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Mr. Ray Yan - Independent Environmental Checker

**Our Reference** TC/GC/al/T355861/02/ 02/L147

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Contract No. HY/2013/04 Hong Kong-Zhuhai-Macao Bridge (HZMB) Hong Kong Boundary Crossing Facilities - Infrastructure Works Stage II (Southern Portion)

Quarterly EM&A Report for September to November 2019 (Revision 0)

27 February 2020

By Email

Dear Sir.

In accordance with Section 16.4 of the updated EM&A Manual for Hong Kong Boundary Crossing Facilities (Version 1.0) covering the captioned contract, we are pleased to submit the certified Quarterly EM&A Report for September to November 2019 (Revision 0) for your verification.

Yours faithfully

For MOTT MACDONALD HONG KONG LIMITED

Gary Chow

Environmental Team Leader

Encl.

CC.

AECOM - Mr. Peter Lee (By Email)

China State Construction Engineering (Hong Kong) Ltd. - Mr. Jason Chung / Mr.

Xavier Lam (By Email)



Ref.: HYDHZMBEEM00\_0\_7911L.20

27 February 2020

By Fax (3468 2076) and By Post

AECOM Asia Co. Ltd.
The PRE's Office
550 Cheung Tung Road, Lantau, Hong Kong

Attention: Mr. Peter Lee

Dear Sir,

Re: Agreemen

Agreement No. CE 48/2011 (EP)

**Environmental Project Office for the** 

HZMB Hong Kong Link Road, HZMB Hong Kong Boundary Crossing Facilities, and Tuen Mun-Chek Lap Kok Link – Investigation

Contract No. HY/2013/04 - HZMB HKBCF - Infrastructure Works Stage II (Southern Portion)

**Quarterly EM&A Report for September 2019 to November 2019** 

Reference is made to the Environmental Team's submission of Quarterly EM&A Report for September 2019 to November 2019 certified by the ET Leader (ET's ref.: "TC/GC/al/T355861/02/02/L147" dated 27 February 2020) and provided to us via e-mail on 27 February 2020.

We are pleased to inform you that we have no adverse comments on the captioned Quarterly EM&A Report for September 2019 to November 2019.

Thank you very much for your attention and please feel free to contact the undersigned should you require further information.

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

Rav Yan

Independent Environmental Checker

HZMB HKBCF

c.c. HyD Mr. Cheng Pan
HyD Mr. Harry Louie

/D Mr. Harry Louie (By Fax: 3188 6614)

(By Fax: 3188 6614)

MMHK Mr. Gary Chow (By Fax: 2827 1823) CSCE Mr. Jason Chung (By Fax: 2459 4336)

Internal: DY, YH, MY, ENPO Site



Contract No. HY/2013/04 HZMB HKBCF – Infrastructure Works Stage II (Southern Portion)

Quarterly EM&A Report for September to November 2019

February 2020

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## **Executive summary**

This Quarterly Environmental Monitoring and Audit (EM&A) Report is prepared for Contract No. HY/2013/04 "Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities – Infrastructure Works Stage II (Southern Portion)" (hereafter referred to as "the Contract") for the Highways Department of Hong Kong Special Administrative Region (HKSAR). The Contract was awarded to China State Construction Engineering (Hong Kong) Limited (hereafter referred to as "the Contractor") and Mott MacDonald Hong Kong Limited (MMHK) was appointed as the Environmental Team (ET) by the Contractor.

1

The Contract is part of the "Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities" (HZMB HKBCF) Project which is a "Designated Project" under Schedule 2 of the Environmental Impact Assessment (EIA) Ordinance (Cap. 499) and for which an EIA Report (Register No. AEIAR-145/2009) was prepared and approved. The current Environmental Permit (EP) for HKBCF, namely No. EP-353/2009/K, was issued on 11 April 2016. These documents are available through the EIA Ordinance Register. Commencement of the Contract took place on 13 March 2015 and the construction works commenced on 13 July 2015.

Mott MacDonald Hong Kong Limited has been appointed by the Contractor to implement the Environmental Monitoring & Audit (EM&A) programme for the Contract in accordance with the Updated EM&A Manual for HKBCF (Version 1.0) and will be providing environmental team services for the Contract. This is the 18<sup>th</sup> Quarterly EM&A Report for the Contract which summarises findings of the EM&A works during the reporting period from 1 September 2019 to 30 November 2019 (the "reporting period").

Landscape checklists for HyD Contract Nos. HY/2013/01, HY/2013/02, HY/2013/03 and HY/2014/05 are shown in **Appendix K**.

#### **Environmental Monitoring and Audit Progress**

The EM&A programme was undertaken in accordance with the Updated EM&A Manual for HKBCF (Version 1.0).

The remaining air quality, noise, water quality and dolphin monitoring works under Contract No. HY/2013/01 "HZMB HKBCF – Passenger Clearance Building" were suspended from 1 October 2018. The ET of Contract No. HY/2013/04 is required and continues the full implementation of environmental monitoring commencing on 1 October 2018. From 1 October 2018 onwards, the ET of Contract No. HY/2013/04 has continued the same implementation of air quality, noise and water quality environmental monitoring (including air quality and noise monitoring already under its implementation) as well as the reporting of all environmental monitoring. The same implementation of dolphin monitoring was performed by the ET of Contract No. HY/2011/03 from 1 October 2018 to 30 September 2019 and is being continued by the ET of Contract No. HY/2012/08 from 1 October 2019 onwards.

Air quality monitoring stations AMS2, AMS3C and AMS7B are covered by this Contract. It should be noted that the air quality monitoring station AMS6 is covered by Contract No. HY/2011/03 "Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road (HZMB HKLR) – Section between Scenic Hill and HKBCF". If the impact air quality monitoring at AMS6 is no longer covered under Contract No. HY/2011/03, it is required to continue such monitoring at AMS6 as

part of EM&A programme However, this is subject to ENPO's final decision on which ET should carry out the monitoring work at these stations.

Noise monitoring stations NMS2 and NMS3C, water quality monitoring works and dolphin monitoring works under HZMB HKBCF are covered by this Contract.

The monitoring reports for landscape establishment for Contract Nos. HY/2013/01, HY/2013/02, HY/2013/03 and HY/2014/05 with respect to the reporting period were covered in this EM&A report.

A summary of monitoring and audit activities conducted in the reporting period is listed below:

1-hour Total Suspended Particulates (TSP) monitoring: 16 sessions

24-hour TSP monitoring:
Noise monitoring:
16 sessions
1 session#

Impact operation phase water quality monitoring: 3 sessions^

Post-construction dolphin monitoring:
 6 sets of surveys conducted\*

Joint Environmental site inspection:
 13 sessions

#### Remarks:

- # A proposal to terminate impact monitoring for noise at NMS2 and NMS3C was justified by the ET Leader of this Contract and verified by the IEC on 13 August 2019, and approved by EPD on 3 September 2019. Therefore, the last noise monitoring event at NMS2 and NMS3C to be reported under this Contract was conducted on 2 September 2019.
- ^ Monthly impact operation phase water quality monitoring in accordance with Section 9.9 of the Updated EM&A Manual for HKBCF (Version 1.0) was commenced during the reporting period.
- \* Post-construction dolphin monitoring in accordance with Section 10.7 of the Updated EM&A Manual for HKBCF was conducted during the reporting period.

#### **Breaches of Action and Limit Levels**

Summary of Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level at AMS6 shall be referred to the monthly EM&A report prepared by Contract No. HY/2011/03.

A summary of environmental exceedances for the reporting period as recorded by the Environmental Team of this Contract are listed below:

| Environmental Monitoring | Parameters   | Action Level | Limit Level |
|--------------------------|--------------|--------------|-------------|
| Air Quality              | 1-hour TSP   | -            | -           |
|                          | 24-hour TSP  | 3            | -           |
| Noise                    | Leq (30 min) | -            | -           |

Three Action Level exceedances of 24-hour TSP for air quality (one at AMS3C and two at AMS7B) were recorded and investigated by the ET of the Contract during the reporting period. It was concluded that the air quality exceedances were not due to the Contract.

Furthermore, post-construction dolphin monitoring results at all transects during the reporting period are reported in the monthly EM&A Reports for this Contract.

#### **Complaint Log**

There were no complaints received in relation to the environmental impact during the reporting period.

#### **Notifications of Summons and Successful Prosecutions**

There were no notifications of summons or prosecutions received during this reporting period.

#### **Reporting Changes**

#### Noise

A proposal to terminate impact monitoring for noise at NMS2 and NMS3C was justified by the ET Leader of this Contract and verified by the IEC on 13 August 2019, and approved by EPD on 3 September 2019. Therefore, the last noise monitoring event at NMS2 and NMS3C to be reported under this Contract was conducted on 2 September 2019.

#### Chinese White Dolphin

The transfer of the role of implementation of dolphin monitoring and collection of monitoring data from the ET of Contract No. HY/2011/03 to the ET of Contract No. HY/2012/08 "Tuen Mun-Chek Lap Kok Link – Northern Connection Sub-sea Tunnel Section" was justified by the ET Leader of Contract No. HY/2011/03 and verified by the IEC during August 2019, and approved by EPD during September 2019 for implementation with effect from October 2019.

#### 1 Introduction

#### 1.1 Basic Project Information

This Quarterly Environmental Monitoring and Audit (EM&A) Report is prepared for Contract No. HY/2013/04 "Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities – Infrastructure Works Stage II (Southern Portion)" (hereafter referred to as "the Contract") for the Highways Department of Hong Kong Special Administrative Region (HKSAR). The Contract was awarded to China State Construction Engineering (Hong Kong) Limited (hereafter referred to as "the Contractor") and Mott MacDonald Hong Kong Limited (MMHK) was appointed as the Environmental Team (ET) by the Contractor.

The Contract is part of the "Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities" (HZMB HKBCF) Project which is a "Designated Project" under Schedule 2 of the Environmental Impact Assessment (EIA) Ordinance (Cap. 499) and for which an EIA Report (Register No. AEIAR-145/2009) was prepared and approved. The current Environmental Permit (EP) for HKBCF, namely No. EP-353/2009/K, was issued on 11 April 2016. These documents are available through the EIA Ordinance Register. Commencement of the Contract took place on 13 March 2015 and the construction works commenced on 13 July 2015. The works areas of the contract are shown in **Appendix A**.

This is the 18<sup>th</sup> Quarterly EM&A Report for the Contract which summarises findings of the EM&A works during the reporting period from 1 September 2019 to 30 November 2019 (the "reporting period").

#### 1.2 Project Organisation

The organisation chart and lines of communication with respect to the on-site environmental management structure together with the contact information of the key personnel are shown in **Appendix B**. The key personnel contact names and numbers are summarized in **Table 1.1**.

**Table 1.1: Contact Information of Key Personnel** 

| Party   | Position                               | Name        | Telephone                | Fax       |
|---|--|-------------|--------------------------|-----------|
| Engineer or Engineer's Representative (AECOM Asia Co. Ltd.)         | Senior Resident Engineer               | Peter Lee   | 3958 7465                | 3748 8900 |
| Environmental Project Office /<br>Independent Environmental Checker | Environmental Project<br>Office Leader | Y H Hui     | 3465 2888                | 3465 2899 |
| (Ramboll Hong Kong Limited)   | Independent<br>Environmental Checker   | Ray Yan     | 3465 2836 /<br>5181 8401 | 3465 2899 |
|   | Environmental Site<br>Supervisor       | Harris Wong | 3465 2805 /<br>5181 8709 | 3465 2899 |
| Contractor  | Site Agent                             | Jason Chung | 9127 8369                | 2459 4336 |
| (China State Construction Engineering (Hong Kong) Limited)          | Environmental Officer                  | Xavier Lam  | 9493 2944                | 2459 4336 |
| (Hong Rong) Emilion   |  | K P Ng      | 9626 9961                | 2459 4336 |
| Environmental Team<br>(Mott MacDonald Hong Kong Limited)            | Environmental Team<br>Leader           | Gary Chow   | 2828 5874                | 2827 1823 |
| 24-hour Complaint Hotline   | -                                      | -           | 5236 7111                | -         |

#### 1.3 Construction Programme

The Construction Works Programme of the Project is provided in **Appendix C**.

#### 1.4 Construction Works undertaken during the Reporting Period

A summary of the construction activities undertaken during this reporting period is shown below:

- Erection of sign gantries (land-based)
- Construction of parapets for bridge structures (land-based)
- Construction of Retaining Wall RW16N and RW16S (land-based)
- Construction of Bridge Deck D16 in-situ deck (land-based)
- Construction of utilities cross-over frame under Bridge D9c (land-based)
- Backfilling of retaining walls and formation of fill slopes and road embankment (land-based)
- Drainage works and watermains laying (land-based)
- Roadworks and road furniture (land-based)
- Maintenance of temporary traffic arrangements (TTA) associated with the commissioning of HKBCF and Tuen Mun – Chek Lap Kok Link Southern Connection (TM-CLKL-SC) (land-based)
- No marine-based segment delivery (all segments stored at segment storage yard on HKBCF island site)
- No generation of excavated marine sediment

During this reporting period, temporary soft landscaping works were conducted and marine-based outfall works had not commenced.

### 2 EM&A Requirements

#### 2.1 Summary of EM&A Requirements

The EM&A programme was undertaken in accordance with the Updated EM&A Manual for HKBCF (Version 1.0).

For this reporting period, the remaining air quality, noise, water quality and dolphin monitoring works under Contract No. HY/2013/01 "HZMB HKBCF – Passenger Clearance Building" were suspended from 1 October 2018. The ET of Contract No. HY/2013/04 is required and continues the full implementation of environmental monitoring commencing on 1 October 2018.

#### Air Quality and Noise

Air quality monitoring at stations AMS2, AMS3C and AMS7B, and noise monitoring at station NMS2 and NMS3C, are covered by this Contract. It should be noted that the air quality monitoring station AMS6 is covered by Contract No. HY/2011/03 "Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road (HZMB HKLR) – Section between Scenic Hill and HKBCF". If the impact air quality monitoring at AMS6 is no longer covered under Contract No. HY/2011/03, it is required to continue such monitoring at AMS6 as part of EM&A programme However, this is subject to ENPO's final decision on which ET should carry out the monitoring work at these stations.

A proposal to terminate impact monitoring for noise at NMS2 and NMS3C was justified by the ET Leader of this Contract and verified by the IEC on 13 August 2019, and approved by EPD on 3 September 2019. Therefore, the last noise monitoring event at NMS2 and NMS3C to be reported under this Contract was conducted on 2 September 2019.

A summary of air and noise monitoring locations are presented in **Table 2.1**. The location of air quality and noise monitoring stations are shown as in **Figure 2.1** and **Figure 2.2**, respectively.

**Table 2.1: Construction Dust and Noise Monitoring Locations** 

| <b>Environmental Monitoring</b> | Identification No.   | Location Description                     |
|---------------------------------|----------------------|--|
| Air Quality                     | AMS2                 | Tung Chung Development Pier              |
|                                 | AMS3C                | Ying Tung Estate Market Rooftop          |
|                                 | AMS6 <sup>(1)</sup>  | Dragonair / CNAC (Group) Building        |
|                                 | AMS7B                | 3RS Site Offices                         |
| Noise                           | NMS2                 | Seaview Crescent                         |
|                                 | NMS3C <sup>(2)</sup> | Ying Tung Estate Refuse Collection Point |

Remarks: (1) The ET of this Contract should conduct impact air quality monitoring at station AMS6 listed in the table as part of EM&A programme according to latest notification from ENPO when the monitoring station(s) is/are no longer covered by another ET of the HZMB project.

(2) Limit Level for schools will be applied for NMS3C. Day time noise Limit Level of 70 dB(A) applies to education institutions, while 65 dB(A) applies during the school examination period.

#### **Water Quality**

The water quality monitoring works for HZMB HKBCF under the approved EM&A Manual for the reporting period are covered by this Contract.

Upon completion of all marine-based construction activities, a post-project monitoring exercise on water quality shall be carried out for 4 weeks in the same manner as the Baseline monitoring and was conducted during May 2019. An impact operational phase monitoring exercise on water quality shall also be carried out monthly during the first year of Project operation at all designated monitoring stations including control stations. For post-construction and impact operational phase water quality monitoring, measurement was taken in accordance with the Updated EM&A Manual for HKBCF (Version 1.0). A total of four stations (two Sensitive Receiver Stations and two Control Stations) are covered for impact operational phase monitoring by the current EM&A programme.

Application of the alternative water quality monitoring stations at SR3(N) and CS2(A) to impact operational phase water quality monitoring was justified by the ET Leader of this Contract on 14 May 2019, verified by the IEC on 15 May 2019 and submitted to EPD for record on 15 May 2019 for implementation with effect from June 2019.

**Table 2.2** and **Figure 2.3** show the locations of water quality monitoring stations.

**Table 2.2: Impact Operational Phase Water Quality Monitoring Stations** 

| Station | Description                        | East   | North  |
|---------|------------------------------------|--------|--------|
| SR2(A)  | Sensitive receivers (Sha Lo Wan)   | 807810 | 817189 |
| SR3(N)  | Sensitive receivers (San Tau SSSI) | 810689 | 816591 |
| CS2(A)  | Control Station                    | 805232 | 818606 |
| CS(Mf)5 | Control Station                    | 817990 | 821129 |

#### **Chinese White Dolphin**

Post-construction dolphin monitoring in accordance with Section 10.7 of the Updated EM&A Manual for HKBCF was conducted during the reporting period.

The transfer of the role of implementation of dolphin monitoring and collection of monitoring data from the ET of Contract No. HY/2011/03 "Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road (HZMB HKLR) – Section between Scenic Hill and HKBCF" to the ET of Contract No. HY/2012/08 "Tuen Mun-Chek Lap Kok Link – Northern Connection Sub-sea Tunnel Section" was justified by the ET Leader of Contract No. HY/2011/03 and verified by the IEC during August 2019, and approved by EPD during September 2019 for implementation with effect from October 2019.

During the reporting period, the dolphin monitoring works (i.e. implementation of dolphin monitoring and collection of monitoring data) for the Contract are covered by Contract No. HY/2011/03 during September 2019 and by Contract No. HY/2012/08 during October and November 2019, with the reporting of monitoring results for the whole reporting period presented by the ET of this Contract.

The dolphin monitoring should adopt line-transect vessel survey method. The survey follows pre-set and fixed transect lines in the two areas defined by AFCD as: Northeast Lantau (NEL) survey area; and Northwest Lantau (NWL) survey area.

**Table 2.3** shows the co-ordinates for the transect lines and layout map.

The revised layout map showing the transect lines have been provided by AFCD and are shown in **Figure 2.4**.

Table 2.3: Post-Construction Dolphin Monitoring Line Transect Co-ordinates (Provided by AFCD)

| Transect         | HK Grid | l System | Long Lat   | in WGS84  |
|------------------|---------|----------|------------|-----------|
|                  | Х       | Υ        | Long       | Lat       |
| 1#               | 804671  | 815456   | 113.870287 | 22.277678 |
|                  | 804671  | 831404   | 113.869975 | 22.421696 |
| 2*^              | 805476  | 820800   | 113.877995 | 22.325951 |
|                  | 805476  | 826654   | 113.877882 | 22.378815 |
| 3^               | 806464  | 821150   | 114.030267 | 22.196697 |
|                  | 806464  | 822911   | 114.047344 | 22.196712 |
| 4^               | 807518  | 821500   | 114.033651 | 22.206219 |
|                  | 807518  | 829230   | 114.108618 | 22.206267 |
| 5^               | 808504  | 821850   | 114.037037 | 22.215126 |
|                  | 808504  | 828602   | 114.102523 | 22.215169 |
| 6^               | 809490  | 822150   | 114.039938 | 22.224033 |
|                  | 809490  | 825352   | 114.070995 | 22.224056 |
| 7 <sup>#</sup> ^ | 810499  | 822000   | 114.038474 | 22.233143 |
|                  | 810499  | 824613   | 114.063820 | 22.233163 |
| 8#               | 811508  | 821123   | 113.936539 | 22.328966 |
|                  | 811508  | 824254   | 113.936486 | 22.357241 |
| 9#               | 812516  | 821303   | 113.946320 | 22.330606 |
|                  | 812516  | 824254   | 113.946279 | 22.357255 |
| 10*              | 813525  | 820827   | 113.956112 | 22.326321 |
|                  | 813525  | 824657   | 113.956066 | 22.360908 |
| 11#              | 814556  | 818853   | 113.966155 | 22.304858 |
|                  | 814556  | 820992   | 113.966125 | 22.327820 |
| 12               | 815542  | 818807   | 113.975726 | 22.308109 |
|                  | 815542  | 824882   | 113.975647 | 22.362962 |
| 13               | 816506  | 819480   | 113.985072 | 22.314192 |
|                  | 816506  | 824859   | 113.985005 | 22.362771 |
| 14               | 817537  | 820220   | 113.995070 | 22.320883 |
| •                | 817537  | 824613   | 113.995018 | 22.360556 |
| 15               | 818568  | 820735   | 114.005071 | 22.325550 |
| 10               | 818568  | 824433   | 114.005030 | 22.358947 |
| 16               | 819532  | 821420   | 114.014420 | 22.331747 |
|                  | 819532  | 824209   | 114.014390 | 22.356933 |
| 17               | 820451  | 822125   | 114.023333 | 22.338117 |
| .,               | 820451  | 823671   | 114.023317 | 22.352084 |
| 18               | 821504  | 822371   | 114.033556 | 22.340353 |
|                  | 821504  | 823761   | 114.033544 | 22.352903 |
| 19               | 822513  | 823268   | 114.043340 | 22.348458 |
|                  | 822513  | 824321   | 114.043331 | 22.357971 |
| 20               | 823477  | 823402   | 114.052695 | 22.349680 |
|                  | 823477  | 824613   | 114.052686 | 22.360610 |
| <br>21           | 805476  | 827081   | 113.877878 | 22.382668 |
|                  | 805476  | 830562   | 113.877811 | 22.414103 |
| 22               | 806464  | 824033   | 113.887520 | 22.355164 |
| <b></b>          | 806464  | 829598   | 113.887416 | 22.405423 |
|                  | 000404  | 023030   | 113.00/410 | ZZ.4UU4Z3 |

| Transect | HK Grid | System | Long Lat   | in WGS84  |
|----------|---------|--------|------------|-----------|
| 23       | 814559  | 821739 | 113.966142 | 22.334574 |
|          | 814559  | 824768 | 113.966101 | 22.361920 |
| 24^      | 805476  | 815900 | 113.979368 | 22.187721 |
|          | 805476  | 819100 | 114.010398 | 22.187756 |

#### Remarks:

- (a) \* Due to the presence of deployed silt curtain systems at the site boundaries of the Contract, some of the transect lines shown in Figure 2.4 could not be fully surveyed during the regular survey. Transect 10 is reduced from 6.4km to approximately 3.6km in length due to the HKBCF construction site. Therefore, the total transect length for both NEL and NWL combined is reduced to approximately 108km.
- (b) # Coordinates for transect lines 1, 2, 7, 8, 9 and 11 have been updated in respect to the Proposal for Alteration of Transect Line for Dolphin Monitoring approved by EPD on 19 August 2015.
- (c) ^ The change of transect lines 2, 3, 4, 5, 6 and 7 and new transect line 24 were justified and verified by the ET Leader for Contract No. HY/2010/02 and the IEC respectively on 24 March 2017 and it was approved by EPD on 12 May 2017.

Landscape and visual bi-monthly checking and reporting on compliance of the planting works is required during the 12-month Establishment Period after completion of the construction works.

#### 2.2 Monitoring Requirements

The monitoring requirements, monitoring equipment, monitoring parameters, frequency and duration, monitoring methodology, monitoring schedule, meteorological information are detailed in the monthly EM&A reports prepared for this Contract and Contract No. HY/2011/03.

#### 2.3 Action and Limit Levels

#### Air Quality

The Action and Limit Levels for 1-hr TSP and 24-hr TSP are provided in **Table 2.4** and **Table 2.5** respectively.

Table 2.4: Action and Limit Levels for 1-hour TSP

| Monitoring Station                              | Action Level, μg/m <sup>3</sup> | Limit Level, μg/m <sup>3</sup> |
|---|---------------------------------|--------------------------------|
| AMS2 – Tung Chung Development Pier              | 374                             | 500                            |
| AMS3C – Ying Tung Estate Market Rooftop         | 368                             | 500                            |
| AMS6 – Dragonair / CNAC (Group) Building (HKIA) | 360                             | 500                            |
| AMS7B – 3RS Site Offices                        | 370                             | 500                            |

Table 2.5: Action and Limit Levels for 24-hour TSP

| Monitoring Station                              | Action Level, μg/m <sup>3</sup> | Limit Level, μg/m <sup>3</sup> |
|---|---------------------------------|--------------------------------|
| AMS2 – Tung Chung Development Pier              | 176                             | 260                            |
| AMS3C – Ying Tung Estate Market Rooftop         | 167                             | 260                            |
| AMS6 – Dragonair / CNAC (Group) Building (HKIA) | 173                             | 260                            |
| AMS7B – 3RS Site Offices                        | 183                             | 260                            |

If exceedance(s) at these stations is/are recorded by the ET of the Contract or referred by the other ET under the HZMB project to the Contract, the ET of the Contract will carry out an investigation and findings will be reported in the quarterly EM&A report.

#### Noise

The Action and Limit Levels for construction noise are defined in Table 2.6.

Table 2.6: Action and Limit Level for Construction Noise

| Monitoring | Station Time Period  | Action Level  | Limit Level  |  |
|------------|--|---|--------------|--|
| NMS2       | 07:00 – 19:00 hours or   | 1 What are the description of the second of | 70 dB(A)     |  |
| NMS3C      | normal weekdays  | When one documented complaint is received   | 70/65 dB(A)* |  |
| Domork: I  | Percepty Limit Level for exhaple will be expliced for NMC2C. Day time noise Limit Level of 70 dP/A) explice to |   |              |  |

Remark: Limit Level for schools will be applied for NMS3C. Day time noise Limit Level of 70 dB(A) applies to education institutions, while 65 dB(A) applies during the school examination period.

If exceedance(s) at these stations is/are recorded by the ET of the Contract or referred by the other ET under the HZMB project to the Contract, the ET of the Contract will carry out an investigation and findings will be reported in the guarterly EM&A Report.

#### **Water Quality**

The Action and Limit Levels for water quality are provided in **Table 2.7**.

Table 2.7: Action and Limit Levels for Water Quality

| Parameters  | Action  | Limit  |
|---|---|--|
| DO in mg L <sup>-1</sup>  | Surface and Middle  | Surface and Middle   |
| (Surface, Middle & Bottom)  | 5.0   | 4.2 (except 5 mg/L for FCZ)  |
|   | Bottom  | Bottom   |
|   | 4.7   | 3.6  |
| SS in mg L <sup>-1</sup> (depth-averaged) at all monitoring stations and control stations | 23.5 and 120% of upstream control station's SS at the same tide of the same day*        | 34.4 and 130% of upstream control station's SS at the same tide of the same day and 10mg/L for WSD Seawater intakes* |
| Turbidity in NTU<br>(depth-averaged)  | 27.5 and 120% of upstream control station's turbidity at the same tide of the same day* | 47.0 and 130% of upstream control station's  |

#### Remarks:

#### Notes:

- 1. "depth-averaged" is calculated by taking the arithmetic means of reading of all three depths.
- 2. For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
- 3. For turbidity, SS, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.
- 4. All the figures given in the table are used for reference only and the EPD may amend the figures whenever it is considered as necessary.
- The 1%-ile of baseline data for dissolved oxygen (surface and middle) and dissolved oxygen (bottom) are 4.2 mg/L and 3.6 mg/L respectively.

#### **Chinese White Dolphin**

The Action and Limit Levels for Chinese White Dolphin Monitoring are provided in **Table 2.8** and **Table 2.9**, respectively.

Table 2.8: Action and Limit Levels for Chinese White Dolphin Monitoring - Approach to Define Action Level (AL) and Limit Level (LL)

|              | North Lantau               | North Lantau Social Cluster                         |  |
|--------------|----------------------------|---|--|
|              | NEL                        | NWL   |  |
| Action Level | (STG < 70% of baseline) &  | (STG < 70% of baseline) &                           |  |
|              | (ANI < 70% of baseline)    | (ANI < 70% of baseline)                             |  |
| Limit Level  | [(STG < 40% of baseline) & | (ANI < 40% of baseline)] AND                        |  |
|              | [(STG < 40% of baseline)   | [(STG < 40% of baseline) & (ANI < 40% of baseline)] |  |

Reference is made to EPD approval of adjustment of water quality assessment criteria issued and became effective on 18 February 2013.

Table 2.9: Derived Value of Action Level (AL) and Limit Level (LL) for Chinese White Dolphin Monitoring

#### **North Lantau Social Cluster**

|              | NEL                           | NWL  |  |
|--------------|-------------------------------|--|--|
| Action Level | (STG < 4.2) & (ANI < 15.5)    | (STG < 6.9) & (ANI < 31.3)                                   |  |
| Limit Level  | [(STG < 2.4) & (ANI <8.9)] AN | [(STG < 2.4) & (ANI <8.9)] AND [ (STG < 3.9) & (ANI < 17.9)] |  |

If exceedance(s) at these survey transect(s) is/are recorded by the ET of the Contract or referred by the other ET under the HZMB project to the Contract, the ET of the Contract will carry out an investigation and findings will be reported in the monthly EM&A Report.

#### 2.4 Event and Action Plans

The event and action plans for air quality, noise, water quality, dolphin monitoring, and landscape and visual are provided in **Appendix D**.

#### 2.5 Mitigation Measures

Environmental mitigation measures for the contract were recommended in the approved EIA Report. **Appendix E** lists the recommended mitigation measures and the implementation status.

### 3 Environmental Monitoring and Audit

#### 3.1 Air Quality Monitoring Results

The monitoring results for AMS2, AMS3C and AMS7B are reported in the monthly EM&A Report prepared for this Contract.

The monitoring results for AMS6 are reported in the monthly EM&A Reports prepared for Contract No. HY/2011/03.

Summary of Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level at AMS6 is reported in the monthly EM&A Reports (for September, October and November 2019) prepared by Contract No. HY/2011/03.

During the reporting period, a total of three Action Level exceedances of 24-hour TSP for air quality (one at AMS3C and two at AMS7B) were recorded by the Environmental Team of this Contract. Following investigations, it was concluded that the exceedances were not related to the HZMB HKBCF project. The detailed investigation results of these exceedances recorded are presented in the monthly EM&A Report.

There was no Action and Limit Level exceedance of 1-hr TSP level recorded at stations AMS2, AMS3C and AMS7B, no Action and Limit Level exceedance of 24-hr TSP level recorded at station AMS2 and no Limit Level exceedance of 24-hr TSP level recorded at AMS3C and AMS7B by the Environmental Team of this Contract the reporting period.

#### 3.2 Noise Monitoring Results

Noise monitoring was conducted on 2 September 2019 only during the reporting period. The monitoring results for NMS2 and NMS3C are reported in the monthly EM&A Report (for September 2019) prepared for this Contract.

No noise exceedances were recorded at stations NMS2 and NMS3C by the ET of this Contract during the reporting period.

School calendar of Ho Yu College and calendar of Hong Kong Diploma of Secondary Education (HKDSE) were checked against noise monitoring days at NMS3C.

#### 3.3 Water Quality Monitoring Results

Monthly impact operational phase water quality monitoring in accordance with Section 9.9 of the Updated EM&A Manual for HKBCF (Version 1.0) was conducted during the reporting period on 20 September, 23 October and 20 November 2019.

The impact operational phase monitoring results for the four monitoring stations are reported in the monthly EM&A Reports (for September, October and November 2019) prepared for this Contract.

#### 3.4 Dolphin Monitoring Results

In accordance with the updated EM&A Manual, pre-set and fixed transect line vessel based dolphin survey was required in two AFCD designated areas (Northeast Lantau (NEL) and

Northwest Lantau (NWL) survey areas). The post-construction dolphin monitoring at each survey area should be conducted twice per month.

The post-construction dolphin monitoring conducted is vessel-based and combines line-transect and photo-ID methodology, which have adopted similar survey methodologies as that adopted during baseline monitoring to facilitate comparisons between data sets.

The layout map of post-construction dolphin monitoring has been provided by AFCD and is shown in Figure 1 of **Appendix J**.

The effort summary and sighting details during the reporting period are shown in the **Appendix J**. A summary of key findings of the dolphin surveys completed during the reporting period is shown below in **Table 3.1**:

Table 3.1: Summary of Key Dolphin Survey Findings in the Reporting Period

| Parameter  | Findings   |  |
|--|--|--|
| Number of Impact Surveys Completed^                            | 6  |  |
| Survey Distance Travelled under Favourable On-Effort Condition | 796.8 km   |  |
| Number of Sightings  | 4 sightings  |  |
|  | (all sightings are "on effort" (which are all under favourable condition)) |  |
| Number of dolphin individual sighted                           | 4 individuals (the best estimated group size)                              |  |
| Dolphin Encounter Rate#  | NEL: 0   |  |
|  | NWL: $0.8 \pm 0.91$  |  |
| Dolphin Group Size   | Average of NEL: 0  |  |
|  | Average of NWL: 1.1 ± 1.34   |  |
|  | Varied from 1 to 3 individuals   |  |
| Most frequent dolphin sighting area                            | NWL  |  |

Remarks: Completion of line transect survey of NEL and NWL survey area once was counted as one complete survey.

# Dolphin Encounter Rate = Sum of 1<sup>st</sup>, 2<sup>nd</sup> & 3<sup>rd</sup> month's total sighting
Sum of 1<sup>st</sup>, 2<sup>nd</sup> & 3<sup>rd</sup> month's total effort
(encounter rates are calculated using on effort sightings made under favourable conditions only.)

Details of the comparison and analysis methodology and their findings and discussions are annexed in **Appendix J**.

#### 3.5 Implementation of Environmental Measures

In response to the site audit findings, the Contractor carried out corrective actions. Details of site audit findings and the corrective actions during the reporting period are presented in **Appendix F** 

A summary of the Implementation Schedule of Environmental Mitigation Measures (EMIS) is presented in **Appendix E**. Most of the necessary mitigation measures were implemented properly.

Implementation status of the Regular Marine Travel Route Plan (RMTRP) including checking of Contractor's marine traffic records by ER, ETL and IEC/ENPO would be conducted in the event of Contract-related marine traffic taking place during the reporting period.

According to the Contractor of HY/2013/04, all marine-based segment deliveries were completed in January 2018 and no marine-based works were conducted under the contract during the reporting period.

#### 3.6 Landscape Establishment Monitoring

As coordinated between IEC and EPD, arrangements for the monitoring reports for landscape establishment for Contract Nos. HY/2013/01, HY/2013/02, HY/2013/03 and HY/2014/05 with respect to the reporting period are described below.

During the reporting period, bi-monthly landscape establishment monitoring for Contract Nos. HY/2013/01, HY/2013/02, HY/2013/03 and HY/2014/05 was conducted. The corresponding landscape monitoring reports are presented in **Appendix K**.

#### 3.7 Advice on the Solid and Liquid Waste Management Status

The Contractor registered as a chemical waste producer for the Contract. Sufficient numbers of receptacles were available for general refuse collection and sorting. As a practical means, the disposal operation is managed by a single HKBCF contractor who is also responsible for applying dumping permit and its subsequent extension applications from EPD. Contract No. HY/2013/03 has been assigned to coordinate and arrange for disposal of extracted marine sediment from this Contract.

There was no generation of excavated sediment for treatment during this reporting period. Any treatment of excavated marine sediment will be conducted using cement solidification / stabilization (Cement S/S) techniques and the treated sediment will be reused onsite for either backfilling or landscaping (e.g. berm material).

The summary of waste flow table is detailed in **Appendix G**.

The Contractor was reminded that chemical waste containers should be properly treated and stored temporarily in designated chemical waste storage area on site in accordance with the Code of Practice on the Packing, Labelling and Storage of Chemical Waste.

#### 3.7.1 Disposal of Marine Sediment Extracted from Bored Piling Works

#### 3.7.1.1 Background

After the acceptance of the review of the approved Sediment Quality Report (SQR) for this Project under EPD letter dated 19 August 2015, an approval to dispose the marine sediment extracted from bored piling for this Project was then approved under memo from Secretary, Marine Fill Committee of CEDD dated 20 August 2015 for the disposal of marine sediment extracted from bored piling works. The disposal sites allocated to this Project are the Mud Pit CMP2 of the Confined Marine Sediment Disposal Facility to the South of The Brothers (or at the East of Sha Chau). As advised by CEDD in the memo dated 19 February 2016, from 00:00 on 22 March 2016 onward, the disposal space at CMP2 of the South of The Brothers is closed and all disposal of contaminated sediment is to be carried out at CMP Vd to the East of Sha Chau (ESC).

As Contract No. HY/2013/01 has commenced treatment of the extracted marine sediment, treatment will continue and the treated marine sediment will be re-used within the HKBCF Island. On the other hand, Contract Nos. HY/2013/02, HY/2013/03 and HY/2013/04 have not commenced the treatment of extracted marine sediment. Therefore the marine sediment extracted from these three Contracts will be disposed to the allocated disposal sites directly without treatment. As a practical means, the disposal operation is managed by one contractor who is also responsible for applying dumping permit and its subsequent extension applications from EPD. Contract No. HY/2013/03 has been assigned to coordinate and arrange for disposal of extracted marine sediment from all three Contracts.

The SQR was further reviewed in mid-2016. EPD has no comment to extend the validity of the SQR to August 2017 under letter dated 18 August 2016.

Based on the actual piling operation, the estimated quantity of marine sediment to be extracted has been revised from 85,000 m<sup>3</sup> to 126,000 m<sup>3</sup> (bulk volume). EPD has no comments on the request as in the letter dated 20 October 2016. The Secretary of Marine Fill Committee, CEDD approved the increasing quantity in the memo dated 10 November 2016.

During the course of reviewing the SQR, it was noted that the contamination level of the marine sediment extracted from the inner part of the HKBCF Island was not identified during the previous sampling and testing. As requested by EPD, sampling and testing are required. The Sediment Sampling and Testing Proposal (SSTP) for the inner area of the HKBCF Island was approved by EPD on 2 June 2016.

As in the agreed SSTP for the inner area of the HKBCF Island, samples were taken from the seventeen batches of stockpiled marine sediments and from five boreholes each in one of the five sampling grids. After conducting chemical tests on samples, six batches of stockpiled samples under Contract No. HY/2013/03 and all eight batches of stockpiled samples under Contract No. HY/20013/04 are classified as Category L sediment. The Secretary of Marine Fill Committee of CEDD allocated disposal sites under memo dated 24 October 2016 and dated 22 November 2016 for disposal of a total of 9,500 m³ in-situ volume of Category L sediment (using a bulk factor of 1.3). The Category L sediment was disposed in December 2016.

One sample from the batch of stockpiled marine sediment under Contract No. HY/2013/03 and samples from all five sampling grids had contamination levels exceeding the Lower Chemical Exceedance Levels (LCEL) and biological screenings were carried out. All samples passed the biological screenings and are classified as Category Mp sediment and to be disposed off site using Type II confined marine disposal method the same method used for marine sediment extracted from other part of the HKBCF Island.

#### 3.7.1.2 Dumping Arrangements

The barge for disposal of marine sediment will morn at the temporary loading and unloading at the east shore of the HKBCF Island, which has been being used by reclamation contractor (Contract No. HY/2010/02) for reclamation activities. In terms of safety consideration, each dumping date will be allocated to one Contract. The quantity of marine sediment disposed on the date is from one Contract.

During dumping, each Contractor is responsible for transporting the marine sediment from his site area to the barge. The estimated quantity of marine sediment in each truck is confirmed by Resident Site Staff of each Contract. The trip tickets for transportation and disposal of marine sediment are collected and checked. Contract No. HY/2013/03 as the dumping permit holder is responsible for reporting to EPD the quantity disposed of as the condition stipulated in the dumping permit.

#### 3.7.1.3 Reporting

AECOM has confirmed that the disposal of excavated marine sediments to allocated dumping site via Contract No. HY/2013/03 has been completed with the last batch disposal on 30 August 2017. The total quantities disposed are presented in the following table (**Table 3.2**):

## Table 3.2: Summary of Marine Sediment disposed to Dumping Site via Contract No. HY/2013/03

|       |   | Type of Sediment and Quantity Disposed (m <sup>3</sup> ) |                                  |
|-------|---|--|----------------------------------|
|       |   | Cat. L (in Type I)                                       | Type II                          |
|       | Total =   | 3,570  | 39,814                           |
| Note: | For monthly breakdown of these quantities, please refer to the waste flow table in Appendix |  | low table in <b>Appendix G</b> . |

#### 3.8 Environmental Licences and Permits

The valid environmental licences and permits during the reporting period are summarized in **Appendix H**.

# 4 Summary of Exceedances, Complaints, Notification of Summons and Successful Prosecution

#### 4.1 Summary of Exceedance of the Environmental Quality Performance Limit

#### Air Quality

During the reporting period, a total of three Action Level exceedances of 24-hour TSP for air quality (one at AMS3C and two at AMS7B) were recorded by the Environmental Team of this Contract. Following investigations, it was concluded that the exceedances were not related to the HZMB HKBCF project. The detailed investigation results of these exceedances recorded are presented in the monthly EM&A Report.

There was no Action and Limit Level exceedance of 1-hr TSP level recorded at stations AMS2, AMS3C and AMS7B, no Action and Limit Level exceedance of 24-hr TSP level recorded at station AMS2 and no Limit Level exceedance of 24-hr TSP level recorded at AMS3C and AMS7B by the Environmental Team of this Contract the reporting period.

Summary of Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level at AMS6 is reported in the monthly EM&A Reports (for September, October and November 2019) prepared by Contract No. HY/2011/03.

#### **Noise**

Noise monitoring was conducted on 2 September 2019 only during the reporting period. There was no Action and Limit Level exceedance for noise recorded at station NMS2 and station NMS3C by the Environmental Team of this Contract during the reporting period.

#### **Water Quality**

During the reporting period, monthly impact operational phase water quality monitoring in accordance with Section 9.9 of the Updated EM&A Manual for HKBCF (Version 1.0) was conducted on 20 September, 23 October and 20 November 2019.

#### **Chinese White Dolphin**

During the reporting period, post-construction dolphin monitoring was conducted in accordance with Section 10.7 of the Updated EM&A Manual for HKBCF (Version 1.0). Post-construction dolphin monitoring results at all transects during the reporting period are reported in the monthly EM&A Reports for this Contract.

## 4.2 Summary of Complaints, Notification of Summons and Successful Prosecution

There were no complaints received in relation to the environmental impact during the reporting period. The details of cumulative statistics of Environmental Complaints are provided in **Appendix H**.

#### **Notifications of Summons and Successful Prosecutions**

Statistics on notifications of summons and successful prosecutions are summarized in  $\mbox{\bf Appendix}\ \mbox{\bf I}.$ 

## 5 Comments, Recommendations and Conclusions

#### 5.1 Comments

According to the environmental site inspections undertaken during the reporting period, the following recommendations were provided:

- The Contractor was reminded to store only chemical waste storage with proper labels in the chemical waste storage area.
- The Contractor was reminded to provide water spraying on the haul road and exposed works areas regularly to keep them wet.
- The Contractor was reminded to provide proper label for all non-road mobile machinery (NRMM) onsite.
- The Contractor was reminded to properly separate general refuse from construction waste and provide proper waste bin for general refuse.
- The Contractor was reminded to provide suitable bund or drip tray for chemical containers.
- The Contractor was reminded to clear the general refuse more frequently.
- The Contractor was reminded to repair / replace the damaged chemical waste storage area.
- The Contractor was reminded to ensure wheel washing of vehicles is properly implemented before leaving site.

A summary of the Implementation Schedule of Environmental Mitigation Measures (EMIS) is presented in **Appendix E**. Most of the necessary mitigation measures were implemented properly.

#### 5.2 Recommendations

With implementation of the recommended environmental mitigation measures, the contract's environmental impacts were considered environmentally acceptable. The weekly environmental site inspections ensured that all the environmental mitigation measures recommended were effectively implemented.

The recommended environmental mitigation measures, as included in the EM&A programme, effectively minimize the potential environmental impacts from the Contract. Also, the EM&A programme effectively monitored the environmental impacts from the construction activities and ensured the proper implementation of mitigation measures. No particular recommendation was advised for the improvement of the programme.

#### 5.3 Conclusions

#### General

Commencement of the Contract took place on 13 March 2015 and the construction works of the Contract commenced on 13 July 2015. This is the 18<sup>th</sup> Quarterly EM&A Report for the Contract which summarises findings of the EM&A works during the reporting period from 1 September 2019 to 30 November 2019 (the "reporting period").

#### **Breaches of Action and Limit Levels**

#### Air Quality

During the reporting period, a total of three Action Level exceedances of 24-hour TSP for air quality (one at AMS3C and two at AMS7B) were recorded by the Environmental Team of this Contract. Following investigations, it was concluded that the exceedances were not related to the HZMB HKBCF project. The detailed investigation results of these exceedances recorded are presented in the monthly EM&A Report.

There was no Action and Limit Level exceedance of 1-hr TSP level recorded at stations AMS2, AMS3C and AMS7B, no Action and Limit Level exceedance of 24-hr TSP level recorded at station AMS2 and no Limit Level exceedance of 24-hr TSP level recorded at AMS3C and AMS7B by the Environmental Team of this Contract the reporting period.

Summary of Action and Limit Level exceedance of 1-hr TSP level and 24-hr TSP level at AMS6 shall be referred to the monthly EM&A Reports (for September, October and November 2019) prepared by Contract No. HY/2011/03.

#### Noise

Noise monitoring was conducted on 2 September 2019 only during the reporting period. There was no Action and Limit Level exceedance for noise recorded at stations NMS2 and NMS3C by the Environmental Team of this Contract during the reporting period.

#### Water Quality

During the reporting period, monthly impact operational phase water quality monitoring in accordance with Section 9.9 of the Updated EM&A Manual for HKBCF (Version 1.0) was conducted on 20 September, 23 October and 20 November 2019.

#### Chinese White Dolphin

During the reporting period, post-construction dolphin monitoring was conducted in accordance with Section 10.7 of the Updated EM&A Manual for HKBCF (Version 1.0). Post-construction dolphin monitoring results at all transects during the reporting period are reported in the monthly EM&A Reports for this Contract.

#### **Environmental Site Inspections**

Environmental site inspection was carried out on 4, 11, 18 and 25 September, 2, 9, 16, 21 and 30 October, and 6, 14, 18 and 27 November 2019. Recommendations on remedial actions were given to the Contractors for the deficiencies identified during the site inspections.

#### **Landscape Establishment Monitoring**

Landscape checklists for HyD Contract Nos. HY/2013/01, HY/2013/02, HY/2013/03 and HY/2014/05 are shown in **Appendix K**.

