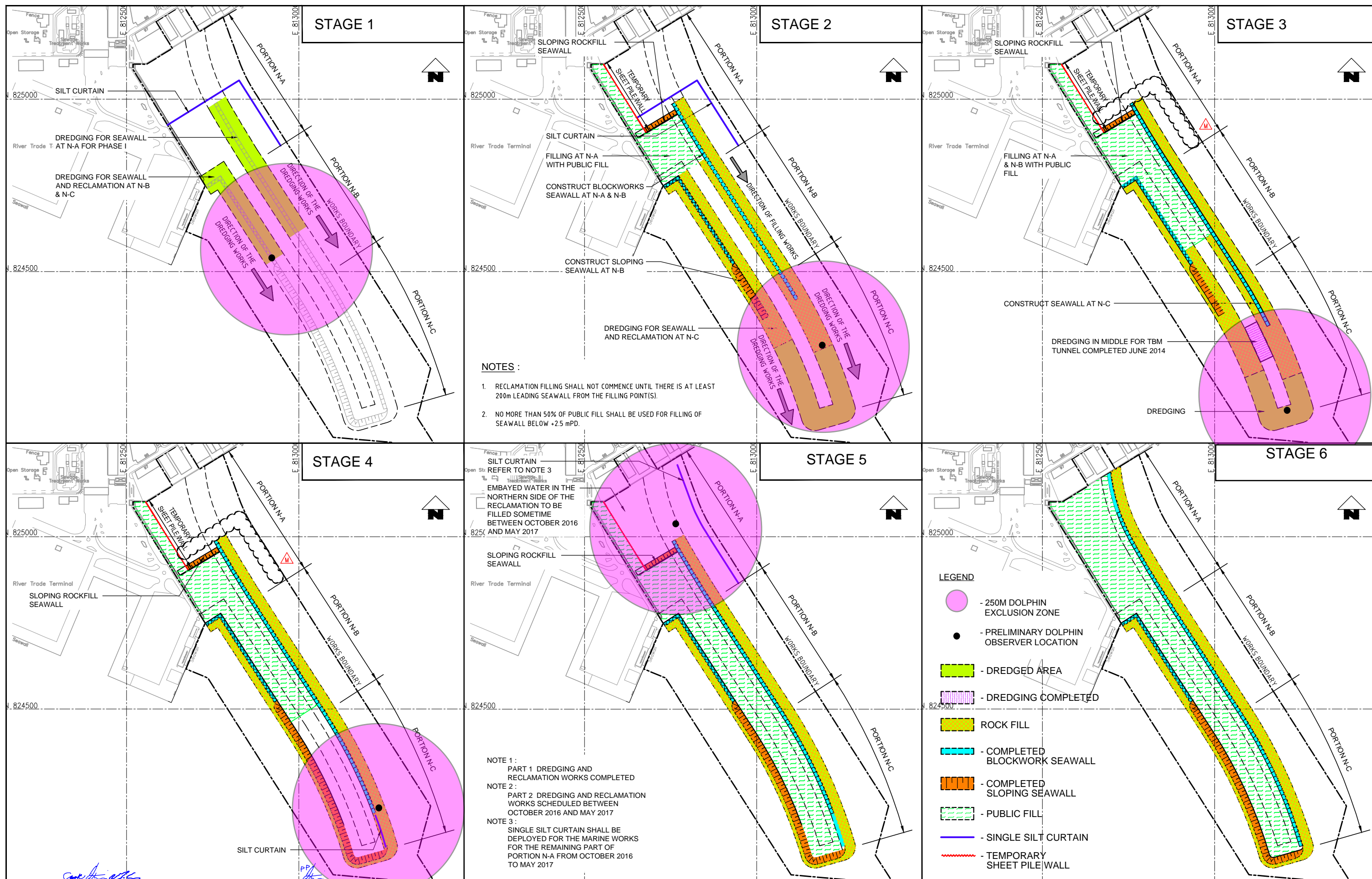
2.2 METHODOLOGY

2.2.1 Implementation Period

The tentative marine works sequence of the Contract is presented in *Figure 2.1*. According to the latest works sequence, dredging, reclamation (filling) and sheet piling works will be undertaken during Stages 1, 2, 3, 4 and 5. As such, DEZ will be implemented during these stages. For Stage 5, marine works at Portion N-a is tentatively to be undertaken between October 2016 and December 2016. DEZ will thus only be implemented during the marine works period of Stage 5. The indicative locations of 250 m DEZ at different stages are presented in *Figure 2.1*. The period of DEZ implementation should