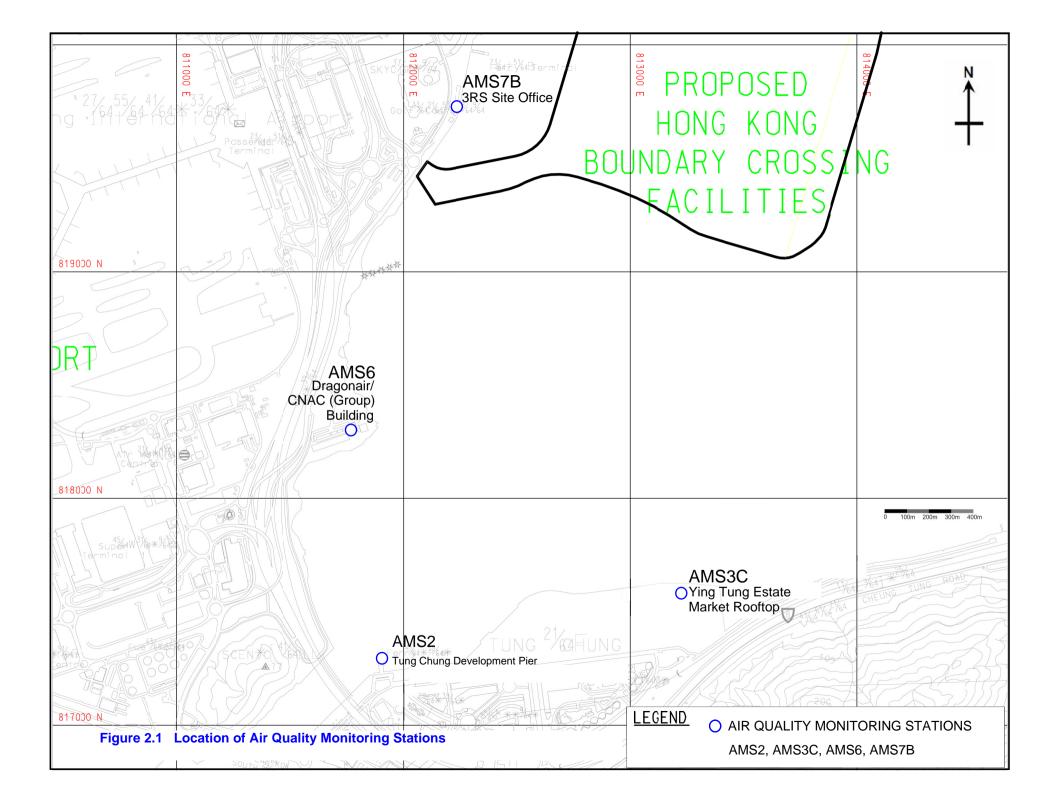
#### **Complaints**

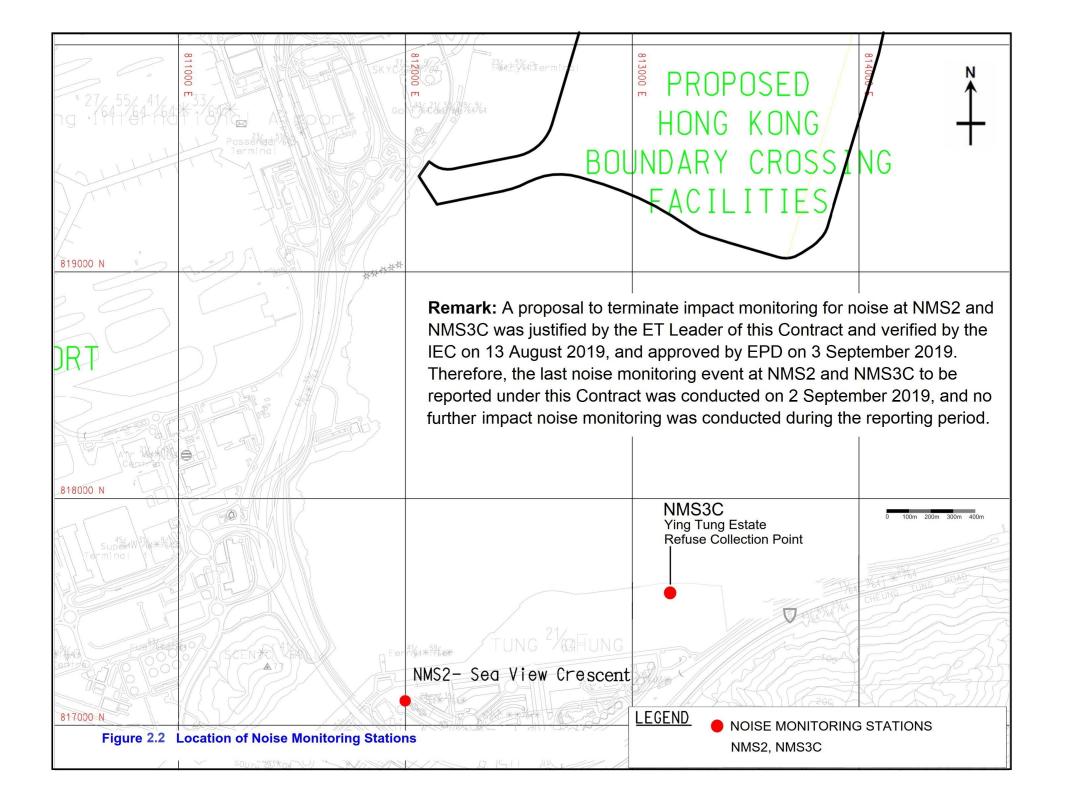
There were no complaints received in relation to the environmental impact during the reporting period.

#### **Notifications of Summons and Successful Prosecutions**

There were no notifications of summons or prosecutions received during the reporting period.

## **Figures**







| Station | East   | North  |
|---------|--------|--------|
| SR2(A)  | 807810 | 817189 |
| SR3(N)  | 810689 | 816591 |
| CS2(A)  | 805232 | 818606 |
| CS(Mf)5 | 817990 | 821129 |

## FIGURE 2.3 — LOCATION OF WATER QUALITY MONITORING STATIONS

**LEGEND** 

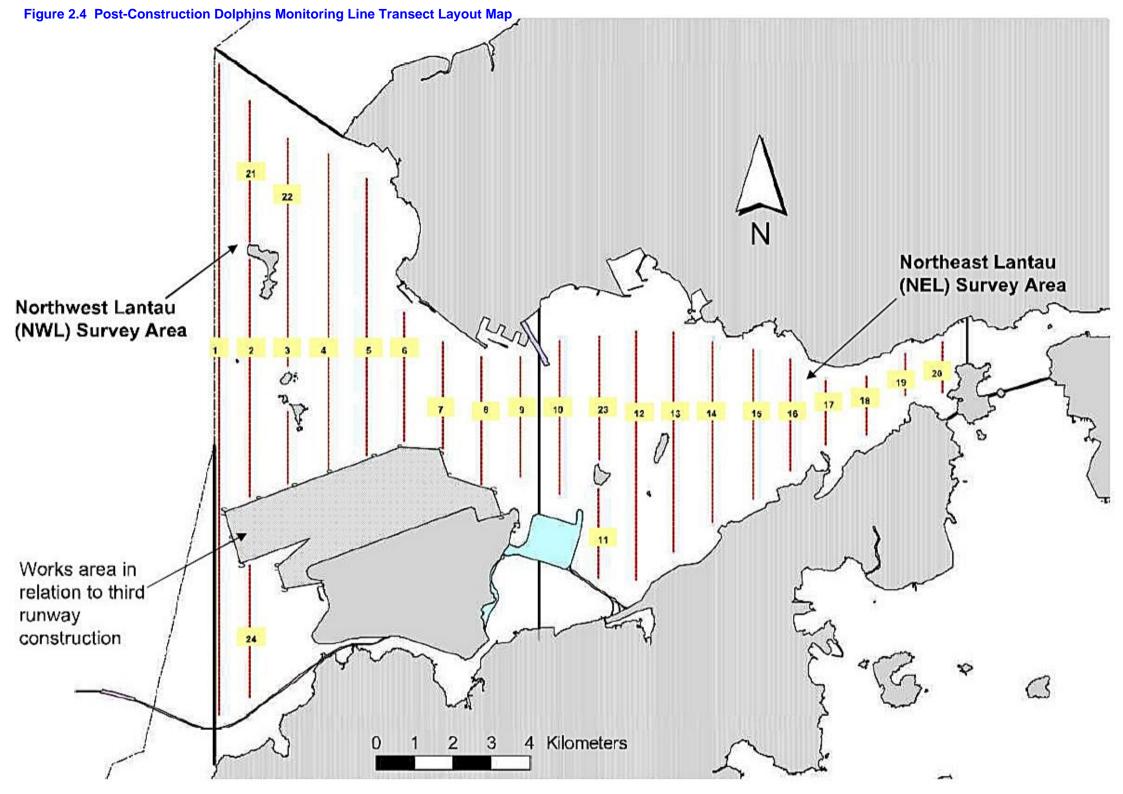


CONTROL

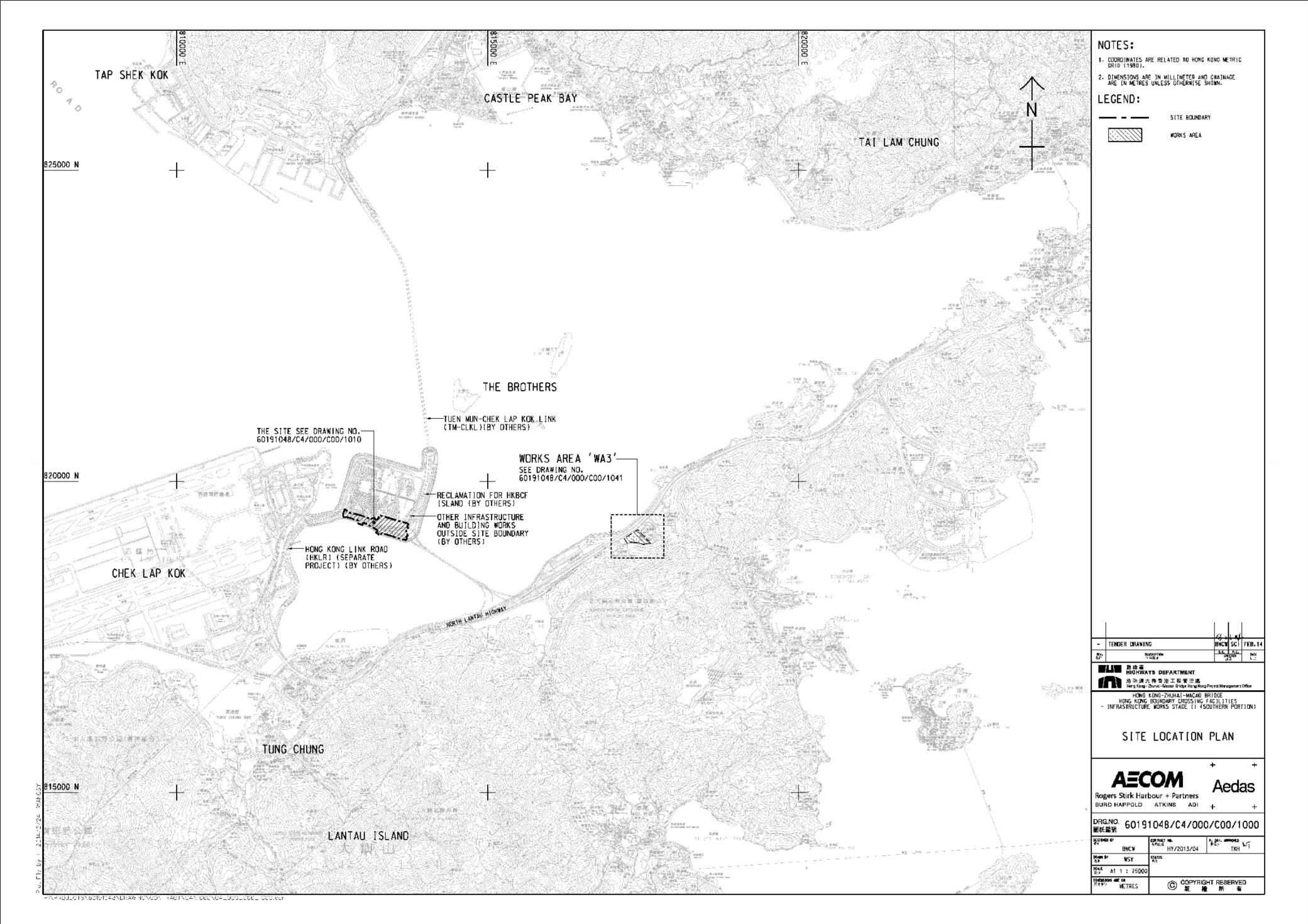
STATIONS

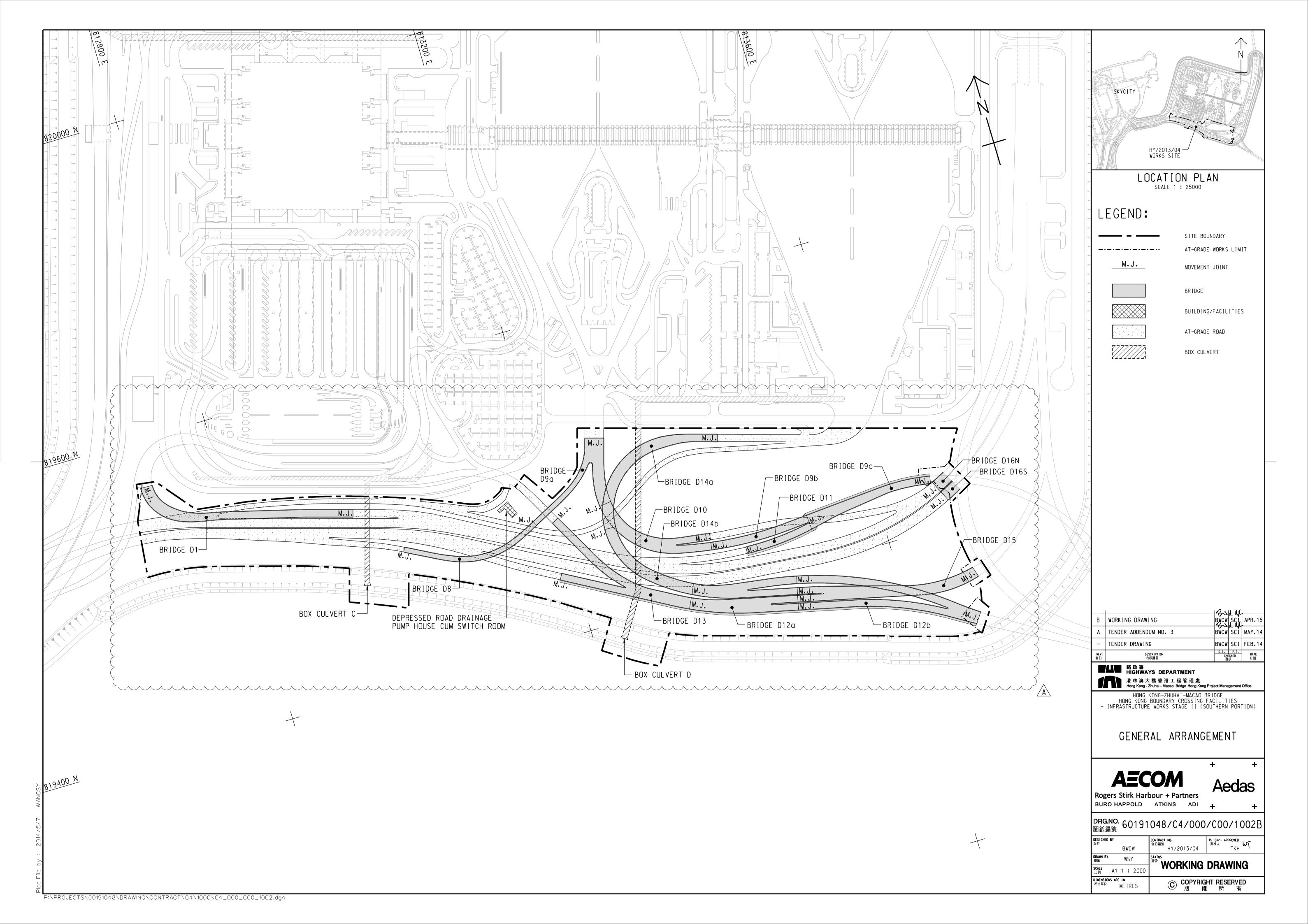


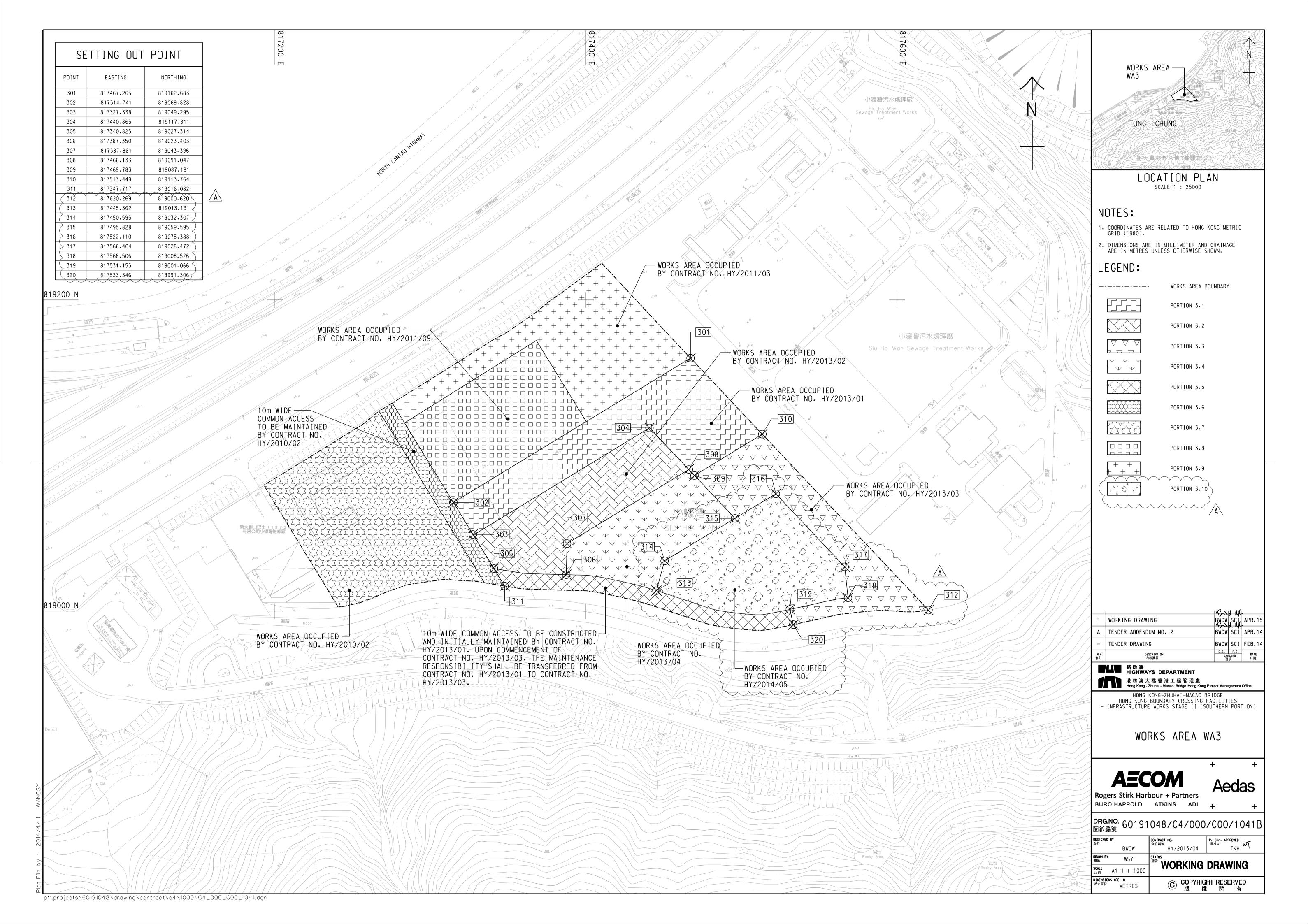
SENSITIVE RECEIVERS STATIONS



## **Appendix A. Location of Works Areas**

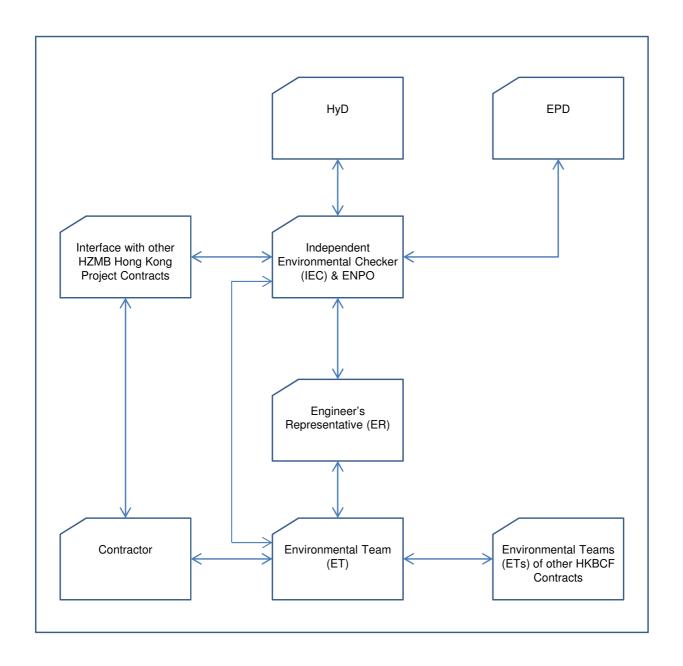






## **Appendix B. Project Organization for Environmental Works**

### **Project Organisation for Environmental Works**



## **Appendix C. Construction Programme**

| A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D Essential Works Updates - Tier 1 - 26 C **Contract Key Dates** CON KD 0005 Letter of Acceptance (LOA) etter of Acceptance (LOA) CON.KD.0010 ent Date Commencement Date CON.KD.0020 Completion of the whole of the Works (1520) 11-May-19, Completion of the whole of the Works (1520) Possession Dates CON.PD.1010 Site Possession of Portion A1 (61) - 8 sion of Portion A1 (61) CON.PD.1020 Site Possession of Portion A2 (61) Site Poss sion of Portion A2 (61) CON.PD.1050 Site Possession of Portion A5 (61) Site Possession of Portion Site Possession of Portion A6 (61) on of Portion A6 (61) CON.PD.1060 CON PD 1070 e Possession of Portion B1-5 (92) Site Possession of Portion B1-5 (92) CON.PD.1080 sion of Portioh B2 (123) Site Possession of Portion B2 (123) Site Possession of Portion B5 (123) CON.PD.1130 Site Possession of Portion B5 (123) CON.PD.1140 Site Possession of Portion C1 (184) 06-Oct-16 Site Pos CON.PD.1150 Site Possession of Portion C2 (184) Site Possession of Port Site Pos sion of Portion D1 (183) CON.PD.1160 Site Possession of Portion D1 (183) CON.PD.1180 Site Possession of Portion D3 (183) Site Po sion of Portion D3 (183) CON.PD.1190 Site Possession of Portion A1 (61) - 2 Site Possession of Portion A1 (61) CON.PD.1200 Site Possession of Portion A1 (61) - 5 Site Passessian of Partian A1 (61) - 5 CON.PD.1210 Site Possession of Portion A1 (61) Site Possession of Portion A1 (61) - 1 ssion of Portion C1; -1 (184) CON.PD.1220 Site Possession of Portion C1 -1 (184) CON.PD.1230 Site Possession of Portion C1 -2 (184) session of Portion C1 -2 (184) CON.PD.1240 Site Possession of Portion B1 -1 (92) Site Possession of Portion B1 -1 (92) CON.PD.1250 Site Possession of Portion B1 -2 (92) Site Possession of Portion B1 -2 (92) CON.PD.1260 Site Possession of Portion A1 (61) - 7 ion of Porti<mark>o</mark>n A1 (61) - 7 ossession of Portion B1-3 (92) CON.PD.1270 Site Possession of Portion B1-3 (92) CON PD 1280 Site Possession of Portion B1-4 (92) Site Possession of Portion B1-4 (92) Site Possession of Portion C1 -3 (184) ite Possession of Portion C1 -3 (184) CON.PD.1290 CON.PD.1030 Site Access of Portion A3 (476) 06-Oct-16 Site Access of Portion A3 (476) -16 🔷 Site Access of Portion A4 (627) CON.PD.1040 Site Access of Portion A4 (627) CON.PD.1090 Site Access of Portion B3 (476) 06-Oct-16 Site Access of Portion B3 (476) CON.PD.1100 Site Access of Portion B4 (627) -16 🔷 Site Access of Portion B4 (627) Site Access of Portion D2 (488) CON.PD.1170 Site Access of Portion D2 (488) Contractual Key Dates - Stage / Section CON.FOT.KD01 KD01 - Achievement of Stage 1A (525) 06-Oct-16, KD01 - Achi ◆ 22-Dec-16, KD02 - Achievement of Stage 1B (650) CON.FOT.KD02 KD02 - Achievement of Stage 1B (650) CON.FOT.KD03 KD03 - Achievement of Stage 2 (525) 06-Oct-16, KD03 - Achieve ment of Stage 2 (525) 06-Oct-16, KD04 - Achievement of Stage 3 (465) CON.FOT.KD04 KD04 - Achievement of Stage 3 (465) ◆ 17-Nov-16, KD05 - Achievement of Stage 4 (615) CON.FOT.KD05 KD05 - Achievement of Stage 4 (615) ◆ 17-Nov-16, KD06 - Achievement of Stage 5 CON.FOT.KD06 KD06 - Achievement of Stage 5 (615) 6-Oct-16, KD07 - Achiev nent of Stage 6 (270) CON.FOT.KD07 KD07 - Achievement of Stage 6 (270) CON.FOT.KD08 KD08 - Completion of Section I of the Works ◆ 16-May-17, KD08 - Completion of Section I of the Works (795) ◆ 24-May-17, KD09 CON.FOT.KD09 KD09 - Completion of Section II of the Works ◆ 24-May-17, KD10 - Completion of Section III of the Works (803) CON.FOT.KD10 KD10 - Completion of Section III of the Works 06-Oct-16, KD11 - Completion of Section IV of the Works (565) CON.FOT.KD11 KD11 - Completion of Section IV of the Works 24-May-17, KD12 - Completion of Section V of the Works (803) CON.FOT.KD12 KD12 - Completion of Section V of the Works 06-Oct-16, KD13 - Completion of Section VI of the Works (465) CON.FOT.KD13 KD13 - Completion of Section VI of the Works CON.FOT.KD14 KD14 - Completion of Section VII of the Works (1155) ♦ 11-May-18, KD14 - Co tion of Section VII of the Works (1155 ♦ 16 May-17, KD15 - Completion of Section VIIIA of the Works (795 CON.FOT.KD15 KD15 - Completion of Section VIIIA of the Works (795) ◆ 11-May-18, KD16 - Completion of Section VIIIB of the Works (1155) CON.FOT.KD16 KD16 - Completion of Section VIIIB of the Works (1155) CON.FOT.KD17 KD17 - Achievement of Stage 7 (718) ♦ 28-Feb-17, KD17 - Achievement of Stage 7 (718) ◆ 16-May-17, KD17A - Completion of Section VIIIC of the Works (795) CON.FOT.KD17A KD17A - Completion of Section VIIIC of the Works (795) KD18 - Completion of Section VIIID of the Works (1155) CON.FOT.KD18 ◆ 11-May-18, KD18 - Co etion of Section VIIID of the Works (1155) etion of Section IXA of the Works (1160) ♦ 16-May-18, KD19 - Comp KD19 - Completion of Section IXA of the Works CON.FOT.KD19 ♠ 11-May-19, KD20 - Completion of Section IXB of the Works (1520) CON.FOT.KD20 KD20 - Completion of Section IXB of the Works (1520) Contractual Handover Dates to Employer ♦ 13-Jun-17, Handover of Portion A1 (KD8+28 days) CON.HD.1190 Handover of Portion A1 (KD8+28 days) CON.HD.1200 Handover of Portion A2 (KD8+28 days) 13-Jun-17, Handover of Portion A2 (KD8+28 days) ♦ 21-Jun-17, Handover of Portion A3 (KD9+28 days) CON.HD.1210 Handover of Portion A3 (KD9+28 days) CON.HD.1220 21-Jun-17, Handover of Portion A4 (KD10+28 days) Handover of Portion A4 (KD10+28 days) Handover of Portion A5 (KD13+0 days) CON.HD.1240 r of Portion A5 (KD13+0 days) HY/2013/04 - Detailed Works Programme **\** Current Milestone

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| D         | etailed vvorks Programme (IVVP) | Rev. 04 |          |
|-----------|---------------------------------|---------|----------|
| Date      | Revision                        | Chec    | Approved |
| 09-Sep-15 | Detailed Works Programme        | WN/WC   | ET       |
| 17-Oct-15 | Detailed Works Programme        | WN/WC   | ET       |
| 29-Oct-15 | Detailed Works Programme        | WN/WC   | ET       |
| 25-Nov-15 | Detailed Works Programme        | WN/WC   | ET       |

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Print Date: 14-Dec-16 09:46 Page: 2 / 23 CON.HD.1250 Handover of Portion A6 (KD14+28 days) CON.HD.1260 Handover of Portion B1 (KD8+28 days) of Portion B1 (KD8+28 days) Handover of Portion B2 (KD8+28 days) ♦ 13-Jun-17, Handover of Portion B2 (KD8+28 davs) CON.HD.1270 of Portion B3 (KD11+28 days) CON.HD.1280 Handover of Portion B3 (KD11+28 days) CON.HD.1290 Handover of Portion B4 (KD12+28 days) 21-Jun-17, Handover of Portion B4 (KD12+28 days) CON.HD.1300 Handover of Portion B5 (KD14+28days) ♦ 08-Jun-18. Had B5 (KD14+28days CON.HD.1310 Handover of Portion C1 (KD8+28 days) ♦ 13-Jun 17 Handover of Portion C1 (KD8+28 days) CON.HD.1320 Handover of Portion C2 (KD13+0 days) 06-Oct-16, Hand f Portion C2 (KD13+0 days CON.HD.1330 Handover of Portion D1 (KD8+28 days) of Portion D1: (KD8+28 days) CON.HD.1340 🔷 13-Jun-17, Handov er of Portion D2 (KD8+28 days) Handover of Portion D2 (KD8+28 days) 13-Jun-17, Handov CON.HD.1350 Handover of Portion D3 (KD8+28 days) er of Portion D3 (KD8+28 days) Contractor Planned Completion: Key Dat ◆ 19-Jun-18, KD01 - Achievement of Stage 1A (525) CON.SC.KD01 KD01 - Achievement of Stage 1A (525) nent of \$tage 1B (650) KD02 - Achievement of Stage 1B (650) CON.SC.KD02 03-May-18, KD02 - Achie CON.SC.KD03 KD03 - Achievement of Stage 2 (525) 19-Jun-18, KD03 - Achievement of Stage 2 (525) ♦ 12-Jun-17, KD04 - Achie CON.SC.KD04 KD04 - Achievement of Stage 3 (465) nt of Stage 3 (465) CON.SC.KD05 KD05 - Achievement of Stage 4 (615) ◆ 20-Aug-18, KD05 -CON.SC.KD06 03-Aug-17, KD06 - Achievement of Stage 5 (615) KD06 - Achievement of Stage 5 (615) CON.SC.KD07 KD07 - Achievement of Stage 6 (270) nent of Stage 6 (270) ♦ 04-Jul-18, KD08 tion of Section I of the Works (795 CON.SC.KD08 KD08 - Completion of Section I of the Works CON.SC.KD09 21-Aug-18, KD09 - Completion of Section II of the Works (803) KD09 - Completion of Section II of the Works (803) CON.SC.KD10 KD10 - Completion of Section III of the Works 21-Aug-18, KD10 - Completion of Section III of the Works (803) CON.SC.KD11 10-Apr 18 KD11 Completion of Section (V of the Works (565) KD11 - Completion of Section IV of the Works (565)◆ 21-Aug-18, KD12 - Completion of Section V of the Works (803) CON.SC.KD12 KD12 - Completion of Section V of the Works KD13 - Completion of Section VI of the Works CON.SC.KD13 🔷 29-Jun-17, KD13 tion of Section VI of the Works (465) ♦ 28-Aug-19, KD14 - Comp CON.SC.KD14 KD14 - Completion of Section VII of the Works CON SC KD15 KD15 - Completion of Section VIIIA of the 03-Aug-18, KD15 - Completion of Section VIIIA of the Works (795) Works (795) 28-Aug-19, KD16 - Completion of Section VIIIB of the CON.SC.KD16 KD16 - Completion of Section VIIIB of the Works (1155) O3-Jul-18, KD17 - Achievement of Stage 7 (718) CON.SC.KD17 KD17 - Achievement of Stage 7 (718) KD17A - Completion of Section VIIIC of the Works (795) CON.SC.KD17A d3-Aug-18, KDI 7A - Completion of Section VII IC of the Works (795) CON.SC.KD18 KD18 - Completion of Section VIIID of the 28-Aug-19, KD18 - Completion of Section VIIID of the Works (1155) CON.SC.KD19 KD19 - Completion of Section IXA of the Works 0/3-Aug-19, KD19 - Completion of Section IXA of the World CON.SC.KD20 KD20 - Completion of Section IXB of the Works ♦ 27-Aug-20, KD20 (1520)Preliminaries and General Requiremer Insurance CON.PR.1010 Arrange and Secure Professional Indemnity Insurances and submit copy to Engineer **Initial Works Programme** CON.PR.1020.10 Prepare & Submit Initial Works Programme (IWP) Enginéer's Approval CON.PR.1020.20 Engineer's Approval **Provisional Programme for Piling Works** CON.PR.1030.10 Prepare Detailed Piling Schedule (refer to IWP) repare Detailed Piling S CON.PR.1030.20 Engineer's Approval Engineer's Approval 3 Months Rolling Programme Prepare 3 Months Rolling Progra CON.PR.1040.10 Prepare 3 Months Rolling Programme CON.PR.1040.20 Engineer's Approval Engineer's Appro **Detailed Works Programme** CON.PR.1050.10 Prepare Detailed Works Programme (DWP) Prepare Detailed Works Programme (DWP) Engineer's Approval CON.PR.1050.20 Engineer's Approval Safety & Health CON.PR.1060.10 Draft Safety Plan Draft Safety Plan Finalized Safety Plan CON.PR.1060.20 Finalized Safety Plan **Environmental Management Plan** CON.PR.1080.10 Draft Envirionmental Management Plan Draft Envirionm Finalized EMP CON.PR.1080.20 Finalized EMP **Sub-Contractor Management Plan** CON.PR.1080.50 Draft Subcontractor Management Plan Engineer's Approval CON.PR.1080.60 Engineer's Approval **Temporary Facilities** ession / Access to W CON.PR.0130 Site Possession / Access to Works Area WA3 CON.PR.0140 Survey / Setting Out Survey / Setting Out CON.PR.0150.10 Site Formation / Site Clearing Site Formation / Site Clearing CON.PR.0160 Contractor's Site Office 💄 ¢ontractor's Site Øffice CON.PR.0170 External Works - Paving, Drainage and Fencing External Works: - Paving, Drainage and Fencing **Contractors Design & Procurement Bridge Bearings** 

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A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D Detailed Design / Shop Drawings and Materials PROC.MA.1610 PROC.MA.1615 Engineer's Review / Approval Engineer's Review / Approva PROC.MA.1650 Production / Manufacturing / Facbrication Production / Manufacturing / Facbrid 6 ♦ Materials Delivery (first delivery) PROC.MA.1670 Materials Delivery (first delivery) **Precast Concrete - Segments** PROC.MA.1760 Moulds Detailed Design Preparation / Engineer's Review / Appr PROC.MA.1765 Engineer's Review / Approval Mould Fabri PROC.MA.1770 Mould Fabrication Cast Prototype / Ir PROC.MA.1780 Cast Prototype / Inspection and Approval ection and Approva PROC.MA.2570 Production of Precast Segments 14-Nov-16 ♦ Materials Delivery (First Delivery) PROC.MA.2590 Materials Delivery (First Delivery) Segment Fabrication and Post Pouring Segment Fabrication Type A Segment Fabrication for Bridge D1 (96 nos) tion for Bridge D1 (96 nos) Segment Fabrication Type C1 Fab.TC1.0010 Segment Fabrication for Bridge D12b (91-106) 16 nos. Segment Fabrication for Bridge D12b (91-106) 16 nos Fab.TC1.0020 rication for Bridge D9c (1-3) 3 nos. Segment Fabrication for Bridge D9c (1-3) 3 nt Fabrication for Bridge D14a (1-30) 30 nos Fab.TC1.0030 Segment Fabrication for Bridge D14a (1-30) 30 Fab.TC1.0040 Segment Fabrication for Bridge D12a (66-80) Segment Fabrication for Bridge D12a (66-80) 15 nds Segment Fabrication for Bridge D14b (14-27) 14 nos. Fab.TC1.0050 Segment Fabrication for Bridge D14b (14-27) Segment Fabrication for Bridge D14c (1-15) 15 nos. Fab.TC1.0060 Segment Fabrication for Bridge D14c (1-15) 1 Fab.TC1.0080 Segment Fabrication for Bridge D9c (4-14) 11 abrication for Bridge D9c (4-14) 11 nos Segment Fabrication for Bridge D15 (48-64) 17 nos. Fab.TC2.00060 | Segment Fabrication for Bridge D15 (48-64) 1 Segment Fabrication for Bridge D15 (31-47) 17 nos Fab.TC3.0060 Segment Fabrication for Bridge D15 (31-47) 1 Segment Fabrication for Bridge D13 (103-129) 27 nos. Fab.TC4.0030 ment Fabridation for Bridge D13 (103-129) 27 nos egment Fabrication for Bridge D14c (46-60) 15 nos Fab.TC4.0060 Segment Fabrication for Bridge D14c (46-60) 15 nos. Segment Fabrication Type C2 Segment Fabrication for Bridge D15 (1-15) 15 nos Fab.TC1.0070 Segment Fabrication for Bridge D15 (1-15) 15 Fab.TC2.00010 Segment Fabrication for Bridge D12b Segment Fabrication for Bridge D12b (112-127) 16 nos. (112-127) 16 nos. Fab.TC2.00020 Segment Fabrication for Bridge D14a (31-59) 29 nos. Segment Fabrication for Bridge D14a (31-59) 29 nos nt Fabrication for Bridge D9c (29-42) 14 nos Fab.TC2.00030 | Segment Fabrication for Bridge D9c (29-42) 14 Fab.TC2.00040 Segment Fabrication for Bridge D12a (48-65) \$egment Fabrication for Bridge D12a (48-65) 18 nos. Fab.TC2.00050 Segment Fabrication for Bridge D14c (16-30) 15 nos. Segment Fabrication for Bridge 014c (16-30) 15 nos. Segment Fabrication for Bridge D12b (4/4-8/4, 1/07-111) 46 nos Fab.TC3.0010 Segment Fabrication for Bridge D12b (44-84, 107-111) 46 nos. Segment Fabrication for Bridge D14c (31-45) 15 nos. Fab.TC3.0050 Segment Fabrication for Bridge D14¢ (31-45) 15 nos. Segment Fabrication for Bridge D15 (65-78) 14 no Fab.TC4.0070 Segment Fabrication for Bridge D15 (65-78) 1 Segment Fabrication Type C3 Fab.TC3.0020 Segment Fabrication for Bridge D9c (15-28) 14 nt Fabrication for Bridge D9c (15-28) 14 nos Segment Fabrication for Bridge D13 (43-70 & 100-102) 31 nos Fab.TC3.0030 Segment Fabrication for Bridge D13 (43-70 & 100-102) 31 nos. Fab.TC3.0040 Segment Fabrication for Bridge D14b (28-49) Segment Fabrication for Bridge D14b (28-49) 22 nos. Fab.TC4.0010 Segment Fabrication for Bridge D12b (1-43,85-90) 49 nos. nent Fabrication for Bridge D12b (1-43,85-90) 49 no abrication for Bridge D14a (60-75) 16 nos Fab.TC4.0020 Segment Fabrication for Bridge D14a (60-75) Segment Fabrication for Bridge D12a (81-95) 15 nos. Fab.TC4.0040 Segment Fabrication for Bridge 🛭 12a (81-95) 15 nos Segment Fabrication for Bridge D14b (1-13) 13 nos Fab.TC4.0050 Segment Fabrication for Bridge D14b (1-13) 13 Segment Fabrication Type D2 ment Fabrication for Bridge D9a (75-86 & nt Fabrication for Bridge D9a (75-86 & 92-104) 25 r Segment Fabrication for Bridge D13 (33-46) 14 nos. Fab.T1.0040 Segment Fabrication for Bridge D13 (33-46) 14 Segment Fabrication for Bridge D9a (1-15) 15 nos. ent Fabrication for Bridge D9a (1-15) 15 nos. Fab.T1.0050 Fab.T2.0010 Segment Fabrication for Bridge D9a (32-46) 15 ment Fabrication for Bridge D9a (32-46) 15 nos brication for Bridge D9b (1-15) 15 nos Fab.T2.0030 Segment Fabrication for Bridge D9b (1-15) 15 Fab.T2.0040 Segment Fabrication for Bridge D10 (33-47) 14 Segment Fabrication for Bridge D10 (33-47) 14 nos. Segment Fabrication for Bridge D13 (29-41) 13 nos. Fab.T2.0050 Segment Fabrication for Bridge D13 (29-41) 13 ment Fabrication for Bridge D9a (47-57, 70-74) 16 nos; Fab.T3.0030 Segment Fabrication for Bridge D9a (47-57, 70-74) 16 nos. Segment Fabrication for Bridge D10 (68-88 & 27-32) 27 nos. Fab.T3.0040 Segment Fabrication for Bridge D10 (68-88 & 27-32) 27 nos Segment Fabrication for Bridge D15 (1-14) 14 no Segment Fabrication for Bridge D15 (1-14) 14 Fab.T3.0070 Segment Fabrication for Bridge D10 (61-67 & 89-95) 14 nos. Fab.T4.0020 Segment Fabrication for Bridge D10 (61-67 & 89-95) 14 nos. Fab.T4.0040 Segment Fabrication for Bridge D8 (48-62) 15 Segment Fabrication for Bridge D8 (48-62) 15 nos Segment Fabrication for Bridge D13 (78-98) 21 nos Fab.T4.0050 Segment Fabrication for Bridge D13 (78-98) 21 Fab.T4.0060 Segment Fabrication for Bridge D10 (96-109) 14 nos. Segment Fabrication for Bridge D10 (96-109) 14 nos. Segment Fabrication Type D3 Fab.T1.0010 Segment Fabrication for Bridge D11 (17-31) 15 nos. Segment Fabrication for Bridge D11 (17-31) 15 nos egment Fabrication for Bridge D10 (1-26) 26 nos. Fab.T1.0030 Segment Fabrication for Bridge D10 (1-26) 26 Fab.T1.0060 Segment Fabrication for Bridge D8 (1-16) 16 abrication for Bridge D8 (1-16) 16 nos. Segment Fabrication for Bridge D12a (1-16) 16 nos. Segment Fabrication for Bridge D12a (1-16) 14 nos Fab.T1.0070 Fab.T2.0020 nt Fabrication for Bridge D11 (1-16) 16 no Segment Fabrication for Bridge D11 (1-16) 16 Segment Fabrication for Bridge D8 (17-31) 15 Segment Fabrication for Bridge D8 (17-31) 15 nos. Fab.T2.0060

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3 Nos Pier Segment for Bridge D13 - 4 Nos Fab.T3.00130 Pier Segment for Bridge D13 - 4 Nos ier Segment for Bridge D14b - 4 Fab.T3.00140 Pier Segment for Bridge D14b - 4 Nos Pier Segment for Bridge D12a - 4 Nos Fab.T3.00150 Pier Segment for Bridge D12a - 4 Nos Fab.T3.00160 Pier Segment for Bridge D14c - 4 Nos ■ Pier Segment for Bridge D14c - 4 Nos Pier Segment for Bridge D12b - 4 Nos Fab.T3.00170 Pier Segment for Bridge D12b - 4 Nos Pier Segment for Bridge D15 - 4 Nos Fab.T3.00180 Pier Segment for Bridge D15 - 4 Nos Fab.T3.00260 Pier Segment for Bridge D15 - 4 Nos Pler Segment for Bridge D15 - 4 Nos Fab.T3.0090 Pier Segment for Bridge D14a - 6 Nos Segment for Bridge D14a - 6 Nos Pier Segment - Type D- 1 Fab.T2.0070 Segment Fabrication for Bridge D12a (18-31) Fab.T3.00100 Pier Seament for Bridge D9b - 4 Nos Pier Segment for Bridge D9b - 4 Nos Pier Segment for Bridge D9a - 5 Nos Fab.T3.00190 Pier Segment for Bridge D9a - 5 Nos Pier Segment for Bridge D11 - 3 Nos Fab.T3.00200 Pier Segment for Bridge D11 - 3 Nos Fab.T3.00210 Pier Segment for Bridge D10 - 5 Nos Pier Segment for Bridge D10 - 5 No Fab.T3.00220 Pier Segment for Bridge D8 - 5 Nos Pier Segment for Bridge D8 - 5 No Pier Segment for Bridge D13 - 6 Nos Fab.T3.00230 Pier Segment for Bridge D13 - 6 Nos Fab.T3.00240 Pier Segment for Bridge D12a - 4 Nos Pier Segment for Bridge D12a + 4 Nos ■ Pier Segment for Bridge D15 - 1 Nos Pier Segment for Bridge D15 - 1 Nos Fab.T3.00250 Fab.T3.00280 Pier Segment for Bridge D10 - 5 Nos Pier Segment for Bridge D10 - 5 Nbs Fab.T3.00290 Pier Segment for Bridge D9a - 5 Nos Pier Segment for Bridge D9a - 5 Nos Segment Fabrication for Bridge D12a (33-46) 14 no Segment Fabrication for Bridge D12a (33-46) Fab.T3.0060 &M Works and Building Services for Pu Detailed Design and Material/ Equipment Submisison & Statutory Approval (FSD/EMSD) PROC.SC.1285 Engineer's Review / Approval PROC.SC.1287 Engineer's Review / Approval PROC.SC.1290 Procurement and Manufacturing of Materials nt and Manufacturing of Material PROC.SC.1300 Materials Delivery (first delivery) 29-Jun-17 • Materials Delivery (first delivery) Draft Operation and Maintenance (O&M) Manual PROC.SC.1310 Draft Operation and Maintenance (O&M) PROC.SC.1320 Engineer's Review on Draft O&M Manual Engineer's Review on Draft O&M Manual Draft Testing and Commissioning (T&C) Procedure PROC.SC.1330 Draft Testing and Commissioning (T&C) Final T&C Procedure PROC.SC.1340 Final T&C Procedure Engineer's Review on Draft T&C Procedure PROC.SC.1350 Engineer's Review on Draft T&C Procedure Engineer's Approval on Final T&C Procedure PROC.SC.1360 Engineer's Approval on Final T&C Procedure PROC.SC.2840 Final O&M Manual with as-fitted drawings Final O&M Manual with as-fitted drawings PROC.SC.2850 Engineer's Approval on Final O&M Manual with teel Structures for Sign Gantry / High N PROC.MA.1990 Detailed Design / Material Submission Detailed Design / Material Subr Engineer's Review / Approval PROC.MA.1995 Engineer's Review / Approval PROC.MA.2010 Manufacture of Steel Structures of Steel Structures PROC.MA.2020 Material Delivery (first delivery) 15-Sep-17 : ♦ Material Delivery (first delivery Roads and Bridge Lighting PROC.MA.2840 Lighting Arrangement Detailed Design / Material Submission and Approval (within 12 Lighting Arrangement Detailed Design / Material Submission and Approval (within 12 weeks) Engineer's Review / Approval PROC.MA.2845 Engineer's Review / Approval Manufacture of Road and Bridge Lighting PROC.MA.2850 Manufacture of Road and Bridge Lighting rv (first delivery) PROC.MA.2860 Material Delivery (first delivery) 27-Sep-17 🔷 Material Delive The Engineer confirm Landscape Works/ Irrigation Work (31 Dec 2015) PROC.SC.1178 The Engineer confirm Landscape Works/ 06-Oct-16 Irrigation Work (31 Dec 2015) PROC.SC.1180 Detailed Design / Material Submission Detailed Design / Material Submis Engineer's Review / Approval PROC.SC.1185 Engineer's Review / Approval PROC.SC.1190 Procurement and Shipment of Irrigation Materials/Equipment Soft Landscaping PROC.SC.2760 Propose Nursery for Landscape Materials Propose Nursery for Landscape Materials Joint Inspection and Engineer's appro PROC.SC.2780 Joint Inspection and Engineer's approval PROC.SC.2790 Landscape Materials Growing 02-Aug-17 A Materials Delivery (first delivery) PROC.SC.2810 Materials Delivery (first delivery) Construction / Installation Initial Works / Site Establishment & Mai

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| A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D **Mobilisation and Site Establishment** CONS.A1.0100 Site Possession / Access to Portion A1, A2, A5 CONS.A1.0110 Mobilisation, Site Clearing and Site Set-up oilisation, Site Clearing and Site Set-up CONS.A1.0120 Install Temporary Facilities / Hygiene Facilities Gates and Haul Road Construction (as per Dwg CONS.A1.1010 Site Possession / Access to Portion A1 Survey/ Setting Out CONS.A1.1020 Survey/ Setting Out CONS.A1.1030 | Construct Gate 1 at Haul Road Construct Gate 1 at Haul Road CONS.B1.1010 Site Possession / Access to Portion B1 06-Oct-16 Site Possession / Access to Portion B1 Mobilisation, Site Survey and Setting Out CONS.B1.1020 Mobilisation, Site Survey and Setting Out CONS.B1.1030 Construct Gate 3 and Temporary Haul Road Construct Gate 3 and Temporary Haul Road CONS.B2.1010 Site Possession / Access to Portion B2 & B5 ession / Access to Portion B2 & B5 Site Survey / \$etting out CONS.B2.1020 Site Survey / Setting out CONS.B2.1030 Construct Temporary Haul Road Construct Temporary Haul Road Preliminary Bored Pile with Additional Instrum CONS.A1.0180 | Commence Preliminary Bored Pile at Abutmer CONS.A1.0190 Mobilise Plant & Set-up Support ■ Mobilise Plant & Set-up Support CONS.A1.0195.1 Predrilling to Preliminary Bored Pile (D11) Predrilling to Preliminary Bored Pile (D11) CONS.A1.0195.2 GI Report and Verification / Agreement to GI Report and Verification / Agreement to F unding Level CONS.A1.0200 Preliminary Bored Piling with Additional Instrumentation at Abutment A1101 (1 no. Pile Curing CONS.A1.0210 Pile Curing CONS.A1.0220 Pile Load Testing & Submit Report Pile Load Testing & Submit Repor Replacement Preliminary Bored Pile and Load CONS.A1.0195.6 GI Report and Verification / Agreement to GI Report and Verification! Agreement to Founding Level CONS.A1.0195.7 Engineer's Representative confirmed the replacement bored pile at Pier P908-P1 Engineer's Representative confirmed the replace ement bored pile at Pier P908-P1 Commence Replacement Preliminary Bored Pile at Abutment A1004 CONS.A1.0280 Commence Replacement Preliminary Bored Pile at Abutment A1004 CONS.A1.0290 Mobilise Plant & Set-up Support ■ Mobilise Plant & Set-up Support Replacement Preliminary Bored Pil CONS.A1.0300 Replacement Preliminary Bored Piling - Pier Pile Curing CONS.A1.0310 Pile Curing CONS.A1.0320 Pile Load Testing & Submit Report Pile Load Testing & Submit Preliminary Bored Pile and Load Testing at Abı CONS.C1.0400 Commence Preliminary Bored Pile at Abutmer A106 06-Oct-16 Commence Préliminary Bored Pile at Abutment A106 CONS.C1.0410 Mobilise Plant & Set-up Support Mobilise Plant & Set-up Support Predrilling to Preliminary Bored Pile (D1) CONS.C1.0415.1 Predrilling to Preliminary Bored Pile (D1) CONS.C1.0415.2 GI Report and Verification / Agreement to Founding Level GI Report and Verification / Agreement to Founding Level Preliminary Bored Piling - Abutment A106 (1 no. 2000mm dia x 52m CONS.C1.0420 Preliminary Bored Piling - Abutment A106 (1 no. 2000mm dia x 52m) Pile Curing CONS.C1.0430 Pile Curing CONS.C1.0440 Pile Load Testing and Submit Report Pile Load Testing and Submit Report **Prelimnary Driven H Piles and Load Testing** CONS.A1.4360 Test Pile approved, commence permanent driven h-pile 15-Oct-16 Test Pile approved, commence permanent driven select Preliminary Test Pile (Driven H Pile) CONS.C1.0510 Engineer select Preliminary Test Pile (Driven H e Plant & Set-up Support CONS.C1.0520 | Mobilise Plant & Set-up Support CONS.C1.0530.1 Pre-drilling (2 nos) (Sign Gantry - Preliminary Pile) Pre-drilling (2 nos) (Sign Gantry - Preliminary Pile) CONS.C1.0530.2 GI Report and Verification / Agreement to Founding Level Preliminary Driven H Pile (2 nos) CONS.C1.0540 Preliminary Driven H Pile (2 nos) Pile Load Testing and Submit Report CONS.C1.0550 Pile Load Testing and Submit Report Preliminary Pre-Bored H-Pile and Load Testing CONS.A1.0195.3 Predrilling to Preliminary Pre-Bored H-Pile - 1 Predrilling to Preliminary Pre-Bored H-Pile - 1 no ent ta Founding L CONS.A1.0195.4 GI Report and Verification / Agreement to Founding Level GI Report and Verification / Agree Engineer select Preliminary Test Pile (Pre-Bored H-Pile) CONS.A1.0230 Engineer select Preliminary Test Pile (Pre-Bored H-Pile) Mobilise Plant & Set-up Support CONS.A1.0240 | Mobilise Plant & Set-up Support Preliminary Pre-Bored H-Piling - 1 no. CONS.A1.0250 Preliminary Pre-Bored H-Piling - 1 no. ile Load Testing & Submit Report CONS.A1.0270 Pile Load Testing & Submit Report **Treatment for Bored Piling Excavated Materials** Set-up Stockpile for Excavated Marine Mud CONS.EX.1010 Set-up Stockpile for Excavated Marine Mud Pilot Test for Marine Mud Treatmen CONS.EX.1020 Pilot Test for Marine Mud Treatment CONS.EX.1030 Solidification / Stabilisation / Approval Method Solidification / Stabilisation Set-up Treatment Facilities and Storage Yard CONS.EX.1040 Set-up Treatment Facilities and Storage Yard CONS.EX.1050 Full Scale Solidification / Stabilization Treatment and Verification Testing Full Scale Solidification CONS.EX.1060 Decommissioning of Treatment Facilities Site Set Up at Portion C1 CONS.C1.1010 Site Possession / Access to Portion C1 and C2 06-Oct-16 Site Possession / Access to Portion C1 and C2 06-Oct-16 Site Possession / Access to Portion D1 and D3 CONS.C1.1020 Site Possession / Access to Portion D1 and D3 Site Set-Up CONS.C1.1030 Site Set-Up Pump House cum Switch Room CONS.C1.5110 Commence Pump House Cum Switch Room mmence Pump House Cum Switch Room (2B+ GF) (2B+ GF)

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| A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D CONS.C1.5120 Mobilisation / Survey/ Setting Out CONS.C1.5125 Cofferdam - Sheet Piling Install Dewatering Wells + Pump Test CONS.C1.5130 Install Dewatering Wells + Pump Test ELS Works to Formation level (Base CONS.C1.5140 ELS Works to Formation level (Basement 2) Blinding, Waterproofing and Base Slab CONS.C1.5150 Blinding, Waterproofing and Base Slab Construct Walls and Slab to Upper Ba CONS.C1.5160 Construct Walls and Slab to Upper Basement CONS.C1.5170 Construct Walls and Slab to Ground Level CONS.C1.5200 Construct Walls and Roof Slab Construct Walls and Roof Slab ABWF & Building Service Works to Pump Hous / Switch Room ABWF & Building Service Works to Pump House / Switch CONS.C1.5205 vement of \$tage 5 (KD6) / Interfac ♦ 03-Aug-17, Achie CONS.C1.5210 Achievement of Stage 5 (KD6) / Interface with Pump House/ Switch Rm - Allow Access to ◆ 03-Aug-17, Pump House/Switch Rm - Allow Access to Contract HY/2013/03 CONS.C1.5215 Contract HY/2013/03 CONS.C1.5225 MEP installation for Pump House/Switch Room Testing and Commissioning and Statutory Permits / Certification by FSD / BD CONS.C1.5235 Testing and Commissioning and Statutory Permits / Certification by FSD / BD ABWF Works and External Works CONS.C1.5245 ABWF Works and External Works E&M Equipment Installation CONS.C1.5255 E&M Equipment Installation **Box Culvert D - Cost Savings Design Contractors Design** AD.A1.0001 Approval in Principle for Cost Savings Design 06-Oct-16 Approval in Principle for Cost Savings Design Detailed Design / Shop Drawings and AD.A1.0100 Detailed Design / Shop Drawings and Material AD.A1.0110 Engineer's Review / Approval Engineer's Review / Approva **Preliminary Driven Pile and Load Test** AD.A1.0470.30 Predrilling (1 nos) (Box Culvert D) Predrilling (1 nos) (Box Culvert D) GI Report and Verification / Agreement to Founding Level AD.A1.0470.40 GI Report and Verification / Agreement to Engineer advise Test Pile/ Preliminary Driven Pile at Box Culvert D Engineer advise AD.A1.0510 Test Pile/ Preliminary Driven H Pile at Box ( Mobilize Plant & Set-up Support AD.A1.0520 Mobilize Plant & Set-up Support AD.A1.0530 Preliminary Driven H Pile (2 nos) Preliminary Driven H Pile (2 nos) Pile Load Testing and Submit Report AD.A1.0540 Box Culvert D - 15 Bays drilling at Portion A1 (30 nos) (Box Culvert D) AD.A1.1055.30 Predrilling at Portion A1 (30 nos) (Box Culvert ■ GI Report and Verification / Agree AD.A1.1055.40 GI Report and Verification / Agreement to Founding Level AD.A1.1095.30 Box Culvert - Base Slab, Wall & Top Slab - Part Box Culvert - Base Slab, Wall & Top Slab - Part 1 (8 bays) AD.A1.1095.40 Box Culvert - Base Slab, Wall & Top Slab - Part Box Culvert - Base Slab, Wall & Top \$lab - Part 2 (7 bays) 2 (7 bays) Access to Portion A1 (Interface with Contract 03) 06-Oct-16 Access to Portion A1 (Interface with Contract AD.A1.1110 AD.A1.1120 Box Culvert D - Driven H-Pile Works ox Culvert D - Driven H-Pile Works AD.A1.1130 Install Dewatering Wells + Pump Test + Open Cut Excavation to formation ■ Backfill / Reinstate and Conhect UU and Road Works SOL101 AD.A1.1150 Backfill / Reinstate and Connect UU and Road Works SOL101 and SOL102 AD.A1.1160 Survey / Setting Out Survey / Setting Out AD.A1.1170 Pile Testing Mobilization and AD.A1.1180 Mobilization and Plant Set Up int Set Up Pile Trimming and Pile Caps (30 nos ) Pile Trimming and Pile Caps (30 nos.) AD.A1.2250 Box Culvert D - 3 Bays and Outfall AD.B1.1180.30 Predrilling (6 nos) (Box Culvert D along Seawall redrilling (6 nos) (Box Culvert D along Seawall Are AD.B1.1180.40 GI Report and Verification / Agreement to Founding Level Pile Trimming and Construction of Pile Caps AD.B1.2235 Pile Trimming and Construction of Pile Caps AD.B1.2250 Remove Piling Platform ve Piling Platform AD.B1.2260 Install Seawall Block & Rockfill near Seawall AD.B1.2270 General Fill General Fill AD.B1.2280 ELS Works ( 2 levels of Strut) ELS Works (2 levels of \$trut) Box Culvert D - Driven H Pile with Steel Plate AD.B1.2330 AD.B1.2350 Backfill, Remove Seawall Blocks & Reinstate Backfill, Remove Seawall Blocks & Reinstate Rock Armpur AD.B1.2360 ♦ 02-Mar-18, Complete Box Culvert D - based on CSD Complete Box Culvert D - based on CSD Construct Box Culvert Outfall & Connect Drainage AD.B1.2370 Construct Box Culvert Outfall & Connect Drainage Divert/Shift Haul Road ( on top of completed box culvert) AD.B1.2380 Divert/Shift Haul Road (lon to of completed box culvert) Sheet Piling Works AD.B1.2390 Install Dewatering Wells and Carry Out Pumping Test Install Dewatering Wells and Carry Out Pumping Test AD.B1.2400 AD.B1.2410 Commence Works on Box Culvert Outfall MDN Application for Marine Plants CONS.OF.1010 Prepare Documents for Statutory Submission to Marine Department MD Vetting, Site Inspection and Approva CONS.OF.1020 MD Vetting, Site Inspection and Approval 02-Dec-16. Marine Department Issues Permit / Cd CONS.OF.1030 Marine Department Issues Permit / Consent Box Culvert C (Portion C1) **Preliminary Driven Piles and Load Testing** CONS.C1.0450 Commence Preliminary Driven H Pile at Box Culvert C 06-Oct-16 Commence Preliminary Driven HiPile at Box Culvert C Mobilise Plant & Set-up Support CONS.C1.0460 Mobilise Plant & Set-up Support CONS.C1.0470. Predrilling (4 nos) (Box Culvert C) Predrilling (# nos) (Box Culvert C)

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CONS.C1.0470. GI Report and Verification / Agreement to Founding Level CONS.C1.0480 Preliminary Driven H Pile (4 nos) Preliminary Driven H Pile (4 nos) CONS.C1.0500 Pile Load Testing and Submit Report Pile Load Testing and Submit Report Box Culvert C - Bay 4-8 CONS.C1.1040 Commence Box Culvert C at Portion C1 05-Nov-Commence Box Culvert C at Portion C1 CONS.C1.1045 Survey / Setting Out Survey / Setting Out CONS.C1.1055. Predrilling (56 nos) (Box Culvert C) Predrilling (56 nos) (Box Culvert C) CONS.C1.1055. GI Report and Verification / Agreement to GIReport and Verification / Agreement to Founding Level CONS.C1.1060 Driven H Piling Works (56 nos x 6 days per Pile Driven H Piling Works (56 nos x 6 days per Pile / 3 rigs) CONS.C1.1070 Excavate and Install Dewatering Wells+ Pump Excavate and Install Dewatering Wells+ Pump Test Test CONS.C1.1090 Pile Trimming and Construction of Pile Caps Pile Trimming and Construction of Pile Caps CONS.C1.1100 Construct Box Culvert & Drainage Connection Construct Box Culvert & Drainage (5 bays) Backfill CONS.C1.1110 Backfill Box Culvert C - Bay 1-3 and Outfall CONS.C1.1120 Divert / Shift Haul Road to North Divert / Shift Haul Road to North Remove Rock Armour CONS.C1.1150 Remove Rock Armour CONS.C1.1160 Construct Piling Plaform Construct Piling Plaform CONS.C1.1170. Predrilling (36 nos) (Box culvert area in C1, Predrilling (36 nos) (Box culvert area in C1, along the GI Report and Verification / Agreement to Founding Leve CONS.C1.1170. GI Report and Verification / Agreement to Piling Driving Works - Driven H-Pile (36 nos) CONS.C1.1180 Piling Driving Works - Driven H-Pile (36 nos) 27-Feb-17. ♦ Commence Box Culvert C Outfall CONS.C1.8480 Commence Box Culvert C Outfall Divert /Shift Haul Road to North CONS.C1.8485 Divert /Shift Haul Road to North (on top of completed box culvert) CONS.C1.8490 Remove Piling Platform Remove Piling Platform CONS.C1.8500 Seawall Block Installation near Seawall Seawall Block Installation CONS.C1.8510 General Fill General Fill Sheet Piling CONS.C1.8530 Sheet Piling CONS.C1.8540 Dewatering Wells + Pump Test Dewatering Wells + Pump Test CONS.C1.8550 ELS Works (2 layers of Strut) ELS Works (2 layers of Strut) CONS.C1.8560 Pile Trimming and Construction of Pile Caps (9 Pile Trimming and Construction of Pile Caps (9:Pile CONS.C1.8570 Construct Box Culvert + Outfall & Drainage Connection (38m or 3 bays) Construct Box Culvert + Outfall & Drainage Connection (38m or 3 bays) CONS.C1.8580 Backfill & Remove Sea Wall Blocks and Backfill & Remove Sea Wall Blocks and Reinstate Rock Armour CONS.C1.8590 | Complete Box Culvert C ◆ 28-Feb-18, Complete Box Cully **Bridge Works** Bridge D1 in Portion C1, D1 and D3 (Interface CONS.C1.1130 Access to Portion C1, D1 & D3 06-Oct-16 Access to Portion C1, D1 & D3 CONS.C1.1140 Survey / Setting Out Survey / Setting Out Pier Columns (P508) CONS.C1.2100 Pier Columns (P508) CONS.C1.2200 Pier Head (P508) Pier Head (P508) CONS.C1.2200.1 Predrilling (17 nos) (D1) CONS.C1.2200.2 GI Report and Verification / Agreement to GI Report and /erification / Agreement to Founding Level Founding Level CONS.C1.2210 D1 Bored Piling (18 nos. 1800-2000mm dia x 52m) ( 2 nos + 0.8m Rock Socket ) D1 Bared Piling (18 nos, 1800-2000m Pile Testing CONS.C1.2215 Pile Testing Pile Trimming CONS.C1.2220 Pile Trimming CONS.C1.2225.3 Bearing Installation, Final Inspection and ♦ 17-May-17, Achievement of KD4 (465) CONS.C1.2226 Achievement of KD4 (465) CONS.C1.2230 Construct Abutment A106 Construct Aboutm CONS.C1.2250 Bridge D1 - Erect Precast Segments + Bridge D1 Erect Precast Segments + Stitching + Stressing (6 spans) Stitching + Stressing (6 spans) D1 Bridge Ancillary Parapet/TCS\$, Railing, MJ, Drainage & Bridge Lighting CONS.C1.2260 D1 Bridge Ancillary - Parapet/TCSS, Railing, MJ, Drainage & Bridge Lighting CONS.C1.2265 D1 Bridge Ancillary - Parapet + Railing, MJ, Drainage, Bridge Lighting, Signages D1 Bridge Aricillary - Parapet + Railing, MJ, Drainage, Bridge Lighting, Signa D1 Final Asphalt Paving + Road Mark CONS.C1.2270 D1 Final Asphalt Paving + Road Markings ♦ 02-Jan-18, Completion of Bridge D1 CONS.C1.2280 Completion of Bridge D1 Pier Columns (P101) CONS.C1.2299 Pier Columns (P101) Pier Columns (P102) CONS.C1.8850 Pier Columns (P102) CONS.C1.8860 Pier Columns (P103) Pier Columns (P103) Pier Columns (P104) CONS.C1.8870 Pier Columns (P104) Pier Columns (P105) CONS.C1.8880 Pier Columns (P105) CONS.C1.8950 Pile Cap (P103) Pile Cap (P103) Pile Cap (P104) CONS.C1.8960 Pile Cap (P104) CONS.C1.8970 Pile Cap (P105) Pile Cap (P105) Pile Cap (P101) CONS.C1.8980 Pile Cap (P101) Pile Cap (A106) CONS.C1.8990 Pile Cap (A106) CONS.C1.9000 Pile Cap (P508) Pile Cap (P508) CONS.C1.9010 Pile Cap (P102) Ple Cap (P102) CONS.C1.9020 Pier Head & Bearing (P101) Pier Head & Bearing (P101) Pier Head & Bearing (P102) CONS.C1.9030 Pier Head & Bearing (P102) Pier Head & Bearing (P103) CONS.C1.9040 Pier Head & Bearing (P103)

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1 A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J CONS.C1.9050 Pier Head & Bearing (P104) Pier Head & Bearing (P105) CONS.C1.9060 Pier Head & Bearing (P105) RW1 (51m / 4 bays) CONS.C2.3140 Commence RW1 Retaining Wall Survey / Setting Out CONS.C2.3150 Survey / Setting Out CONS.C2.3160 Excavate to formation level (open cut / slope) Excavate to formation level (ppen cut / slope) Cast Base & Wall Stem 4 bays (ribbed finish to 1m CONS.C2.3170 Cast Base & Wall Stem 4 bays (ribbed finish to 1m below F.G.L) Backfill to final ground level and Reinstate Roa CONS.C2.3180 Backfill to final ground level and Reinstate CONS.C2.3250 Install Railing for RW1 and RW1a Install Railing for RW1 and RW1a RW1a (176m / 11 bays) CONS.C2.3200 Commence RW1a Retaining Wall Commence RW1a Retaining Wal CONS.C2.3210 Survey / Setting Out ■ Survey / Setting Out Excavate to formation level (open cut / slope) - Bay 4 to Bay 11 CONS.C2.3220 Excavate to formation level (open cut / slope) Bay 4 to Bay 11 CONS.C2.3230 Cast Base & Wall Stem (ribbed finish to 1m below F.G.L) - Bay 4 to Bay 11 Cast Base & Wall Stem (ribbled finish to 1m below F.G.L) - Bay 4 to Bay 11 CONS.C2.3240 Backfill to final ground level and Reinstate Backfill to final ground level and Reinstate Roads - Bay 4 to Bay 1 Roads - Bay 4 to Bay 11 Excavate to formation level (open cut / slope) - Bay 1 to Bay : CONS.C2.3370 Excavate to formation level (open cut / slope) Bay 1 to Bay 3 CONS.C2.3380 Cast Base & Wall Stem (ribbed finish to 1m below F.G.L) - Bay 1 to Bay 3 Cast Base & Wall Stem (ribbed finish to 1m below F.G.L) - Bay 1 to Bay 3 CONS.C2.3390 Backfill to final ground level and Reinstate Roads - Bay 1 to Bay 3 Bridge D8 CONS.C1.2285 Site Possession / Access to Portion C1 CONS.C1.2288 Survey / Setting Out Survey / Setting Out CONS.C1.2290.1 Predrilling (10 nos) (D8) Predrilling (10 nos) (D8) CONS.C1.2290.2 GI Report and Verification / Agreement to GI Report and Verification / Agreement to Founding Leve Founding Level D8 Bored Piling (10 nos.2000mm dia x.52m) CONS.C1.2300 D8 Bored Piling (10 nos.2000mm dia x 52m) CONS.C1.2305 Pile Testing Pile Testing Pile Trimming CONS.C1.2310 Pile Trimming Construct Abutment A801 CONS.C1.2320 Construct Abutment A801 CONS.C1.2322 Pier Columns (P805) Pier Columns (P805) Bridge D8:- Erect Precast Segments + Stitching + Stressing (4 CONS.C1.2340 Bridge D8 - Erect Precast Segments + CONS.C1.2350 D8 Bridge Ancillary - Parapet/TCSS, Railing, MJ Drainage & Bridge Lighting D8 Bridge Ancillary - Parapet/TCSS, Railing, MJ, Drainage & Bridge Lighting D8 Bridge Ancillary - Parapet + Railing, Mi, Drainage, Bridge Lighting, Signages CONS.C1.2355 D8 Bridge Ancillary - Parapet + Railing, MJ, Drainage, Bridge Lighting, Signages ■ D8 Final Asphalt Paving + Road Markings CONS.C1.2360 D8 Final Asphalt Paving + Road Markings O2-Nov-17, Completion of Bridge D8 CONS.C1.2370 Completion of Bridge D8 CONS.C1.8820 Pier Columns (P804) CONS.C1.8830 Pier Columns (P803) Pier Columns (P803) CONS.C1.8900 Pile Cap (A801) Pile Cap (A801) Pile Cap (P805) CONS.C1.8910 Pile Cap (P805) CONS.C1.8920 Pile Cap (P804) Pile Cap (P804) CONS.C1.8930 Pile Cap (P802) CONS.C1.9070 Pier Head & Bearing (P805) Pier Head & Bearing (P805) CONS.C1.9080 Pier Head & Bearing (P804) Pier Head & Bearing (P804) Pier Head & Bearing (P803) CONS.C1.9090 Pier Head & Bearing (P803) Pier Columns (P802) CONS.C2.3420 Pier Columns (P802) CONS.C2.3460 Pile Cap (P803) Pier Head & Bearing (P802) CONS.C2.3490 Pier Head & Bearing (P802) RW8 (35m / 3 bays) 08-Aug-17 ♦ Commence RW8 Retaining Wall CONS.C2.3320 Commence RW8 Retaining Wall ■ Survey / Setting Out CONS.C2.3330 Survey / Setting Out CONS.C2.3340 Excavate to formation level (open cut / slope) Excavate to formation level (open cut / slope) CONS.C2.3350 Cast Base & Wall Stem 3 bays (ribbed finish to 1m below F.G.L) Backfill to final ground level & Reinstate Road CONS.C2.3360 Backfill to final ground level & Reinstate Road Bridge D9a in Portion A1 & A5 06-Oct-16 Site Possession / Access to Portion A1 & A5 (61 days) CONS.A5.2010 Site Possession / Access to Portion A1 & A5 (61 days) CONS.A5.2015 Suvey / Setting out Suvey / Setting out Predrilling - Portion A1 & A5 (12 nos) (09a) CONS.A5.2020.1 Predrilling - Portion A1 & A5 (12 nos) (D9a) ■ GI Report and Verification / Agreem CONS.A5.2020.2 GI Report and Verification / Agreement to to Founding Level Founding Level CONS.A5.2030 D9a Bored Piling (12 nos.1800-2200mm dia x 47m) Pilling (12 nos 1800-2200mm dia x 47m) D9a Bor CONS.A5.2035 Pile Testing CONS.A5.2040 Pile Trimming Bridge D9a - Erect Pr CONS.A5.2065 Bridge D9a - Erect Precast Segments + Stitching + Stressing (4 spans) D9a Bridge Ancillary - Parapet/TCSS, Railing, MJ, Drainage, Bridge Lighting, & Sign Gantry CONS.A5.2070 D9a Bridge Ancillary - Parapet/TCSS, Railing, MJ, Drainage, Bridge Lighting, & Sign Gantry CONS.A5.2080 D9a Bridge Ancillary - Parapet + Railing, MJ, Drainage, Bridge Lighting, Signages D9a Bridge Ancillary - Parapet + Railing, MJ, Drainage, Bridge Lighting, Signages CONS.A5.2090 Pier Columns (P905 & P907) Pier Columns (P905 & P907) Pier Columns (P904 & P906) CONS.A5.2110 Pier Columns (P904 & P906) CONS.A5.2140 Pile Caps (P904) Pile Caps (P904) Pile Caps (P905) CONS.A5.2150 Pile Caps (P905)

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| A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D CONS.A5.2160 Pier Head & Bearing (P905 & P907) Pier Head & Bearing (P904 & P906) CONS.A5.2180 Pier Head & Bearing (P904 & P906) Bridge D9a in Portion C1 & C2 cess to Portion C1 & C2 (184 days) CONS.C2.3010 Site Possession / Access to Portion C1 & C2 (184 days) CONS.C2.3015 Survey / Setting Out Survey / Setting Out CONS.C2.3020. Predrilling - Portion C1 & C2 (8 nos) (D9a) Predrilling + Portion C1 & C2 (8 nos) (D CONS.C2.3020. GI Report and Verification / Agreement to GI Report and Verification / Agree Founding Level D9a in Portion C1 & C2 Bored Piling (8 nos.1800-2200mm dia x 47m) CONS.C2.3030 D9a in Portion C1 & C2 Bored Piling (8 nos.1800-2200mm dia x 47m) CONS.C2.3035 Pile Testing CONS.C2.3040 Pile Trimming CONS.C2.3070 Construct Abutment A901 Construct Abutment A901 CONS.C2.3080 Bridge D9a (C1 & C2) - Erect Precast Bridge D9a (C1 & C2) - Erect P D9a (C1 & C2) Bridge Ancillary - Parapet/TCSS, Railing, MJ, Drainage, Bridge Lighting, & Sign Gantry CONS.C2.3085 D9a (C1 & C2) Bridge Ancillary - Parapet/TCSS Railing, MJ, Drainage, Bridge Lighting, & Sign CONS.C2.3095 Completion of Works in Section VI (KD13) ♦ 14-Jun-17, Completion of Works in Section VI (KD13) CONS.C2.3100 Bridge D9a (C1 & C2) - Erect Precast Bridge D9a (C1 & C2) - Erect Precast Segments + Stitching Segments + Stitching + Stressing (1 span) iD9a Bridge Ancillary | Parapiet/TCSS, Railing, MJ, Drainage, Bridge Lighting, & Sign Gantry CONS.C2.3110 D9a Bridge Ancillary - Parapet/TCSS, Railing, MJ, Drainage, Bridge Lighting, & Sign Gantry CONS.C2.3115 D9a Bridge Ancillary - Parapet + Railing, MJ, Drainage, Bridge Lighting, Signages D9a Bridge Ancillary - Parapet + Railing, MJ, Drainage, Bridge Lighting, Signage CONS.C2.3120 D9a Final Asphalt Paving + Road Markings ■ D9a Final Asphalt Paving + Road Markings ♦ 28-Jul-17, Completion of Bridge D9a CONS.C2.3130 Completion of Bridge D9a CONS.C2.3400 Pier Columns (P902) Pier Columns (P902) Pier Calumns (P903) CONS.C2.3410 Pier Columns (P903) CONS.C2.3440 Pile Caps (P902) Pile Caps (P902) CONS.C2.3450 Pile Caps (P903) Pile Caps (P903) CONS.C2.3470 Pier Head & Bearing (P902) Pier Head & Bearing (P902) CONS.C2.3480 Pier Head & Bearing (P903) Pier Head & Bearing (P903) CONS.C2.3560 Pile Caps (A901) Pile Caps (A901) Bridge D9b CONS.A1.1105 Access to Portion A1 ccess to Portion A CONS.A1.1108 Survey / Setting Out Survey / Setting Out CONS.A1.1110.1 Predrilling (8 nos incl. 4 nos for P910) (D9b) drilling (8 nos incl. 4 nos for P910 CONS.A1.1110.2 GI Report and Verification / Agreement to GI Report and Verification / Agreement to Founding Leve Founding Level D9b Bored Piling (8 nos. 2000mm dia x 49m) including 4 for P910 CONS.A1.1120 D9b Bored Piling (8 nos. 2000mm dia x 49m) including 4 for P910 CONS.A1.1125 Pile Testing CONS.A1.1130 Pile Trimming CONS.A1.1160 Bridge D9b - Erect Precast Segments + Stitching + Stressing (3 spans) Bridge D9b - Erect Precast Segments + Stitching + \$tressing (3 spans) CONS.A1.1170 D9b Bridge Ancillary - Parapet/TCSS, Railing, MJ, Drainage & Bridge Lighting D9b Bridge Ancillary - Parapet/TC\$S, Railing, MJ Drainage & Bridge Lighting D9b Bridge Ancillary - Parapet + Railing, MJ, Drainage, Bridge Lighting, Signage CONS.A1.1175 D9b Bridge Ancillary - Parapet + Railing, MJ, Drainage, Bridge Lighting, Signages CONS.A1.1180 D9b Final Asphalt Paving + Road Markings Þ9b Final Asphalt Paying + Road Markings ♦ 11-Aug-17, Bridge D9b complete CONS.A1.1190 Bridge D9b complete CONS.A1.8750 Pier Columns (P908) Pier Columns (P908) CONS.A1.8760 Pier Columns (P909) Pier Columns (P909) Pler Columns (P910) - A (Portal) CONS.A1.8770 Pier Columns (P910) - A (Portal) Per Columns (P910) B (Portal) CONS.A1.8780 Pier Columns (P910) - B (Portal) CONS.A1.9230 Pile Caps (P908) CONS.A1.9240 Pile Caps (P909) Pilė Caps (P909) CONS.A1.9250 Pile Caps (P910 - A) Pile Cap (P910 - A) CONS.A1.9260 Pile Caps (P910 - B) CONS.A1.9270 Pier Head & Bearing (P908) Pier Head & Bearing (P908) CONS.A1.9280 Pier Head & Bearing (P909) Pier Head & Bearing (P909) Bridge D9c CONS.A1.1192 Site Possession / Access to Portion A1 & A2 06-Oct-16 Site Possession / Access to Portion A1 & A2 CONS.A1.1194 Survey / Setting Out Survey / Setting Out CONS.A1.1200.1 Predrilling (8 nos) (D9c) Predrilling (8 nos) (D9c) CONS.A1.1200.2 GI Report and Verification / Agreement to Founding Level CONS.A1.1210 D9c Bored Piling (8 nos. 2000mm dia x 62m) CONS.A1.1215 Pile Testing CONS.A1.1220 Pile Trimming Construct Deck (Cast in Situ) (1 span, P910 to P911) CONS.A1.1240 Bridge D9c - Construct Deck (Cast in Situ) (1 Bridge D9c span, P910 to P911) CONS.A1.1250 Bridge D9c - Erect Precast Segments Pier P911 to Pier P913 + Stitching + Stressing (2 spans) Bridge D9¢ - Erect Precast Segments Pier P911 to Pier P913 + Stitching D9c Bridge Ancillary - Parapet/TCSS, Railing, MJ, Drainage & Bridge Lighting CONS.A1.1260 D9c Bridge Ancillary - Parapet/TCSS, Railing, MJ, Drainage & Bridge Lighting CONS.A1.1270 D9c Bridge Ancillary - Parapet + Railing, MJ, 💻 ;D9¢ Bridgė Aricillary į Parapet + Railing, MJ, Drainage, Bridge Lighting; Sigr Drainage, Bridge Lighting, Signages CONS.A1.8790 Pier Columns (P913) Pier Columns (P913) CONS.A1.8800 Pier Columns (P912) Pier Columns (P912) CONS.A1.8810 Pier Columns (P911) Pier Columns (P911) CONS.A1.9190 Pile Cap (P913) CONS.A1.9200 Pile Cap (P912) ap (P912)

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Erect Precast Segments + Bridge D10 - Erect Precast Segments + Stitching + Stressing (8 spans Stitching + Stressing (8 spans) CONS.A1.1350 D10 Bridge Ancillary - Parapet/TCSS, Railing, D10 Bridge Ancillary - Parapet/TCSS, Ralling, MJ, Drainage, Bridge Lighting, & Sign Gantry MJ, Drainage, Bridge Lighting, & Sign Gantry CONS.A1.1355 D10 Bridge Ancillary - Parapet + Railing, MJ, Drainage, Bridge Lighting, Signages D10 Bridge Ancillary - Parapet + Railing, MJ, Drainage, Bridge Lighting, \$ignage D10 Final Asphalt Paving + Road Markings CONS.A1.1360 D10 Final Asphalt Paving + Road Markings ◆ 18-Oct-17, Bridge D10 complete CONS.A1.1370 Bridge D10 complete Pier Columns (P1003) CONS.A1.8830 Pier Columns (P1003) Pier Columns (P1002 & P1006) CONS.A1.8840 Pier Columns (P1002 & P1006) CONS.A1.8850 Pier Columns (P1008) Pier Columns (P1008) Pier Columns (P1001 & P1 CONS.A1.8860 Pier Columns (P1001 & P1005) Pier Columns (P1007) CONS.A1.8870 Pier Columns (P1007) CONS.A1.9110 Pile Caps (P1008) Pile Caps (P1008) Pile Caps (P1003) CONS.A1.9120 Pile Caps (P1003) CONS.A1.9130 Pile Caps (P1007) Pilė Caps (P1007) le Caps (P1002) CONS.A1.9140 Pile Caps (P1002) Pile Caps (P1001) CONS.A1.9160 Pile Caps (P1001) CONS.A1.9350 Pier Head & Bearing (P1003) Fier Head & Bearing (P1003) Pier Head & Bearing (P1007) CONS.A1.9360 Pier Head & Bearing (P1007) Pier Head & Bearing (P1008) CONS.A1.9370 Pier Head & Bearing (P1008) CONS.A1.9380 Pier Head & Bearing (P1002 & P1006) Pier Head & Bearing (P1002 & P1006) ■ Pier Head & Bearing (P1001 & 1005) CONS.A1.9400 Pier Head & Bearing (P1001 & 1005) Bridge D11 CONS.A1.1375 Site Possession / Access to Portion A1 (61d) Survey / Setting Out CONS.A1.1378 Survey / Setting Out CONS.A1.1380.1 Predrilling (3 nos) (D11) Predrilling (3 nos) (D11) GI Report and Verification / Agreem CONS.A1.1380.2 GI Report and Verification / Agreement to nt to Founding Level D11 Bored Piling (3 nos. 2000mm dia x 65) (52m for abutment CONS.A1.1390 D11 Bored Piling (3 nos. 2000mm dia x 65) (52m for abutment) CONS.A1.1395 Pile Testing Pile Te CONS.A1.1400 Pile Trimming CONS.A1.1405 Abutment A1101 nt A1101 CONS.A1.1430 Bridge D11 - Erect Precast Segments + Bridge D11 - Erect Precast Segments + Stitching + Stressing (2 spans) CONS.A1.1440 D11 Bridge Ancillary - Parapet/TCSS, Railing, MJ, Drainage, Bridge Lighting, & Sign Gantry D11 Bridge Ancillary - Parapet/TCSS, Railing, MJ, Drainage, Bridge Lighting, & Sign Gantry CONS.A1.1445 D11 Bridge Ancillary - Parapet + Railing, MJ, Drainage, Bridge Lighting, Signages D11 Bridge Ancillary - Parapet + Railing, MJ, Drainage, Bridge Lighting, Signages Road Markings D11 Final Asphalt Paving CONS.A1.1450 D11 Final Asphalt Paving + Road Markings CONS.A1.1460 Bridge D11 complete CONS.A1.8900 Pier Columns (P1102) Pler Columns (P1102) Pile Caps (P1102) CONS.A1.9070 Pile Caps (P1102) CONS.A1.9080 Pile Caps (A1101) Pile Caps (A1101) CONS.A1.9420 Pier Head & Bearing (P1102) Pier Head & Bearing (P1102) RW11 (42m / 3 bays) CONS.A1.3320 Commence RW11 Retaining Wall (42m / 3 bays) 13-May-17 ♦ Commence RW11 Retaining Wall (42m / 3 bays) Survey / Setting Out CONS.A1.3330 Survey / Setting Out CONS.A1.3340 Excavate to formation level (open cut / slope) Excavate to formation level (open cut / slope) CONS.A1.3350 Cast Base & Wall Stem 3 bays (ribbed finish to 1m below F.G.L) Cast Base & Wall Stem 3 bays (ribbed finish to 1m below Backfill to final ground level CONS.A1.3360 Backfill to final ground level

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Bridge D12a CONS.B1.1835 Site Possession / Access to Portion B1 Site Survey and Setting Out CONS.B1.1837 Site Survey and Setting Out CONS.B1.1840.1 Predrilling (17 nos) (D12a) Predrilling (17 nos) (D12a) GI Report and Verification / Agreement to Founding Leve CONS.B1.1840.2 GI Report and Verification / Agreement to Founding Level CONS.B1.1850 D12a Bored Piling (17 nos. 2000mm dia x 60m + 1.0m Rock Socket) D12a Bored Piling (17 nos, 2000mm dia x 60m + 1,0m Rock \$ocket) CONS.B1.1855 Pile Testing Pile Trimming CONS.B1.1860 Pile Trimming CONS.B1.1890 Bridge D12a - Erect Precast Segments + Stitching + Stressing (6 spans) Bridge D12a - Erect Precast Segr nents + Stitching + Stressing (6 spans) D12a Bridge Ancillary - Parapet/TCSS, Railing, M.), Drainage, Bridge Lighting, & Sig CONS.B1.1900 D12a Bridge Ancillary - Parapet/TCSS, Railing, MJ, Drainage, Bridge Lighting, & Sign Gantry CONS.B1.1905 D12a Bridge Ancillary - Parapet + Railing, MJ, Drainage, Bridge Lighting, Signages - Parapet + Railing, MJ, Drainage, Bridge Lighting, Signages D12a Bridge Ancillary CONS.B1.1910 D12a Final Asphalt Paving + Road Markings aving + Road Markings O4-Jul-18, Bridge D12a complete CONS.B1.1920 Bridge D12a complete Pier Columns (P1201 & P1204) CONS.B1.2020 Pier Columns (P1201 & P1204) CONS.B1.2040 Pier Columns (P1202 & P1205) Pier Columns (P1202 & P1205) Pier Columns (P1203 & P1414) CONS.B1.2050 Pier Columns (P1203 & P1414) CONS.B1.2070 Pier Columns (P1206) Pier Columns (P1206) Pile Caps (P1206) CONS.B1.2440 Pile Caps (P1206) CONS.B1.2450 Pile Caps (P1201) Pile: Caps (P1201): CONS.B1.2460 Pile Caps (P1202) Pile Caps (P1202) CONS.B1.2470 Pile Caps (P1203) Pile Caps (P1203) CONS.B1.2480 Pier Head & Bearing (P1201 & P1204) Pier Head & Bearing (P1201 & P1204) Pier Head & Bearing (P1202 & P1205) CONS.B1.2500 Pier Head & Bearing (P1202 & P1205) CONS.B1.2520 Pier Head & Bearing (P1203 & P1414) Pier Head & Bearing (P1203 & P1414) Pier Head & Bearing (P1206) CONS.B1.2530 Pier Head & Bearing (P1206) Bridge D12b CONS.B2.2015 Site Possession / Access to Portion B2 & B5 06-Oct-16 Site Possession / Access to Portion B2 & B5 CONS.B2.2018 Site Survey / Setting out Site Survey / Setting ou Predrilling (18 nds) (D12b) CONS.B2.2020.1 Predrilling (18 nos) (D12b) CONS.B2.2020.2 GI Report and Verification / Agreement to Founding Level GI Report and Verification / Agree D12b Bored Piling (18 nos. 2000mm da x 64m + 3.3m Rock Socket) CONS.B2.2030 D12b Bored Piling (18 nos. 2000mm dia x 64m 3.3m Rock Socket) CONS.B2.2035 Pile Testing Pile Testing Pile Trimming CONS.B2.2040 Pile Trimming D12b - Erect Precast Segments + Stitching + Stressing (4 spans) CONS.B2.2070 Bridge D12b - Erect Precast Segments + Stitching + Stressing (4 spans) ■ D12b Bridge Ancillary - Farapet/TCSS, Ralling, MJ, Drainage, Bridge Lighting, & Sign Gantry CONS.B2.2080 D12b Bridge Ancillary - Parapet/TCSS, Railing, MJ, Drainage, Bridge Lighting, & Sign Gantry CONS.B2.2085 D12b Bridge Ancillary - Parapet + Railing, MJ, Drainage, Bridge Lighting, Signages D12b Bridge Ancillary - Parapet + Railing MJ, Drainage Bridge Lighting, \$ignage Final Paving, Road CONS.B2.2090 Final Paving, Road Markings and Signages Markings and \$ignages CONS.B2.2100 Pier Columns (P1211) Pier Columns (P1211) CONS.B2.2110 Pier Columns (P1212) Pier Columns (P1214) CONS.B2.2120 Pier Columns (P1214) CONS.B2.2130 Pier Columns (P1213) - A (Portal) Pier Columns (P1213) - A (Porta Pier Columns (P1210) CONS.B2.2140 Pier Columns (P1210) CONS.B2.2150 Pier Columns (P1213) - B (Portal) Pier Columns (P1213) - B (Porta Pier Columns (P1208) CONS.B2.2160 Pier Columns (P1208) Pier Columns (P1209) CONS.B2.2170 Pier Columns (P1209) CONS.B2.2190 Pile Caps (P1211) Pile Caps (P1211) Pile Caps (P1212) CONS.B2.2200 Pile Caps (P1212) Pile Caps (P1213 - A) CONS.B2.2210 Pile Caps (P1213 - A) CONS.B2.2220 Pile Caps (P1213 - B) Pile Caps (P1213 - B) Pile Caps (P1214) CONS.B2.2230 Pile Caps (P1214) CONS.B2.2240 Pile Caps (P1207) Pile Caps (P1207) CONS.B2.2250 Pile Caps (P1208) Pile Caps (P1208) Pile Caps (P1209) CONS.B2.2260 Pile Caps (P1209) CONS.B2.2270 Pile Caps (P1210) Pile Caps (P1210) Pier Columns (P1207) CONS.B2.2280 Pier Columns (P1207) CONS.B2.2290 Pier Head & Bearing (P1211) Pier Head & Bearing (P1211) CONS.B2.2300 Pier Head & Bearing (P1214) Pier Head & Bearing (P1214) ■ Pier Head & Bearing (P1212) CONS.B2.2320 Pier Head & Bearing (P1212) CONS.B2.2340 Pier Head & Bearing (P1207) Pier Head & Bearing (P1207) Pier Head & Bearing (F CONS.B2.2350 Pier Head & Bearing (P1210) CONS.B2.2360 Pier Head & Bearing (P1208) Pier Head & Bearing (P1208) CONS.B2.2370 Pier Head & Bearing (P1209) Pier Head & Bearing (P1209 CONS.B2.2380 Bridge D12b - Erect Precast Segments + Stitching + Stressing (4 spans) Bridge D12b - Frect Preca Bridge D12b (cast in-situ) in Portion B3 (Inter CONS.B3.2110 Site Possession/Access to Portion B3 CONS.B3.2120 Survey / Setting Out Survey / Setting Out