⁽¹⁾ AECOM (August 2009) *Op. cit.*

⁽²⁾ AECOM (August 2009) *Op. cit.*



Rev.	Date	Drawn	Designed	Verified	Description	Approved
M	02SEP14	JBu	pkv	CFK	SILT CURTAIN REMOVED AT STAGES 3 & 4	SPo
L	09JUL14	JBu	pkv	CFK	UPDATED PROGRESS FOR DREDGING IN MIDDLE	SPo
K	26JUNE14	JBu	pkv	CFK	MIDDLE SILT CURTAIN ON STAGE 3 REMOVED	SPo
J	23JUNE14	JBu	pkv	CFK	MIDDLE SILT CURTAIN ON STAGE 4 REMOVED	SPo
I	19JUNE14	JBu	pkv	CFK	PROGRESS UPDATED & SILT CURTAIN ADDED FOR PILOT TEST	SPo
H	10JUNE14	pkv/JBu	pkv	CFK	SEQUENCE AND PROGRESS UPDATED	SPo



Client
Contractor's Designer
Project

Contract No. HY/2012/08
Tuen Mun - Chek Lap Kok Link -
Northern Connection Sub-Sea Tunnel Section
Figure 2.1

Drawing no.	TMCLKL8-DBJ-NAA-MRW-00132
Scale	1:10000 @ A3
CADD Ref.	NAA-MRW-00132-M-DFT
Issue Status	DFT (DRAFT)
Revision	M

be considered as preliminary and be reviewed with reference to the actual progress of the construction works.

2.2.2 *Deployment Location of Dolphin Observer*

One trained dolphin observer from the ET will be deployed at the site to monitor the DEZ. In accordance with relevant requirements presented in *Section 2.1* above, the DEZ will cover a radius of 250 m from the works area of dredging, reclamation and sheet piling. The dolphin observer will be stationed onboard a derrick barge (*Figure 2.2*), which has a higher air draft when compared to other works vessel, in order to obtain an unobstructed, elevated view of the DEZ. The derrick barge selected for the DEZ monitoring will be reviewed based on actual location of the barges relative to the distribution of other works vessels at the site. Preferably the derrick barge where the dolphin observer is stationed should be located in the middle of the relevant works areas. Should location other than a derrick barge be identified as a better viewing platform in terms of providing unobstructed, elevated view of the area, it will also be considered for use. Location of the selected derrick barge/viewing platform will be included on the sighting records.

A small vessel should be available at all times to support the DEZ monitoring (eg for the dolphin observer to approach the observed dolphin(s) for any necessary detailed observations).

Table 2.1 summarized the number of dolphin observer required in different stages of the works sequence. Additional dolphin observer(s) will be deployed if deemed necessary to ensure effective monitoring of the DEZ.

Figure 2.2 Photo and General Information of Derrick Barge


Vessel Details	Photo
Length: 50m Breadth: 20m Air Draft: 38m	

Table 2.1 Summary of 250 m DEZ Implementation at different stages of works sequence