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CONS.B3.2130 Bridge D12b (Portion B3) - Construct Deck (cast-in-situ) Pier P1210/P1214 interface with CONS.B3.2140 D12b Bridge Ancillary - Parapet/TCSS, Railing, TCSS, Railing, NJ, Drainage, Bridge Lighting, & Sign Gantry MJ, Drainage, Bridge Lighting, & Sign Gantry D 2b Bridge Ancillary - Parapet + Railing, MJ, Drainage, Bridge Lighting, Signages CONS.B3.2145 D12b Bridge Ancillary - Parapet + Railing, MJ, Drainage, Bridge Lighting, Signages CONS.B3.2150 D12b Final Paving, Road Markings and Signages 10-Apr-18, Completion of Section IV (KD11) Works within Portion \$3 including Bridge D12b CONS.B3.2160 | Completion of Section IV (KD11) Works within Portion B3 including Bridge D12b Bridge D13 in Portion B1 and Portion C1 CONS.B1.1925 Site Possession / Access to Portion B1 CONS.B1.1926 Site Possession / Access to Portion C1 06-Oct-16 Site Possession / Access to Portion C CONS.B1.1928 Site Survey / Setting out Portion B1 Site Survey / Setting out Portion B1 CONS.B1.1929 Site Survey / Setting out Portion C1 Site Survey / \$etting out Portion C1 CONS.B1.1930.1 Predrilling (15 nos) in Portion B1 (D13) Predrilling (15 nos) in Portion B1 (D13) GI Report and Verifica CONS.B1.1930.2 GI Report and Verification / Agreement to Founding Level - B1 Predrilling (6 nos) in Portion C1 (D13) CONS.B1.1932.1 Predrilling (6 nos) in Portion C1 (D13) CONS.B1.1932.2 GI Report and Verification / Agreement to Founding Level - C1 ■ GI:Report and Verification / Agreen nt to Founding D13 Bored Piling (15 nos 1800-2000mm dia x 52m) 4nos + 0.8m Rock Socket CONS.B1.1940 D13 Bored Piling (15 nos. 1800-2000mm dia x 52m) 4nos + 0.8m Rock Socket - Portion B1 Pile Testing B1 CONS.B1.1942 Pile Testing B1 CONS.B1.1946 D13 Bored Piling (6 nos. 1800-2000mm dia x 47m-52m) - Portion C1 D13 Bored Plling (6 nos. 1800-2000mm dia x 47m CONS.B1.1948 Pile Testing C1 CONS.B1.1950 Pile Trimming - Portion B1 Pile Trimming - Portion B1 Pile Trimming - Portion C1 CONS.B1.1952 Pile Trimming - Portion C1 CONS.B1.1960 Construct Abutment A1301 + A1307 - Portion Construct Abutment A1301 + A1307 - Portion C1 CONS.B1.1980 Bridge D13 - Erect Precast Segments + Stitching + Stressing (9 spans) g + Stressing (9 span Bridge D13 - Erect Precast Segments + Stitcl CONS.B1.1990 D13 Bridge Ancillary - Parapet/TCSS, Railing, D13 Bridge Ancillary - Parapet/TCSS, Railing, NU, Drainage, Bridge Lighting, & Sign Gantry MJ, Drainage, Bridge Lighting, & Sign Gantry D13; Bridge, Ancillary - Parapet + Railing, MJ, Drainage, Bridge Lighting, Signages CONS.B1.1995 D13 Bridge Ancillary - Parapet + Railing, MJ, Drainage, Bridge Lighting, Signages D13 Final Asphalt Paving, Road Markings & \$ignages CONS.B1.2000 D13 Final Asphalt Paving, Road Markings & Signages 24-Feb-18, Completion of Bridge D13 CONS.B1.2010 Completion of Bridge D13 CONS.B1.2190 Pier Columns (P1303) Pler Columns (P1303) Pier Columns (P1308) CONS.B1.2200 Pier Columns (P1308) CONS.B1.2210 Pier Columns (P1311 & P1306) Pier Calumns (P1311; & P1306) CONS.B1.2220 Pier Columns (P1310 & P1305) Pier Columns (P1310 & P130) Pier Columns (P1309 & P1304) CONS.B1.2230 Pier Columns (P1309 & P1304) CONS.B1.2330 Pile Caps (P1311) Pile Caps (P1311) CONS.B1.2340 Pier Columns (P1302) Pier Columns (P1302) Pile Caps (P1310) CONS.B1.2350 Pile Caps (P1310) CONS.B1.2360 Pile Caps (P1309) Pile Caps (P1309) CONS.B1.2370 Pile Caps (A1307) Pile Caps (A1307) Pile Caps (A1301) CONS.B1.2380 Pile Caps (A1301) CONS.B1.2390 Pile Caps (P1308) Pile Caps (P1308) CONS.B1.2400 Pile Caps (P1303) Pile Caps (P1303) Pile Caps (P1302) CONS.B1.2410 Pile Caps (P1302) CONS.B1.2560 Pier Head & Bearing (P1311 & P1306) ■ Pier Head & Bearing (P1311 & P1306) Pier Head & Bearing (P1310 & P1305) CONS.B1.2580 Pier Head & Bearing (P1310 & P1305) CONS.B1.2600 Pier Head & Bearing (P1309 & P1304) Pier Head & Bearing (P1309 & P1304) Pier Head & Bearing (P130 CONS.B1.2610 Pier Head & Bearing (P1303) Pier Head & Bearing (P1308) CONS.B1.2620 Pier Head & Bearing (P1308) CONS.B1.2630 Pier Head & Bearing (P1302) Pier Head & Bearing (P1302) RW13 (40m / 3 bays) nence RW13 Retaining Wall CONS.C2.3260 Commence RW13 Retaining Wall 11-Oct-17 🔷 Comn CONS.C2.3270 Survey / Setting Out I Survey / Setting Out CONS.C2.3280 Excavate to formation level (open cut / slope) CONS.C2.3290 Cast Base & Wall Stem 3 bays (ribbed finish to 1m below F.G.L) Cast Base & Wall Stem 3 bays (ribbed finish to 1m below F.G.L) CONS.C2.3300 Backfill to final ground level and Reinstate Backfill to final ground level and Reinstate Bridge D14a CONS.A1.1464 Commence Bridge D14a / Portion A1 06-Oct-16 nce Bridge D14a / Portion A1 Survey / Setting Out CONS.A1.1466 Survey / Setting Out CONS.A1.1470.1 Predrilling (12 nos) (D14a) Predrilling (12 nos) (D14a) CONS.A1.1470.2 GI Report and Verification / Agreement to Founding Level ■ G Report and Verification / Agr D14a Bored CONS.A1.1480 D14a Bored Piling (12 nos. 2000mm dia x 62m) 47m for Abutment Piling (12 nos. 2000mm dia x 62m) 47m for Abutment CONS.A1.1485 Pile Testing CONS.A1.1490 Pile Trimming CONS.A1.1515 Construct Abutment A1401 Construct Abutment A1401 CONS.A1.1520 Bridge D14a - Erect Precast Segments + Stitching + Stressing (5 spans) Bridge D14a - Erect Precast Segn CONS.A1.1530 D14a Bridge Ancillary - Parapet + Railing, MJ, Drainage, Bridge Lighting & Signages Parapet + Ralling, MJ, Drainage, Bridge D14a Bridge Ancillary CONS.A1.1540 D14a Final Asphalt Paving + Road Markings D14a Final Asphalt Paving + Road Markings ♦ 09-Jun-17, Bridge D14a co CONS.A1.1550 Bridge D14a complete CONS.A1.8940 Pier Columns (P1402) Columns (P1402)

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CONS.A1.8950 Pier Columns (P1403) Pier Columns (P1404) CONS.A1.8960 Pier Columns (P1404) Pier Columns (P1405) CONS.A1.8970 Pier Columns (P1405) CONS.A1.8980 Pier Columns (P1406) Pier Columns (P1406 CONS.A1.9000 Pile Caps (A1401) Pile Caps (A1401) CONS.A1.9010 Pile Caps (P1402) Pile Caps (P1402) Pile Caps (P1403) CONS.A1.9020 Pile Caps (P1403) Pile Caps (P1404) CONS.A1.9030 Pile Caps (P1404) CONS.A1.9040 Pile Caps (P1405) Pile Caps (P1405) Pile Caps (P1406) CONS.A1.9050 Pile Caps (P1406) CONS.A1.9440 Pier Head & Bearing (P1402) Pier Head & Bearing (P1402) CONS.A1.9450 Pier Head & Bearing (P1403) Pier Head & Bearing (P1404) CONS.A1.9460 Pier Head & Bearing (P1404) CONS.A1.9470 Pier Head & Bearing (P1405) Pier Head & Bearing (P1405) Pier Head & Bearing (P1406) CONS.A1.9480 Pier Head & Bearing (P1406) RW14A (29m / 2 bays) CONS.A1.3380 Commence RW14a Retaining Wall (29m / 2 25-Jul-17 • Comr nce RW14a Retaining Wall (29m / 2 bays) Survey / Setting Out CONS.A1.3390 Survey / Setting Out Excavate to formation level (open cut / slope) CONS.A1.3400 Excavate to formation level (open cut / slope) CONS.A1.3410 Cast Base & Wall Stem 2 bays (ribbed finish to Cast Base & Wall Stem 2 bays (ribbed finish to 1 m 1m below F.G.L) CONS.A1.3420 Backfill to final ground level Backfill to final ground level Bridge D14b in Portion A1 and Portion B1 CONS.B1.1654 Access to Portion B1 Access to Portion B1 CONS.B1.1656 Survey / Setting Out Survey / Setting Out CONS.B1.1660.1 Predrilling (6 nos) (D14b) Predrilling (6 nos) (D14b) GI Report and Verification / Agreement to Founding Level CONS.B1.1660.2 GI Report and Verification / Agreement to Founding Level CONS.B1.1670 D14b Bored Piling (6 nos. 2000-2200mm dia x 62m) (2nos +2.3m Rock Socket) D14b Bored Piling (6 nos. 2000-2200mm dia x 62m) (2nos +2.3m Rock Socket) Pile Testing / Coring Test for Socket Bored Pile CONS.B1.1675 Pile Testing / Coring Test for Socket Bored Pile Pile Trimming CONS.B1.1680 Pile Trimming CONS.B1.1710 Bridge D14b - Erect Precast Segments + Stitching + Stressing (3 spans) CONS.B1.1720 D14b Bridge Ancillary - Parapet + Railing, MJ, Drainage, Bridge Lighting & Signages D14b Bridge Ancillary - Parapet + Railing, MJ Drainage, Bridge Lighting & Signages D14b Final Asphalt Paving + Road Markings CONS.B1.1730 D14b Final Asphalt Paving + Road Markings ♦ 26-Sep-17, Bridge D14b complete CONS.B1.1740 Bridge D14b complete Pier Columns (P1407) CONS.B1.2090 Pier Columns (P1407) CONS.B1.2100 Pier Columns (P1408) Pier Columns (P1408) CONS.B1.2110 Pier Columns (P1409) Pier Columns (P1409) Pile Caps (P1407) CONS.B1.2290 Pile Caps (P1407) Pile Caps (P1408) CONS.B1.2300 Pile Caps (P1408) Pile Caps (P1409) CONS.B1.2310 Pile Caps (P1409) CONS.B1.2640 Pier Head & Bearing (P1407) Pier Head & Bearing (P1407) CONS.B1.2650 Pier Head & Bearing (P1408) Pier Head & Bearing (P1408) Pier Head & Bearing (P1409) CONS.B1.2660 Pier Head & Bearing (P1409) Bridge D14c CONS.B1.1744 Site Possession / Access to Portion B1 Survey / Setting Out CONS.B1.1746 Survey / Setting Out CONS.B1.1750.1 Predrilling (11 nos) (D14c) redrilling (11 nos) (D14c) CONS.B1.1750.2 GI Report and Verification / Agreement to GI Report and Verification / Agreement to Founding Level D) 4c Bored Pilling (11 nos; 2000-2200mm dia x 67m + 2.3m (Rock Socket) CONS.B1.1760 D14c Bored Piling (11 nos. 2000-2200mm dia x 67m + 2.3m Rock Socket) Pile Testing CONS.B1.1765 Pile Testing CONS.B1.1770 Pile Trimming CONS.B1.1795 Bridge D14c - Construct Deck (cast in-situ) Pier P1409 to P1410 Bridge D14c - Construct Deck (cast in-situ); Pier P1409 to P1410 Bridge D14c - Erect Precast Segments + Stitching + Stressing (4 spans) CONS.B1.1800 Bridge D14c - Erect Precast Segments + CONS.B1.1810 D14c Bridge Ancillary - Parapet + Railing, MJ, Drainage, Bridge Lighting & Signages D14c Bridge Ancillary - Parapet + Railing, MJ, Drainage, Bridge Lighting & Signages CONS.B1.1820 D14c Final Asphalt Paving + Road Markings D14c Final Asphalt Paving + Road Marking ♦ 14-Dec-17, Bridge D14c complete CONS.B1.1830 Bridge D14c complete CONS.B1.2120 Pier Columns (P1410) Pier Columns (P1410) CONS.B1.2130 Pier Columns (P1411 & P1413) Pier Columns (P1411 & P1413) Pier Columns (P1412) CONS.B1.2140 Pier Columns (P1412) CONS.B1.2250 Pile Caps (P1410) Pile Caps (P1410) CONS.B1.2260 Pile Caps (P1411) Pile Caps (P1411) CONS.B1.2270 Pile Caps (P1412) Pile Caps (P1412) CONS.B1.2670 Pier Head & Bearing (P1410) Pier Head & Bearing (P1410) CONS.B1.2680 Pier Head & Bearing (P1411 & P1413) Pier Head & Bearing (P1411 & P1413) Pier Head & Bearing (P1412): CONS.B1.2690 Pier Head & Bearing (P1412) Bridge D15 Site Possession/Access to Partion B5 CONS.B5.2104 Site Possession/Access to Portion B5 06-Oct-16

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| A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D CONS.B5.2106 Survey/ Site Setting Out edrilling (11 nos) (D15) CONS.B5.2110.1 Predrilling (11 nos) (D15) CONS.B5.2110.2 GI Report and Verification / Agreement to GI Report and Verification / Agreement to Founding Level D15 Bored Piling (11 nos. 2000mm dia x 65m CONS.B5.2120 D15 Bored Piling (11 nos. 2000mm dia x 65m 3.3m Rock Socket) CONS.B5.2125 Pile Testing Pile Testing CONS.B5.2130 Pile Trimming Pile Trimmino CONS.B5.2150 Bridge D15 - Construct Deck (cast in-situ) Pier P1501/P1502-1503 CONS.B5.2160 Bridge D15 - Erect Precast Segments + Bridge D15 - Erect Precast Segments Stitching + Stressing (2 spans Stitching + Stressing (2 spans) CONS.B5.2170 D15 Bridge Ancillary - Parapet/TCSS, Railing, MJ, Drainage, Bridge Lighting, & Sign Gantry :D15 Bridge Ancillary - Parapet/TCSS, Railing, MJ, Drainage, Bridge Ligh CONS.B5.2180 D15 Final Asphalt Paving, Road Markings and p15 Final Asphalt Paving, Road Markings and Signages Signages CONS.B5.2190 Pier Columns (P1501 & P1502) Pier Columns (P1501 & P1502) Pier Columns (P1503) CONS.B5.2210 Pier Columns (P1503) Pier Columns (P1504) CONS.B5.2220 Pier Columns (P1504) CONS.B5.2230 Pier Columns (P1505) Pier Columns (P1505) CONS.B5.2250 Pile Caps (P1501 & P1502) Pile Caps (P1501 & P1502) Pile Caps (P1503) CONS.B5.2260 Pile Caps (P1503) CONS.B5.2270 Pile Caps (P1504) Plle Caps (P1504) CONS.B5.2280 Pile Caps (P1505) Pile Caps (P1505) CONS.B5.2290 Pier Head & Bearing (P1501) Pier Head & Bearing (P1501) Pier Head & Bearing (P1503) CONS.B5.2310 Pier Head & Bearing (P1503) Pier Head & Bearing (P1504) CONS.B5.2320 Pier Head & Bearing (P1504) CONS.B5.2330 Pier Head & Bearing (P1505) Pier Head & Bearing (P1505) CONS.B5.2340 Bridge D15 - Erect Precast Segments + Bridge D15 - Erect Precast Segments + \$titching + Stressing (2 spans) Stitching + Stressing (2 spans) Bridge D15 in Portion B4 (Interface with Cont CONS.B4.2170 Site Possession/Access to Portion B4 ■ Survey / \$ite Setting Out CONS.B4.2180 Survey / Site Setting Out CONS.B4.2190 Bridge D15 - Erect Precast Segments on Falseworks at Portion B4 Interface (1 spa ■ Bridge D15 - Erect Precast Segments on Falseworks at Portion B4 Interface (1 span) orks at Portion B4 Interface (1 span) - Parapet/T¢SS, Railing, M.), Drainage, Bridge Lighting, & Sign G CONS.B4.2200 D15 Bridge Ancillary - Parapet/TCSS, Railing, MJ, Drainage, Bridge Lighting, & Sign Gantry D15 Final Asphalt Paving, Road Markings and Signages CONS.B4.2210 D15 Final Asphalt Paving, Road Markings and CONS.B4.2220 Inspection and Handover CONS.B4.2230 Completion of Section V (KD12) Works within Portion B4 including Bridge D15 mpletion of Section V (KD12) Works within Portion B4 including Bridge D15 ♦ 18-Aug-18, Co Bridge D16S and D16N and Abutment A1601 in CONS.A4.2230 Commence Works for Abutment A1601 06-Oct-16 ce Works for Abutment A1601 Survey / Site \$etting Out CONS.A4.2240 Survey / Site Setting Out CONS.A4.2250.1 Predrilling (2 nos) (D16) - BH 03 & BH 04 at Portion A6 Predrilling (2 nos) (D16) - BH 03 & BH 04 at Portion A6 CONS.A4.2250.2 GI Report and Verification / Agreement to Founding Level to BH 03 and BH 04 Predrilling (2 nos):(D16) + BH 01 & BH 02 at Portion A3 CONS.A4.2250.3 Predrilling (2 nos) (D16) - BH 01 & BH 02 at CONS.A4.2250.4 GI Report and Verification / Agreement to Founding Level to BH 01 and BH 02 CONS.A4.2260 D16S Bored Piling (2 nos x 1800mm dia) D16S Boried Piling (2 nos x 1800mm dia) CONS.A4.2265 Pile Testing - BH 03 & BH 04 Pile Testing - BH 03 & BH 04 Construct Abutment A1601 CONS.A4.2280 | Construct Abutment A1601 016N Bored Piling (2 nos x 1800mm dia) CONS.A4.2340 D16N Bored Piling (2 nos x 1800mm dia) CONS.A4.2350 Pile Testing - BH 01 & BH 02 Pile Testing - BH 01 & BH 02 CONS.A4.2360 Pile Trimming + Pile Caps Bridge D16S and D16N in Portion A4 CONS.A4.2285 Site Possession / Site Access to Portion A4 20-Mar 17 Site Po sion / Site Access Construct Deck (cast in-stu) CONS.A4.2290 Bridge D16S & D16N - Construct Deck (cast D16N & D16S Bridge Ancillary - Parapet, MJ, Drainage, Bridge Lighting, †CSS & Signage CONS.A4,2300 D16N & D16S Bridge Ancillary - Parapet, MJ Drainage, Bridge Lighting, TCSS & Signages CONS.A4.2310 D16 Final Asphalt Paving, Road Markings and D16 Final Asphalt Paving, Road Markings and Signages Signages CONS.A4.2320 Inspection and Handover of Bridge D16 Handover of Bridge D16 CONS.A4.2330 Completion of Bridge D16N and D16S 21-Aug-18, Completion of Bridge D16N and D16S RW16S (15m / 1 bay) in Portion A6 13-Feb-17 ♦ Commence RW16s Retaining Wall (29m / 2 bays) CONS.A1.3500 Commence RW16s Retaining Wall (29m / 2 bays) Survey / Setting Out CONS.A1.3510 Survey / Setting Out Excavate to formation level (open cut / slope) CONS.A1.3520 Excavate to formation level (open cut / slope) CONS.A1.3530 Cast Base & Wall Stem 1 bay (ribbed finish to 1m below F.G.L) Cast Base & Wall Stem 1 bay (ribbed finish to 1m below F.G.L) CONS.A1.3540 Install U/G Utilities - TCSS, ELV & LV Ducting & Draw Pits Install U/G Utilities - TCSS, ELV & LV Ducting & Draw Pits CONS.A1.3550 Backfill to final ground level Backfill to final ground level RW16N (15m / 1 bay) in Portion A6 ence RW16n Retaining Wall (29m / 2 bays) CONS.A1.3440 Commence RW16n Retaining Wall (29m / 2 bays) CONS.A1.3450 Survey / Setting Out : Survey / Setting Out: CONS.A1.3460 Excavate to formation level (open cut / slope) Excavate to formation level (open cut / slope) CONS.A1.3470 Cast Base & Wall Stem 1 bay (ribbed finish to 1m below F.G.L) Cast Base & Wall Stem 1 bay (ribbed finish to 1m below F.G.L) Install U/G Utilities - TCSS, FLV & LV Ducting CONS.A1.3480 Install U/G Utilities - TCSS, ELV & LV Ducting Backfill to final ground leve CONS.A1.3490 Backfill to final ground level **Depressed Road RC Structure** 

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Predrilling (12 nos) (DS303) CONS.A1.4380. GI Report and Verification / Agreement to Founding Level GI Report and Verification / Agreement to Fo CONS.A1.4390 Piling Works - Driven H Pile (12 nos) ing Works - Driven H Pile (12 nos) CONS.A1.4410 Excavation, Pile Trimming + Cast Pile Caps (3 Excavation, Pile Trimming + Cast Pile Caps (3 nos) CONS.A1.4420 Backfill Foundation ■ Backfill Foundation Sign Gantry Footing at Grade in Portion C1 & P DS302 (610mm dia. Prebored H Pile) CONS.D1.3380 Commence Foundation / Footing for Sign 06-Oct-16 🔷 Commence Foundation / Footing for Sign Gantry Gantry Mobilisation/Survey/Setting Out CONS.D1.3390 | Mobilisation/ Survey / Setting Out CONS.D1.3400. Predrilling for Prebored H Pile (8 nos) (DS302) Predrilling for Prebored H Pile (8 nos) (DS302) CONS.D1.3400. GI Report and Verification / Agreement to GI Report and Verification / Agr Founding Level CONS.D1.3410 Pre-bored Socket H-Pile (8 nos) Pre-bored Socket H-Pile (8 nds) CONS.D1.3420 Pile Testing Pile Testing Excavation, Pile Trimming + Pile Caps ( 2 nos) CONS.D1.3430 Excavation, Pile Trimming + Pile Caps ( 2 nos) CONS.D1.3440 Backfill Foundation Backfill Foundation GT408 (Driven H Pile) Predrilling (8 nos) (GT408) CONS.C1.4030. Predrilling (8 nos) (GT408) CONS.C1.4030. GI Report and Verification / Agreement to Founding Level GI Report and Verification / Agreement to Founding Level Piling Works - Driven H Pile (8 nos) CONS.C1.4040 Piling Works - Driven H Pile (8 nos) CONS.C1.4060 Excavation, Pile Trimming + Cast Pile Caps ( 2 nos) Excavation, Pile Trimming + Cast Pile Caps (2 nos) CONS.C1.4070 Backfill Foundation Backfill Foundation DS44 (Driven H Pile) CONS.C1.4100. Predrilling (8 nos) (DS44) Predrilling (8 nos) (DS44) GI Report and Verification / Agreement to Founding Level CONS.C1.4100. GI Report and Verification / Agreement to Founding Level ing Works - Driven H Pile (8 nos) CONS.C1.4110 Piling Works - Driven H Pile (8 nos) CONS.C1.4130 Excavation, Pile Trimming + Cast Pile Caps ( 2 Excavation, Pile Trimming + Cast Pile Caps (2 nos) Backfill Foundation CONS.C1.4140 Backfill Foundation DS261 (Driven H Pile) Predrilling (8 nos) (D\$261) CONS.C1.4170. Predrilling (8 nos) (DS261) ■ GI Report and Verification / Agreement to Founding Level CONS.C1.4170. GI Report and Verification / Agreement to Founding Level Piling Works - Driven H Pile (8 nos) CONS.C1.4180 Piling Works - Driven H Pile (8 nos) Excavation, Pile Trimming + Cast Rile Caps (2 nos) CONS.C1.4200 Excavation, Pile Trimming + Cast Pile Caps ( 2 nos) ■ Backfill Foundation CONS.C1.4210 Backfill Foundation ADS301 (Driven H Pile) Predrilling (12 nos) (ADS301) CONS.C1.4240. Predrilling (12 nos) (ADS301) GI Report and Verification / Agreement to Founding Level CONS.C1.4240. GI Report and Verification / Agreement to Founding Level Pillng Works - Driven H Pile (12 nos) CONS.C1.4250 Piling Works - Driven H Pile (12 nos) CONS.C1.4270 Excavation, Pile Trimming + Cast Pile Caps ( 3 nos) Excavation, Pile Trimming + Cast Pile Caps (3 nos) CONS.C1.4280 Backfill Foundation Backfill Foundation FADS303 (Driven H Pile) Predrilling (8 nos) (FADS303) CONS.C1.4310. Predrilling (8 nos) (FADS303) CONS.C1.4310. GI Report and Verification / Agreement to Founding Level GI Report and Verification / Agre Piling Works - Driven H Pile (8 nos) CONS.C1.4320 Piling Works - Driven H Pile (8 nos) CONS.C1.4340 Excavation, Pile Trimming + Cast Pile Caps ( 2 nos) Excavation, Pile Trimming + Cast Pile Caps ( ■ Backfill Foundation CONS.C1.4350 Backfill Foundation **Erection of Sign Gantry and High Mast for TCS!** CONS.C1.4360 Erection of Sign Gantry & High Mast Structure and Associated Conduits for TCSS Works and Associated Conduits for TCSS Works Drainage and U/G Utilities CONS.RW.2300 Handover area to CLP for HV Cable Laying and Install HV Cable Ducting on Ca CONS.RW.3870 Excavate and Install HV Cable Ducting on Carriageway (West of Pump House - Portion : Excavate and Install HV Cable Ducting on Carriageway (East of Pump House - Portion: A and C) CONS.RW.3880 Excavate and Install HV Cable Ducting on Carriageway (East of Pump House - Portion A

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CONS.RW.3890 Excavate and Install HV Cable Ducting on Carriageway (East of Pump House - Portion B CONS.RW.3900 Excavate and Install HV Cable Ducting on Carriageway (West of Pump House - Portion Drainage and U/G Utilities (West of Pump Hou Drainage & UU Road SOL 101 / 105 (Phase 1) **Drainage System** CONS.RW.22 Survey/ Road Setting Out Survey/ Road Setting Out CONS.RW.228 Road Formation to Sub-grade (Cut & Fill) Road Formation to Sub-grade (Cut & Fill) CONS.RW.22 Excavate to invert level and install Drainage System (Drain Pipes & Catchpit/Manholes) + **Installation of Underground Utilities** CONS.RW.23 Excavate and Install Fresh WM / Valves & Excavate and Install Fresh WM / Valves & fittings; + Testing; Cleaning & Flushing and Interface Co fittings + Testing, Cleaning & Flushing and CONS.RW.23 Excavate and Install Common Telecom Ducting and Telecom Ducting by Others elecom Ducting by Other Excavate and Install ELV/ LV Ducting and Pillar Box for CONS.RW.23 Excavate and Install ELV/ LV Ducting and Pillar Box for TCSS Road SOL 101 / 105 (Phase 2) **Drainage System** CONS.RW.34 Survey/ Road Setting Out Survey/ Road Setting Out CONS.RW.34 Road Formation to Sub-grade (Cut & Fill) Road Formation to Sub-grade (Cut & Fill) CONS.RW.34( Excavate to invert level and install Drainage System (Drain Pipes & Catchpit/Manholes) + **Installation of Underground Utilities** CONS.RW.34( Excavate and Install Fresh WM / Valves & fittings + Testing, Cleaning & Flushing and Excavate and Install Fresh WM / Valves & fittings + To ng, Cleaning & Flushing a Excavate and Install Common Telecom Ducting and Telecom Ducting by Others CONS.RW.34 Excavate and Install Common Telecom Ducting and Telecom Ducting by Others CONS.RW.34 Excavate and Install ELV/ LV Ducting and Pillar Box for TCSS Excavate and Install ELV/ LV Ducting and Pillar Box for Road SOL 102 /106 /111 and the neigboring la **Drainage System** Survey/ Road Setting Out CONS.RW.24 Survey/ Road Setting Out Road Formation to Sub-grade (Cut & Fill) CONS.RW.242 Road Formation to Sub-grade (Cut & Fill) CONS.RW.24 Excavate to invert level and install Drainage Excavate to invert level and install Drainage System (Drain Pipes & Catchpit/Manholes) System (Drain Pipes & Catchpit/Manholes) + **Installation of Underground Utilities** Excavate and Install Fresh WM / Valves & fittings + Testing, Cleaning & Flushing and Interface Connection CONS.RW.29 Excavate and Install Fresh WM / Valves & Excavate and Install Common Telecom Ducting and Telecom Ducting; by Others fittings + Testing, Cleaning & Flushing and CONS.RW.29 Excavate and Install Common Telecom Ducting and Telecom Ducting by Others Excavate and Install ELV/ LV Ducting and Pillar Box for TC\$S CONS.RW.29( Excavate and Install ELV/ LV Ducting and Pillar Box for TCSS Road SOL 102 /106 /111 and the neigboring la **Drainage System** Survey/ Road Setting Out CONS.RW.34 Survey/ Road Setting Out CONS.RW.34 Road Formation to Sub-grade (Cut & Fill) Road Formation to Sub-grade (Cut & Fill) CONS.RW.34 Excavate to invert level and install Drainage System (Drain Pipes & Catchpit/Manholes) + nd install Drainage System (Drain Pipes Installation of Underground Utilities CONS.RW.35( Excavate and Install Fresh WM / Valves & fittings + Testing, Cleaning & Flushing and Excavate and Install Fresh WM / Valves & fittings + Testing, Cleaning & Flush Excavate and Install Common Telecom Ducting and Telecom Ducting by Others CONS.RW.35 Excavate and Install Common Telecom Ducting and Telecom Ducting by Others Excavate and Install ELV/ LV Ducting and Pillar Box for TC\$S CONS.RW.352 Excavate and Install ELV/ LV Ducting and Pilla Box for TCSS Road SOL 104 (Phase 1) **Drainage System** CONS.RW.24 Survey/ Road Setting Out ■ Survey/ Road Setting Out CONS.RW.24 Road Formation to Sub-grade (Cut & Fill) Excavate to invert level and install Drainage System (Drain Pipes & Catchpit/Manholes) + Testing & Interface Connection CONS.RW.24( Excavate to invert level and install Drainage System (Drain Pipes & Catchpit/Manholes) + Installation of Underground Utilities CONS.RW.24 Excavate and Install Fresh WM / Valves & Excavate and Install Fresh WM / Valves & fittings + Testing, Cleaning & Flushing and Interface Connection fittings + Testing, Cleaning & Flushing and Excavate and Install Flush WM / Valves & fittings + Testing, Cleaning & Flushing and Interface Connection (1 line) CONS.RW.24{ Excavate and Install Flush WM / Valves & fittings + Testing, Cleaning & Flushing and CONS.RW.24 Excavate and Install ELV/ LV Ducting and Pillar Box for TCSS Excavate and Install ELV/ LV Ducting and Pillar Box for TCSS Road SOL 104 (Phase 2) **Drainage System** Survey/ Road Setting Out CONS.RW.35¢ Survey/ Road Setting Out Road Formation to Sub-grade (Cut & Fill): CONS.RW.35 Road Formation to Sub-grade (Cut & Fill) CONS.RW.35{ Excavate to invert level and install Drainage System (Drain Pipes & Catchpit/Manholes) + Installation of Underground Utilities CONS.RW.351 Excavate and Install Fresh WM / Valves & Excavate and Install Fresh WM / Valves & fittings + Testing, Cleaning & Flushing and Interface Connection (3 lines) fittings + Testing, Cleaning & Flushing and CONS.RW.35 Excavate and Install Flush WM / Valves & fittings + Testing, Cleaning & Flushing and Excavate and Install Flush WM / Valves & fittings + Testing, Cla Excavate and Install ELV/LV Ducting and Pillar Box for TCSS CONS.RW.35! Excavate and Install ELV/ LV Ducting and Pillar Box for TCSS Undergound Utilties (ELV, Fresh WM & Teleco Work in Portion D1 and D2 Sewage Rising main at Portion D1 16-May-17 Commence Works on Rising Main CONS.RM.101 Commence Works on Rising Main ■ Site Survey / Setting Out Sewerage Alignment CONS.RM.102 Site Survey / Setting Out Sewerage Alignmen CONS.RM.103 Excavate to Invert Level & Install 2 Sewage Rising Main DN100 CHC & CHD Excavate to Invert Level & Install 2 Sewage Rising Main DN100 CHC & CHD Construct Thrust Block CONS.RM.104 Construct Thrust Block Gravity Flow Testing CONS.RM.105 Gravity Flow Testing

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Print Date: 14-Dec-16 09:47 Page: 17 / 23 CONS.RM.106 Backfill Telecom Crossing at Portion D2 and D1 Excavate and Install Common Telecom Ducting and Telecom Ducting by Telecom Com CONS.RW.28( Excavate and Install Common Telecom Ducting and Telecom Ducting by Telecom Companies Backfill and reinstate ground CONS.RW.282 Backfill and reinstate ground Drainage and U/G Utilities (East of Pump Hous Drainage & UU Road SOL 101 / 109 / 114 (Phase 1) **Drainage System** Survey/ Road Setting Out CONS.RE.101 Survey/ Road Setting Out CONS.RE.102 Road Formation to Sub-grade (Cut & Fill) Road Formation to Sub-grade (Cut & Fill) CONS.RE.103 Excavate to invert level and install Drainage Excavate to invert level and install Drainage System (Drain Pipes & Catchpit/Manholes) + Testing Interface Connection System (Drain Pipes & Catchpit/Manholes) + **Installation of Underground Utilities** CONS.RE.106 Excavate and Install Fresh WM / Valves & Excavate and Install Fresh WM / Valves & fittings; + Testing, Cleaning & Flushing and Interface Connection fittings + Testing, Cleaning & Flushing and CONS.RE.107 Excavate and Install Common Telecom Ducting and Telecom Ducting by Others and Install Common Telecom Ducting a Telecom Ducting by Others Excavate and Install ELV/ LV Ducting and Pillar Box for TCS\$ and Road Lighting CONS.RE.108 Excavate and Install ELV/ LV Ducting and Pilla Box for TCSS and Road Lighting Road SOL 101 / 109 / 114 (Phase 2) **Drainage System** CONS.RE.420 Road Formation to Sub-grade (Cut & Fill) Road Formation to Sub-grade (Cut & Fill) CONS.RE.421 Excavate to invert level and install Drainage Excavate to invert level and install [ inage System (Drain Pipes & Catchpit/ System (Drain Pipes & Catchpit/Manholes) + Survey/ Road Setting Out CONS.RE.422 Survey/ Road Setting Out **Installation of Underground Utilities** CONS.RE.423 Excavate and Install Fresh WM / Valves & fittings + Testing, Cleaning & Flushing and Excavate and Install Fresh WM / Valves & fittings + Testing, Cleaning & Excavate and Install Common Telecom Ducting and Telecom Ducting by Others CONS.RE.424 Excavate and Install Common Telecom Ductin and Telecom Ducting by Others CONS.RE.425 Excavate and Install ELV/ LV Ducting and Pillar Excavate and Install ELV/ LV Ducting and Pillar Bdx for TCSS and Road Lighting Box for TCSS and Road Lighting Road SOL 102 and the area outside the carriage **Drainage System** CONS.RE.197 Survey/ Road Setting Out Survey/ Road Setting Out CONS.RE.198 Road Formation to Sub-grade (Cut & Fill) Road Formation to Sub-grade (Cut & Fill) CONS.RE.199 Excavate to invert level and install Drainage Excavate to invert level and install Drainage System (Drain Pipes & Catchpit/Manholes) + Testing & Interface Connection System (Drain Pipes & Catchpit/Manholes) + Installation of Underground Utilities CONS.RE.289 Excavate and Install Fresh WM / Valves & l; Excavate and Install Fresh WM / Valves & fittings + Testing, Cleaning & Flushing and Interi fittings + Testing, Cleaning & Flushing and Excavate and Install Common Telecom Ducting and Telecom Ducting by Others CONS.RE.290 Excavate and Install Common Telecom Ductin and Telecom Ducting by Others CONS.RE.291 Excavate and Install ELV/ LV Ducting and Pillar Box for TCSS and Road Lighting Excavate and Install ELV/ LV Ducting and Pillar Box for TCSS and Road Lighting Road SOL 102 and the area outside the carriage **Drainage System** CONS.RE.426 Survey/ Road Setting Out Road Formation to Sub-grade (Cut & Fill) CONS.RE.427 Road Formation to Sub-grade (Cut & Fill) CONS.RE.428 Excavate to invert level and install Drainage System (Drain Pipes & Catchpit/Manholes) + Excavate to invert level and install Dr em (Drain Pipes & Catchpit/Manholes) + Testing & Interface Connecti **Installation of Underground Utilities** CONS.RE.429 Excavate and Install Fresh WM / Valves & Excavate and Install Fresh WM / Valves & fittings + Testing, Cleaning & Flushing and Interface Con fittings + Testing, Cleaning & Flushing and CONS.RE.430 Excavate and Install Common Telecom Ducting and Telecom Ducting by Others Telecom Ducting and Telecom Ducting by Others CONS.RE.431 Excavate and Install ELV/ LV Ducting and Pillar Box for TCSS and Road Lighting Road SOL 107 / 113 (Phase 1) **Drainage System** CONS.RE.200 Survey/ Road Setting Out Survey/ Road Setting Out CONS.RE.201 Road Formation to Sub-grade (Cut & Fill) Road Formation to Sub-grade (Cut & Fill) CONS.RE.202 Excavate to invert level and install Drainage Excavate to invert level and install Drainage System (Drain Pipe System (Drain Pipes & Catchpit/Manholes) + **Installation of Underground Utilities** CONS.RE.204 Excavate and Install Fresh WM / Valves & fittings + Testing, Cleaning & Flushing and Excavate and Install Fresh WM / Valves & fittings + Testing Cleaning & Flushing and Interface Connection (3 lines) CONS.RE.205 Excavate and Install Fresh WM / Valves & Excavate and Install Fresh WIM / Valves & fittings + Testing, Cleaning & Flushing and Interface Cor fittings + Testing, Cleaning & Flushing and CONS.RE.206 Excavate and Install ELV/ LV Ducting and Pillar Box for TCSS Excavate and Install ELV/LV Ducting and Pillar Box for TOSS Road SOL 107 / 113 (Phase 2) **Drainage System** CONS.RE.432 Survey/ Road Setting Out CONS.RE.433 Road Formation to Sub-grade (Cut & Fill) Road Formation to Sub-grade (Cut & Fill) CONS.RE.434 Excavate to invert level and install Drainage Excavate to invert level and install Drainage System (Drain I System (Drain Pipes & Catchpit/Manholes) + Installation of Underground Utilities CONS.RE.435 Excavate and Install Fresh WM / Valves & Excavate and Install Fresh WM / Valves & fittings; + Testing, Cleaning & Flushing and Interface Connection (3 lines) Excavate and Install Fresh:WM / Valves & fittings +: Testing, Cleaning & Flushing and Interface Connection (1 line) fittings + Testing, Cleaning & Flushing and CONS.RE.436 Excavate and Install Fresh WM / Valves & fittings + Testing, Cleaning & Flushing and and Install ELV/LV Ducting and Pillar Box for TCSS CONS.RE.437 Excavate and Install ELV/ LV Ducting and Pilla Box for TCSS Road SOL 108 / 106 & SOL 110 Adjacent to Road SOL 108 / 106, Abutment A90 CONS.RE.207 Excavate and Install Common Telecom Ducting Common Telecom Ducting and Telecom and Telecom Ducting by Others + Backfilling CONS.RE.216 Road Formation to subgrade + Drainage Road Formation to subgrade + 'Drainage System' CONS.RE.219 Install TCSS/LV/ELV Ducting ■ Install TC\$S/LV/ELV Ducting Portion A1 and A2 - Sub-Base Area

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Page: 18 / 23 Print Date: 14-Dec-16 09:47 CONS.A1.4430 Demobilisation of Temporary Facilities on Site CONS.A1.4440 Site Survey / Site Clearing Area to Formation Level CONS.A1.4450 Area to Formation Level CONS.A1.4460 Sub-Base Material Topping (Area 29,963 m2 : 100mm thk Subbase) Sub-Base Material Topping (Area 29,963 m2 x 100r Area 3 (in Portion A6) **Drainage System** ■ Survey/ Road Setting Out CONS.RE.4660 Survey/ Road Setting Out Road Formation to Sub-grade (Cut & Fill) CONS.RE.4670 Road Formation to Sub-grade (Cut & Fill) CONS.RE.4680 Excavate to invert level and install Drainage System (Drain Pipes & Catchpit/Manholes) + ■ Excavate to invert leve and install Drainage System (Drain Pipe Installation of Underground Utilities CONS.RE.4690 Excavate and Install ELV/ LV Ducting and Pilla Excavate and Install ELV/, LV Ducting and Pillar Box for TCSS Box for TCSS Excavate and Install Fresh WM / Valves & fittings + Testing, Cleaning & Flushing and Interface Connec CONS.RE.4700 Excavate and Install Fresh WM / Valves & fittings + Testing, Cleaning & Flushing and Excavate and Install Fresh WM / Valves & fittings + Testing, Cleaning & Flyshing and Interface Connection CONS.RE.4710 Excavate and Install Fresh WM / Valves & fittings + Testing, Cleaning & Flushing and Area 1 (West of Pump House) (Portion C1) **Road Works** Road SOL 101 / 105 (Phase 1) Kerbing and Footings for Railing, Fencing, Sign CONS.RW.30( Excavate and Construct Footings for Road and Construct Footings for Road Lightings / Railing / Fencing and Signage Lightings / Railing / Fencing and Signages oad Formation to Sub-base CONS.RW.30' Road Formation to Sub-base CONS.RW.301 Construct Precast Road Kerbings Construct Precast Road Kerbings Road Works to Road Base and Base Course CONS.RW.30 Road Formation to Road Base CONS.RW.304 Road Formation to Base Course Road Formation to Base Course Installation of Railing and Fencing + Road Ligh Install Road Railing and Fencing CONS.RW.30! Install Road Railing and Fencing CONS.RW.30( Install Road Lighting and Signages Install Road Lighting and Signages **Final Paving and Road Markings** CONS.RW.29 Cleaning and Rectification Works ☐ Cleaning and Rectification Work CONS.RW.298 Final Road Paving (Wearing Course) Final Road Paving (Wearing C Road Markings and Road Sig CONS.RW.299 Road Markings and Road Signages Road SOL 101 / 105 (Phase 2) Kerbing and Footings for Railing, Fencing, Sign Road Formation to Sub-bas CONS.RW.36; Road Formation to Sub-base Construct Precast Road Kerbings CONS.RW.36 Construct Precast Road Kerbings Road Works to Road Base and Base Course CONS.RW.36! Road Formation to Road Base Road Formation to Road Base Road Formation to Base Course CONS.RW.36¢ Road Formation to Base Course Installation of Railing and Fencing + Road Ligh CONS.RW.36 Install Road Railing and Fencing Install Road Railing and Fencing CONS.RW.36 Install Road Lighting and Signages Install Road Lighting and \$igna **Final Paving and Road Markings** CONS.RW.35 Cleaning and Rectification Works Cleaning and Rectification Work Final Road Paving (Wearing C CONS.RW.36( Final Road Paving (Wearing Course) Road Markings and Road Sigha CONS.RW.36 Road Markings and Road Signages Road SOL 102 /106 /111 (Phase 1) Kerbing and Footings for Railing, Fencing, Sign and Construct Footings for Road Lightings / Railing / Fencing and Signage CONS.RW.32 Excavate and Construct Footings for Road Lightings / Railing / Fencing and Signages Road Formation to Sub-base CONS.RW.328 Road Formation to Sub-base CONS.RW.32 Construct Precast Road Kerbings Road Works to Road Base and Base Course CONS.RW.32 Road Formation to Road Base Road Formation to Base Course CONS.RW.32: Road Formation to Base Course Installation of Railing and Fencing + Road Ligh CONS.RW.32 Install Road Railing and Fencing nstall Road Railing and Fehcing CONS.RW.32 Install Road Lighting and Signages Install Road Lighting and Signage Final Paving and Road Markings CONS.RW.32 Final Road Paving (Wearing Course) Final Road Paving (Wearing Course) CONS.RW.32 Road Markings and Road Signages Road SOL 102 /106 /111 (Phase 2) Kerbing and Footings for Railing, Fencing, Sign CONS.RW.37 Excavate and Construct Footings for Road Lightings / Railing / Fencing and Signages / Railing / Fencing and Signages CONS.RW.37( Road Formation to Sub-base CONS.RW.37 Construct Precast Road Kerbings Construct Precast Road Kerbings Road Works to Road Base and Base Course CONS.RW.36 Road Formation to Road Base Road Formation to Road Base

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Page: 19 / 23 Print Date: 14-Dec-16 09:47 CONS.RW.37( Road Formation to Base Course Installation of Railing and Fencing + Road Ligh Install Road Railing and Fencing CONS.RW.37 Install Road Railing and Fencing CONS.RW.37. Install Road Lighting and Signages Install Road Lighting and Signages **Final Paving and Road Markings** Final Road Paving (Wearing Course) CONS.RW.37 Final Road Paving (Wearing Course) Road Markings and Road Signages CONS.RW.37 Road Markings and Road Signages Road SOL 104 (Phase 1) Kerbing and Footings for Railing, Fencing, Sign CONS.RW.332 Excavate and Construct Footings for Road Excavate and Construct Footings for Road Lightings Lightings / Railing / Fencing and Signages CONS.RW.33: Road Formation to Sub-base Road Formation to Sub-base CONS.RW.33 Construct Precast Road Kerbings Road Works to Road Base and Base Course CONS.RW.33 Road Formation to Road Base Road Formation to Road Base Road Formation to Base Course CONS.RW.33¢ Road Formation to Base Course Installation of Railing and Fencing + Road Ligh Install Road Railing and Fencing CONS.RW.33 Install Road Railing and Fencing CONS.RW.338 Install Road Lighting and Signages nstall Road Lighting and Signag **Final Paving and Road Markings** Final Road Paving (Wearing Course) CONS.RW.33( Final Road Paving (Wearing Course) CONS.RW.33 Road Markings and Road Signages Road Markings and Road Signages Road SOL 104 (Phase 2) Kerbing and Footings for Railing, Fencing, Sign CONS.RW.38( Excavate and Construct Footings for Road Excavate and Construct Footings for Road Lightings Lightings / Railing / Fencing and Signages CONS.RW.38 Road Formation to Sub-base Road Formation to Sub-base Construct Precast Road Kerbings CONS.RW.38: Construct Precast Road Kerbings Road Works to Road Base and Base Course CONS.RW.38 Road Formation to Road Base Road Formation to Base Course CONS.RW.38 Road Formation to Base Course Installation of Railing and Fencing + Road Ligh Install Road Railing and Fencing CONS.RW.38! Install Road Railing and Fencing CONS.RW.38 Install Road Lighting and Signages Install Road Lighting and Signages **Final Paving and Road Markings** CONS.RW.378 Final Road Paving (Wearing Course) inal Road Paving (Wearing Course) CONS.RW.37 Road Markings and Road Signages ■ Road Markings and Road Signages Area 2 (East of Pump House Portion C1, A1, A2 **Road Works** Road SOL 101 / 109 / 114 (Phase 1) Kerbing and Footings for Railing, Fencing, Sign CONS.RE.384 Excavate and Construct Footings for Road Lightings / Railing / Fencing and Signages Excavate and Construct Footings for Road Lightings / Railing / Fencing and Sign CONS.RE.385 Road Formation to Sub-base Road Formation to Sub-base Construct Precast Road Kerbings CONS.RE.386 Construct Precast Road Kerbings Road Works to Road Base and Base Course CONS.RE.372 Road Formation to Road Base Road Formation to Base Course CONS.RE.373 Road Formation to Base Course Installation of Railing and Fencing + Road Ligh ■ Install Road Railing and Fencing CONS.RE.374 Install Road Railing and Fencing ■ Install Road Lighting and Signag CONS.RE.375 Install Road Lighting and Signages Road SOL 101 / 109 / 114 (Phase 2) Kerbing and Footings for Railing, Fencing, Sigr CONS.RE.442 Excavate and Construct Footings for Road Lightings / Railing / Fencing and Signages Excavate and Construct Footings for Road Lightings / Railing / Fencing and Signages CONS.RE.443 Road Formation to Sub-base Road Formation to Sub-base CONS.RE.444 Construct Precast Road Kerbings Construct Precast Road Kerbing Road Works to Road Base and Base Course CONS.RE.438 Road Formation to Road Base CONS.RE.439 Road Formation to Base Course Road Formation to Base ( Installation of Railing and Fencing + Road Ligh CONS.RE.440 Install Road Railing and Fencing Install Road Railing and Fencing CONS.RE.441 Install Road Lighting and Signages Install Road Lighting Road SOL 102 (Phase 1) Kerbing and Footings for Railing, Fencing, Sign CONS.RE.415 Excavate and Construct Footings for Road Lightings / Railing / Fencing and Signages nd Construct Footings for Road Lightings / Railing / Fencing and Signages CONS.RE.416 Construct Precast Road Kerbings Construct Precast Road Kerbings CONS.RE.417 Road Formation to Sub-base ad Formation to Sub-base Road Works to Road Base and Base Course CONS.RE.410 Road Formation to Road Base Road Formation to Road Base

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+ Bearings BRG.ES.1030 Bridges in Portion A & B - Decking / Segments Erection + Stitching Decking / Segments Erection BRG.ES.1040 Bridges in Portion A & B - Parapet + Ancillary n Portion A & B - Parapet Works Bridges in Portion C & D ridges in Portion C & D - Bored Piling BRG.ES.2010 Bridges in Portion C & D - Bored Piling + Pilecaps BRG.ES.2020 Bridges in Portion C & D - Column, Pier Head + Bridges in Portion € & D - Column, Pier Head + Bearings Bearings

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## **Appendix D. Event and Action Plan**