Stage	Works	Number of Dolphin Observer	Remarks
1	Dredging for seawall construction by two dredgers	1	Given that each dolphin observer has a field of view of 500 m and the dredgers will be operated in the close proximity of each other (< 100m), only one dolphin observer is required at this stage.
2	Dredging for seawall construction, filling, sheet pile wall construction	1	Filling in the middle of Portions N-a and N-b will be undertaken in a fully enclosed area, thus implementation of 250 m DEZ will not be required. Only dredging at Portion N-c will be carried out in open waters, thus 250 m DEZ will be implemented with one dolphin observer.
3	Dredging for seawall construction, dredging in middle of portion N-c, filling	1	Implementation of 250 m DEZ will not be required for marine works undertaken in the fully enclosed area in the middle of Portions N-a and N-b. Only dredging at Portion N-c will be carried out in open waters, thus 250 m DEZ will be implemented.
4	Seawall construction, filling	1	Implementation of 250 m DEZ will not be required for marine works undertaken in the fully enclosed area in the middle of portions N-a and N-b. Only seawall construction at Portion N-c will be carried out in open waters, thus 250 m DEZ will be implemented.
5	Filling	1	After the seawall has fully completed, implementation of 250mDEZ will not be required at Portions N-b and N-c. Filling in the middle of Portion N-a will be undertaken with marine access, thus 250m DEZ will be implemented.
6	All marine works completed	0	-

2.2.3

Implementation of DEZ before and during Works

One qualified dolphin observer will stand on the open upper deck of the derrick/viewing platform, allowing for relatively unobstructed elevated view of the DEZ (ie within a radius of 250 m from the works vessels such as dredgers and barges, which are engaged in dredging, reclamation and sheet piling works). Qualified observer will scan the 250 m exclusion zone for at least 30 minutes prior to the start of dredging / reclamation / sheet piling. If dolphin is sighted in the exclusion zone, dredging / reclamation / sheet piling will be delayed until they have left the DEZ. This measure will confirm that the area in the vicinity of the dredging / reclamation / sheet piling work is clear of dolphin prior to the commencement of works and will serve to reduce any potential disturbance to dolphin.

In case dolphin is observed within the exclusion zone during dredging, reclamation or sheet piling works, the relevant part of the works should cease and works should not be started again until the observer has confirmed that the area is continuously clear of dolphin for a period of 30 minutes. If the dolphin is found within the works area which is semi-enclosed, the dolphin specialist (Dr Samuel Hung) should also be informed and arrive on site as soon as practicable to attend the matter.

In the event that a Chinese White Dolphin, or other marine mammal, is found injured or dead within the DEZ, the Agriculture, Fisheries and Conservation Department (AFCD) should be contacted at the government 24-hour hotline (i.e. 1823) to seek assistance from the corresponding responsible team of AFCD. The dolphin specialist should also be informed and arrive on site as soon as practicable to determine if the injury/death is works related.

A flowchart showing the communication procedure is shown in *Figure 2.3*.

2.2.4

Reporting

Reports on DEZ monitoring, eg sighting records, should be submitted to the IEC/ENPO within 10 working days from the end of the previous reporting month. The sighting record will be in the form a log-sheet recording the initial sighting time, position, distance and angle data of the sighted dolphin. Other information on sea state, weather conditions (Beaufort scale), as well as notes on dolphin appearance, behaviour, direction of movement, response to vessel, group size, etc can also be recorded.

A Dolphin Intrusion Report will be provided to the SOR, IEC/ENPO and the dolphin specialist (Dr Samuel Hung) within three working days after each incidence of CWD intrusion/presence within the DEZ. The CWD Intrusion Report will include date, time, position and number of CWD observed, a chronological list of actions taken, with time, by the observer(s) and construction workers.