#### **Event/Action Plan for Air Quality Monitoring**

| EVENT  | ACTION  |  |  |   |  |
|--|---|--|--|---|--|
|  | ET  | IEC  | ER   | CONTRACTOR  |  |
| ACTION LEVEL                                   |   |  |  |   |  |
| 1. Exceedance<br>for one<br>sample             | Identify source, investigate the causes of exceedance and propose remedial measures;     Inform IEC and ER;     Repeat measurement to confirm finding;     Increase monitoring frequency to daily.  | <ol> <li>Check monitoring data submitted by ET;</li> <li>Check Contractor's working method.</li> </ol>   | Notify Contractor.   | Rectify any unacceptable practice;     Amend working methods if appropriate.  |  |
| Exceedance for two or more consecutive samples | <ol> <li>Identify source;</li> <li>Inform IEC and ER;</li> <li>Advise the ER on the effectiveness of the proposed remedial measures;</li> <li>Repeat measurement s to confirmfindings;</li> <li>Increase monitoring frequency to daily;</li> <li>Discuss with IEC and Contractor on remedial actions required;</li> <li>If exceedance continues, arrange meeting with IEC and ER;</li> <li>If exceedance stops, cease additional monitoring.</li> </ol> | <ol> <li>Check monitoring data submitted by ET;</li> <li>Check Contractor's working method;</li> <li>Discuss with ET and Contractor on possible remedial measures;</li> <li>Advise the ER on the effectiveness of the proposed remedial measures;</li> <li>Supervise Implementation of remedial measures.</li> </ol> | <ol> <li>Confirm receipt of notification of failure in writing;</li> <li>Notify Contractor;</li> <li>Ensure remedial measures properly implemented.</li> </ol> | <ol> <li>Submit proposals for remedial to ER within 3 working days of notification;</li> <li>Implement the agreed proposals;</li> <li>Amend proposal if appropriate.</li> </ol> |  |

| EVENT   | ACTION   |  |  |  |
|---|--|--|--|--|
|   | ET   | IEC  | ER   | CONTRACTOR   |
| 1. Exceedance for one sample                      | 1. Identify source, investigate the causes of exceedance and propose remedial measures;  2. Inform ER, Contractor and EPD;  3. Repeat measurement to confirm finding;  4. Increase monitoring frequency to daily;  5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results.  | 1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ER on the effectiveness of the proposed remedial measures; 5. Supervise implementation of remedial measures.            | Confirm receipt of notification of failure in writing;     Notify Contractor;     Ensure remedial measures properly implemented.   | <ol> <li>Take immediate action to avoid further exceedance;</li> <li>Submit proposals for remedial actions to IEC within 3 working days of notification;</li> <li>Implement the agreed proposals;</li> <li>Amend proposal if appropriate.</li> </ol>   |
| 2. Exceedance for two or more consecutive samples | <ol> <li>Notify IEC, ER,         Contractor and EPD;</li> <li>Identify source;</li> <li>Repeat measurement         to confirm findings;</li> <li>Increase monitoring         frequency to daily;</li> <li>Carry out analysis of         Contractor's working         procedures to         determine possible         mitigation to be         implemented;</li> <li>Arrange meeting with         IEC and ER to         discuss the remedial         actions to be taken;</li> <li>Assess effectiveness         of Contractor's         remedial actions and         keep IEC, EPD and         ER informed of the         results;</li> <li>If exceedance stops,         cease additional         monitoring.</li> </ol> | <ol> <li>Discuss amongst ER, ET, and Contractoron the potential remedial actions;</li> <li>Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly;</li> <li>Supervise the implementation of remedial measures.</li> </ol> | <ol> <li>Confirmreceipt of notification of failure in writing;</li> <li>Notify Contractor;</li> <li>In consultation with the IEC, agree with the Contractor on the remedial measures to be implemented;</li> <li>Ensure remedial measures properly implemented;</li> <li>If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.</li> </ol> | <ol> <li>Take immediate action to avoid further exceedance;</li> <li>Submit proposals for remedial actions to IEC within 3 working days of notification;</li> <li>Implement the agreed proposals;</li> <li>Resubmit proposals if problem still not under control;</li> <li>Stop the relevant portion of works as determined by the ER until the exceedance is abated.</li> </ol> |

#### **Event / Action Plan for Construction Noise Monitoring**

| EVENT        | ACTION  |  |   |  |  |
|--------------|---|--|---|--|--|
|              | ET  | IEC  | ER  | CONTRACTOR   |  |
| Action Level | Contractor; 2. Identify source,   |  | notification of failure<br>in writing;<br>2. Notify Contractor;   | 1. Submit noise mitigation proposals to IEC; 2. Implement noise mitigation proposals.  |  |
| Limit Level  | and Contractor;  2. Identify source;  3. Repeat measurements to confirm findings;  4. Increase monitoring frequency;  5. Carry out analysis of Contractor's working procedures to | <ol> <li>Discuss amongst ER, ET, and Contractor on the potential remedial actions;</li> <li>Review Contractors remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly;</li> <li>Supervise the implementation of remedial measures.</li> </ol> | to propose remedial measures for the analysed noise problem; 4. Ensure remedial measures properly implemented; 5. If exceedance continues, consider what portion of the work is responsible | <ol> <li>Take immediate action to avoid further exceedance;</li> <li>Submit proposals for remedial actions to IEC within 3 working days of notification;</li> <li>Implement the agreed proposals;</li> <li>Resubmit proposals if problem still not under control;</li> <li>Stop the relevant portion of works as determined by the ER until the exceedance is abated.</li> </ol> |  |

#### **Event / Action Plan for Water Quality Monitoring**

| EVENT  | ACTION   |   |   |   |  |
|--|--|---|---|---|--|
|  | ET   | IEC   | ER  | CONTRACTOR  |  |
| Action level being exceeded by one sampling day                      | <ol> <li>Repeat in situ measurement to confirm findings;</li> <li>Identify source(s) of impact;</li> <li>Inform IEC, contractor and ER;</li> <li>Check monitoring data, all plant, equipment and Contractor's working methods;</li> <li>Discuss mitigation measures with IEC, ER and Contractor;</li> <li>Ensure mitigation measures are implemented;</li> <li>Repeat measurement on next day of exceedance to confirm findings.</li> </ol>  | <ol> <li>Check monitoring data submitted by ET and Contractor's working methods;</li> <li>Discuss with ET and Contractor on possible remedial actions;</li> <li>Review the proposed mitigation measures submitted by Contractor and advise the ER accordingly;</li> <li>Assess the effectiveness of the implemented mitigation measures.</li> </ol> | <ol> <li>Confirm receipt of notification of noncompliance in writing;</li> <li>Discuss with IEC on the proposed mitigation measures;</li> <li>Make agreement on mitigation measures to be implemented;</li> <li>Ensure mitigation measures are properly implemented.</li> </ol>   | <ol> <li>Inform the ER and confirm notification of the non-compliance in writing;</li> <li>Rectify unacceptable practice;</li> <li>Check all plant and equipment and consider changes of working methods;</li> <li>Discuss with ET and IEC on possible remedial actions and propose mitigation measures to IEC and ER;</li> <li>Implement the agreed mitigation measures.</li> <li>Amend working methods if appropriate.</li> </ol>   |  |
| Action level being exceeded by two or more consecutive sampling days | <ol> <li>Repeat in situ measurement to confirm findings;</li> <li>Identify source(s) of impact;</li> <li>Inform IEC, Contractor and ER;</li> <li>Check monitoring data, all plant, equipment and Contractor's working methods;</li> <li>Discuss mitigation measures with IEC, ER and Contractor;</li> <li>Ensure mitigation measures are implemented;</li> <li>Increase the monitoring frequency to daily until no exceedance of Action level;</li> <li>Repeat measurement on next day of exceedance to confirm findings.</li> </ol> | <ol> <li>Check monitoring data submitted by ET and Contractor's working method;</li> <li>Discuss with ET and Contractor on possible remedial actions;</li> <li>Review the proposed mitigation measures submitted by Contractor and advise the ER accordingly;</li> <li>Assess the effectiveness of the implemented mitigation measures.</li> </ol>  | <ol> <li>Confirm receipt of notification of noncompliance in writing;</li> <li>Discuss with IEC on the proposed mitigation measures;</li> <li>Make agreement on mitigation measures to be implemented;</li> <li>Ensure mitigation measures are properly implemented;</li> <li>Assess the effectiveness of the implemented mitigation measures.</li> </ol> | <ol> <li>Inform the Engineer and confirm notification of the non-compliance in writing;</li> <li>Rectify unacceptable practice;</li> <li>Check all plant and equipment and consider changes of working methods;</li> <li>Discuss with ET and IEC on possible remedial actions and propose mitigation measures to IEC and ER within 3 working days of notification;</li> <li>Implement the agreed mitigation measures;</li> <li>Amend working methods if appropriate.</li> </ol> |  |

| EVENT   | ACTION  |  |  |   |  |
|---|---|--|--|---|--|
|   | ET  | IEC  | ER   | CONTRACTOR  |  |
| Limit level being exceeded by one sampling day                      | <ol> <li>Repeat in-situ measurement to confirm findings;</li> <li>Identify source(s) of impact;</li> <li>Inform IEC, Contractor, ER and EPD;</li> <li>Check monitoring data, all plant, equipment and Contractor's working methods;</li> <li>Discuss mitigation measures with IEC, ER and Contractor;</li> <li>Ensure mitigation measures are implemented;</li> <li>Increase the monitoring frequency to daily until no exceedance of Limit level.</li> </ol>                                 | mitigation measures<br>submitted by<br>Contractor and advise   | proposed mitigation<br>measures; 3. Request Contractor to<br>critically review the<br>working methods; 4. Ensure mitigation  | <ol> <li>Inform the ER and confirm notification of the non-compliance in writing;</li> <li>Rectify unacceptable practice;</li> <li>Check all plant and equipment and consider changes of working methods;</li> <li>Submit proposal of mitigation measures to ER within 3 working days of notification and discuss with ET, IEC and ER;</li> <li>Implement the agreed mitigation measures;</li> <li>Amend working methods if appropriate.</li> </ol> |  |
| Limit level being exceeded by two or more consecutive sampling days | <ol> <li>Repeat <i>in-situ</i> measurement to confirm findings;</li> <li>Identify source(s) of impact;</li> <li>Inform IEC, contractor, ER and EPD;</li> <li>Check monitoring data, all plant, equipment and Contractor's working methods;</li> <li>Discuss mitigation measures with IEC, ER and Contractor;</li> <li>Ensure mitigation measures are implemented;</li> <li>Increase the monitoring frequency to daily until no exceedance of Limit level for two consecutive days.</li> </ol> | Contractor's mitigation measures whenever necessary to assure their effectiveness and advise the ER accordingly. | <ol> <li>Confirm receipt of notification of failure in writing;</li> <li>Discuss with IEC, ET and Contractor on the proposed mitigation measures;</li> <li>Request Contractor to critically review the working methods;</li> <li>Make agreement on the mitigation measures to be implemented;</li> <li>Ensure mitigation measures are properly implemented;</li> <li>Assess the effectiveness of the implemented mitigation measures;</li> <li>Consider and instruct, if necessary, the Contractor to slow down or to stop all or part of the construction activities until no exceedance of Limit level.</li> </ol> | avoid further exceedance; 3. Rectify unacceptable   |  |

**Event / Action Plan for Dolphin Monitoring** 

| EVENT EVENT  | ACTION  |   |  |            |  |
|--------------|---|---|--|------------|--|
|              | ET  | IEC   | ER   | CONTRACTOR |  |
| Action Level | <ol> <li>Repeat statistical data analysis to confirm findings;</li> <li>Review all available and relevant data, including raw data and statistical analysis results of other parameters covered in the EM&amp;A, to ascertain if differences are as a result of natural variation or previously observed seasonal differences;</li> <li>Identify source(s) of impact;</li> <li>Inform the IEC, ER/SOR and Contractor;</li> <li>Check monitoring data.</li> <li>Review to ensure all the dolphin protective measures are fully and properly implemented and advise on additional measures if necessary.</li> </ol> | <ol> <li>Check monitoring data submitted by ET and Contractor;</li> <li>Discuss monitoring results and finding with the ET and the Contractor.</li> </ol> | 1. Discuss monitoring with the IEC and any other measures proposed by the ET; 2. If ER/SOR is satisfied with the proposal of any other measures, ER/SOR to signify the agreement in writing on the measures to be implemented. |            |  |

| EVENT       |  | ACT  | TON   |   |
|-------------|--|--|---|---|
|             | ET   | IEC  | ER  | CONTRACTOR  |
| Limit Level | <ol> <li>Repeat statistical data analysis to confirm findings;</li> <li>Review all available and relevant data, including raw data and statistical analysis results of other parameters covered in the EM&amp;A, to ascertain if differences are as a result of natural variation or previously observed seasonal differences;</li> <li>Identify source(s) of impact;</li> <li>Inform the IEC, ER/SOR and Contractor of findings;</li> <li>Check monitoring data;</li> <li>Repeat review to ensure all the dolphin protective measures are fully and properly implemented and advise on additional measures if necessary.</li> <li>If ET proves that the source of impact is caused by any of the construction activity by the works contract, ET to arrange a meeting to discuss with IEC, ER/SOR and Contractor the necessity of additional dolphin monitoring and/or any other potential mitigation measures (e.g., consider to modify the perimeter silt curtain or consider to control/temporarily stop relevant construction activity etc.) and submit to IEC a proposal of additional dolphin monitoring and/or mitigation measures where necessary.</li> </ol> | Contractor the necessity of additional dolphin monitoring and any other potential mitigation measures.  4. Review proposals for additional monitoring and any other mitigation measures submitted by ET and Contractor and advise ER/SOR of the results and findings accordingly.  5. Supervise / Audit the implementation of additional monitoring and/or any other mitigation measures and advise ER/SOR the results and findings accordingly. | additional dolphin monitoring and/or any other mitigation measures submitted by ET and Contractor and verified by IEC, ER/SOR to signify the agreement in writing on such | <ol> <li>Inform the ER/SOR and confirm notification of the non-compliance in writing;</li> <li>Attend the meeting to discuss with ET, IEC and ER/SOR the necessity of additional dolphin monitoring and any other potential mitigation measures.</li> <li>Jointly submit with ET to IEC a proposal of additional dolphin monitoring and/or any other mitigation measures when necessary.</li> <li>Implement the agreed additional dolphin monitoring and/or any other mitigation measures.</li> </ol> |

#### Action Plan for Landscape and Visual

|                    | ACTION  |   |  |  |  |
|--------------------|---|---|--|--|--|
| EVENT              | ET  | IEC   | ER   | CONTRACTOR   |  |
| Conflicts<br>occur | Check Contractor's proposed remedial design conforms to the requirements of EP and prepare checking report(s) | <ul> <li>Check and<br/>endorse ET's<br/>report(s)</li> <li>Check and certify<br/>Contractor's<br/>proposed<br/>remedial design</li> </ul> | Supervise the<br>Contractor to<br>carry out the<br>proposed<br>remediation<br>work | Propose remedial<br>design and carry<br>out the proposed<br>work |  |

# **Appendix E. Implementation Schedule for Environmental Mitigation Measures (EMIS)**

#### Appendix E – Implementation Schedule of Environmental Mitigation Measures (EMIS)

| EIA Ref.    | EM&A<br>Log Ref. | Recommended Mitigation Measures  | Location of the measures                        | Implementation Status  |
|-------------|------------------|--|---|--|
| Air Quality | у                |  |   |  |
| S5.5.6.1    | A1               | The Contractor shall follow the procedures and requirements given in the Air Pollution Control (Construction Dust) Regulation  | All construction sites                          | V  |
| S5.5.6.2    | A2               | 2) Proper watering of exposed spoil should be undertaken throughout the construction phase:  | All construction sites                          | V  |
|             |                  | <ul> <li>Any excavated or stockpile of dusty material should be covered entirely by<br/>impervious sheeting or sprayed with water to maintain the entire surface wet and then<br/>removed or backfilled or reinstated where practicable within 24 hours of the excavation<br/>or unloading;</li> </ul>   |   |  |
|             |                  | <ul> <li>Any dusty materials remaining after a stockpile is removed should be wetted with<br/>water and cleared from the surface of roads;</li> </ul>  |   |  |
|             |                  | • A stockpile of dusty material should not be extend beyond the pedestrian barriers, fencing or traffic cones;   |   |  |
|             |                  | <ul> <li>The load of dusty materials on a vehicle leaving a construction site should be<br/>covered entirely by impervious sheeting to ensure that the dusty materials do not leak<br/>from the vehicle;</li> </ul>  |   |  |
|             |                  | <ul> <li>Where practicable, vehicle washing facilities with high pressure water jet should be<br/>provided at every discernible or designated vehicle exit point. The area where vehicle<br/>washing takes place and the road section between the washing facilities and the exit<br/>point should be paved with concrete, bituminous materials or hardcores;</li> </ul> |   |  |
| S5.5.6.2    | A2               | When there are open excavation and reinstatement works, hoarding of not less than 2.4m high should be provided as far as practicable along the site boundary with provision for public crossing. Good site practice shall also be adopted by the Contractor to ensure the conditions of the hoardings are properly maintained throughout the construction period;        | All construction sites                          | V  |
|             |                  | • The portion of any road leading only to construction site that is within 30m of a vehicle entrance or exit should be kept clear of dusty materials;  |   |  |
|             |                  | <ul> <li>Surfaces where any pneumatic or power-driven drilling, cutting, polishing or other<br/>mechanical breaking operation takes place should be sprayed with water or a dust<br/>suppression chemical continuously;</li> </ul>   |   |  |
|             |                  | <ul> <li>Any area that involves demolition activities should be sprayed with water or a dust<br/>suppression chemical immediately prior to, during and immediately after the activities<br/>so as to maintain the entire surface wet;</li> </ul>   |   |  |
|             |                  | <ul> <li>Where a scaffolding is erected around the perimeter of a building under construction,<br/>effective dust screens, sheeting or netting should be provided to enclose the<br/>scaffolding from the ground floor level of the building, or a canopy should be provided<br/>from the first floor level up to the highest level of the scaffolding;</li> </ul>       |   |  |
|             |                  | <ul> <li>Any skip hoist for material transport should be totally enclosed by impervious<br/>sheeting;</li> </ul>   |   |  |
|             |                  | <ul> <li>Every stock of more than 20 bags of cement or dry pulverised fuel ash (PFA) should<br/>be covered entirely by impervious sheeting or placed in an area sheltered on the top<br/>and the 3 sides</li> </ul>  |   |  |
| S5.5.6.2    | A2               | <ul> <li>Cement or dry PFA delivered in bulk should be stored in a closed silo fitted with an<br/>audible high level alarm which is interlocked with the material filling line and no<br/>overfilling is allowed;</li> </ul>   | All construction sites                          | V  |
|             |                  | <ul> <li>Loading, unloading, transfer, handling or storage of bulk cement or dry PFA should<br/>be carried out in a totally enclosed system or facility, and any vent or exhaust should<br/>be fitted with an effective fabric filter or equivalent air pollution control system; and</li> </ul>   |   |  |
|             |                  | <ul> <li>Exposed earth should be properly treated by compaction, turfing, hydroseeding,<br/>vegetation planting or sealing with latex, vinyl, bitumen, shotcrete or other suitable<br/>surface stabiliser within six months after the last construction activity on the<br/>construction site or part of the construction site where the exposed earth lies.</li> </ul>  |   |  |
| S5.5.6.3    | A3               | 3) The Contractor should undertake proper watering on all exposed spoil (with at least 8 times per day) throughout the construction phase.   | All construction sites                          | V  |
| S5.5.6.4    | A4               | Engineer to incorporate the controlled measures into the Particular Specification (PS) for the civil work. The PS should also draw the Contractor's attention to the relevant latest Practice Notes issued by EPD.   | All construction sites                          | V  |
| S5.5.6.4    | A5               | 5) Implement regular dust monitoring under EM&A programme during the construction stage.   | Selected representative dust monitoring station | V (impact air quality<br>monitoring, covered<br>by Contract No.<br>HY/2013/04 (AMS2,<br>AMS3C, AMS7B) &<br>HY/2011/03 (AMS6) |

| EIA Ref.  | EM&A<br>Log Ref. | Recommended Mitigation Measures  | Location of the measures  | Implementation Status  |
|-----------|------------------|--|---|--|
| S5.5.7.1  | A6               | The following mitigation measures should be adopted to prevent fugitive dust emissions for concrete batching plant:  • Loading, unloading, handling, transfer or storage of any dusty materials should be carried out in totally enclosed system;  • All dust-laden air or waste gas generated by the process operations should be properly extracted and vented to fabric filtering system to meet the emission limits for TSP;  • Vents for all silos and cement/pulverised fuel ash (PFA) weighing scale should be fitted with fabric filtering system;  • The materials which may generate airborne dusty emissions should be wetted by water spray system;  • All receiving hoppers should be enclosed on three sides up to 3m above unloading point;  • All conveyor transfer points should be totally enclosed;  • All access and route roads within the premises should be paved and wetted; and  • Vehicle cleaning facilities should be provided and used by all concrete trucks before leaving the premises to wash off any dust on the wheels and/or body. | Selected<br>representative dust<br>monitoring station                             | N/A  |
| S5.5.2.7  | A7               | The following mitigation measures should be adopted to prevent fugitive dust emissions at barging point:  • All road surface within the barging facilities will be paved;  • Dust enclosures will be provided for the loading ramp;  • Vehicles will be required to pass through designated wheels wash facilities; and  • Continuous water spray at the loading points.   | All construction sites  | N/A  |
| Construct | ion Noise (A     | Air borne)   |   |  |
| S6.4.10   | N1               | 1) Use of good site practices to limit noise emissions by considering the following:  • only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction programme;  • machines and plant (such as trucks, cranes) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum;  • plant known to emit noise strongly in one direction, where possible, be orientated so that the noise is directed away from nearby NSRs;  • silencers or mufflers on construction equipment should be properly fitted and maintained during the construction works;  • mobile plant should be sited as far away from NSRs as possible and practicable;  • material stockpiles, mobile container site officer and other structures should be effectively utilised, where practicable, to screen noise from on-site construction activities.   | All construction sites  | V  |
| S6.4.11   | N2               | Install temporary hoarding located on the site boundaries between noisy construction activities and NSRs. The conditions of the hoardings shall be properly maintained throughout the construction period.   | All construction sites  | V  |
| S6.4.12   | N3               | 3) Install movable noise barriers (typically density @ 14kg/m²), acoustic mat or full enclosure close to noisy plants including air compressor, generators, saw.   | For plant items listed in Appendix 6D of the EIA report at all construction sites | V  |
| S6.4.13   | N4               | 4) Select "Quiet plants" which comply with the BS 5228 Part 1 or TM standards.   | For plant items listed in Appendix 6D of the EIA report at all construction sites | V  |
| S6.4.14   | N5               | 5) Sequencing operation of construction plants where practicable.  | All construction sites where practicable  | V  |
|           | N6               | 6) Implement a noise monitoring under EM&A programme.  | Selected<br>representative noise<br>monitoring station                            | V (impact noise<br>monitoring, covered<br>by Contract No.<br>HY/2013/04, was<br>conducted on 2 Sep<br>2019 only and<br>terminated on 3 Sep<br>2019 upon EPD<br>approval) |
| Sediment  |                  |  |   |  |
| S7.3      | S1               | 1) The requirements as recommended in ETWB TC(W) 34/2002 Management of Dredged/Excavated Sediment shall be included in the Particular Specification as appropriate.  | All construction sites  | V  |

| EIA Ref.            | EM&A<br>Log Ref. | Recommended Mitigation Measures   | Location of the measures | Implementation Status |
|---------------------|------------------|---|--------------------------|-----------------------|
| Waste Mai           | nagement (       | Construction Noise)   |                          |                       |
| S8.3.8              | WM1              | Construction and Demolition Material  The following mitigation measures should be implemented in handling the waste:  • Maintain temporary stockpiles and reuse excavated fill material for backfilling and reinstatement;  | All construction sites   | V                     |
|                     |                  | <ul> <li>Carry out on-site sorting;</li> <li>Make provisions in the Contract documents to allow and promote the use of recycled aggregates where appropriate;</li> <li>Adapt 'Sclostics Domelities' to charge to domelic the existing structures and</li> </ul>   |                          |                       |
|                     |                  | <ul> <li>Adopt 'Selective Demolition' technique to demolish the existing structures and<br/>facilities with a view to recovering broken concrete effectively for recycling purpose,<br/>where possible;</li> </ul>  |                          |                       |
|                     |                  | <ul> <li>Implement a trip-ticket system for each works contract to ensure that the disposal of C&amp;D materials are properly documented and verified; and</li> <li>Implement an enhanced Waste Management Plan similar to ETWB TC(W) No. 19/2005 – "Environmental Management on Construction Sites" to encourage on-site sorting of C&amp;D materials and to minimize their generation during the course of construction.</li> </ul>   |                          |                       |
|                     |                  | <ul> <li>In addition, disposal of the C&amp;D materials onto any sensitive locations such as<br/>agricultural lands, etc. should be avoided. The Contractor shall propose the final<br/>disposal sites to the Project Proponent and get its approval before implementation.</li> </ul>  |                          |                       |
| S8.3.9-<br>S8.3.11  | WM2              | C&D Waste  • Standard formwork or pre-fabrication should be used as far as practicable in order to minimise the arising of C&D materials. The use of more durable formwork or plastic facing for the construction works should be considered. Use of wooden hoardings should not be used, as in other projects. Metal hoarding should be used to enhance the possibility of recycling. The purchasing of construction materials will be carefully planned in order to avoid over ordering and wastage.  | All construction sites   | V                     |
|                     |                  | • The Contractor should recycle as much of the C&D materials as possible on-site.<br>Public fill and C&D waste should be segregated and stored in different containers or skips to enhance reuse or recycling of materials and their proper disposal. Where practicable, concrete and masonry can be crushed and used as fill. Steel reinforcement bar can be used by scrap steel mills. Different areas of the sites should be considered for such segregation and storage.  |                          |                       |
| 58.2.12-<br>58.3.15 | WM3              | Chemical Waste  Chemical waste that is produced, as defined by Schedule 1 of the Waste Disposal (Chemical Waste) (General) Regulation, should be handled in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes.  Containers used for the storage of chemical wastes should be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition, and securely closed; have a capacity of less than 450 liters unless the specification has been approved by the EPD; and display a label in English and Chinese in accordance with instructions prescribed in Schedule 2 of the regulation.  | All construction sites   | V                     |
|                     |                  | The storage area for chemical wastes should be clearly labelled and used solely for the storage of chemical waste; enclosed on at least 3 sides; have an impermeable floor and bunding of sufficient capacity to accommodate 110% of the volume of the largest container or 20 % of the total volume of waste stored in that area, whichever is the greatest; have adequate ventilation; covered to prevent rainfall entering; and arranged so that incompatible materials are adequately separated.  Disposal of chemical waste should be via a licensed waste collector; be to a facility licensed to receive chemical waste, such as the Chemical Waste Treatment Centre which also offers a chemical waste collection service and can supply the necessary storage containers; or be to a reuser of the waste, under approval from the EPD. |                          |                       |
| S8.3.16             | WM4              | Sewage  • Adequate numbers of portable toilets should be provided for the workers. The portable toilets should be maintained in a state, which will not deter the workers from utilizing these portable toilets. Night soil should be collected by licensed collectors regularly.   | All construction sites   | V                     |
| S8.3.17             | WM5              | General Refuse  • General refuse generated on-site should be stored in enclosed bins or compaction units separately from construction and chemical wastes.  • A reputable waste collector should be employed by the Contractor to remove general refuse from the site, separately from construction and chemical wastes, on a daily basis to minimize odour, pest and litter impacts. Burning of refuse on construction sites is prohibited by law.   | All construction sites   | V                     |
|                     |                  | <ul> <li>Aluminium cans are often recovered from the waste stream by individual collectors if<br/>they are segregated and made easily accessible. Separate labelled bins for their</li> </ul>   |                          |                       |

| EIA Ref.  | EM&A<br>Log Ref. | Recommended Mitigation Measures  | Location of the measures  | Implementation Status |
|-----------|------------------|--|---------------------------|-----------------------|
|           |                  | deposit should be provided if feasible.  • Office wastes can be reduced through the recycling of paper if volumes are large enough to warrant collection. Participation in a local collection scheme should be considered by the Contractor. In addition, waste separation facilities for paper, aluminium cans, plastic bottles etc., should be provided.   |                           |                       |
|           |                  | <ul> <li>Training should be provided to workers about the concepts of site cleanliness and<br/>appropriate waste management procedure, including reduction, reuse and recycling of<br/>wastes.</li> </ul>  |                           |                       |
| Water Qua | ality (Constr    | ruction Phase)   |                           |                       |
| S9.11.1.1 | W1               | Mitigation during the marine works to reduce impacts to within acceptable levels have been recommended and will comprise a series of measures that restrict the method and sequencing of dredging/backfilling, as well as protection measures. Details of the measures are provided below.   | Marine works              | N/A                   |
|           |                  | • Floating type perimeter silt curtains shall be around the HKBCF site before the commencement of marine works.  |                           |                       |
|           |                  | Silt curtain shall be fully maintained throughout the works.   |                           |                       |
| S9.11.1.7 | W2               | <u>Land Works</u> General construction activities on land should also be governed by standard good working practice. Specific measures to be written into the works contracts should include:  | Land-based works<br>areas | V                     |
|           |                  | wastewater from temporary site facilities should be controlled to prevent direct discharge to surface or marine waters;  |                           |                       |
|           |                  | <ul> <li>sewage effluent and discharges from on-site kitchen facilities shall be directed to<br/>Government sewer in accordance with the requirements of the W PCO or collected for<br/>disposal offsite. The use of soakaways shall be avoided;</li> </ul>  |                           |                       |
|           |                  | <ul> <li>storm drainage shall be directed to storm drains via adequately designed sand/silt<br/>removal facilities such as sand traps, silt traps and sediment basins. Channels, earth<br/>bunds or sand bag barriers should be provided on site to properly direct stormwater to<br/>such silt removal facilities. Catchpits and perimeter channels should be constructed in<br/>advance of site formation works and earthworks;</li> </ul> |                           |                       |
|           |                  | <ul> <li>silt removal facilities, channels and manholes shall be maintained and any deposited<br/>silt and grit shall be removed regularly, including specifically at the onset of and after<br/>each rainstorm;</li> </ul>  |                           |                       |
|           |                  | • temporary access roads should be surfaced with crushed stone or gravel;  |                           |                       |
|           |                  | rainwater pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities;      measures should be taken to project the washout of construction meterials said silt.   |                           |                       |
|           |                  | <ul> <li>measures should be taken to prevent the washout of construction materials, soil, silt or debris into any drainage system;</li> <li>open stockpiles of construction materials (e.g. aggregates and sand) on site should</li> </ul>   |                           |                       |
|           |                  | be covered with tarpaulin or similar fabric during rainstorms;   |                           |                       |
|           |                  | <ul> <li>manholes (including any newly constructed ones) should always be adequately<br/>covered and temporarily sealed so as to prevent silt, construction materials or debris<br/>from getting into the drainage system, and to prevent storm run-off from getting into<br/>foul sewers;</li> </ul>  |                           |                       |
|           |                  | • discharges of surface run-off into foul sewers must always be prevented in order not to unduly overload the foul sewerage system;  |                           |                       |
|           |                  | <ul> <li>all vehicles and plant should be cleaned before they leave the construction site to ensure that no earth, mud or debris is deposited by them on roads. A wheel washing bay should be provided at every site exit;</li> </ul>  |                           |                       |
|           |                  | wheel wash overflow shall be directed to silt removal facilities before being discharged to the storm drain;   |                           |                       |
|           |                  | • the section of construction road between the wheel washing bay and the public road should be surfaced with crushed stone or coarse gravel;   |                           |                       |
|           |                  | wastewater generated from concreting, plastering, internal decoration, cleaning work and other similar activities, shall be screened to remove large objects;  |                           |                       |
|           |                  | <ul> <li>vehicle and plant servicing areas, vehicle wash bays and lubrication facilities shall be<br/>located under roofed areas. The drainage in these covered areas shall be connected<br/>to foul sewers via a petrol interceptor in accordance with the requirements of the W<br/>PCO or collected for off site disposal;</li> </ul>   |                           |                       |
|           |                  | • the Contractors shall prepare an oil / chemical cleanup plan and ensure that leakages or spillages are contained and cleaned up immediately;   | 3                         |                       |
|           |                  | <ul> <li>waste oil should be collected and stored for recycling or disposal, in accordance with</li> </ul>   |                           |                       |

• waste oil should be collected and stored for recycling or disposal, in accordance with

• all fuel tanks and chemical storage areas should be provided with locks and be sited on sealed areas. The storage areas should be surrounded by bunds with a capacity equal to 110% of the storage capacity of the largest tank; and

the Waste Disposal Ordinance;

| EIA Ref.  | EM&A<br>Log Ref. | Recommended Mitigation Measures   | Location of the measures                      | Implementation Status  |
|-----------|------------------|---|---|--|
|           |                  | surface run-off from bunded areas should pass through oil/grease traps prior to discharge to the stormwater system.   |   |  |
| S9.14     | W3               | Implement a water quality monitoring programme  | At identified monitoring locations            | V (impact<br>operational phase<br>water quality<br>monitoring<br>programme, covered<br>by Contract No.<br>HY/2013/04)  |
| Ecology ( | Constructio      | n Phase)  |   |  |
| S10.7     | E2               | <ul> <li>Install silt curtain during the construction.</li> <li>Limit dredging and works fronts.</li> <li>Good site practices.</li> <li>Site runoff control.</li> </ul>   | Marine works and<br>Land-based works<br>areas | N/A  |
| S10.7     | E4               | Watering to reduce dust generation; prevention of siltation of freshwater habitats; Site runoff should be desilted, to reduce the potential for suspended sediments, organics and other contaminants to enter streams and standing freshwater   | Land-based works areas                        | V  |
| S10.7     | E5               | Good site practices, including strictly following the permitted works hours, using quieter machines where practicable, and avoiding excessive lightings during night time   | Land-based works areas                        | V  |
| S10.7     | E6               | Dolphin Exclusion Zone;     Dolphin watching plan   | Marine works                                  | N/A  |
| S10.7     | E7               | Decouple compressors and other equipment on working vessels     Avoidance of percussive piling  | Marine works                                  | N/A  |
| S10.7     | E8               | <ul><li>Control vessel speed</li><li>Skipper training</li><li>Predefined and regular routes for working vessels; avoid Brother Islands.</li></ul>   | Marine Traffic                                | N/A  |
| S10.10    | E9               | Dolphin vessel monitoring   | North Lantau and<br>West Lantau               | V (post-construction<br>dolphin monitoring,<br>covered by Contract<br>No. HY/2011/03 for<br>Sep 2019 and by<br>Contract No.<br>HY/2012/08 for Oct<br>& Nov 2019) |
| Fisheries |                  |   |   |  |
| S11.7     | F4               | <ul><li>Maritime Oil Spill Response Plan (MOSRP);</li><li>Contingency plan.</li></ul>   | HKBCF   | V  |
| Landscap  | e & Visual (l    | Detailed Design Phase)  |   |  |
| S14.3.3.1 | LV1              | General design measures include:  Roadside planting and planting along the edge of the HKBCF Island is proposed;  Transplanting of mature trees in good health and amenity value where appropriate and reinstatement of areas disturbed during construction by compensatory hydroseeding and planting;  Protection measures for the trees to be retained during construction activities;  Optimizing the sizes and spacing of the bridge columns; Fine-tuning the location of the bridge columns to avoid visually-sensitive locations;  Maximizing new tree, shrub and other vegetation planting to compensate tree felled and vegetation removed;  Providing planting area around peripheral of HKBCF for tree planting screening effect;  Providing salt-tolerant native trees along the planter strip at affected seawall and | HKBCF   | V  |
|           |                  | newly reclaimed coastline; • For HKBCF, providing aesthetic architectural design on the related buildings (e.g. similar materials for PCB building facade to Airport buildings, roof planting and subtle materials for other facilities buildings and so on), and the related infrastructure (e.g. parapet planting and transparent cover for elevated footbridges) to provide harmonious atmosphere of the HKBCF; and • Fine-tuning the sizes of the structural members to minimize the bulkiness of buildings and adjustment of building arrangement to minimise disturbance to surrounding vegetation in the HKBCF.  |   |  |

| EIA Ref.  | EM&A<br>Log Ref. | Recommended Mitigation M   | leasures           |   | Location of the measures | Implementation Status |
|-----------|------------------|--|--------------------|---|--------------------------|-----------------------|
| Landscap  | e & Visual (     | Construction Phase)  |                    |   |                          |                       |
| S14.3.3.3 | LV2              | Mitigate both Landscape and Visu   | HKBCF              | V   |                          |                       |
|           |                  | G1. Grass-hydroseed bare soil su   | irface and stock p | ile areas.  |                          |                       |
|           |                  | G2. Add planting strip and automa of bridge footbridge to screen brid                        |                    | em if appropriate at some portions  |                          |                       |
|           |                  | G3. Not applicable as this is for H  | KLR.               |   |                          |                       |
|           |                  | similar materials for PCB building materials for other facilities building                   | facade to Airport  | esign on the related buildings (e.g. buildings, roof planting and subtle nd the related infrastructure (e.g. I footbridges) to provide harmonious |                          |                       |
|           |                  | G5. Vegetation reinstatement and   | l upgrading to dis | turbed areas  |                          |                       |
|           |                  | G6. Maximizing new tree shrub ar felled and vegetation removed                               |                    |   |                          |                       |
|           |                  | G7. Providing planting area aroun effect;  | d peripheral of H  | KBCF for tree planting screening  |                          |                       |
|           |                  | G8. Plant salt-tolerant native and   | shrubs etc along   | the planter strip at affected seawall.  |                          |                       |
|           |                  | "natural-look" by means of using a   | armour rocks in th | se. Provide new coastline to adopt<br>the form of natural rock materials and<br>enhance "natural-look" of the new                                 |                          |                       |
| S14.3.3.3 | LV3              | Mitigate Visual Impacts  |                    |   |                          | V                     |
|           |                  | V1. Minimize time for construction   | activities during  | construction period.  |                          |                       |
|           |                  | V2. Provide screen hoarding at th areas near VSRs who have close construction.               |                    |   |                          |                       |
| EM&A      |                  |  |                    |   |                          |                       |
| S15.2.2   | EM1              | An Independent Environmental Cl Manual.  | hecker needs to b  | e employed as per the EM&A  | All construction sites   | V                     |
| S15.5 -   | EM2              | 1) An Environmental Team needs   | to be employed     | as per the EM&A Manual.   | All construction sites   | V                     |
| S15.6     |                  | 2) Prepare a systematic Environm implementation of the mitigation n                          |                    |   |                          |                       |
|           |                  | 3) An environmental impact monit<br>Environmental Team to ensure all<br>fully complied with. |                    |   |                          |                       |
| Legend:   | V = implen       | ented; x = not imple   | omontod:           | N/A = not applicable  |                          |                       |

# **Appendix F. Site Audit Findings and Corrective Actions**

#### Appendix F – Site Audit Findings and Corrective Actions

Site Inspections were carried out on a weekly basis to monitor the implementation of proper environmental pollution control mitigation measures for the project. During the reporting period, site inspections were carried out on 4, 11, 18 and 25 September, 2, 9, 16, 21 and 30 October, and 6, 14, 18 and 27 November 2019.

Particular observations during the site inspections are described below.

#### 28 August 2019

a. Plastic pipes were observed directly connected to storm drain. Subsequently, Aquased was provided to treat site effluent and eventually no discharge was observed. The observation was closed on 11 September 2019.

#### 4 September 2019

a. A container inside chemical waste storage area was observed without chemical waste label. Subsequently, the container was removed from the chemical waste storage area. The observation was closed on 11 September 2019.

#### 11 September 2019

a. The haul road and stockpiles onsite were observed dry and dusty. Subsequently, water spray was provided. The observation was closed on 18 September 2019.

#### 18 September 2019

- a. A generator was observed without display of NRMM label. Subsequently, the concerned generator was removed from site. The observation was closed on 25 September 2019.
- b. Food wastes were observed storing with other construction wastes in a waste skip. Subsequently, the food wastes were sorted and removed from the skip. The observation was closed on 25 September 2019.

### 25 September 2019

a. Stockpiles and some exposed works areas were observed dry and dusty. Subsequently, these locations were wetted. The observation was closed on 9 October 2019.

#### 2 October 2019

a. General refuse was observed mixing with other construction wastes. Subsequently, the concerned wastes were removed from site. The observation was closed on 9 October 2019.

#### 9 October 2019

a. No new observations were made.

### 16 October 2019

a. Stagnant water was observed accumulating onsite. Subsequently, the stagnant water was cleared. The observation was closed on 21 October 2019.

#### 21 October 2019

- a. An oil container was observed without secondary containment. Subsequently, the oil container was removed from site. The observation was closed on 27 November 2019.
- b. The waste skip was observed overflowing. Subsequently, the general refuse was cleared. The observation was closed on 18 November 2019.

### 30 October 2019

a. The exposed works area was observed dry and dusty. The Contractor should ensure provision of water spraying for dust suppression. Follow-up action for the outstanding observation will be inspected during the upcoming site inspections and reported in the coming reporting period.

#### 6 November 2019

a. A chemical waste storage area was observed damaged. The Contractor should repair / replace the damaged chemcial waste storage area. Follow-up action for the outstanding observation will be inspected during the upcoming site inspections and reported in the coming reporting period.

#### 14 November 2019

a. No new observations were made.

#### 18 November 2019

a. No new observations were made.

#### 27 November 2019

a. Muddy trail was observed outside the site entrance of Gate 3 works area. The Contractor should ensure wheel washing of vehicles is properly implemented before leaving site. Followup action for the outstanding observation will be inspected during the upcoming site inspections and reported in the coming reporting period.

### **Appendix G. Waste Flow Table**

Name of Department: Highways Department

Contract No.: HY/2013/04

### **Monthly Summary Waste Flow Table for 2019**

|           |                             | Actual Qua                                | Intities of Inert C&D    | Materials Generate                     | ed Monthly                 |                          | Actual Quantities of C&D Wastes Generated Monthly |                                  |                   |                |                                |  |
|-----------|-----------------------------|---|--------------------------|--|----------------------------|--------------------------|---|----------------------------------|-------------------|----------------|--------------------------------|--|
| Month     | Total Quantity<br>Generated | Hard Rock and<br>Large Broken<br>Concrete | Reused in the Contract   | Transported to other Projects (Note 2) | Disposed as<br>Public Fill | Imported Fill            | Metals  | Paper/<br>cardboard<br>packaging | Plastics (Note 1) | Chemical Waste | Others,<br>e.g. general refuse |  |
|           | (in '000m <sup>3</sup> )    | (in '000m <sup>3</sup> )                  | (in '000m <sup>3</sup> ) | (in '000m <sup>3</sup> )               | (in '000m <sup>3</sup> )   | (in '000m <sup>3</sup> ) | (in '000kg)                                       | (in '000kg)                      | (in '000kg)       | (in '000kg)    | (in '000m <sup>3</sup> )       |  |
| Jan       | 4.2740                      | 0   | 0                        | 0                                      | 4.2740                     | 0                        | 0   | 0                                | 0                 | 0              | 0.1046                         |  |
| Feb       | 0.9927                      | 0   | 0                        | 0                                      | 0.9927                     | 0                        | 0   | 0                                | 0                 | 0              | 0.0864                         |  |
| Mar       | 1.4638                      | 0   | 0                        | 0                                      | 1.4638                     | 0                        | 0   | 0                                | 0                 | 0              | 0.0843                         |  |
| Apr       | 0.1044                      | 0   | 0                        | 0                                      | 0.1044                     | 0                        | 0   | 0                                | 0                 | 0              | 0.0688                         |  |
| May       | 0.9415                      | 0   | 0                        | 0                                      | 0.9415                     | 0                        | 0   | 0                                | 0                 | 0              | 0.0745                         |  |
| Jun       | 0.6075                      | 0   | 0                        | 0                                      | 0.6075                     | 0                        | 0   | 0                                | 0                 | 0              | 0.0176                         |  |
| Sub-total | 8.3839                      | 0   | 0                        | 0.000                                  | 8.3839                     | 0                        | 0   | 0                                | 0                 | 0              | 0.4362                         |  |
| Jul       | 0.1456                      | 0   | 0                        | 0                                      | 0.1456                     | 0                        | 0   | 0                                | 0                 | 0              | 0.0873                         |  |
| Aug       | 1.4485                      | 0   | 0                        | 0                                      | 1.4485                     | 0                        | 0   | 0                                | 0                 | 0              | 0.0383                         |  |
| Sep       | 0.6110                      | 0   | 0                        | 0                                      | 0.6110                     | 0                        | 0   | 0                                | 0                 | 0              | 0.0526                         |  |
| Oct       | 0.4347                      | 0   | 0                        | 0                                      | 0.4347                     | 0                        | 0   | 0                                | 0                 | 0              | 0.0358                         |  |
| Nov       | 1.1544                      | 0   | 0                        | 0                                      | 1.1544                     | 0                        | 0   | 0                                | 0                 | 0              | 0.0694                         |  |
| Dec       |                             |   |                          |  |                            |                          |   |                                  |                   |                |                                |  |
| Total     | 12.1781                     | 0   | 0                        | 0.000                                  | 12.1781                    | 0                        | 0   | 0                                | 0                 | 0              | 0.7196                         |  |

Note:

<sup>(1)</sup> Plastics refer to plastic bottles / containers, plastic sheets / foam from packaging material

<sup>(2) &</sup>quot;Other Projects" refers to HKBCF Contract No. HY/2013/03

Name of Department: Highways Department

Contract No.: HY/2013/04

### **Monthly Summary of Excavated Marine Sediment for 2019**

| Month     | a. Estimated Volume of Excavated<br>Marine Sediment Generated | b. Estimate Volume of<br>Accumulated Excavated Marine<br>Sediment Treated | c. Reused in the Contract | d. Estimated Volume of<br>Excavated Marine Sediment<br>Transported to Other Projects<br>(Note 1) | e. Estimated Volume of Treated<br>Excavated Marine Sediment<br>Stored on Site (Unused) |
|-----------|---|---|---------------------------|--|--|
|           | (in m³)   | (in m³)   | (in m³)                   | (in m³)  | (in m³)  |
| Jan       | 0   | 0   | 0                         | 0  | 0  |
| Feb       | 0   | 0   | 0                         | 0  | 0  |
| Mar       | 0   | 0   | 0                         | 0  | 0  |
| Apr       | 0   | 0   | 0                         | 0  | 0  |
| May       | 0   | 0   | 0                         | 0  | 0  |
| Jun       | 0   | 0   | 0                         | 0  | 0  |
| Sub-total | 0   | 0   | 0                         | Ō  | 0  |
| Jul       | 0   | 0   | 0                         | 0  | 0  |
| Aug       | 0   | 0   | 0                         | 0  | 0  |
| Sep       | 0   | 0   | 0                         | 0  | 0  |
| Oct       | 0   | 0   | 0                         | 0  | 0  |
| Nov       | 0   | 0   | 0                         | 0  | 0  |
| Dec       |   |   |                           |  |  |
| Total     | 0   | 0   | 0                         | 0  | 0  |

Note:

<sup>(1) &</sup>quot;Other Projects" refers to HKBCF Contract No. HY/2013/03. The disposal of excavated marine sediments to allocated dumping site via Contract No. HY/2013/03 has been completed with the last batch disposal on 30 August 2017.