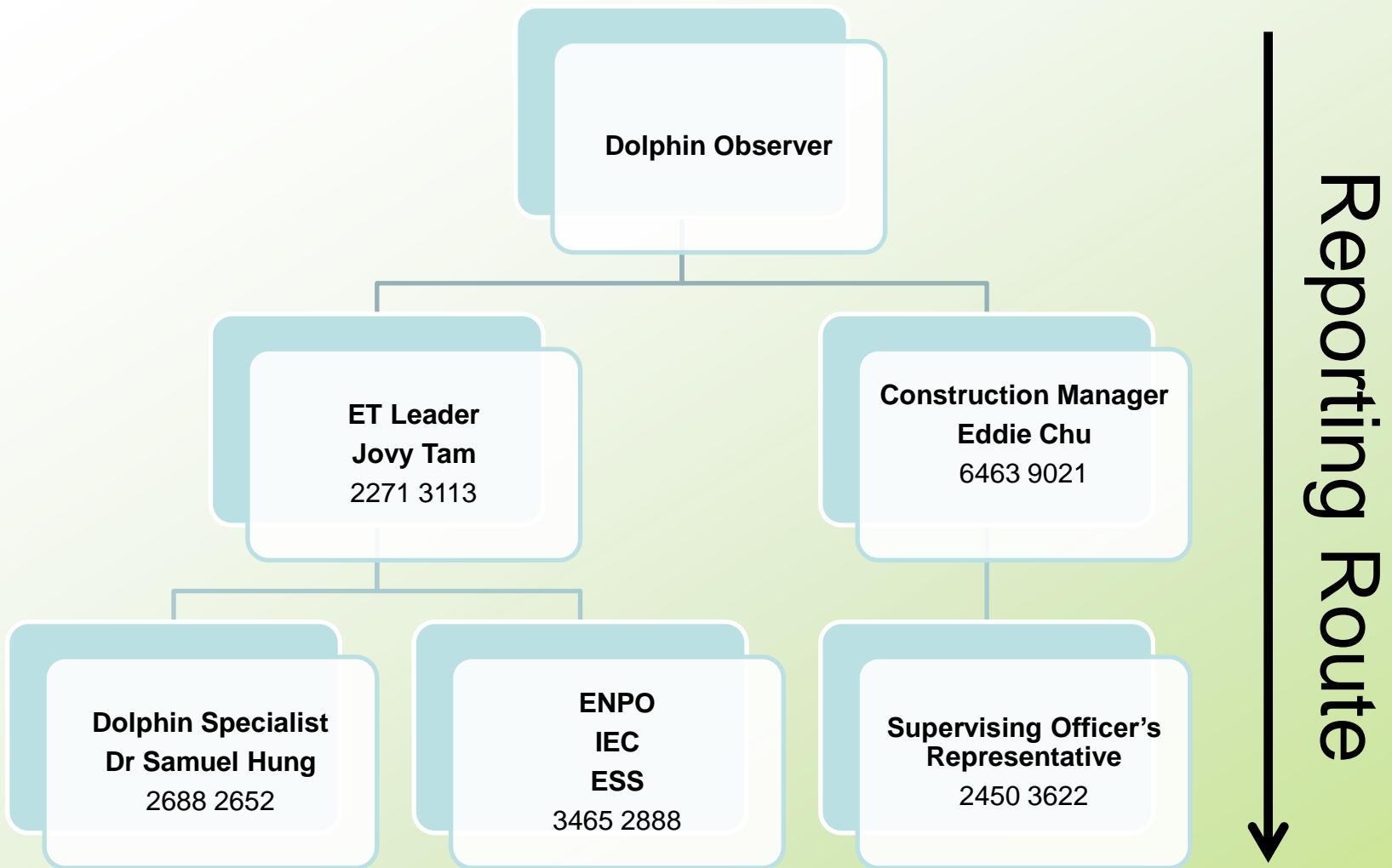


Figure 2.3

Flow Chart of Reporting Route

TRAINING OF DOLPHIN OBSERVERS

All dolphin observers will be suitably trained by the dolphin specialist (Dr Samuel Hung) in accordance with requirements of the EM&A Manual. Training materials and schedule will be submitted to the Environmental Protection Office (ENPO) and the IEC of the Project prior to the start of training for their records. Training records/certificates of dolphin observers will also be submitted to ENPO/IEC and SOR for records. Trained dolphin observers should attend refreshment training conducted by the dolphin specialist on an annual basis.

CONCLUSION

In accordance with recommendation of the approved EIA Report and requirements of the *EP-354/2009/B* and EM&A Manual of the Project, this Specification for Dolphin Exclusion Zone has been prepared to present the methodology of implementing DEZ for works during daylight hours, including dredging, reclamation and sheeting works, of the Contract. This specification covers the observation period, location, implementation and reporting for the DEZ monitoring as well as training requirements of the qualified dolphin observers which will be followed during the construction works of the Contract.