# **Appendix H. Environmental Licenses and Permits**

### **Environmental Licences and Permits**

| Item<br>No. | Type of Permit / Licence   | Reference No.  | Application Date | Valid from  | Valid until | Remark                          |
|-------------|--|--|------------------|-------------|-------------|---------------------------------|
| 1           | Environmental Permit under EIAO  | EP-353/2009/K  | 24 Mar 2016      | 11 Apr 2016 | N/A         | Issued                          |
| 2           | Further Environmental Permit under EIAO                                  | FEP-01/353/2009/K                                    | 29 Nov 2018      | 27 Dec 2018 | N/A         | Issued                          |
| 3           | Construction Dust Notification (HKBCF Southern Portion)                  | 387156   | 26 Mar 2015      | 1 Apr 2015  | N/A         | Notified                        |
| 4           | Construction Waste Disposal Account                                      | 7022038  | 16 Mar 2015      | 1 Apr 2015  | N/A         | Account approved                |
| 5           | Registration as a Chemical<br>Waste Producer (HKBCF<br>Southern Portion) | Waste Producer<br>Number (WPN):<br>5213-951-C3952-01 | 27 Mar 2015      | 27 Apr 2015 | N/A         | Registration completed          |
| 6           | Discharge Licence under WPCO (Works Area WA3)                            | WT00022316-2015                                      | 1 Jun 2015       | 14 Aug 2015 | 31 Aug 2020 | Issued                          |
| 7           | Discharge Licence under WPCO (HKBCF Works Area)                          | WT00028782-2017                                      | 25 May 2017      | 19 Jul 2017 | 31 Jul 2022 | Issued                          |
| 8           | Construction Noise Permit  | GW-RS0181-19   | 19 Feb 2019      | 30 Mar 2019 | 29 Sep 2019 | Expired during reporting period |
| 9           | Construction Noise Permit  | GW-RS0713-19   | 19 Jul 2019      | 30 Sep 2019 | 4 Mar 2020  | Issued                          |

# Appendix I. Statistics on Environmental Complaints, Notification of Summons and Successful Prosecutions

### Statistics on Environmental Complaints, Notifications of Summons and Successful Prosecutions

| Reporting Period   | Complaints | Notifications of<br>Summons | Successful<br>Prosecutions |
|--|------------|-----------------------------|----------------------------|
| This reporting period  | 0          | 0                           | 0                          |
| From commencement date of construction to end of reporting month | 11         | 0                           | 0                          |

# **Appendix J. Post-Construction Dolphin Monitoring Survey Findings and Analysis**



### 香港鯨豚研究計劃

### CONTRACT NO. HY/2013/04

### Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities – Infrastructure Works Stage II (Southern Portion) Dolphin Monitoring (Operational Phase)

Third Quarterly Progress Report (September-November 2019)

Submitted to Mott MacDonald Hong Kong Limited & China State Construction Engineering (Hong Kong) Limited

Submitted by Samuel K.Y. Hung, Ph.D. Hong Kong Cetacean Research Project

10 February 2020

### 1. Introduction

- 1.1. For the Hong Kong-Zhuhai-Macao Bridge (HZMB) Hong Kong Boundary Crossing Facilities (HKBCF), its operation requires the contractor (i.e. China State Construction Engineering (Hong Kong) Limited) and the associated Environmental Team, Mott MacDonald Hong Kong Limited, to implement the Environmental Monitoring and Audit (EM&A) programme during the operational phase.
- 1.2. According to the HKBCF EM&A Manual, monthly line-transect vessel surveys for Chinese White Dolphins should be conducted to cover the Northwest (NWL) and Northeast Lantau (NEL) survey areas, which should be the same as in AFCD annual marine mammal monitoring programme. However, as such monitoring surveys have been undertaken by the HKLR03/TMCLKL08 EM&A programmes in the same areas (i.e. NWL and NEL) during the construction phase of these projects, a combined monitoring approach is recommended by the Highways Department, that the HKBCF EM&A project should utilize the monitoring data collected by HKLR03/TMCLKL08 EM&A project to avoid any redundancy in monitoring effort.
- 1.3. In April 2019, the Director of Hong Kong Cetacean Research Project (HKCRP), Dr. Samuel Hung, has been appointed by the ET as the dolphin specialist for the operational phase of the HKBCF EM&A project. He is responsible for the dolphin monitoring study,



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including the collection and collation of dolphin monitoring data from the HKLR03/ TMCLKL08 EM&A projects to examine any potential impacts during the operational phase of HKBCF project on the dolphins. From the monitoring results, any changes in dolphin occurrence within the study area will be reviewed for possible causes, and appropriate actions and additional mitigation measures will be recommended as necessary.

1.4. The present quarterly progress report of this HKBCF operational phase dolphin monitoring programme is submitted to the environmental team and the contractor, summarizing the result of the survey findings during the quarterly period of September to November 2019 utilizing the monitoring data collected through the HKLR03 Contract (for September 2019) and TMCLKL08 Contract (for October and November 2019). Moreover, the historical monitoring data from previous years obtained under the HKLR03 Contract are also referenced and compared. All these previous monitoring data was collected by the same HKCRP survey team, to ensure 100% consistency in monitoring methodology including vessel survey method as well as various analyses.

### 2. Monitoring Methodology

- 2.1. Vessel-based Line-transect Survey
- 2.1.1. According to the requirement of the updated EM&A manual, dolphin monitoring programme should cover all transect lines in NEL and NWL survey areas (see Figure 1) twice per month throughout the entire operational period. The co-ordinates of all transect lines are shown in Table 1.

Table 1. Co-ordinates of transect lines

|   | Line No.    | Easting | Northing |    | Line No.    | Easting | Northing |
|---|-------------|---------|----------|----|-------------|---------|----------|
| 1 | Start Point | 804671  | 815456   | 13 | Start Point | 816506  | 819480   |
| 1 | End Point   | 804671  | 831404   | 13 | End Point   | 816506  | 824859   |
| 2 | Start Point | 805476  | 820800   | 14 | Start Point | 817537  | 820220   |
| 2 | End Point   | 805476  | 826654   | 14 | End Point   | 817537  | 824613   |
| 3 | Start Point | 806464  | 821150   | 15 | Start Point | 818568  | 820735   |
| 3 | End Point   | 806464  | 822911   | 15 | End Point   | 818568  | 824433   |
| 4 | Start Point | 807518  | 821500   | 16 | Start Point | 819532  | 821420   |



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|    |             |        |        | <br> |             |        |        |
|----|-------------|--------|--------|------|-------------|--------|--------|
| 4  | End Point   | 807518 | 829230 | 16   | End Point   | 819532 | 824209 |
| 5  | Start Point | 808504 | 821850 | 17   | Start Point | 820451 | 822125 |
| 5  | End Point   | 808504 | 828602 | 17   | End Point   | 820451 | 823671 |
| 6  | Start Point | 809490 | 822150 | 18   | Start Point | 821504 | 822371 |
| 6  | End Point   | 809490 | 825352 | 18   | End Point   | 821504 | 823761 |
| 7  | Start Point | 810499 | 822000 | 19   | Start Point | 822513 | 823268 |
| 7  | End Point   | 810499 | 824613 | 19   | End Point   | 822513 | 824321 |
| 8  | Start Point | 811508 | 821123 | 20   | Start Point | 823477 | 823402 |
| 8  | End Point   | 811508 | 824254 | 20   | End Point   | 823477 | 824613 |
| 9  | Start Point | 812516 | 821303 | 21   | Start Point | 805476 | 827081 |
| 9  | End Point   | 812516 | 824254 | 21   | End Point   | 805476 | 830562 |
| 10 | Start Point | 813525 | 821176 | 22   | Start Point | 806464 | 824033 |
| 10 | End Point   | 813525 | 824657 | 22   | End Point   | 806464 | 829598 |
| 11 | Start Point | 814556 | 818853 | 23   | Start Point | 814559 | 821739 |
| 11 | End Point   | 814556 | 820992 | 23   | End Point   | 814559 | 824768 |
| 12 | Start Point | 815542 | 818807 | 24   | Start Point | 805476 | 815900 |
| 12 | End Point   | 815542 | 824882 | 24   | End Point   | 805476 | 819100 |

- 2.1.2. The HKLR03/TMCLKL08 survey teams used standard line-transect methods (Buckland et al. 2001) to conduct the systematic vessel surveys, and followed the same technique of data collection that has been adopted over the last 22 years of marine mammal monitoring surveys in Hong Kong (see Hung 2018). For each monitoring vessel survey, a 15-m inboard vessel with an open upper deck (about 4.5 m above water surface) was used to make observations from the flying bridge area.
- 2.1.3. Two experienced observers (a data recorder and a primary observer) made up the on-effort survey team, and the survey vessel transited different transect lines at a constant speed of 13-15 km per hour. The data recorder searched with unaided eyes and filled out the datasheets, while the primary observer searched for dolphins continuously through 7 x 50 marine binoculars. Both observers searched the sea ahead of the vessel, between 270° and 90° (in relation to the bow, which is defined as 0°). At least one additional experienced observers were available on the boat to work in shift (i.e. rotate every 30).



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minutes) in order to minimize fatigue of the survey team members. All observers were experienced in small cetacean survey techniques and identifying local cetacean species.

- 2.1.4. During on-effort survey periods, the survey team recorded effort data including time, position (latitude and longitude), weather conditions (Beaufort sea state and visibility), and distance traveled in each series (a continuous period of search effort) with the assistance of a handheld GPS (e.g. *Garmin eTrex Legend*). Data including time, position and vessel speed were also automatically and continuously logged by handheld GPS throughout the entire survey for subsequent review.
- 2.1.5. When dolphins were sighted, the survey team would end the survey effort, and immediately record the initial sighting distance and angle of the dolphin group from the survey vessel, as well as the sighting time and position. Then the research vessel was diverted from its course to approach the animals for species identification, group size estimation, assessment of group composition, and behavioural observations. The perpendicular distance (PSD) of the dolphin group to the transect line was later calculated from the initial sighting distance and angle.
- 2.1.6. Survey effort being conducted along the parallel transect lines that were perpendicular to the coastlines (as indicated in Figure 1) was labeled as "primary" survey effort, while the survey effort conducted along the connecting lines between parallel lines was labeled as "secondary" survey effort. According to HKCRP long-term dolphin monitoring data, encounter rates of Chinese white dolphins deduced from effort and sighting data collected along primary and secondary lines were similar in NEL and NWL survey areas. Therefore, both primary and secondary survey effort were presented as on-effort survey effort in this report.

### 2.2. Photo-identification Work

- 2.2.1. When a group of Chinese White Dolphins were sighted during the line-transect survey, the survey team would end effort and approach the group slowly from the side and behind to take photographs of them. Every attempt was made to photograph every dolphin in the group, and even photograph both sides of the dolphins, since the colouration and markings on both sides may not be symmetrical.
- 2.2.2. One to two professional digital cameras (e.g. *Canon* EOS 7D model), each equipped with long telephoto lenses (100-400 mm zoom), were available on board for researchers to take sharp, close-up photographs of dolphins as they surfaced. The images were shot at the highest available resolution and stored on Compact Flash memory cards for downloading onto a computer.



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- 2.2.3. All digital images taken in the field were first examined, and those containing potentially identifiable individuals were sorted out. These photographs would then be examined in greater detail, and were carefully compared to the existing Chinese White Dolphin photo-identification catalogue maintained by HKCRP since 1995. Chinese White Dolphins can be identified by their natural markings, such as nicks, cuts, scars and deformities on their dorsal fin and body, and their unique spotting patterns were also used as secondary identifying features (Jefferson 2000).
- 2.2.4. All photographs of each individual were then compiled and arranged in chronological order, with data including the date and location first identified (initial sighting), re-sightings, associated dolphins, distinctive features, and age classes entered into a computer database.

### 2.3. Data analysis

- 2.3.1. Distribution Analysis The line-transect survey data was integrated with the Geographic Information System (GIS) in order to visualize and interpret different spatial and temporal patterns of dolphin distribution using sighting positions. Location data of dolphin groups were plotted on map layers of Hong Kong using a desktop GIS (ArcView® 3.1) to examine their distribution patterns in details. The dataset was also stratified into different subsets to examine distribution patterns of dolphin groups with different categories of group sizes, young calves and activities.
- 2.3.2. Encounter rate analysis Encounter rates of Chinese White Dolphins (number of on-effort sightings per 100 km of survey effort, and total number of dolphins sighted on-effort per 100 km of survey effort) were calculated in NEL and NWL survey areas in relation to the amount of survey effort conducted during each month of monitoring survey. Dolphin encounter rates were calculated in two ways for comparisons with the HZMB baseline monitoring results as well as to AFCD long-term marine mammal monitoring results.
- 2.3.3. Firstly, for the comparison with the HZMB baseline monitoring results, the encounter rates were calculated using primary survey effort alone, and only data collected under Beaufort 3 or below condition would be used for encounter rate analysis. The average encounter rate of sightings (STG) and average encounter rate of dolphins (ANI) were deduced based on the encounter rates from six events during the present quarter (i.e. six sets of line-transect surveys in North Lantau), which was also compared with the one deduced from the six events during the baseline period (i.e. six sets of line-transect surveys in North Lantau).



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- 2.3.4. Secondly, the encounter rates were calculated using both primary and secondary survey effort collected under Beaufort 3 or below condition as in AFCD long-term monitoring study. The encounter rate of sightings and dolphins were deduced by dividing the total number of on-effort sightings (STG) and total number of dolphins (ANI) by the amount of survey effort for the present quarterly period.
- 2.3.5. Quantitative grid analysis on habitat use To conduct quantitative grid analysis of habitat use, positions of on-effort sightings of Chinese White Dolphins collected during the quarterly monitoring period were plotted onto 1-km² grids among NWL and NEL survey areas on GIS. Sighting densities (number of on-effort sightings per km²) and dolphin densities (total number of dolphins from on-effort sightings per km²) were then calculated for each 1 km by 1 km grid with the aid of GIS.
- 2.3.6. Sighting density grids and dolphin density grids were then further normalized with the amount of survey effort conducted within each grid. The total amount of survey effort spent on each grid was calculated by examining the survey coverage on each line-transect survey to determine how many times the grid was surveyed during the study period. For example, when the survey boat traversed through a specific grid 50 times, 50 units of survey effort were counted for that grid. With the amount of survey effort calculated for each grid, the sighting density and dolphin density of each grid were then normalized (i.e. divided by the unit of survey effort).
- 2.3.7. The newly-derived unit for sighting density was termed SPSE, representing the number of on-effort sightings per 100 units of survey effort. In addition, the derived unit for actual dolphin density was termed DPSE, representing the number of dolphins per 100 units of survey effort. Among the 1-km² grids that were partially covered by land, the percentage of sea area was calculated using GIS tools, and their SPSE and DPSE values were adjusted accordingly. The following formulae were used to estimate SPSE and DPSE in each 1-km² grid within the study area:

SPSE =  $((S / E) \times 100) / SA\%$ DPSE =  $((D / E) \times 100) / SA\%$ 

S = total number of on-effort sightings

D = total number of dolphins from on-effort sightings

E = total number of units of survey effort

SA% = percentage of sea area

where

2.3.8. Behavioural analysis – When dolphins were sighted during vessel surveys, their behaviour was observed. Different activities were categorized (i.e. feeding,



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milling/resting, traveling, socializing) and recorded on sighting datasheets. This data was then input into a separate database with sighting information, which can be used to determine the distribution of behavioural data with a desktop GIS. Distribution of sightings of dolphins engaged in different activities and behaviours would then be plotted on GIS and carefully examined to identify important areas for different activities of the dolphins.

2.3.9. Ranging pattern analysis – Location data of individual dolphins that occurred during the quarterly monitoring period were obtained from the dolphin sighting database and photo-identification catalogue. To deduce home ranges for individual dolphins using the fixed kernel methods, the program Animal Movement Analyst Extension, was loaded as an extension with ArcView<sup>©</sup> 3.1 along with another extension Spatial Analyst 2.0. Using the fixed kernel method, the program calculated kernel density estimates based on all sighting positions, and provided an active interface to display kernel density plots. The kernel estimator then calculated and displayed the overall ranging area at 95% UD level.

### 3. Monitoring Results

- 3.1. Summary of survey effort and dolphin sightings
- 3.1.1. A total of six sets of systematic line-transect vessel surveys were conducted under the HKLR03/TMCLKL08 dolphin monitoring programmes during the period of September to November 2019, to cover all transect lines in NWL and NEL survey areas twice per month. From these surveys, 796.8 km of total survey effort was collected, and 97.9% of such effort was conducted under favourable weather conditions (i.e. Beaufort Sea State 3 or below with good visibility). Among the NEL and NWL survey areas, 293.7 km and 503.1 km of survey effort were collected respectively.
- 3.1.2. Moreover, 572.4 km of survey effort was conducted on primary lines, while another 224.4 km of survey effort was conducted on secondary lines. As mentioned in the methodology section, survey effort conducted on primary and secondary lines were all considered to be on-effort survey data. A summary table of the survey effort for the three-month monitoring period is shown in Appendix I.
- 3.1.3. From September to November 2019, only four groups of seven Chinese White Dolphins were sighted during the HKLR03/TMCLKL08 monitoring surveys, and the summary table of dolphin sightings is shown in Appendix II. All four groups were sighted during on-effort search, and three of these on-effort sightings were made on primary lines. All



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dolphin groups were only sighted in NWL, with none being sighted in NEL at all during the three-month monitoring period.

#### 3.2. Distribution

- 3.2.1. Distribution of the four dolphin groups being sighted during the HKLR03/TMCLKL08 monitoring surveys conducted between September and November 2019 is shown in Figure 1. Two of the four dolphin groups were sighted just to the north of Lung Kwu Chau, while the other two were sighted near Black Point and to the west of Sha Chau respectively (Figure 1). On the contrary, the dolphins were completely absent from the central and eastern portions of North Lantau waters.
- 3.2.2. Notably, all four groups were sighted very far away from the HKBCF and HKLR03 reclamation sites, as well as the TMCLKL and HKLR09 bridge alignments (Figure 1).
- 3.2.3. A comparison of dolphin distribution between the present quarterly period and the baseline monitoring period (September-November 2011) revealed considerable differences. For example, dolphin was not found in NEL during the present quarter but in the baseline survey they were frequently found in the same area, including the waters near Shum Shui Kok and in the vicinity of the HKBCF reclamation site (Figure 1).
- 3.2.4. Furthermore, dolphins were rarely sighted in NWL waters, and their distribution was restricted to the western portion of the North Lantau region during the present three-month period. This was in stark contrast with their frequent occurrences throughout the entire NWL survey area during the baseline period (Figure 1).

### 3.3. Encounter rate

3.3.1. The encounter rates of Chinese White Dolphins were deduced from the survey effort and on-effort sighting data from the primary transect lines under favourable conditions (Beaufort 3 or below) for each set of the surveys in NEL and NWL during the present three-month monitoring period, and are shown in Table 2. The average encounter rates deduced from the six sets of surveys were also compared with the ones deduced from the baseline monitoring period (September-November 2011) (Table 3).



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Table 2. Dolphin encounter rates (sightings per 100 km of survey effort) during September-November 2019

| SURVEY<br>AREA | DOLPHIN MONITORING<br>DATES | Encounter rate (STG) (no. of on-effort dolphin sightings per 100 km of survey effort)  Primary Lines Only | Encounter rate (ANI)  (no. of dolphins from all on-effort sightings per 100 km of survey effort)  Primary Lines Only |
|----------------|-----------------------------|---|--|
|                | Set 1 (4 & 11 Sep 2019)     | 0.00  | 0.00   |
|                | Set 2 (17 & 23 Sep 2019)    | 0.00  | 0.00   |
| Northeast      | Set 3 (8 & 9 Oct 2019)      | 0.00  | 0.00   |
| Lantau         | Set 4 (14 & 29 Oct 2019)    | 0.00  | 0.00   |
|                | Set 5 (5 & 19 Nov 2019)     | 0.00  | 0.00   |
|                | Set 6 (27 & 28 Nov 2019)    | 0.00  | 0.00   |
|                | Set 1 (4 & 11 Sep 2019)     | 1.64  | 3.28   |
|                | Set 2 (17 & 23 Sep 2019)    | 0.00  | 0.00   |
| Northwest      | Set 3 (8 & 9 Oct 2019)      | 1.68  | 1.68   |
| Lantau         | Set 4 (14 & 29 Oct 2019)    | 0.00  | 0.00   |
|                | Set 5 (5 & 19 Nov 2019)     | 1.67  | 1.67   |
|                | Set 6 (27 & 28 Nov 2019)    | 0.00  | 0.00   |

Table 3. Comparison of average dolphin encounter rates from present monitoring period (September-November 2019) and baseline monitoring period (September-November 2011) (Note: encounter rates deduced from the baseline monitoring period have been recalculated based only on survey effort and on-effort sighting data made along the primary transect lines under favourable conditions;  $\pm$  denotes the standard deviation of the average encounter rates)

|                  | Encounter rate (STG)                        |                              | Encounter rate (ANI)                          |                              |
|------------------|---|------------------------------|---|------------------------------|
|                  | (no. of on-effort dolphin sightings per 100 |                              | (no. of dolphins from all on-effort sightings |                              |
|                  | km of survey effort)                        |                              | per 100 km of survey effort)                  |                              |
|                  | September –<br>November 2019                | September –<br>November 2011 | September –<br>November 2019                  | September –<br>November 2011 |
| Northeast Lantau | 0.0   | 6.00 ± 5.05                  | 0.0   | 22.19 ± 26.81                |
| Northwest Lantau | 0.83 ± 0.91                                 | 9.85 ± 5.85                  | 1.10 ± 1.34                                   | 44.66 ± 29.85                |

3.3.2. To facilitate another comparison with the AFCD long-term monitoring data, the encounter rates were also calculated for the present quarter using both primary and secondary survey effort. Such encounter rates of sightings (STG) and dolphins (ANI) in NEL were both nil, while the ones the in NWL were 0.8 sightings and 1.4 dolphins per 100 km of survey



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effort respectively for this quarter.

3.3.3. For the present three-month monitoring period, the average dolphin encounter rates (both STG and ANI) in NEL were both zero with no on-effort sighting being made. Such extremely low occurrence of dolphins in NEL has also been consistently recorded during the same autumn quarters throughout the HZMB monitoring period (Table 4).

Table 4. Comparison of average dolphin encounter rates in Northeast Lantau survey area from the same autumn quarters of HZMB monitoring periods and baseline monitoring period (September-November 2011) (Note: encounter rates deduced from the baseline monitoring period have been recalculated based only on survey effort and on-effort sighting data made along the primary transect lines under favourable conditions;  $\pm$  denotes the standard deviation of the average encounter rates)

|   | Encounter rate            | Encounter rate (ANI)      |
|---|---------------------------|---------------------------|
|   | (STG)                     | (no. of dolphins from all |
|   | (no. of on-effort dolphin | on-effort sightings per   |
|   | sightings per 100 km of   | 100 km of survey effort)  |
|   | survey effort)            |                           |
| September-November 2011 (Baseline)          | 6.0 ± 5.05                | 22.2 ± 26.81              |
| September-November 2013 (HKLR03 Impact*)    | 1.0 ± 1.59                | $3.8 \pm 6.49$            |
| September-November 2014 (HKLR03 Impact*)    | 0.0                       | 0.0                       |
| September-November 2015 (HKLR03 Impact*)    | 0.0                       | 0.0                       |
| September-November 2016 (HKLR03 Impact*)    | 0.0                       | 0.0                       |
| September-November 2017 (HKLR03 Impact*)    | 0.0                       | 0.0                       |
| September-November 2018 (HKLR03 Impact*)    | 0.0                       | 0.0                       |
| September-November 2019 (HKBCF Operational) | 0.0                       | 0.0                       |

<sup>\*</sup> As explained in Section 1.4, the previous monitoring data from Contract No. HY/2011/03 (i.e. HKLR03) were adopted for comparison with the baseline and present monitoring period

3.3.4. On the other hand, the average dolphin encounter rates (STG and ANI) in NWL during the present monitoring period were only tiny fractions of the ones recorded during the three-month baseline period (with reductions of 91.6% and 97.5% respectively), indicating a dramatic decline in dolphin usage of this survey area during the present quarterly period as compared to the baseline period (Table 5).



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Table 5. Comparison of average dolphin encounter rates in Northwest Lantau survey area from the same autumn quarters of HZMB monitoring periods and baseline monitoring period (September-November 2011) (Note: encounter rates deduced from the baseline monitoring period have been recalculated based only on survey effort and on-effort sighting data made along the primary transect lines under favourable conditions;  $\pm$  denotes the standard deviation of the average encounter rates)

|   | Encounter rate (STG)      | Encounter rate (ANI)        |
|---|---------------------------|-----------------------------|
|   | (no. of on-effort dolphin | (no. of dolphins from all   |
|   | sightings per 100 km of   | on-effort sightings per 100 |
|   | survey effort)            | km of survey effort)        |
| September-November 2011 (Baseline)          | 9.9 ± 5.85                | 44.7 ± 29.85                |
| September-November 2013 (HKLR03 Impact*)    | 8.0 ± 1.10                | 32.5 ± 26.51                |
| September-November 2014 (HKLR03 Impact*)    | 5.1 ± 4.40                | 20.5 ± 15.10                |
| September-November 2015 (HKLR03 Impact*)    | 3.9 ± 1.57                | 21.1 ± 17.19                |
| September-November 2016 (HKLR03 Impact*)    | 2.9 ± 1.98                | 10.9 ± 10.98                |
| September-November 2017 (HKLR03 Impact*)    | 3.1 ± 1.91                | $10.4 \pm 9.66$             |
| September-November 2018 (HKLR03 Impact*)    | 1.5 ± 2.25                | 2.7 ± 3.78                  |
| September-November 2019 (HKBCF Operational) | 0.8 ± 0.91                | 1.1 ± 1.34                  |

<sup>\*</sup> As explained in Section 1.4, the previous monitoring data from Contract No. HY/2011/03 (i.e. HKLR03) were adopted for comparison with the baseline and present monitoring period

- 3.3.5. Both dolphin encounter rates in NWL in the autumn of 2019 continued to plummet to the lowest level among all autumn quarterly periods since 2013 (Table 5). This is a very worrying trend as the dolphin occurrence is expected to recover somewhat after the completion of HKBCF reclamation works a few years ago as well as the remaining marine construction activities for the HKBCF being completed recently, but apparently that has not been the case.
- 3.3.6. A two-way ANOVA with repeated measures and unequal sample size was conducted to examine whether there were any significant differences in the average encounter rates between the baseline and post-construction monitoring periods. The two variables that were examined included the two periods (baseline and post-construction phases) and two locations (NEL and NWL).
- 3.3.7. For the comparison between the baseline period and the present quarter, the p-values for the differences in average dolphin encounter rates of STG and ANI were 0.0018 and 0.0124 respectively. If the alpha value is set at 0.05, significant differences were detected between the baseline and present quarter in both the average dolphin encounter rates of STG and ANI.



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3.3.8. Both distribution patterns and encounter rates of Chinese White Dolphins indicated that their usage have been dramatically reduced in both NEL and NWL survey areas during the present quarterly period, and such low occurrence of dolphins has been consistently documented in recent years of HZMB dolphin monitoring. Apparently, there has been no sign of recovery in dolphin usage in the post-construction phase, even with most of the marine works associated with the HZMB construction being completed. Continuous dolphin monitoring would be critical to examine whether the downward trend would continue, stabilize or revert in upcoming quarters during the operational phase.

### 3.4. Group size

3.4.1. From September to November 2019, the group sizes of Chinese White Dolphins ranged from one to three individuals per group in North Lantau region. The average dolphin group sizes from the present three-month monitoring period were compared with the ones deduced from the baseline period in September to November 2011, as shown in Table 6.

Table 6. Comparison of average dolphin group sizes from the present monitoring period (September-November 2019) and baseline monitoring period (September-November 2011) (Note: ± denotes the standard deviation of average group size)

|                  | Average Dolphin Group Size |                           |  |
|------------------|----------------------------|---------------------------|--|
|                  | September – November 2019  | September – November 2011 |  |
| Overall          | 1.8 ± 0.96 (n = 4)         | 3.7 ± 3.13 (n = 66)       |  |
| Northeast Lantau |                            | 3.2 ± 2.16 (n = 17)       |  |
| Northwest Lantau | 1.8 ± 0.96 (n = 4)         | $3.9 \pm 3.40 \ (n = 49)$ |  |

- 3.4.2. During the present quarter, the average dolphin group size in NWL was much lower than the one recorded during the baseline period. However, it should also be noted that the sample size in the present quarter (five groups) was a very small fraction of the sample size of the 66 groups sighted during the baseline period (Table 6).
- 3.4.3. All four dolphin groups sighted during the quarterly period were small with 1-3 individuals per group only (Appendix II). This is in stark contrary to the baseline period when the larger groups (at least with five animals) were frequently sighted and evenly distributed in NWL, with a few also sighted in NEL waters.

### 3.5. Habitat use

3.5.1. During the present quarter, the quantitative grid analysis revealed that only three grids recorded dolphin occurrences, and all three gird recorded moderately low to moderate dolphin densities (Figures 3a and 3b). However, it should be emphasized that the



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amount of survey effort collected in each grid during the three-month period was fairly low (6-12 units of survey effort for most grids), and therefore the habitat use pattern derived from the three-month dataset should be treated with caution. A more complete picture of dolphin habitat use pattern should be examined when more survey effort for each grid will be collected throughout the post-construction monitoring programme.

- 3.5.2. When compared with the habitat use patterns during the baseline period, dolphin usage in NEL and NWL has drastically diminished in both areas during the present monitoring period (Figure 4). During the baseline period, many grids between Siu Mo To and Shum Shui Kok in NEL recorded moderately high to high dolphin densities, but the dolphins have completely disappeared from this area during the present quarterly period (Figure 4).
- 3.5.3. Moreover, the dolphin density patterns were also very different in NWL between the baseline and present post-construction monitoring periods, with high usage throughout the area during the baseline period, while only three grids with only moderately low to moderate dolphin densities were recorded during the present impact phase period (Figure 4).
- 3.6. *Mother-calf pairs*
- 3.6.1. During the present quarterly period, no young calf was sighted at all among the four groups of dolphins.
- 3.7. Activities and associations with fishing boats
- 3.7.1. During the present quarterly period, only one of the four dolphin groups was engaged in feeding activity, while none of them was engaged in socializing, traveling, milling/resting activities. The lone group engaged in feeding activity was located near Black Point (Figure 5).
- 3.7.2. Moreover, none of the four dolphin groups sighted during the present quarter was associated with any operating fishing vessels.
- 3.8. Summary of photo-identification works
- 3.8.1. Approximately 250 digital photographs of Chinese White Dolphins were taken from September to November 2019 for the photo-identification work during the HKLR03/TMCLKL08 surveys. A total of four individuals were identified and re-sighted four times altogether (see summary table in Appendix III and photographs of identified individuals in Appendix IV). Re-sightings of individual dolphins were only made in NWL, while none was re-sighted in NEL during the quarterly period.



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- 3.8.2. During the three-month monitoring period, all four individuals were re-sighted only once (Appendix III). None of them was sighted in WL waters during the HKLR09 monitoring surveys that were conducted concurrently during the same three-month period from September to November 2019.
- 3.9. Individual range use
- 3.9.1. Ranging patterns of the four individuals identified during the quarterly monitoring period were determined by fixed kernel method, and are shown in Appendix V.
- 3.9.2. While all four individuals were sighted only in NWL waters in the present quarter, none of them occurred in NEL waters (Appendix V), which was in stark contrast to the extensive movements of many individual dolphins between NEL and NWL survey areas during the baseline period as well as in the earlier HKLR03 monitoring quarters.
- 3.9.3. Moreover, none of the four individuals extended its range use to WL waters during this quarterly period, even though such movements between North and West Lantau waters have been common in the past several years of HZMB dolphin monitoring surveys.
- 3.9.4. Individual range use and movements should be continuously examined in the upcoming quarters during the post-construction monitoring, to determine whether there has been any consistent shift of individual home ranges from North Lantau to West or Southwest Lantau, or vice versa.

#### 4. Conclusion

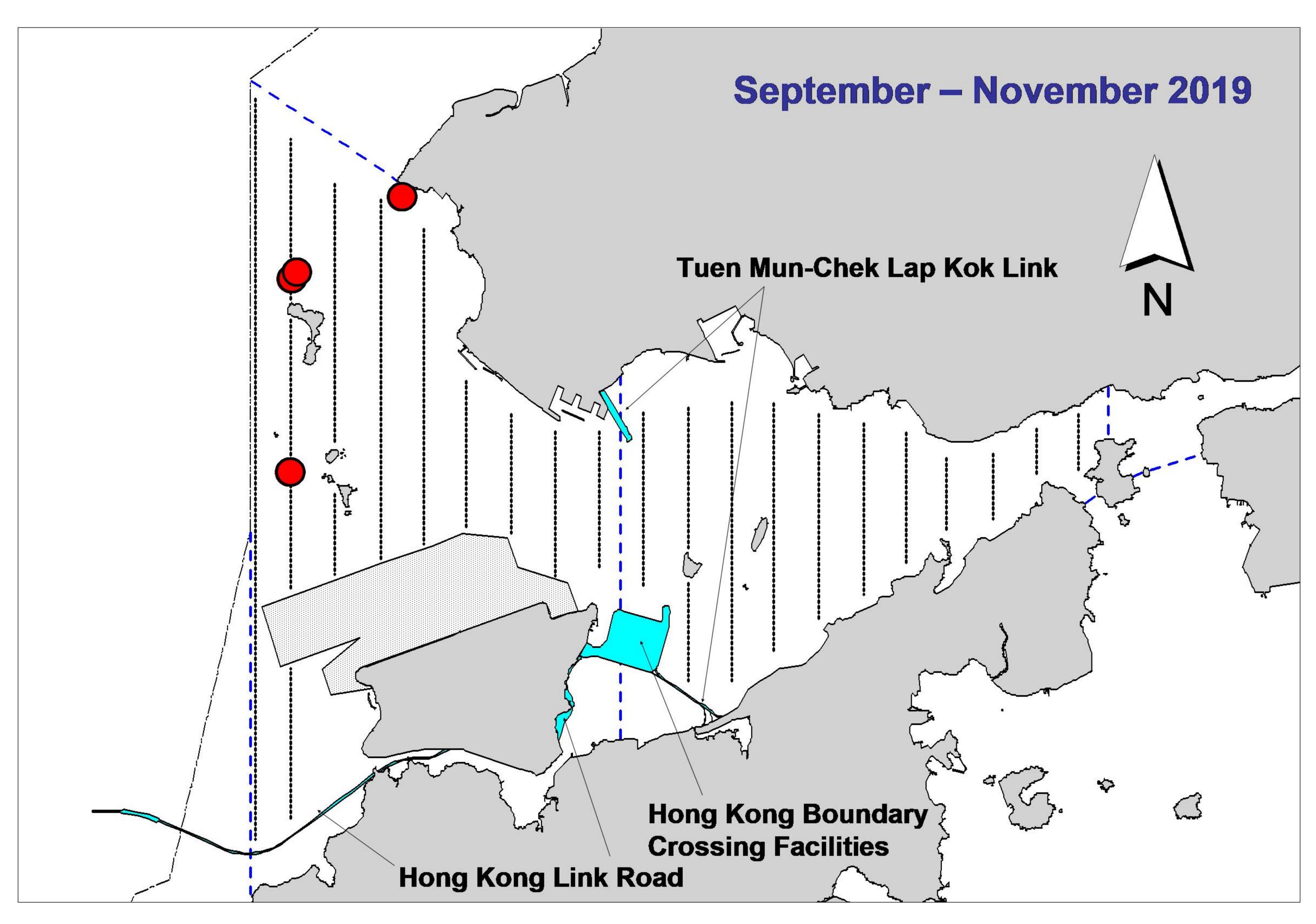
- 4.1. Although dolphins seldom occurred in the area of HKBCF construction in the past and during the baseline monitoring period, it is apparent that dolphin usage has been dramatically reduced in North Lantau waters in recent years, with many individual dolphins shifting away from this once-important habitat for the dolphins. There have been no sign of any recovery in dolphin usage during the present quarter of post-construction dolphin monitoring.
- 4.2. Nevertheless, it is critical to continuously monitor the dolphin usage in North Lantau region in the upcoming quarters, to determine whether there is any sign of recovery after the HZMB construction works have been completed.



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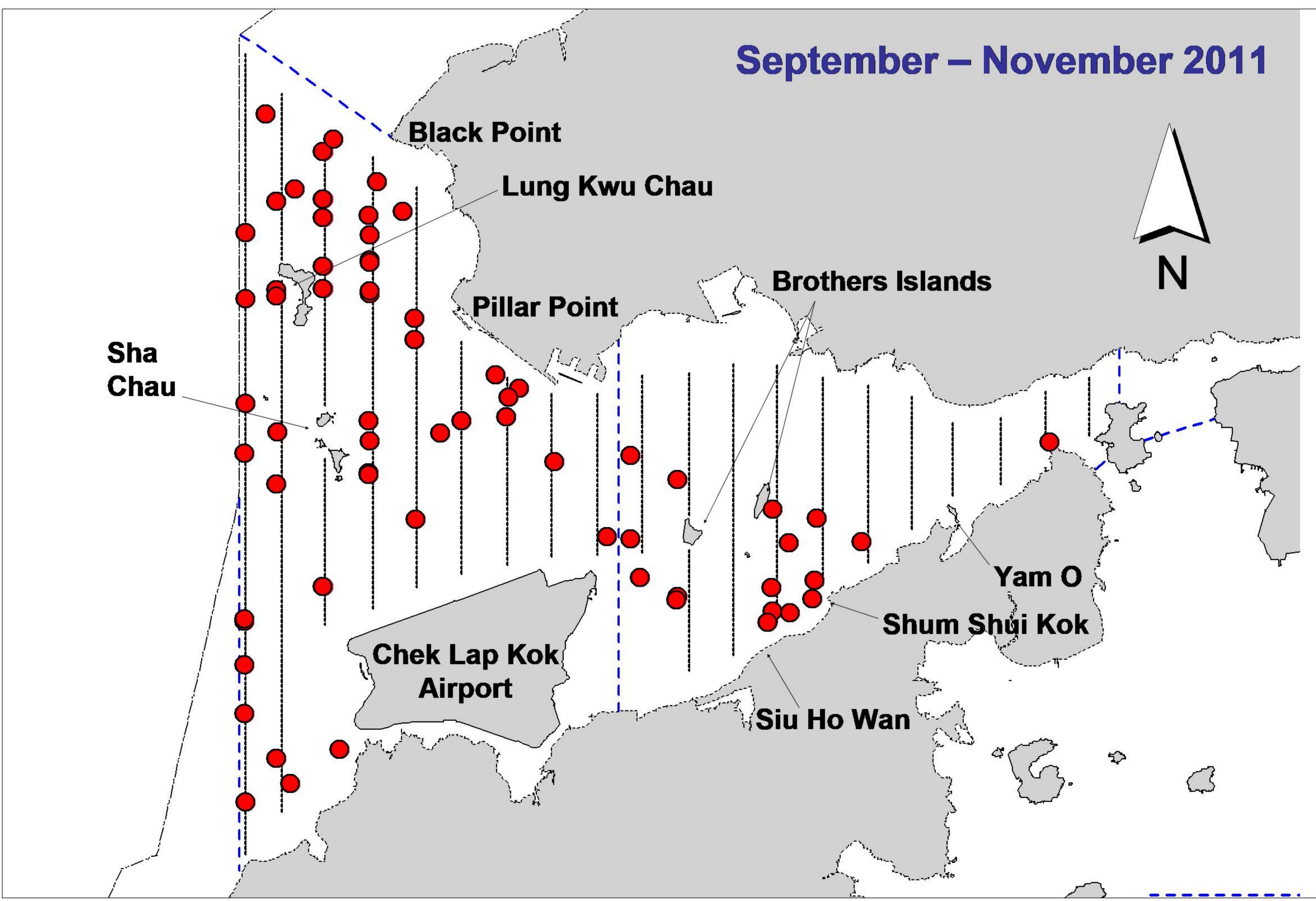


Figure 1. Distribution of Chinese white dolphin sighting in Northwest and Northeast Lantau during TMCLKL08/HKLR03 impact phase (top) and baseline monitoring surveys (bottom)

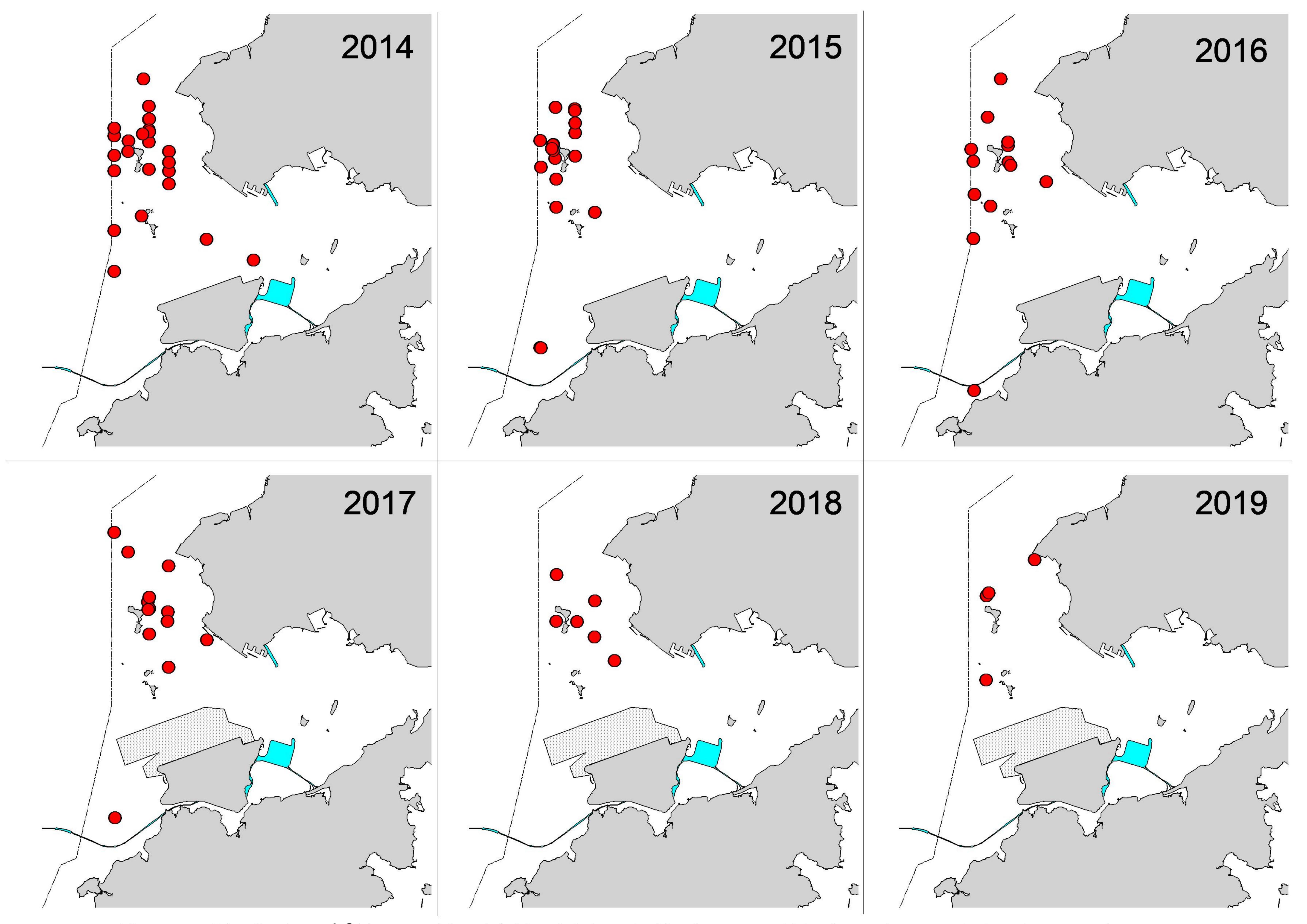


Figure 2. Distribution of Chinese white dolphin sightings in Northwest and Northeast Lantau during the past six autumn quarters (September-November) of TMCLKL08/HKLR03 impact phase in 2014-19

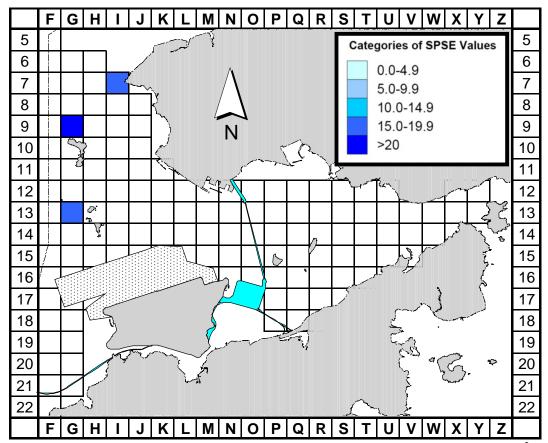


Figure 3a. Sighting density of Chinese white dolphins with corrected survey effort per km<sup>2</sup> in Northeast and Northwest Lantau survey areas, using data collected during TMCLKL08/HKLR03 impact monitoring period (September-November 2019) (SPSE = no. of on-effort sightings per 100 units of survey effort)

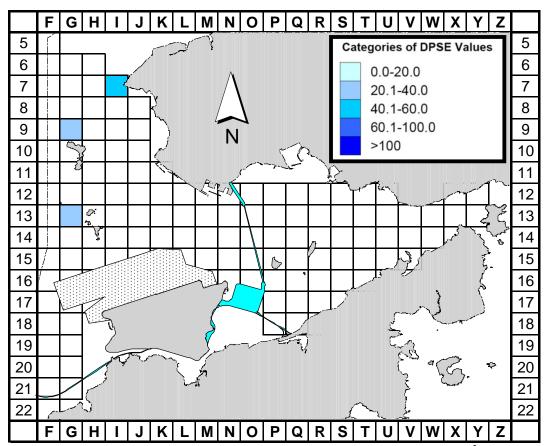


Figure 3b. Density of Chinese white dolphins with corrected survey effort per km<sup>2</sup> in Northeast and Northwest Lantau survey areas, using data collected during TMCLKL08/HKLR03 impact monitoring period (September-November 2019) (DPSE = no. of dolphins per 100 units of survey effort)

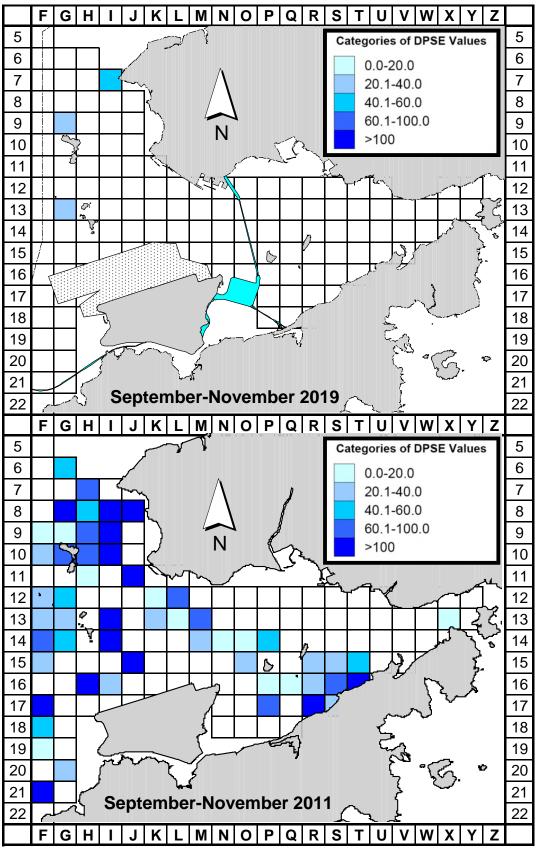


Figure 4. Comparison of density of Chinese white dolphins with corrected survey effort per km<sup>2</sup> in Northwest and Northeast Lantau survey area between the impact monitoring period (September - November 2019) and baseline monitoring period (September-November 2011) (DPSE = no. of dolphins per 100 units of survey effort)

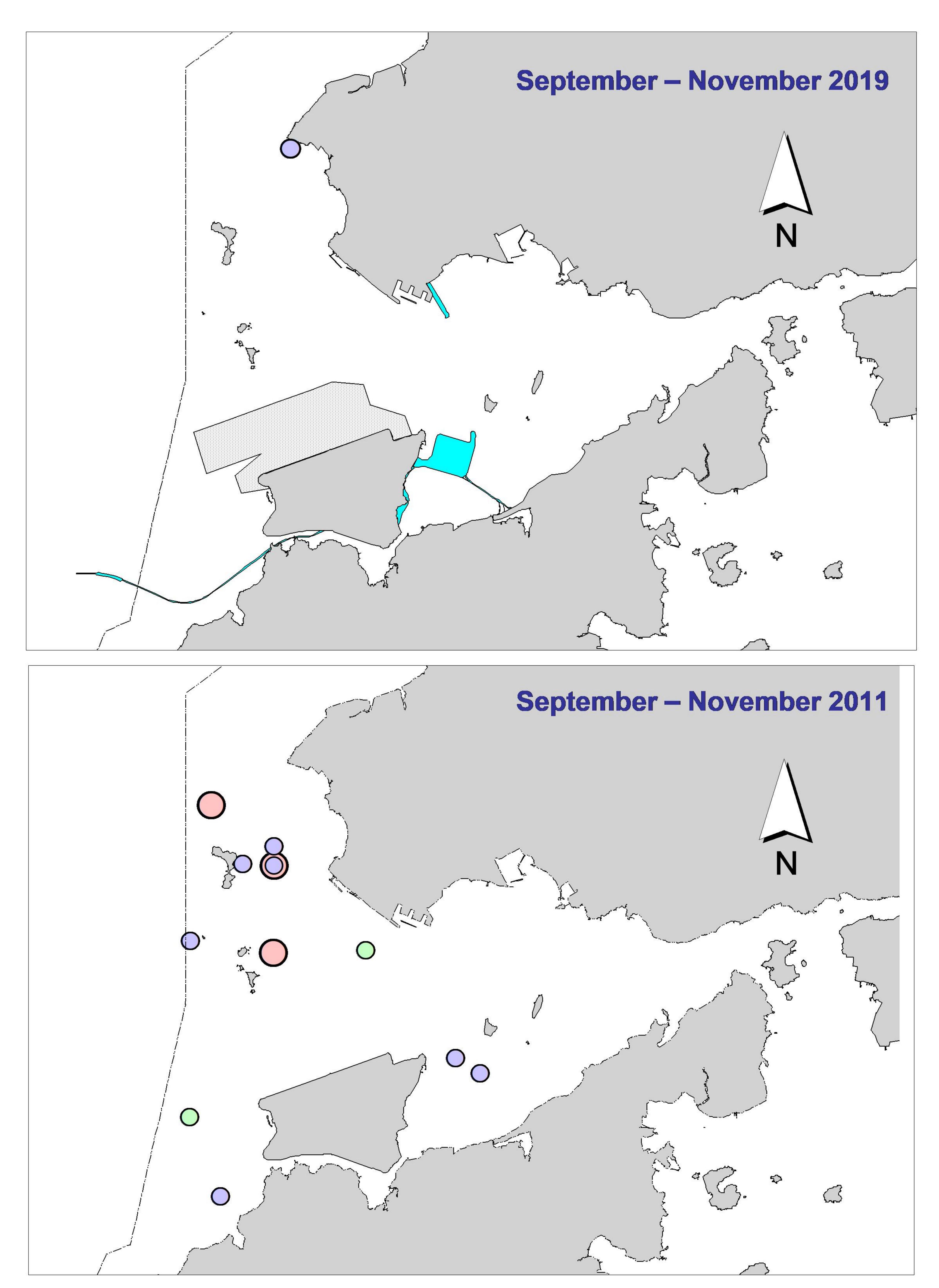


Figure 5. Distribution of Chinese white dolphins engaged in feedings (purple dots), socializing (pink dots) and traveling (green dots) activities during TMCLKL08/HKLR03 impact phase (top) and baseline monitoring surveys (bottom)

## Appendix I. TMCLKL08/HKLR03 Survey Effort Database (Sep-Nov 2019)

(Abbreviations: BEAU = Beaufort Sea State; P = Primary Line Effort; S = Secondary Line Effort)

| DATE                   | AREA                   | BEAU   | EFFORT       | SEASON           | VESSEL                         | TYPE             | P/S    |
|------------------------|------------------------|--------|--------------|------------------|--------------------------------|------------------|--------|
| 4-Sep-19               | NW LANTAU              | 2      | 21.38        | AUTUMN           | STANDARD36826                  | HKLR             | Р      |
| 4-Sep-19               | NW LANTAU              | 3      | 6.40         | AUTUMN           | STANDARD36826                  | HKLR             | Р      |
| 4-Sep-19               | NW LANTAU              | 2      | 9.12         | AUTUMN           | STANDARD36826                  | HKLR             | S      |
| 4-Sep-19               | NW LANTAU              | 3      | 2.52         | AUTUMN           | STANDARD36826                  | HKLR             | S      |
| 4-Sep-19               | NE LANTAU              | 2      | 16.70        | AUTUMN           | STANDARD36826                  | HKLR             | Р      |
| 4-Sep-19               | NE LANTAU              | 3      | 18.83        | AUTUMN           | STANDARD36826                  | HKLR             | Р      |
| 4-Sep-19               | NE LANTAU              | 2      | 7.75         | AUTUMN           | STANDARD36826                  | HKLR             | s      |
| 4-Sep-19               | NE LANTAU              | 3      | 5.12         | AUTUMN           | STANDARD36826                  | HKLR             | S      |
| 11-Sep-19              | NW LANTAU              | 1      | 1.60         | AUTUMN           | STANDARD36826                  | HKLR             | P      |
| 11-Sep-19              | NW LANTAU              | 2      | 29.50        | AUTUMN           | STANDARD36826                  | HKLR             | P      |
| 11-Sep-19              | NW LANTAU              | 3      | 2.10         | AUTUMN           | STANDARD36826                  | HKLR             | Р      |
| 11-Sep-19              | NW LANTAU              | 1      | 1.40         | AUTUMN           | STANDARD36826                  | HKLR             | s      |
| 11-Sep-19              | NW LANTAU              | 2      | 8.99         | AUTUMN           | STANDARD36826                  | HKLR             | S      |
| 17-Sep-19              | NW LANTAU              | 2      | 8.96         | AUTUMN           | STANDARD36826                  | HKLR             | P      |
| 17-Sep-19              | NW LANTAU              | 3      | 22.90        | AUTUMN           | STANDARD36826                  | HKLR             | P      |
| 17-Sep-19<br>17-Sep-19 | NW LANTAU              | 4      | 1.90         | AUTUMN           | STANDARD36826                  | HKLR             | P      |
| 17-Sep-19<br>17-Sep-19 | NW LANTAU              | 2      | 4.54         | AUTUMN           | STANDARD36826<br>STANDARD36826 | HKLR             | S      |
| 17-Sep-19<br>17-Sep-19 | NW LANTAU              | 3      |              | AUTUMN           |                                | HKLR             | S      |
|                        | NW LANTAU              | 4      | 4.90         |                  | STANDARD36826                  |                  | S      |
| 17-Sep-19              |                        | 2      | 1.20         | AUTUMN           | STANDARD36826                  | HKLR             | S<br>P |
| 23-Sep-19              | NW LANTAU              | 3      | 19.22        | AUTUMN           | STANDARD36826                  | HKLR             | P      |
| 23-Sep-19              | NW LANTAU              | 2      | 7.79         | AUTUMN           | STANDARD36826                  | HKLR             |        |
| 23-Sep-19              | NW LANTAU              |        | 9.84         | AUTUMN           | STANDARD36826                  | HKLR             | S      |
| 23-Sep-19              | NW LANTAU              | 3      | 4.25         | AUTUMN           | STANDARD36826                  | HKLR             | S      |
| 23-Sep-19              | NE LANTAU              | 1      | 11.30        | AUTUMN           | STANDARD36826                  | HKLR             | Р      |
| 23-Sep-19              | NE LANTAU              | 2      | 25.35        | AUTUMN           | STANDARD36826                  | HKLR             | Р      |
| 23-Sep-19              | NE LANTAU              | 1      | 3.61         | AUTUMN           | STANDARD36826                  | HKLR             | S      |
| 23-Sep-19              |                        | 2      | 10.74        | AUTUMN           | STANDARD36826                  | HKLR             | S      |
| 8-Oct-19               | NW LANTAU              | 1      | 3.70         | AUTUMN           | STANDARD36826                  | TMCLKL           | Р      |
| 8-Oct-19               | NW LANTAU              | 2      | 23.60        | AUTUMN           | STANDARD36826                  | TMCLKL           | Р      |
| 8-Oct-19               | NW LANTAU              | 3      | 5.20         | AUTUMN           | STANDARD36826                  | TMCLKL           | Р      |
| 8-Oct-19               | NW LANTAU              | 2      | 8.30         | AUTUMN           | STANDARD36826                  | TMCLKL           | S      |
| 8-Oct-19               | NW LANTAU              | 3      | 2.80         | AUTUMN           | STANDARD36826                  | TMCLKL           | S      |
| 8-Oct-19               | NE LANTAU              | 2      | 11.50        | AUTUMN           | STANDARD36826                  | TMCLKL           | P      |
| 8-Oct-19               | NE LANTAU              | 3      | 21.93        | AUTUMN           | STANDARD36826                  | TMCLKL           | Р      |
| 8-Oct-19               | NE LANTAU              | 2      | 5.40         | AUTUMN           | STANDARD36826                  | TMCLKL           | S      |
| 8-Oct-19               | NE LANTAU              | 3      | 8.87         | AUTUMN           | STANDARD36826                  | TMCLKL           | S      |
| 9-Oct-19               | NW LANTAU              | 2      | 7.77         | AUTUMN           | STANDARD36826                  | TMCLKL           | Р      |
| 9-Oct-19               | NW LANTAU<br>NW LANTAU | 3<br>2 | 19.26        | AUTUMN<br>AUTUMN | STANDARD36826<br>STANDARD36826 | TMCLKL<br>TMCLKL | P      |
| 9-Oct-19<br>9-Oct-19   | NW LANTAU<br>NW LANTAU | 3      | 4.33<br>8.44 | AUTUMN           | STANDARD36826<br>STANDARD36826 | TMCLKL           | S<br>S |
| 9-0ct-19<br>14-0ct-19  | NW LANTAU              | 1      | 3.10         | AUTUMN           | STANDARD36826<br>STANDARD36826 | TMCLKL           | o<br>P |
| 14-Oct-19              | NW LANTAU              | 2      | 24.38        | AUTUMN           | STANDARD36826<br>STANDARD36826 | TMCLKL           | P      |
| 14-Oct-19              | NW LANTAU              | 1      | 1.60         | AUTUMN           | STANDARD36826                  | TMCLKL           | S      |
| 14-Oct-19              | NW LANTAU              | 2      | 11.62        | AUTUMN           | STANDARD36826                  | TMCLKL           | S      |
| 29-Oct-19              | NW LANTAU              | 2      | 7.60         | AUTUMN           | STANDARD36826                  | TMCLKL           | P      |
| 29-Oct-19              | NW LANTAU              | 3      | 14.90        | AUTUMN           | STANDARD36826                  | TMCLKL           | Р      |
| 29-Oct-19              | NW LANTAU              | 4      | 10.10        | AUTUMN           | STANDARD36826                  | TMCLKL           | P      |
| 29-Oct-19              | NW LANTAU              | 2      | 5.10         | AUTUMN           | STANDARD36826                  | TMCLKL           | S      |
| 29-Oct-19              | NW LANTAU              | 3      | 6.10         | AUTUMN           | STANDARD36826                  | TMCLKL           | S      |
| 29-Oct-19              | NE LANTAU              | 2      | 31.08        | AUTUMN           | STANDARD36826                  | TMCLKL           | Р      |
| 29-Oct-19              | NE LANTAU              | 3      | 4.40         | AUTUMN           | STANDARD36826                  | TMCLKL           | Р      |
|                        | -                      |        |              |                  |                                |                  |        |
|                        |                        |        |              |                  |                                |                  |        |

Appendix I. (cont'd)

(Abbreviations: BEAU = Beaufort Sea State; P = Primary Line Effort; S = Secondary Line Effort)

| DATE      | AREA      | BEAU | EFFORT | SEASON | VESSEL        | TYPE   | P/S |
|-----------|-----------|------|--------|--------|---------------|--------|-----|
| 29-Oct-19 | NE LANTAU | 2    | 12.30  | AUTUMN | STANDARD36826 | TMCLKL | S   |
| 5-Nov-19  | NW LANTAU | 2    | 13.97  | AUTUMN | STANDARD36826 | TMCLKL | Р   |
| 5-Nov-19  | NW LANTAU | 3    | 13.02  | AUTUMN | STANDARD36826 | TMCLKL | Р   |
| 5-Nov-19  | NW LANTAU | 2    | 4.90   | AUTUMN | STANDARD36826 | TMCLKL | S   |
| 5-Nov-19  | NW LANTAU | 3    | 8.21   | AUTUMN | STANDARD36826 | TMCLKL | S   |
| 5-Nov-19  | NE LANTAU | 1    | 4.62   | AUTUMN | STANDARD36826 | TMCLKL | Р   |
| 5-Nov-19  | NE LANTAU | 2    | 32.15  | AUTUMN | STANDARD36826 | TMCLKL | Р   |
| 5-Nov-19  | NE LANTAU | 1    | 3.48   | AUTUMN | STANDARD36826 | TMCLKL | S   |
| 5-Nov-19  | NE LANTAU | 2    | 10.95  | AUTUMN | STANDARD36826 | TMCLKL | S   |
| 19-Nov-19 | NW LANTAU | 2    | 12.62  | AUTUMN | STANDARD36826 | TMCLKL | Р   |
| 19-Nov-19 | NW LANTAU | 3    | 20.43  | AUTUMN | STANDARD36826 | TMCLKL | Р   |
| 19-Nov-19 | NW LANTAU | 2    | 5.63   | AUTUMN | STANDARD36826 | TMCLKL | S   |
| 19-Nov-19 | NW LANTAU | 3    | 5.22   | AUTUMN | STANDARD36826 | TMCLKL | S   |
| 27-Nov-19 | NW LANTAU | 2    | 30.30  | AUTUMN | STANDARD36826 | TMCLKL | Р   |
| 27-Nov-19 | NW LANTAU | 3    | 1.10   | AUTUMN | STANDARD36826 | TMCLKL | Р   |
| 27-Nov-19 | NW LANTAU | 2    | 9.30   | AUTUMN | STANDARD36826 | TMCLKL | S   |
| 27-Nov-19 | NW LANTAU | 3    | 2.60   | AUTUMN | STANDARD36826 | TMCLKL | S   |
| 28-Nov-19 | NW LANTAU | 2    | 10.90  | AUTUMN | STANDARD36826 | TMCLKL | Р   |
| 28-Nov-19 | NW LANTAU | 3    | 13.76  | AUTUMN | STANDARD36826 | TMCLKL | Р   |
| 28-Nov-19 | NW LANTAU | 4    | 1.96   | AUTUMN | STANDARD36826 | TMCLKL | Р   |
| 28-Nov-19 | NW LANTAU | 2    | 2.80   | AUTUMN | STANDARD36826 | TMCLKL | S   |
| 28-Nov-19 | NW LANTAU | 3    | 8.74   | AUTUMN | STANDARD36826 | TMCLKL | S   |
| 28-Nov-19 | NW LANTAU | 4    | 1.24   | AUTUMN | STANDARD36826 | TMCLKL | S   |
| 28-Nov-19 | NE LANTAU | 2    | 26.61  | AUTUMN | STANDARD36826 | TMCLKL | Р   |
| 28-Nov-19 | NE LANTAU | 3    | 8.50   | AUTUMN | STANDARD36826 | TMCLKL | Р   |
| 28-Nov-19 | NE LANTAU | 2    | 11.39  | AUTUMN | STANDARD36826 | TMCLKL | S   |
| 28-Nov-19 | NE LANTAU | 3    | 1.10   | AUTUMN | STANDARD36826 | TMCLKL | S   |
|           |           |      |        |        |               |        |     |

### Appendix II. TMCLKL08/HKLR03 Chinese White Dolphin Sighting Database (September-November 2019)

(Abberviations: STG# = Sighting Number; HRD SZ = Dolphin Herd Size; BEAU = Beaufort Sea State; PSD = Perpendicular Distance; BOAT ASSOC. = Fishing Boat Association; P/S: Sighting Made on Primary/Secondary Lines)

| DATE      | STG# | TIME | HRD SZ | AREA      | BEAU | PSD | EFFORT | TYPE   | NORTHING | EASTING | SEASON | BOAT ASSOC. | P/S |
|-----------|------|------|--------|-----------|------|-----|--------|--------|----------|---------|--------|-------------|-----|
| 4-Sep-19  | 1    | 1046 | 2      | NW LANTAU | 2    | 311 | ON     | HKLR   | 823375   | 805440  | AUTUMN | NONE        | Р   |
| 11-Sep-19 | 1    | 1058 | 3      | NW LANTAU | 2    | 430 | ON     | HKLR   | 829316   | 807975  | AUTUMN | NONE        | S   |
| 9-Oct-19  | 1    | 1221 | 1      | NW LANTAU | 3    | 57  | ON     | TMCLKL | 827538   | 805469  | AUTUMN | NONE        | Р   |
| 19-Nov-19 | 1    | 1144 | 1      | NW LANTAU | 3    | 386 | ON     | TMCLKL | 827671   | 805583  | AUTUMN | NONE        | Р   |
|           |      |      |        |           |      |     |        |        |          |         |        |             |     |

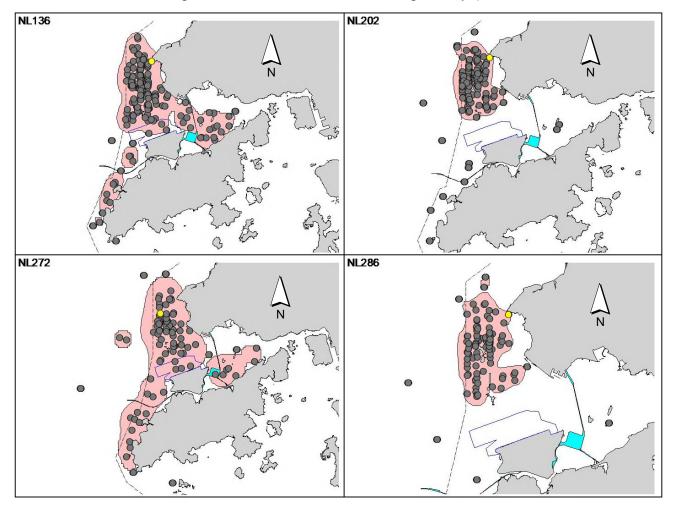
## Appendix III. Individual dolphins identified during TMCLKL08/ HKLR03 monitoring surveys in September-November 2019

| ID#   | DATE     | STG# | AREA      |
|-------|----------|------|-----------|
| NL136 | 11/09/19 | 1    | NW LANTAU |
| NL202 | 11/09/19 | 1    | NW LANTAU |
| NL272 | 19/11/19 | 1    | NW LANTAU |
| NL286 | 11/09/19 | 1    | NW LANTAU |
|       |          |      |           |

Appendix IV. Four individual dolphins that were identified between September and November 2019 under TMCLKL08/HKLR03 monitoring surveys



Appendix V. Ranging patterns (95% kernel ranges) of four individual dolphins that were sighted during TMCLKL08/HKLR03 impact phase monitoring period (note: yellow dots indicate sightings made in September-November 2019 during TMCLKL08/HKLR03 monitoring surveys)



# Appendix K. Landscape Checklist for HyD Contract No. HY/2013/01, HY/2013/02, HY/2013/03 and HY/2014/05

 Covering Period:
 No.6: 24 Aug 2019 to 23 Oct 2019
 Reported By:
 Eva Keung

 Time:
 09:55 ~ 10:50
 Weather Condition:
 Sunny

Participants: Chan Pak Kin (AECOM); Hoyi Ho (AECOM); Ray Yan (IEC/ENPO); Eva Keung (Atkins)

| 1    | At-grade planting west of Passenger Clearance Building   | N/A or not observed | Yes         | No  | Remarks /<br>Photo |
|------|--|---------------------|-------------|-----|--------------------|
| 1.1  | Is watering provided to all plants to ensure satisfactory growth and health (manual and automatic irrigation)?   |                     | $\boxtimes$ |     |                    |
| 1.2  | Are tree stakes, guys and ties provided properly for safety and avoid chaffing of bark?  |                     | $\boxtimes$ |     |                    |
| 1.3  | Are trees or limb overhanging branches pruned?   |                     | $\boxtimes$ |     |                    |
| 1.4  | After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove dead plants and plant debris from the site? |                     |             |     | Observation 1      |
| 1.5  | Are litter and debris removed?   |                     | $\boxtimes$ |     |                    |
| 1.6  | Are planting areas matched with the approved landscape plan?   |                     | $\boxtimes$ |     |                    |
| 1.7  | Is planting pattern matched with the approved landscape plan?  |                     | $\boxtimes$ |     |                    |
| 1.8  | Are planting locations and spacing matched with the approved landscape plan?   |                     | $\boxtimes$ |     | Observation 3      |
| 1.9  | Are the planting species on site matched with Figure 3.6 of the approved landscape plan?   |                     | $\boxtimes$ |     |                    |
| 1.10 | Are the plants in satisfied condition?   |                     | $\boxtimes$ |     |                    |
|      |  | N/A or not          | Yes         | No  | Remarks /          |
| 2    | At-grade planting east of Passenger Clearance Building   | observed            | 103         | 110 | Photo              |
| 2.1  | Is watering provided to all plants to ensure satisfactory growth and health (manual and automatic irrigation)?   |                     | $\boxtimes$ |     |                    |
| 2.2  | Are tree stakes, guys and ties provided properly for safety and avoid chaffing of bark?  |                     | $\boxtimes$ |     |                    |
| 2.3  | Are trees or limb overhanging branches pruned?   |                     | $\boxtimes$ |     |                    |
| 2.4  | After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove dead plants and plant debris from the site? |                     |             |     |                    |
| 2.5  | Are litter and debris removed?   |                     | $\boxtimes$ |     |                    |
| 2.6  | Are planting areas matched with the approved landscape plan?   |                     | $\boxtimes$ |     |                    |
| 2.7  | Is planting pattern matched with the approved landscape plan?  |                     | $\boxtimes$ |     |                    |
| 2.8  | Are planting locations and spacing matched with the approved landscape plan?   |                     | $\boxtimes$ |     |                    |
| 2.9  | Are the planting species on site matched with Figure 3.6 of the approved landscape plan?   |                     | $\boxtimes$ |     |                    |
| 2.10 | Are the plants in satisfied condition?   |                     |             |     |                    |

| 3                        | Planting in Outdoor Planters of Passenger Clearance Building  | N/A or not<br>observed | Yes         | No | Remarks /<br>Photo |
|--------------------------|---|------------------------|-------------|----|--------------------|
| <b>3</b> .1              | Is watering provided to all plants to ensure satisfactory growth and health   |                        | $\square$   |    |                    |
|                          | (manual and automatic irrigation)?  |                        |             | Ш  |                    |
| 3.2                      | Are tree stakes, guys and ties provided properly for safety and avoid chaffing of bark?   |                        | $\boxtimes$ |    |                    |
| 3.3                      | Are trees or limb overhanging branches pruned?  |                        | $\boxtimes$ |    |                    |
| 3.4                      | After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove dead plants and plant debris from the site?  Are litter and debris removed?                                  |                        |             |    |                    |
| 3.6                      | Are planting areas matched with the approved landscape plan?  |                        |             |    |                    |
| 3.7                      | Is planting pattern matched with the approved landscape plan?   |                        |             |    |                    |
| 3.8                      | Are planting locations and spacing matched with the approved landscape  |                        |             |    |                    |
| 5.0                      | plan?   |                        | $\boxtimes$ |    |                    |
| 3.9                      | Are the planting species on site matched with Figure 3.6 of the approved landscape plan?  |                        | $\boxtimes$ |    |                    |
| 3.10                     | Are the plants in satisfied condition?  |                        | $\boxtimes$ |    |                    |
|                          |   |                        |             |    |                    |
|                          |   |                        |             |    |                    |
| 4                        | Planting in Indoor Planters of Passenger Clearance Building   | N/A or not observed    | Yes         | No | Remarks /<br>Photo |
| 4.1                      | Is watering provided to all plants to ensure satisfactory growth and health   |                        | $\boxtimes$ |    | •••                |
| 4.2                      | (manual and automatic irrigation)?  Are tree stakes, guys and ties provided properly for safety and avoid chaffing of bark?   |                        | $\boxtimes$ |    |                    |
| 4.3                      | Are trees or limb overhanging branches pruned?  |                        | $\boxtimes$ |    |                    |
| 4.4                      | After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove  |                        | $\boxtimes$ |    |                    |
| 4.5                      | dead plants and plant debris from the site?   | _                      |             |    |                    |
|                          | Are litter and debris removed?  |                        | $\boxtimes$ |    |                    |
| 4.6                      | Are litter and debris removed?  Are planting areas matched with the approved landscape plan?  |                        | $\boxtimes$ |    |                    |
| 4.6<br>4.7               | Are litter and debris removed?  Are planting areas matched with the approved landscape plan?  Is planting pattern matched with the approved landscape plan?   | _                      |             | _  |                    |
| 4.6                      | Are litter and debris removed?  Are planting areas matched with the approved landscape plan?  |                        | $\boxtimes$ |    |                    |
| 4.6<br>4.7               | Are litter and debris removed?  Are planting areas matched with the approved landscape plan?  Is planting pattern matched with the approved landscape plan?  Are planting locations and spacing matched with the approved landscape plan?  Are the planting species on site matched with Figure 3.6 of the approved                 |                        | $\boxtimes$ |    |                    |
| 4.6<br>4.7<br>4.8        | Are litter and debris removed?  Are planting areas matched with the approved landscape plan?  Is planting pattern matched with the approved landscape plan?  Are planting locations and spacing matched with the approved landscape plan?   |                        |             |    |                    |
| 4.6<br>4.7<br>4.8<br>4.9 | Are litter and debris removed?  Are planting areas matched with the approved landscape plan?  Is planting pattern matched with the approved landscape plan?  Are planting locations and spacing matched with the approved landscape plan?  Are the planting species on site matched with Figure 3.6 of the approved landscape plan? |                        |             |    |                    |
| 4.6<br>4.7<br>4.8<br>4.9 | Are litter and debris removed?  Are planting areas matched with the approved landscape plan?  Is planting pattern matched with the approved landscape plan?  Are planting locations and spacing matched with the approved landscape plan?  Are the planting species on site matched with Figure 3.6 of the approved landscape plan? |                        |             |    | Remarks / Photo    |

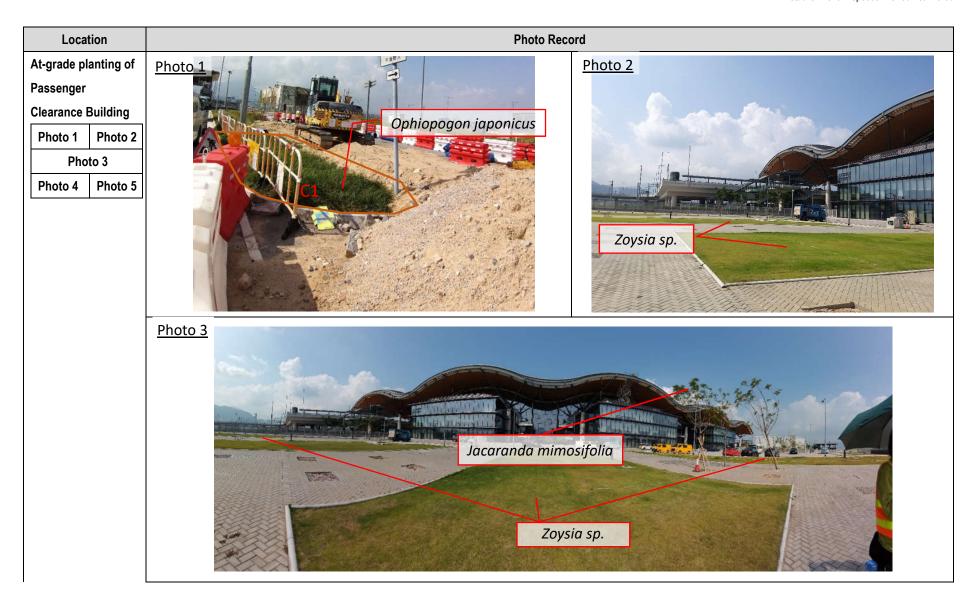
|  |  |  | Establishment Inspection Checklist No.06   |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|--|--|
| Follow up actions for p  | previous Site Audit:   |  |  |  |  |  |  |  |  |
| N/A  |  |  |  |  |  |  |  |  |  |
| Observations:  |  |  |  |  |  |  |  |  |  |
| <ol> <li>A number of trees were affected by Typhoon Wipha (Typhoon signal No.8) on 31 July 2019. Close monitoring and necessary maintenance actions has been carried out. The management office of Passenger Clearance Building is responsible for the related monitoring and necessary maintenance actions.</li> <li>All trees in reasonably good condition.</li> <li>All plants (shrubs, ground cover and turf) were in reasonably good condition. Watermain improvement works conducted by Contract No. HY/2013/02 was observed during inspection on 10 October 2019 (See Photo 1). Part of planting areas (<i>Ophiopogon japonicus</i>) for the Contract No. HY/2013/01 was removed. Planting will be reinstated upon completion of the construction works.</li> </ol> |  |  |  |  |  |  |  |  |  |
| Corrective Actions (if a   | ny):   |  |  |  |  |  |  |  |  |
| N/A  |  |  |  |  |  |  |  |  |  |
| Remark:  |  |  |  |  |  |  |  |  |  |
| The maintenance lan available for checking   | ndscape works were handed over to the manage g.  | ment office                                      | of Passenger Clearance Building. No record is  |  |  |  |  |  |  |
| General Conclusion:  |  |  |  |  |  |  |  |  |  |
| September 2019. Cl<br>Passenger Clearance<br>2. All trees in reasonabl<br>3. All plants (shrubs, gr<br>Contract No. HY/2013<br>japonicus) for the Con  | 28 August 2019 respectively. A standby signal Nose monitoring and necessary maintenance as Building is responsible for the related monitoring good condition.  Tround cover and turf) were in reasonably good good was observed during inspection on 10 October intract No. HY/2013/01 was removed. Planting were  | ctions has ing and nece condition. See 2019 (See | been carried out. The management office of ssary maintenance actions.  Watermain improvement works conducted by the Photo 1). Part of planting areas (Ophiopogon |  |  |  |  |  |  |
| Reported by (ET's Representative):   |  |  |  |  |  |  |  |  |  |
| (= , o , iop. coo. italia, o).   | Eva Keung  | Title:   | ET's Representative  |  |  |  |  |  |  |
| Signature:   | Era  | Date:  | 17 October 2019  |  |  |  |  |  |  |
| (AECOM Landscape<br>Representative):   | CHAN Pak Kin   | Title:   | RSFO(2)  |  |  |  |  |  |  |
| Signature:   | The state of the s | Date:  | 17 OCT 2019  |  |  |  |  |  |  |
| Contractor's<br>Representative:  | Stephen Tsang  | Title:   | Environmental Office   |  |  |  |  |  |  |
| Signature:   |  | Date:  | 17.10.2019   |  |  |  |  |  |  |
| Checked by (IEC's Representative):   | Ray Yan  | Title:   | IEC  |  |  |  |  |  |  |

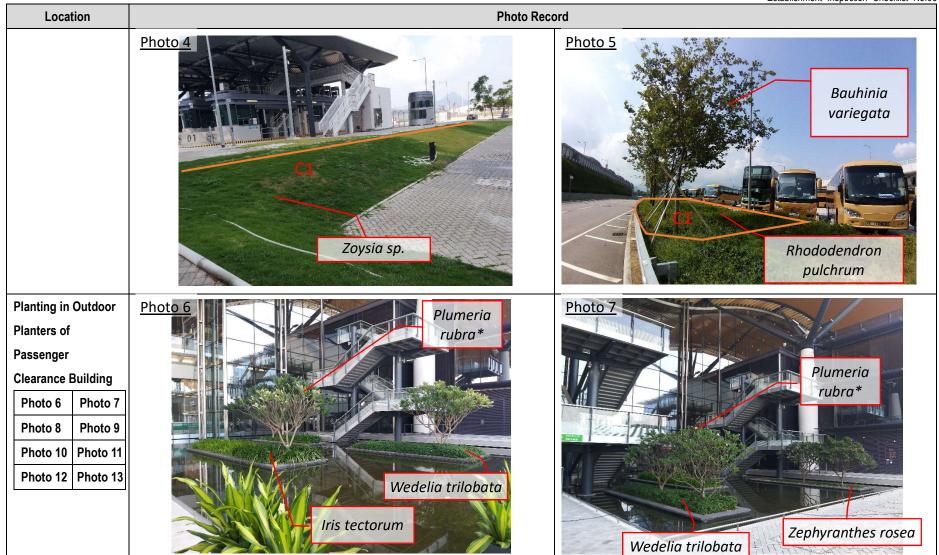
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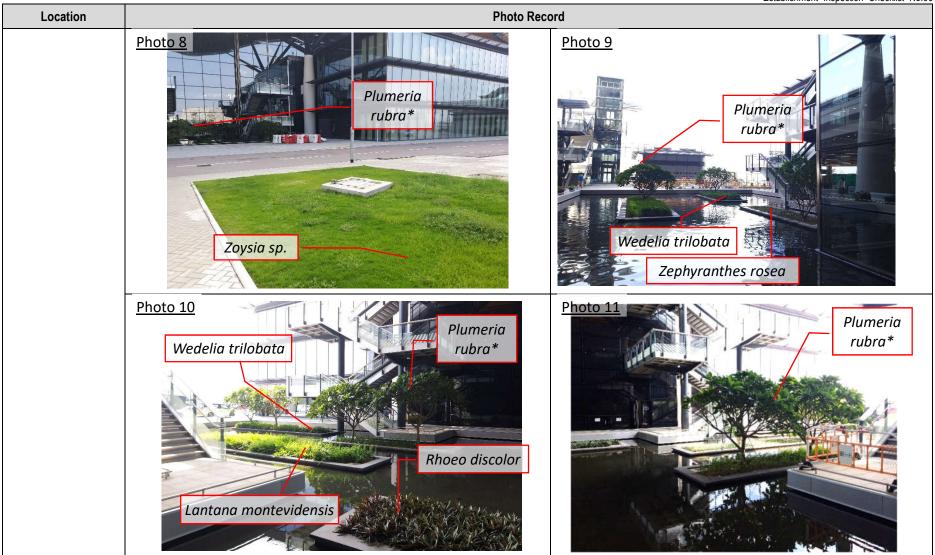
17 October 2019

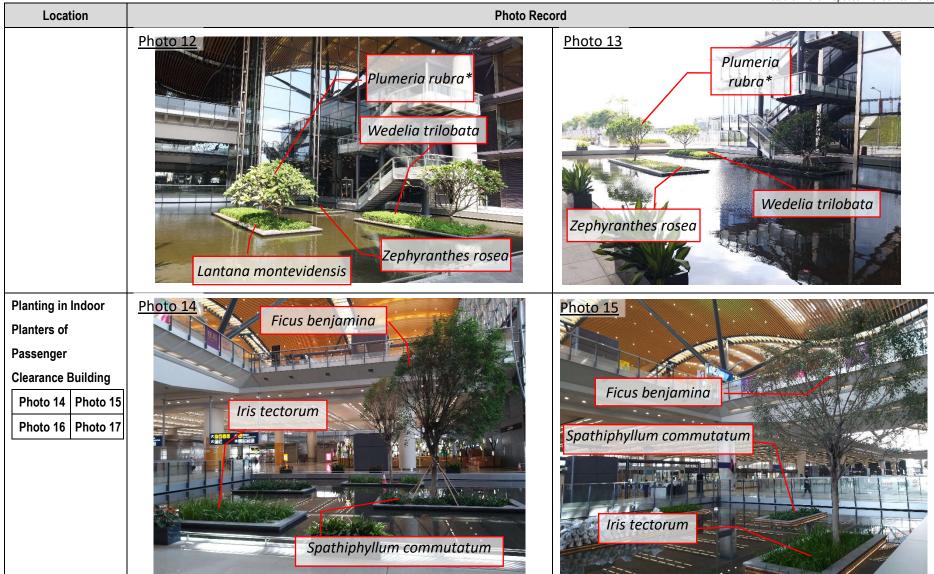
Ray

Signature:

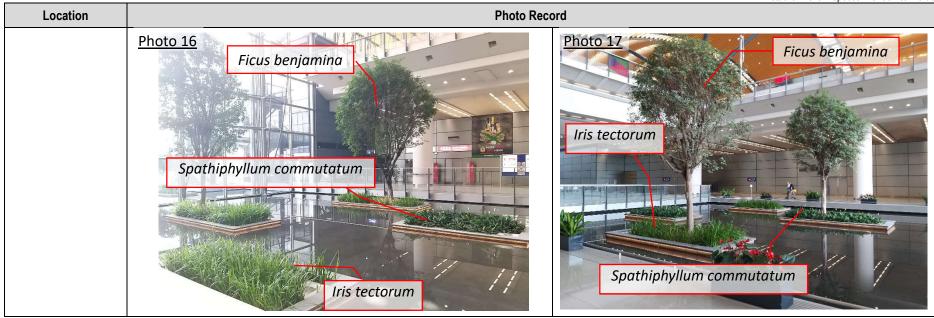




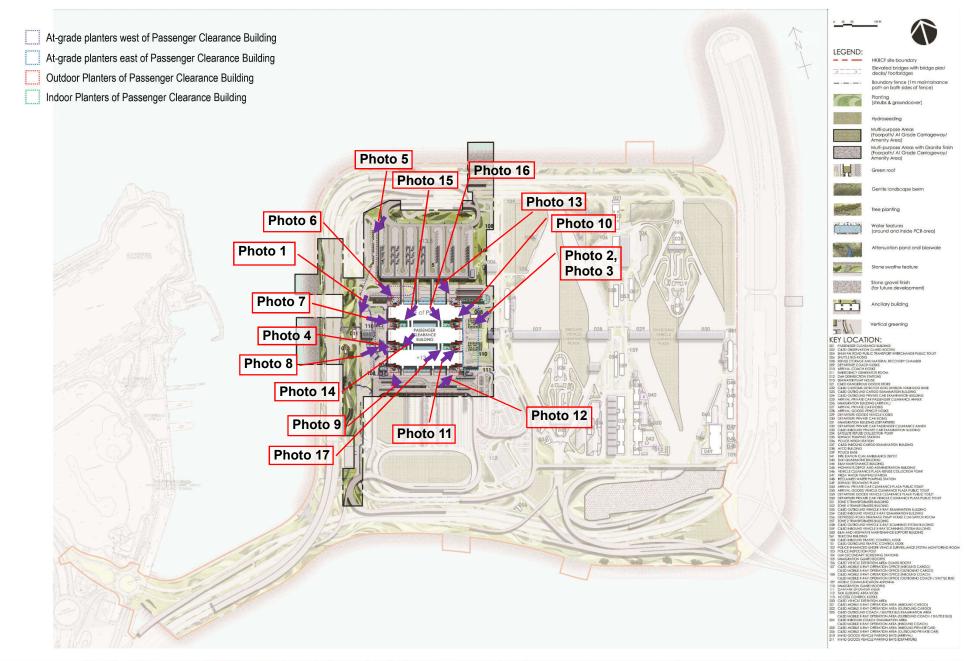




Establishment Inspection Checklist No.06



Note: \* Refer to Approved Landscape Proposal submitted under Section 16 to Plan Department.





| AGREEMENT No. CE 13/2010 (CE)   |
|---|
| HONG KONG - ZHUHAI - MACAO BRIDGE HONG KONG BOUNDARY CROSSING FACILITIES    |
| (SUPERSTRUCTURES AND INFRASTRUCTURES) - DESIGN AND CONSTRUCTION             |
| MASTER LANDSCREED AN EOR CONTRACT NO. HV/2013/01 (C1) (I EVEL: FIRST ELOOR) |

| SCALE   | NA      | DATE        | APR 2018 |  |
|---------|---------|-------------|----------|--|
| CHECK   | ELK     | DRAWN       | TRT      |  |
| JOB No. |         | DRAWING No. | REV      |  |
|         | AECMP01 |             | B.1b -   |  |

| TREE PLANTING (1) |                       |              |                                    |             |  |  |  |
|-------------------|-----------------------|--------------|------------------------------------|-------------|--|--|--|
| SPECIES CODE      | BOTANICAL NAME        | CHINESE NAME | SIZE [mm]                          | SPACING [m] |  |  |  |
| AL **             | Albizia lebbeck       | 大葉合歡         | 4000-5000(H) x 3000(SP) x 100(DBH) | 3 - 4       |  |  |  |
| BV                | Bauhinia variegata    | 宮粉羊蹄甲        | 4000-5000(H) x 3000(SP) x 100(DBH) | 3 - 4       |  |  |  |
| CV                | Callistemon viminalis | 串錢柳          | 4000-5000(H) x 3000(SP) x 100(DBH) | 3 - 4       |  |  |  |
| CS **             | Cassia siamea         | 鐵刀木          | 4000-5000(H) x 3000(SP) x 100(DBH) | 3 - 4       |  |  |  |
| GR                | Grevillea robusta     | 銀樺           | 4000-5000(H) x 3000(SP) x 100(DBH) | 3 - 4       |  |  |  |
| JA                | Jacaranda mimosifolia | 藍花楹          | 4000-5000(H) x 3000(SP) x 100(DBH) | 3 - 4       |  |  |  |
| JC **             | Juniperus chinensis   | 龍柏           | 4000-5000(H) x 3000(SP) x 100(DBH) | 3 - 4       |  |  |  |
| TP *, **          | Thespesia populnea    | 恒春黃槿         | 4000-5000(H) x 3000(SP) x 100(DBH) | 3 - 4       |  |  |  |
|                   |                       |              |                                    |             |  |  |  |

| 1 | GROUND COVER PLANTING (1) |                          |              |                  |              |  |  |  |  |
|---|---------------------------|--------------------------|--------------|------------------|--------------|--|--|--|--|
| 1 | SPECIES CODE              | BOTANICAL NAME           | CHINESE NAME | SIZE [mm]        | SPACING [mm] |  |  |  |  |
| 1 | Aag                       | Agave angustifolia       | 狹葉龍舌蘭        | 200(H) x 300(SP) | 200          |  |  |  |  |
| ] | Aam                       | Agave americana          | 龍舌蘭          | 100(H) x 100(SP) | 100          |  |  |  |  |
| 1 | Asl                       | Aglaonema 'Silver King'  | 銀王粗肋草        | 150(H) x 150(SP) | 100          |  |  |  |  |
| 1 | Ave                       | Alternanthera versicolor | 錦繡莧, 紅草      | 100(H) x 100(SP) | 100          |  |  |  |  |
| 1 | Ite                       | Iris tectorum            | 鳶尾           | 100(H) x 100(SP) | 100          |  |  |  |  |
| 1 | Lmo                       | Lantana montevidensis    | 鋪地臭金鳳        | 200(H) x 300(SP) | 200          |  |  |  |  |
| 1 | Lsp *                     | Liriope spicata          | 山麥冬          | 100(H) x 100(SP) | 100          |  |  |  |  |
| 1 | Nex *                     | Nephrolepis hirsutula    | 毛葉腎蕨         | 150(H) x 200(SP) | 150          |  |  |  |  |
| _ | Oja *                     | Ophiopogon japonicus     | 麥冬           | 150(H) x 150(SP) | 100          |  |  |  |  |
| ٦ | Rds                       | Rhoeo discolor           | 紫背萬年青        | 150(H) x 200(SP) | 100          |  |  |  |  |
| ┨ | Spo **                    | Syngonium podophyllum    | 合果芋          | 200(H) x 200(SP) | 150          |  |  |  |  |
| 1 | Wtr **                    | Wedelia trilobata        | 蟛蜞菊          | 100(H) x 100(SP) | 100          |  |  |  |  |
| 1 | Zan                       | Zephyranthes candida     | 蔥蓮           | 100(H) x 100(SP) | 100          |  |  |  |  |
| 1 | Zro                       | Zephyranthes rosea       | 玫瑰蔥蓮         | 150(H) x 200(SP) | 100          |  |  |  |  |

| SHRUB PLANTING (1) |                                  |              |                   |              |  |  |  |
|--------------------|----------------------------------|--------------|-------------------|--------------|--|--|--|
| SPECIES CODE       | BOTANICAL NAME                   | CHINESE NAME | SIZE [mm]         | SPACING [mm] |  |  |  |
| Aod                | Aglaia odorata                   | 米仔蘭          | 700(H) x 500(SP)  | 400          |  |  |  |
| Cha                | Calliandra haematocephala        | 紅絨球          | 700(H) x 500(SP)  | 400          |  |  |  |
| Fmi **             | Ficus microcarpa 'golden leaves' | 黄金榕          | 1000(H) x 700(SP) | 600          |  |  |  |
| Ite                | Iris tectorum                    | 鳶尾           | 300(H) x 200(SP)  | 150          |  |  |  |
| lch *              | Ixora chinensis                  | 龍船花          | 500(H) x 400(SP)  | 350          |  |  |  |
| Mar                | Malvaviscus arboreus             | 大紅袍          | 700(H) x 500(SP)  | 450          |  |  |  |
| Mfi                | Michelia figo                    | 含笑           | 800(H) x 500(SP)  | 400          |  |  |  |
| Pmy                | Phyllanthus myrtifolius          | 瘤腺葉下珠        | 400(H) x 300(SP)  | 250          |  |  |  |
| Rpu                | Rhododendron pulchrum            | 錦鏽杜鵑         | 600(H) x 400(SP)  | 300          |  |  |  |
| Rsi *              | Rhododendron simsii              | 紅杜鵑          | 600(H) x 400(SP)  | 300          |  |  |  |
| Sco                | Spathiphyllum commutatum         | 白掌           | 300(H) x 300(SP)  | 200          |  |  |  |
| Sre                | Strelitzia reginae               | 天堂鳥蕉         | 500(H) x 400(SP)  | 350          |  |  |  |

| TURFING (1)  |                | -            |           |
|--------------|----------------|--------------|-----------|
| SPECIES CODE | BOTANICAL NAME | CHINESE NAME | SIZE [mm] |
| Zja **       | Zoysia sp.     | 朝鮮草          | 25(H)     |

| Sre               | Strelitzia reginae        | 天堂鳥蕉         | 500(H) x 400(SP) | 350          | Pno      |
|-------------------|---------------------------|--------------|------------------|--------------|----------|
|                   |                           |              |                  |              | Eop*/Lpe |
| <b>GREEN ROOF</b> | GROUND COVER PLANTING (1) |              |                  |              |          |
| SPECIES CODE      | BOTANICAL NAME            | CHINESE NAME | SIZE [mm]        | SPACING [mm] | INDOOR   |
| Zan               | Zephyranthes candida      | 蔥蓮           | 100(H) x 100(SP) | 100          | SPECIES  |

| ] | HYDROSEEDIN  | IG <sup>(1),(2)</sup>                   |              |
|---|--------------|---|--------------|
| ] | SPECIES CODE | BOTANICAL NAME                          | CHINESE NAME |
| 1 | Cda *, **    | Cynodon dactylon                        | 百慕達草         |
|   | Pno          | Paspalum notatum                        | 百喜草          |
|   | Eop * / Lpe  | Eremochloa ophiuroides / Lolium perenne | 假儉草/黑麥草      |
| 1 |              |   |              |

| CLIMBER PLAN | NTING <sup>(1)</sup>     |              |                  |              |
|--------------|--------------------------|--------------|------------------|--------------|
| SPECIES CODE | BOTANICAL NAME           | CHINESE NAME | SIZE [mm]        | SPACING [mm] |
| Pda          | Parthenocissus dalzielii | 異葉爬山虎        | 300(H) x 250(SP) | 250          |
| Pve **       | Pyrostegia venusta       | 炮仗花          | 300(H) x 250(SP) | 250          |

| П | INDOOR PLANTING IN PASSENGER CLEARANCE BUILDING (1) |                          |              |                               |             |  |  |
|---|---|--------------------------|--------------|-------------------------------|-------------|--|--|
|   | SPECIES CODE  | BOTANICAL NAME           | CHINESE NAME | SIZE [mm]                     | SPACING [m] |  |  |
| _ | TREE  |                          |              |                               |             |  |  |
|   | FB **   | Ficus benjamina          | 垂榕           | 5000(H) x 4000(SP) x 150(DBH) | N.A.        |  |  |
| ī | SHRUB   |                          |              |                               |             |  |  |
| ٦ | Ite   | Iris tectorum            | 鳶尾           | 300(H) x 200(SP)              | 150         |  |  |
| ╛ | Sco   | Spathiphyllum commutatum | 白掌           | 300(H) x 300(SP)              | 200         |  |  |

#### NOTES:



<sup>(1)</sup> All proposed plant species and specifications are subject to change during construction to suit the site conditions.

<sup>(2)</sup> Minimum requirement of grass seed mix for hydroseeding shall follow General Specification for Civil Engineering Works Clause 3.26(3).

\* Species native to Hong Kong according to the Hong Kong Herbarium website <a href="http://www.herbarium.gov.hk">http://www.herbarium.gov.hk</a>

<sup>\*\*</sup> Species which is salt spray tolerant



Landscape Inspection Checklist

| Inspe   | ection Date:                                   | 04 October 2018   | of October 2018 Inspection By: |                        |              | Ivy Lo |                    |
|---------|--|---|--------------------------------|------------------------|--------------|--------|--------------------|
| Time:   |  | 04 October 2018   | Weather Condition:             |                        |              | Sinny  |                    |
| Partici | pants:   |   | , Ha                           | rris Wong              | , Eh         | dy Tse |                    |
| 1       | Zone 1   |   |                                | N/A or not<br>observed | Yes          | No     | Remarks /<br>Photo |
| 1.1     | Is watering provided t                         | o all plants to ensure satisfactory   | growth                         |                        | <b>/</b>     |        |                    |
|         | and health (manual ar                          | nd automatic irrigation)?   |                                |                        |              |        |                    |
| 1.2     | implemented to replace bed in all plants that  | reather conditions, are proper<br>ace dead plants, repair damaged<br>have blown over, firm up all othe<br>reafter, remove dead plants an  | plants,<br>r plants            | $\checkmark$           |              |        |                    |
| 1.3     | Are litter and debris re                       | emoved?   |                                |                        | $\checkmark$ |        |                    |
| 1.4     | Are planting areas mat                         | tched with the approved landscape   | plan?                          |                        | $\checkmark$ |        |                    |
| 1.5     | Is planting pattern ma                         | tched with the approved landscape   | plan?                          |                        | ~            |        |                    |
| 1.6     | Are planting locations landscape plan?         | and spacing matched with the ap   | proved                         |                        |              |        |                    |
| 1.7     | Are the planting speci<br>approved landscape p | es on site matched with Figure 3.6 lan?   | of the                         |                        | $\checkmark$ |        |                    |
| 1.8     | Are the plants in satisf                       | ied condition?  |                                |                        | $\checkmark$ |        |                    |
| 2       | Zone 2   |   |                                | N/A or not observed    | Yes          | No     | Remarks /<br>Photo |
| 2.1     | Is watering provided                           | to all plants to ensure satisfactory  | growth                         |                        | $\checkmark$ |        |                    |
|         | and health (manual ar                          | nd automatic irrigation)?   |                                |                        |              |        |                    |
| 2.2     | implemented to replace bed in all plants that  | veather conditions, are proper<br>ace dead plants, repair damaged<br>have blown over, firm up all othe<br>creafter, remove dead plants ar | l plants,<br>er plants         |                        |              |        |                    |
| 2.3     | Are litter and debris re                       | emoved?   |                                |                        | $\checkmark$ |        |                    |
| 2.4     | Are planting areas mat                         | tched with the approved landscape   | plan?                          |                        | $\checkmark$ |        |                    |
| 2.5     | Is planting pattern ma                         | tched with the approved landscape   | plan?                          |                        | ✓            |        |                    |
| 2.6     | Are planting locations landscape plan?         | and spacing matched with the a  | pproved                        |                        | $\checkmark$ |        |                    |
| 2.7     | Are the planting speci                         | es on site matched with Figure 3. an?   | 6 of the                       |                        | <b>✓</b>     |        |                    |
| 2.8     | Are the plants in satisf                       | ied condition?  |                                |                        | $\checkmark$ |        |                    |



Landscape Inspection Checklist

Contract No. HY/2013/02 - Hong Kong - Zhuhai - Macao Bridge Hong Kong Boundary Crossing Facilities - Infrastructure Works Stage I (Western Portion)

Are the planting species on site matched with Figure 3.6 of the

approved landscape plan?

Are the plants in satisfied condition?

4.7

4.8

| 3    | Zone 3   | N/A or not observed | Yes          | No | Remarks / Photo    |
|------|--|---------------------|--------------|----|--------------------|
| 3.1  | Is watering provided to all plants to ensure satisfactory growth   |                     | $\checkmark$ |    |                    |
|      | and health (manual and automatic irrigation)?  |                     |              |    |                    |
| 3.2  | Are tree stakes, guys and ties provided properly for safety and  |                     | $\checkmark$ |    | -                  |
|      | avoid chaffing of bark?  |                     |              |    |                    |
| 3.3  | After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove dead plants and plant debris from the site? | $\checkmark$        |              |    |                    |
| 3.4  | Are litter and debris removed?   |                     | ✓            |    |                    |
| 3.5  | Are trees or limb overhanging branches pruned?   |                     |              |    |                    |
| 3.6  | Are planting areas matched with the approved landscape plan?   |                     | $\checkmark$ |    |                    |
| 3.7  | Is planting pattern matched with the approved landscape plan?  |                     | $\checkmark$ |    |                    |
| 3.8  | Are planting locations and spacing matched with the approved landscape plan?   |                     | $\checkmark$ |    |                    |
| 3.9  | Are the planting species on site matched with Figure 3.6 of the approved landscape plan?   |                     | $\checkmark$ |    | -                  |
| 3.10 | Are the plants in satisfied condition?   |                     | 1            |    |                    |
|      |  |                     |              |    |                    |
| 4    | Zone 4   | N/A or not observed | Yes          | No | Remarks /<br>Photo |
| 4.1  | Is watering provided to all plants to ensure satisfactory growth   |                     | $\checkmark$ |    |                    |
|      | and health (manual and automatic irrigation)?  |                     |              |    |                    |
| 4.2  | After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove dead plants and plant debris from the site? |                     |              |    |                    |
| 4.3  | Are litter and debris removed?   |                     | V            |    |                    |
| 4.4  | Are planting areas matched with the approved landscape plan?   |                     |              |    |                    |
| 4.5  | Is planting pattern matched with the approved landscape plan?  |                     |              |    |                    |
| 4.6  | Are planting locations and spacing matched with the approved landscape plan?   |                     | ~            |    |                    |



Landscape Inspection Checklist

| 5   | Zone 5  | N/A or not observed | Yes                     | No | Remarks /<br>Photo                     |
|---|---|---------------------|-------------------------|----|--|
| 5.1   | Is watering provided to all plants to ensure satisfactory growth  |                     |                         |    |  |
|   | and health (manual and automatic irrigation)?   |                     |                         |    |  |
| 5.2   | After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove dead plants and plant debris from the site?  |                     |                         |    |  |
| 5.3   | Are litter and debris removed?  |                     | $\checkmark$            |    |  |
| 5.4   | Are planting areas matched with the approved landscape plan?  |                     |                         |    |  |
| 5.5   | Is planting pattern matched with the approved landscape plan?   |                     | V                       |    |  |
| 5.6   | Are planting locations and spacing matched with the approved landscape plan?  |                     | $\overline{\checkmark}$ |    |  |
| 5.7   | Are the planting species on site matched with Figure 3.6 of the approved landscape plan?  |                     | $\checkmark$            |    |  |
| 5.8   | Are the plants in satisfied condition?  |                     | $\checkmark$            |    | N===================================== |
|   |   |                     |                         |    |  |
| 6   | Zone 6  | N/A or not observed | Yes                     | No | Remarks /<br>Photo                     |
| <b>6</b><br>6.1   | Zone 6  Is watering provided to all plants to ensure satisfactory growth  | -                   | Yes                     | No | -                                      |
|   |   | -                   |                         | No | -                                      |
|   | Is watering provided to all plants to ensure satisfactory growth  | -                   |                         | No | -                                      |
| 6.1   | Is watering provided to all plants to ensure satisfactory growth and health (manual and automatic irrigation)?  After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove dead plants and plant  | observed            |                         | No | -                                      |
| 6.1   | Is watering provided to all plants to ensure satisfactory growth and health (manual and automatic irrigation)?  After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove dead plants and plant debris from the site?  | observed            |                         | No | -                                      |
| <ul><li>6.1</li><li>6.2</li><li>6.3</li></ul>                         | Is watering provided to all plants to ensure satisfactory growth and health (manual and automatic irrigation)?  After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove dead plants and plant debris from the site?  Are litter and debris removed?  | observed            |                         | No | -                                      |
| <ul><li>6.1</li><li>6.2</li><li>6.3</li><li>6.4</li></ul>             | Is watering provided to all plants to ensure satisfactory growth and health (manual and automatic irrigation)?  After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove dead plants and plant debris from the site?  Are litter and debris removed?  Are planting areas matched with the approved landscape plan?  | observed            |                         | No | -                                      |
| <ul><li>6.1</li><li>6.2</li><li>6.3</li><li>6.4</li><li>6.5</li></ul> | Is watering provided to all plants to ensure satisfactory growth and health (manual and automatic irrigation)?  After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove dead plants and plant debris from the site?  Are litter and debris removed?  Are planting areas matched with the approved landscape plan?  Is planting pattern matched with the approved landscape plan?  Are planting locations and spacing matched with the approved | observed            |                         | No | -                                      |



Landscape Inspection Checklist

| 7                               | Zone 7  | N/A or not observed | Yes          | No | Remarks /<br>Photo |
|---------------------------------|---|---------------------|--------------|----|--------------------|
| 7.1                             | Is watering provided to all plants to ensure satisfactory growth  | $\checkmark$        |              |    |                    |
|                                 | and health (manual and automatic irrigation)?   |                     |              |    |                    |
| 7.2                             | After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove dead plants and plant debris from the site?  |                     |              |    |                    |
| 7.3                             | Are litter and debris removed?  |                     | $\checkmark$ |    |                    |
| 7.4                             | Are planting areas matched with the approved landscape plan?  |                     | $\checkmark$ |    |                    |
| 7.5                             | Is planting pattern matched with the approved landscape plan?   |                     | $\checkmark$ |    |                    |
| 7.6                             | Are planting locations and spacing matched with the approved landscape plan?  |                     | <b>✓</b>     |    |                    |
| 7.7                             | Are the planting species on site matched with Figure 3.6 of the approved landscape plan?  |                     | ~            |    |                    |
| 7.8                             | Are the plants in satisfied condition?  |                     | $\leq$       |    |                    |
|                                 |   |                     |              |    |                    |
| 8                               | Zone 8  | N/A or not observed | Yes          | No | Remarks /<br>Photo |
| 8 8.1                           | Zone 8  Is watering provided to all plants to ensure satisfactory growth  | •                   | Yes          | No |                    |
|                                 |   | •                   | -1==-5/      | No |                    |
|                                 | Is watering provided to all plants to ensure satisfactory growth  | •                   | -1==-5/      | No |                    |
| 8.1                             | Is watering provided to all plants to ensure satisfactory growth and health (manual and automatic irrigation)?  After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove dead plants and plant  | observed            | -1==-5/      | No |                    |
| 8.1                             | Is watering provided to all plants to ensure satisfactory growth and health (manual and automatic irrigation)?  After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove dead plants and plant debris from the site?  | observed            | -1==-5/      | No |                    |
| 8.1<br>8.2<br>8.3               | Is watering provided to all plants to ensure satisfactory growth and health (manual and automatic irrigation)?  After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove dead plants and plant debris from the site?  Are litter and debris removed?  | observed            | -1==-5/      | No |                    |
| 8.1<br>8.2<br>8.3<br>8.4        | Is watering provided to all plants to ensure satisfactory growth and health (manual and automatic irrigation)?  After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove dead plants and plant debris from the site?  Are litter and debris removed?  Are planting areas matched with the approved landscape plan?  | observed            | -1==-5/      | No |                    |
| 8.1<br>8.2<br>8.3<br>8.4<br>8.5 | Is watering provided to all plants to ensure satisfactory growth and health (manual and automatic irrigation)?  After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove dead plants and plant debris from the site?  Are litter and debris removed?  Are planting areas matched with the approved landscape plan?  Is planting pattern matched with the approved landscape plan?  Are planting locations and spacing matched with the approved | observed            | -1==-5/      | No |                    |



Landscape Inspection Checklist

| 9                 | Zone 9   | N/A or not observed    | Yes          | No | Remarks /<br>Photo |
|-------------------|--|------------------------|--------------|----|--------------------|
| 9.1               | Is watering provided to all plants to ensure satisfactory growth   |                        |              |    |                    |
|                   | and health (manual and automatic irrigation)?  |                        |              |    |                    |
| 9.2               | After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove dead plants and plant debris from the site? |                        |              |    |                    |
| 9.3               | Are litter and debris removed?   |                        |              |    |                    |
| 9.4               | Are planting areas matched with the approved landscape plan?   |                        | $\checkmark$ |    |                    |
| 9.5               | Is planting pattern matched with the approved landscape plan?  |                        | $\checkmark$ |    |                    |
| 9.6               | Are planting locations and spacing matched with the approved landscape plan?   |                        | $\checkmark$ |    |                    |
| 9.7               | Are the planting species on site matched with Figure 3.6 of the approved landscape plan?   |                        |              |    |                    |
| 9.8               | Are the plants in satisfied condition?   |                        | $\checkmark$ |    | ·                  |
| 10                | Zone 10  | N/A or not<br>observed | Yes          | No | Remarks /<br>Photo |
| 10.1              | Is watering provided to all plants to ensure satisfactory growth   |                        |              |    |                    |
|                   | and health (manual and automatic irrigation)?  |                        |              |    |                    |
| 10.2              | After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove dead plants and plant debris from the site? |                        |              |    |                    |
| 10.3              | Are litter and debris removed?   |                        | ~            |    |                    |
| 10.4              | Are planting areas matched with the approved landscape plan?   |                        | $\checkmark$ |    |                    |
| 10.5              | Is planting pattern matched with the approved landscape plan?  |                        | ~            |    |                    |
| 10.6              | Are planting locations and spacing matched with the approved landscape plan?   |                        |              |    |                    |
| 10.7              | Are the planting species on site matched with Figure 3.6 of the approved landscape plan?   |                        | $\checkmark$ |    |                    |
| 10.8              | Are the plants in satisfied condition?   |                        | $\checkmark$ |    |                    |
|                   |  |                        |              |    |                    |
| <b>11</b><br>11.1 | General Document  Are the records of watering, fertilizing, weeding, pruning and   | N/A or not observed    | Yes          | No | Remarks /<br>Photo |



| Follow up actions for po                            | ervious Site Audit:  |            |   |
|---|--|------------|---|
|   |  |            |   |
| Observations  |  | Zone 7.    | As confirmed and untimed marks were not |
| Corrective Actions (if ar                           | ny): belonging t   | s any HZ   | MB HKBCF Contracts.                     |
| General Conclusion:                                 | All plants are in satis  | feed condi | tin                                     |
| Inspected by (ET Representative):                   | In Lo  | Title:     | E.T.                                    |
| Signature:  | 47   | Date:      | 04/10/2019                              |
| Reviewed by<br>(AECOM Landscape<br>Representative): | CHAN Pak Kin   | Title:     | RSF0(2)                                 |
| Signature:  | Company of the Compan | Date:      | C4 OCT 2019                             |
| Checked by (IEC Representative):                    | Ray Yan  | Title:     | IEC                                     |
| Signature:  | Ray  | Date:      | 1 Nov 2019                              |



| Location | Species   | Photo | Record |
|----------|---|-------|--------|
| Zone 1   | - Wedelia trilobata   |       |        |
| Zone 2   | <ul> <li>Zoysia sp.</li> <li>Zephyranthes candida</li> <li>Lantana montevidensis</li> </ul> |       |        |



| Location | Species   | Photo Record |  |
|----------|---|--------------|--|
| Zone 3   | - Bauhinia variegata<br>- Zoysia sp.  |              |  |
| Zone 4   | <ul> <li>Zephyranthes         candida</li> <li>Lantana         montevidensis</li> </ul> |              |  |



| Location | Species  | Photo Record |  |
|----------|--|--------------|--|
| Zone 5   | - Zoysia sp.<br>- Zephyranthes<br>candida  |              |  |
| Zone 6   | <ul> <li>Aglaia odorata</li> <li>Liriope spicata</li> <li>Lantana         montevidensis</li> <li>Zoysia sp.</li> </ul> |              |  |

| Location | Species  | Photo Record  |
|----------|--|---|
| Zone 7   | - Zoysia sp.<br>- Zephyranthes rosea           |   |
|          |  | As confirmed and clarified with RSS on site, the pre-construction works (ground investigation works) as shown in photos were not belonging to any HZMB HKBCF contracts.   |
| Zone 8   | - Zephyranthes<br>candida<br>- Liriope spicata | KEEP RIGHT ON THE STATE OF THE |

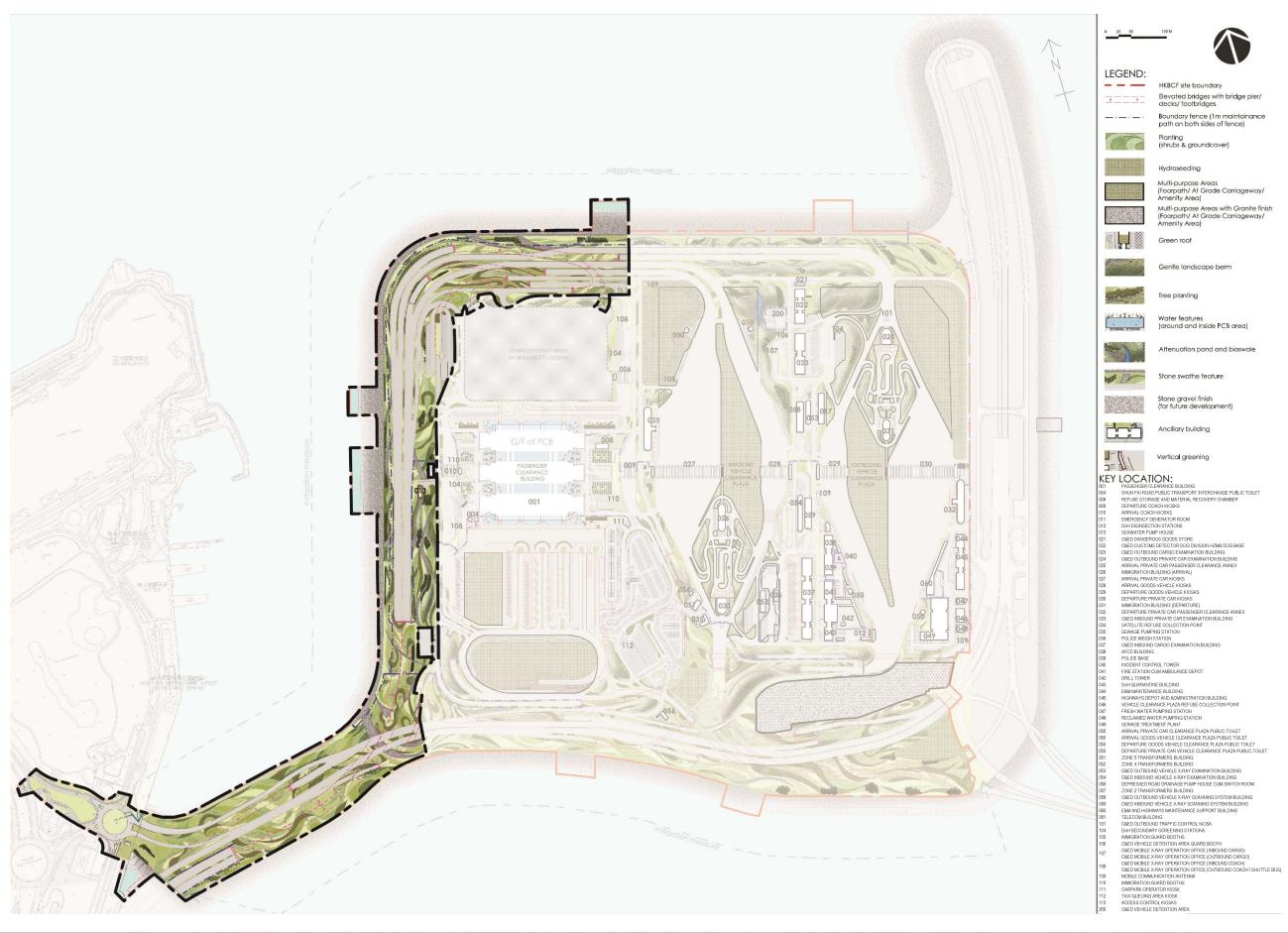


| Location | Species   | Photo Record |
|----------|---|--------------|
| Zone 9   | <ul> <li>Rhododendron         pulchrum</li> <li>Zephyrsnthes candida</li> </ul> |              |
| Zone 10  | <ul> <li>Zephyranthes rosea</li> <li>Zephyrsnthes candida</li> </ul>            |              |



Appendix A

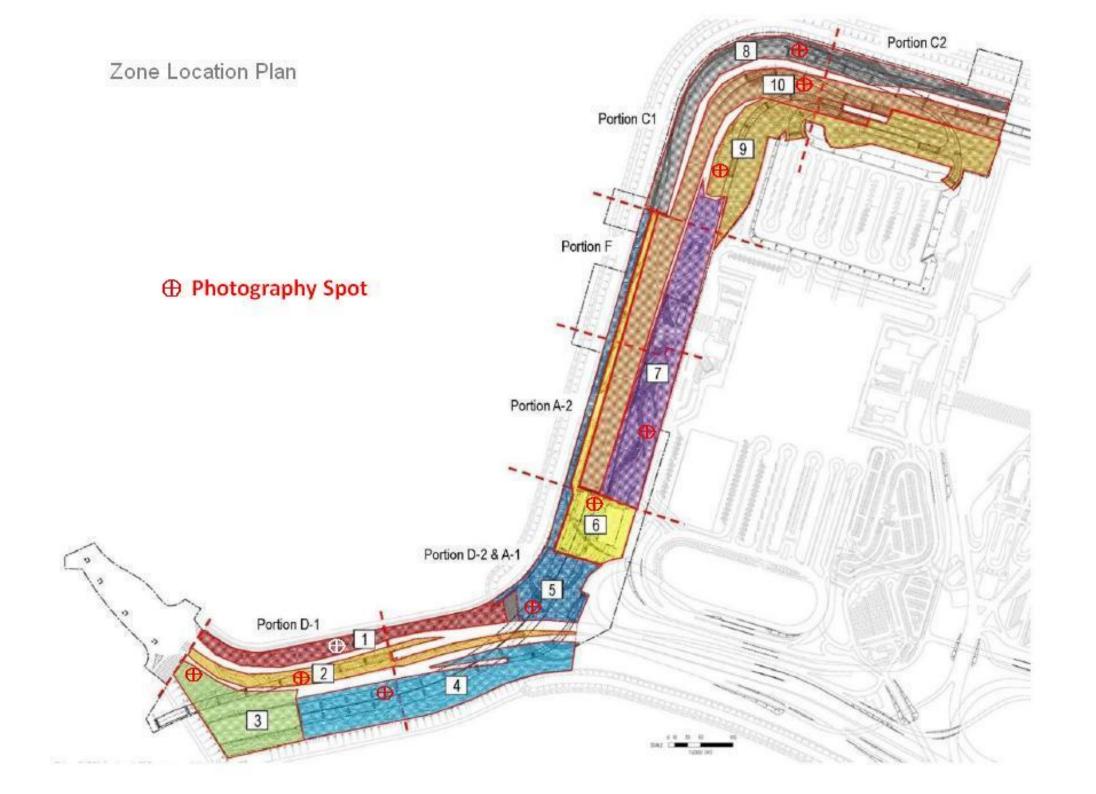
**Location Plan** 





AGREEMENT No. CE 13/2010 (CE)
HONG KONG - ZHUHAI - MACAO BRIDGE HONG KONG BOUNDARY CROSSING FACILITIES
(SUPERSTRUCTURES AND INFRASTRUCTURES) - DESIGN AND CONSTRUCTION
MASTER LANDSCPE PLAN FOR CONTRACT NO. HY/2013/02 (C2) (LEVEL: GROUND LEVEL)

| SCALE   | NA      | DATE       | JAN 2019 | )        |
|---------|---------|------------|----------|----------|
| CHECK   | ELK     | DRAWN      | TRT      |          |
| JOB No. | AECMP01 | DRAWNG No. | C2-a     | REV<br>- |





## Appendix B

**Planting Schedule** 

| TREE PLANTING (1) |                       |              |                                    |             |  |  |
|-------------------|-----------------------|--------------|------------------------------------|-------------|--|--|
| SPECIES CODE      | BOTANICAL NAME        | CHINESE NAME | SIZE [mm]                          | SPACING [m] |  |  |
| AL **             | Albizia lebbeck       | 大葉合歡         | 4000-5000(H) x 3000(SP) x 100(DBH) | 3 - 4       |  |  |
| BV                | Bauhinia variegata    | 宮粉羊蹄甲        | 4000-5000(H) x 3000(SP) x 100(DBH) | 3 - 4       |  |  |
| CV                | Callistemon viminalis | 串錢柳          | 4000-5000(H) x 3000(SP) x 100(DBH) | 3 - 4       |  |  |
| CS **             | Cassia siamea         | 鐵刀木          | 4000-5000(H) x 3000(SP) x 100(DBH) | 3 - 4       |  |  |
| GR                | Grevillea robusta     | 銀樺           | 4000-5000(H) x 3000(SP) x 100(DBH) | 3 - 4       |  |  |
| JA                | Jacaranda mimosifolia | 藍花楹          | 4000-5000(H) x 3000(SP) x 100(DBH) | 3 - 4       |  |  |
| JC **             | Juniperus chinensis   | 龍柏           | 4000-5000(H) x 3000(SP) x 100(DBH) | 3 - 4       |  |  |
| TP *, **          | Thespesia populnea    | 恒春黄槿         | 4000-5000(H) x 3000(SP) x 100(DBH) | 3 - 4       |  |  |

| SHRUB PLANT  | SHRUB PLANTING <sup>(1)</sup>    |              |                   |              |  |
|--------------|----------------------------------|--------------|-------------------|--------------|--|
| SPECIES CODE | BOTANICAL NAME                   | CHINESE NAME | SIZE [mm]         | SPACING [mm] |  |
| Aod          | Aglaia odorata                   | 米仔蘭          | 700(H) x 500(SP)  | 400          |  |
| Cha          | Calliandra haematocephala        | 紅絨球          | 700(H) x 500(SP)  | 400          |  |
| Fmi **       | Ficus microcarpa 'golden leaves' | 黄金榕          | 1000(H) x 700(SP) | 600          |  |
| Ite          | Iris tectorum                    | 鳶尾           | 300(H) x 200(SP)  | 150          |  |
| Ich *        | Ixora chinensis                  | 龍船花          | 500(H) x 400(SP)  | 350          |  |
| Mar          | Malvaviscus arboreus             | 大紅袍          | 700(H) x 500(SP)  | 450          |  |
| Mfi          | Michelia figo                    | 含笑           | 800(H) x 500(SP)  | 400          |  |
| Pmy          | Phyllanthus myrtifolius          | 瘤腺葉下珠        | 400(H) x 300(SP)  | 250          |  |
| Rpu          | Rhododendron pulchrum            | 錦鏽杜鵑         | 600(H) x 400(SP)  | 300          |  |
| Rsi *        | Rhododendron simsii              | 紅杜鵑          | 600(H) x 400(SP)  | 300          |  |
| Sco          | Spathiphyllum commutatum         | 白掌           | 300(H) x 300(SP)  | 200          |  |
| Sre          | Strelitzia reginae               | 天堂鳥蕉         | 500(H) x 400(SP)  | 350          |  |

| GREEN ROOF  | GREEN ROOF GROUND COVER PLANTING (1) |    |                  |     |  |  |  |
|---|--------------------------------------|----|------------------|-----|--|--|--|
| SPECIES CODE   BOTANICAL NAME   CHINESE NAME   SIZE [mm]   SPACING [m |                                      |    |                  |     |  |  |  |
| Zan   | Zephyranthes candida                 | 蔥蓮 | 100(H) x 100(SP) | 100 |  |  |  |

| CLIMBER PLANTING (1) |                          |              |                  |              |  |
|----------------------|--------------------------|--------------|------------------|--------------|--|
| SPECIES CODE         | BOTANICAL NAME           | CHINESE NAME | SIZE [mm]        | SPACING [mm] |  |
| Pda                  | Parthenocissus dalzielii | 異葉爬山虎        | 300(H) x 250(SP) | 250          |  |
| Pve **               | Pyrostegia venusta       | 炮仗花          | 300(H) x 250(SP) | 250          |  |

| GROUND CC    | VER PLANTING (1)         |              |                  |              |
|--------------|--------------------------|--------------|------------------|--------------|
| SPECIES CODI | E BOTANICAL NAME         | CHINESE NAME | SIZE [mm]        | SPACING [mm] |
| Aag          | Agave angustifolia       | 狹葉龍舌蘭        | 200(H) x 300(SP) | 200          |
| Aam          | Agave americana          | 龍舌蘭          | 100(H) x 100(SP) | 100          |
| Asl          | Aglaonema 'Silver King'  | 銀王粗肋草        | 150(H) x 150(SP) | 100          |
| Ave          | Alternanthera versicolor | 錦繡莧, 紅草      | 100(H) x 100(SP) | 100          |
| Ite          | lris tectorum            | 鳶尾           | 100(H) x 100(SP) | 100          |
| Lmo          | Lantana montevidensis    | 鋪地臭金鳳        | 200(H) x 300(SP) | 200          |
| Lsp *        | Liriope spicata          | 山麥冬          | 100(H) x 100(SP) | 100          |
| Nex *        | Nephrolepis hirsutula    | 毛葉腎蕨         | 150(H) x 200(SP) | 150          |
| Oja *        | Ophiopogon japonicus     | 麥冬           | 150(H) x 150(SP) | 100          |
| Rds          | Rhoeo discolor           | 紫背萬年青        | 150(H) x 200(SP) | 100          |
| Spo **       | Syngonium podophyllum    | 合果芋          | 200(H) x 200(SP) | 150          |
| Wtr **       | Wedelia trilobata        | 蟛蜞菊          | 100(H) x 100(SP) | 100          |
| Zan          | Zephyranthes candida     | 蔥蓮           | 100(H) x 100(SP) | 100          |
| Zro          | Zephyranthes rosea       | 玫瑰蔥蓮         | 150(H) x 200(SP) | 100          |

| ┨ | TURFING (1)  |                |              |           |  |  |  |
|---|--------------|----------------|--------------|-----------|--|--|--|
| ╗ | SPECIES CODE | BOTANICAL NAME | CHINESE NAME | SIZE [mm] |  |  |  |
|   | Zja **       | Zoysia sp.     | 朝鮮草          | 25(H)     |  |  |  |

| 1 | HYDROSEEDING (1),(2)                       |                  |      |  |  |  |  |
|---|--|------------------|------|--|--|--|--|
|   | SPECIES CODE   BOTANICAL NAME   CHINESE NA |                  |      |  |  |  |  |
| ╝ | Cda *, **                                  | Cynodon dactylon | 百慕達草 |  |  |  |  |
|   | Pno  | Paspalum notatum | 百喜草  |  |  |  |  |
| _ | Eop * / Lpe                                | 假儉草/黑麥草          |      |  |  |  |  |

|   | INDOOR PLAN  | TING IN PASSENGER CLEARANCE BU | ILDING <sup>(1)</sup> |                               | ~           |
|---|--------------|--------------------------------|-----------------------|-------------------------------|-------------|
|   | SPECIES CODE | BOTANICAL NAME                 | CHINESE NAME          | SIZE [mm]                     | SPACING [m] |
| _ | TREE         |                                |                       |                               |             |
|   | FB **        | Ficus benjamina                | 垂榕                    | 5000(H) x 4000(SP) x 150(DBH) | N.A.        |
| П | SHRUB        |                                |                       |                               |             |
| ۶ | Ite          | Iris tectorum                  | 鳶尾                    | 300(H) x 200(SP)              | 150         |
| ┫ | Sco          | Spathiphyllum commutatum       | 白掌                    | 300(H) x 300(SP)              | 200         |

#### NOTES:



SCALE

N.T.S.

18 MAY 2018

DATE

<sup>(1)</sup> All proposed plant species and specifications are subject to change during construction to suit the site conditions.

<sup>(2)</sup> Minimum requirement of grass seed mix for hydroseeding shall follow General Specification for Civil Engineering Works Clause 3.26(3).

<sup>\*</sup> Species native to Hong Kong according to the Hong Kong Herbarium website <a href="http://www.herbarium.gov.hk">http://www.herbarium.gov.hk</a>

<sup>\*\*</sup> Species which is salt spray tolerant

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Contract No. HY/2013/03

Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facilities -Vehicle Clearance Plazas and Ancillary Buildings and Facilities

#### **Bi-monthly Landscape Monitoring Site Audit Checklist**

| Date of Site Audit: | 16/10/2019 | Time of Site Audit: |      | 14:00 |      |  |
|---------------------|------------|---------------------|------|-------|------|--|
| Site Auditor:       | Vincent Lu | Humidity:           |      | 59%   |      |  |
| Weather Condition:  | Sunny      | Temperature:        | 30°C | Wind: | Mild |  |

| Description  | N.A.     | Yes          | No | Remarks   |  |
|--|----------|--------------|----|---|--|
| Portions A1, A2 & Q  |          |              | •  |   |  |
| Is watering provided to all plants to ensure satisfactory growth and health (manual and automatic irrigation)?   |          | <b>V</b>     |    |   |  |
| After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove dead plants and plant debris from the site? | <b>√</b> |              |    |   |  |
| Are litter and debris removed?   |          | V            |    | The information was checked via on-site inspection. |  |
| Are planting areas matched with the approved landscape plan?   |          | $\checkmark$ |    |   |  |
| Is planting pattern matched with the approved landscape plan?  |          | $\checkmark$ |    |   |  |
| Are planting locations and spacing matched with the approved landscape plan?   |          | <b>V</b>     |    |   |  |
| Are the planting species on site matched with Figure 3.6 of the approved landscape plan?   |          | <b>V</b>     |    |   |  |
| Are the plants in satisfied condition?   |          | $\checkmark$ |    |   |  |
| Portion B  |          |              |    |   |  |
| Is watering provided to all plants to ensure satisfactory growth and health (manual and automatic irrigation)?   |          | <b>V</b>     |    |   |  |
| After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove dead plants and plant debris from the site? | <b>√</b> |              |    |   |  |
| Are litter and debris removed?   |          | $\checkmark$ |    | The information was checked via on-site inspection. |  |
| Are planting areas matched with the approved landscape plan?   |          | <b>√</b>     |    |   |  |
| Is planting pattern matched with the approved landscape plan?  |          | √            |    |   |  |
| Are planting locations and spacing matched with the approved landscape plan?   |          | <b>√</b>     |    |   |  |
| Are the planting species on site matched with Figure 3.6 of the approved landscape plan?   |          | <b>√</b>     |    |   |  |
| Are the plants in satisfied condition?   |          | $\checkmark$ |    |   |  |

Date of Site Audit: 16/10/2019

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| Description  | N.A.     | Yes      | No | Remarks   |  |
|--|----------|----------|----|---|--|
| Portions C, E & F  | ı        | I        |    |   |  |
| Is watering provided to all plants to ensure satisfactory growth and health (manual and automatic irrigation)?   |          | √        |    |   |  |
| After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove dead plants and plant debris from the site? | <b>√</b> |          |    | The information was checked via on-site inspection. |  |
| Are litter and debris removed?   |          | <b>V</b> |    |   |  |
| Are planting areas matched with the approved landscape plan?   |          | <b>V</b> |    |   |  |
| Is planting pattern matched with the approved landscape plan?  |          | √        |    |   |  |
| Are planting locations and spacing matched with the approved landscape plan?   |          | <b>V</b> |    |   |  |
| Are the planting species on site matched with Figure 3.6 of the approved landscape plan?   |          | √        |    |   |  |
| Are the plants in satisfied condition?   |          | √        |    |   |  |
| Portions D & G   |          |          |    |   |  |
| Is watering provided to all plants to ensure satisfactory growth and health (manual and automatic irrigation)?   |          | √        |    |   |  |
| After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove dead plants and plant debris from the site? | <b>√</b> |          |    | The information was checked via on-site inspection. |  |
| Are litter and debris removed?   |          | <b>V</b> |    |   |  |
| Are planting areas matched with the approved landscape plan?   |          | √        |    |   |  |
| Is planting pattern matched with the approved landscape plan?  |          | <b>V</b> |    |   |  |
| Are planting locations and spacing matched with the approved landscape plan?   |          | √        |    |   |  |
| Are the planting species on site matched with Figure 3.6 of the approved landscape plan?   |          | <b>V</b> |    |   |  |
| Are the plants in satisfied condition?   |          | √        |    |   |  |
| Portions H & R   |          |          |    |   |  |
| Is watering provided to all plants to ensure satisfactory growth and health (manual and automatic irrigation)?   |          | √        |    |   |  |
| After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove dead plants and plant debris from the site? | √        |          |    |   |  |
| Are litter and debris removed?   |          | √        |    | The information was checked                         |  |
| Are planting areas matched with the approved landscape plan?   |          | √        |    | via on-site inspection.                             |  |
| Is planting pattern matched with the approved landscape plan?  |          | √        |    |   |  |
| Are planting locations and spacing matched with the approved landscape plan?   |          | <b>V</b> |    |   |  |
| Are the planting species on site matched with Figure 3.6 of the approved landscape plan?   |          | <b>V</b> |    |   |  |
| Are the plants in satisfied condition?   |          | <b>V</b> |    |   |  |

Date of Site Audit: 16/10/2019

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| Description  | N.A. | Yes      | No | Remarks   |  |
|--|------|----------|----|---|--|
| Portion J  |      |          |    |   |  |
| Is watering provided to all plants to ensure satisfactory growth and |      | <b>√</b> |    |   |  |
| health (manual and automatic irrigation)?                            |      | V        |    |   |  |
| After exceptional weather conditions, are proper action              |      |          |    |   |  |
| implemented to replace dead plants, repair damaged plants, bed       |      |          |    |   |  |
| in all plants that have blown over, firm up all other plants and     |      |          |    |   |  |
| immediately thereafter, remove dead plants and plant debris from     |      |          |    |   |  |
| the site?  |      |          |    |   |  |
| Are litter and debris removed?                                       |      | √        |    | The information was checked via on-site inspection. |  |
| Are planting areas matched with the approved landscape plan?         |      |          |    | via on site inspection.                             |  |
| Is planting pattern matched with the approved landscape plan?        |      |          |    |   |  |
| Are planting locations and spacing matched with the approved         |      | <b>√</b> |    |   |  |
| landscape plan?  |      | V        |    |   |  |
| Are the planting species on site matched with Figure 3.6 of the      |      | <b>√</b> |    |   |  |
| approved landscape plan?   |      |          |    |   |  |
| Are the plants in satisfied condition?                               |      |          |    |   |  |
| Portions K, L, M, S & T  |      |          |    |   |  |
| Is watering provided to all plants to ensure satisfactory growth and |      | <b>√</b> |    |   |  |
| health (manual and automatic irrigation)?                            |      | ٧        |    |   |  |
| Are tree stakes, guys and ties provided properly for safety and      |      |          |    |   |  |
| avoid chaffing of bark?  |      |          |    |   |  |
| Are trees or limb overhanging branches pruned?                       |      | √        |    |   |  |
| After exceptional weather conditions, are proper action              |      |          |    |   |  |
| implemented to replace dead plants, repair damaged plants, bed       | ,    |          |    |   |  |
| in all plants that have blown over, firm up all other plants and     | V    |          |    |   |  |
| immediately thereafter, remove dead plants and plant debris from     |      |          |    | The information was checked                         |  |
| the site?  |      | ,        |    | via on-site inspection.                             |  |
| Are litter and debris removed?                                       |      | <b>√</b> |    |   |  |
| Are planting areas matched with the approved landscape plan?         |      | <b>√</b> |    |   |  |
| Is planting pattern matched with the approved landscape plan?        |      | √        |    |   |  |
| Are planting locations and spacing matched with the approved         |      | √        |    |   |  |
| landscape plan?  |      | ,        |    |   |  |
| Are the planting species on site matched with Figure 3.6 of the      |      | √        |    |   |  |
| approved landscape plan?   |      | ,        |    |   |  |
| Are the plants in satisfied condition?                               |      | √        |    |   |  |
| Portion N  | ı    | ı        | 1  | T   |  |
| Is watering provided to all plants to ensure satisfactory growth and |      |          |    |   |  |
| health (manual and automatic irrigation)?                            |      |          |    |   |  |
| After exceptional weather conditions, are proper action              |      |          |    |   |  |
| implemented to replace dead plants, repair damaged plants, bed       | ,    |          |    |   |  |
| in all plants that have blown over, firm up all other plants and     | √    |          |    |   |  |
| immediately thereafter, remove dead plants and plant debris from     |      |          |    |   |  |
| the site?  |      | . /      |    | The information was checked                         |  |
| Are litter and debris removed?                                       |      | <b>√</b> |    | via on-site inspection.                             |  |
| Are planting areas matched with the approved landscape plan?         |      | √<br>/   |    | ·   |  |
| Is planting pattern matched with the approved landscape plan?        |      | √        |    |   |  |
| Are planting locations and spacing matched with the approved         |      | √        |    |   |  |
| landscape plan?  |      |          |    |   |  |
| Are the planting species on site matched with Figure 3.6 of the      |      | √        |    |   |  |
| approved landscape plan?   |      |          |    | _   |  |
| Are the plants in satisfied condition?                               |      | √        |    |   |  |

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| Description  | N.A. | Yes          | No | Remarks                                       |
|--|------|--------------|----|---|
| Portion P  | •    | •            | •  |   |
| Is watering provided to all plants to ensure satisfactory growth and health (manual and automatic irrigation)?   |      | <b>√</b>     |    |   |
| After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove dead plants and plant debris from the site? | 1    |              |    |   |
| Are litter and debris removed?   |      |              |    | The information was checked                   |
| Are planting areas matched with the approved landscape plan?   |      | <b>√</b>     |    | via on-site inspection.                       |
| Is planting pattern matched with the approved landscape plan?  |      | <b>√</b>     |    |   |
| Are planting locations and spacing matched with the approved landscape plan?   |      | <b>V</b>     |    |   |
| Are the planting species on site matched with Figure 3.6 of the approved landscape plan?   |      | V            |    |   |
| Are the plants in satisfied condition?   |      | $\checkmark$ |    |   |
| General Document   |      |              |    |   |
| Are the records of watering, fertilizing, weeding, pruning and mowing kept for checking?   |      | <b>√</b>     |    | The information provided by RSS was reviewed. |

Date of Site Audit: 16/10/2019

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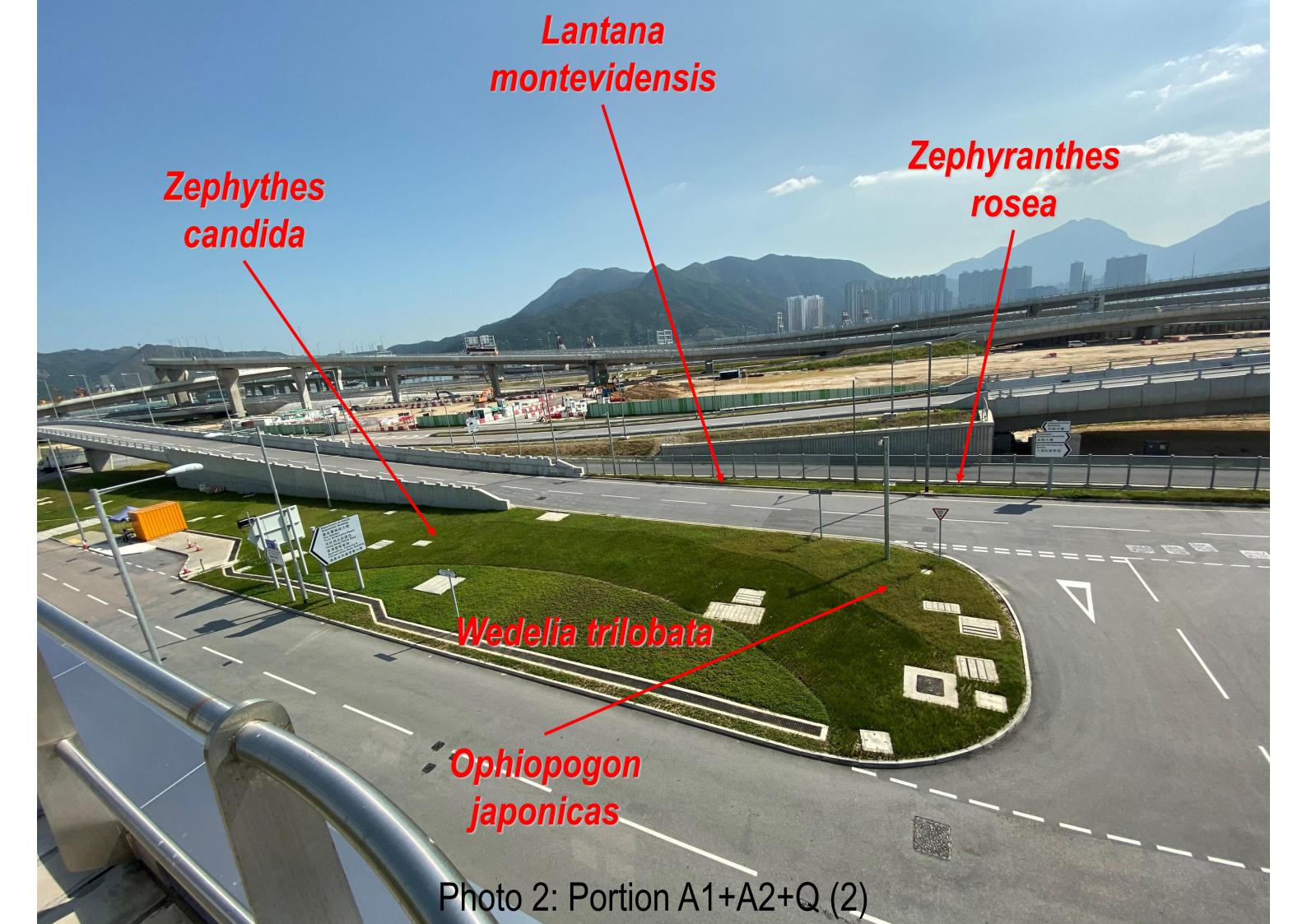
| Contract No. HY/2013/03   |         |
|---|---------|
| Hong Kong-Zhuhai-Macao Bridge Hong Kong Boundary Crossing Facil | ities – |
| Vehicle Clearance Plazas and Ancillary Buildings and Facilities |         |

| Vehicle Clearance Plazas and Anc | illary Buildings and Facilities |           |
|----------------------------------|---------------------------------|-----------|
| Remarks / Recommendations for C  | Contractor                      |           |
| Date of Site Audit: /6/10/       | 2019                            |           |
| Observation and/or Recommended   |                                 |           |
|                                  |                                 |           |
| No particular tinding            |                                 |           |
|                                  |                                 |           |
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|                                  |                                 |           |
| T                                | 4                               |           |
| Target Date of Completion: //    | $\triangleleft$                 |           |
| Signatures:                      |                                 |           |
|                                  | Name                            | Signature |
| ET's Representative              | Vincent Lu                      | 10        |
|                                  |                                 |           |

|                             | Name         | Signature      |
|-----------------------------|--------------|----------------|
| ET's Representative         | Vincent Lu   | 10             |
| Contractor's Representative |              |                |
| ER's Representative         | CHAN Pak Kin | and the second |
| IEC's Representative        | Ray Yan      | Ray            |



Photo 1: Portion A1+A2+Q (1)



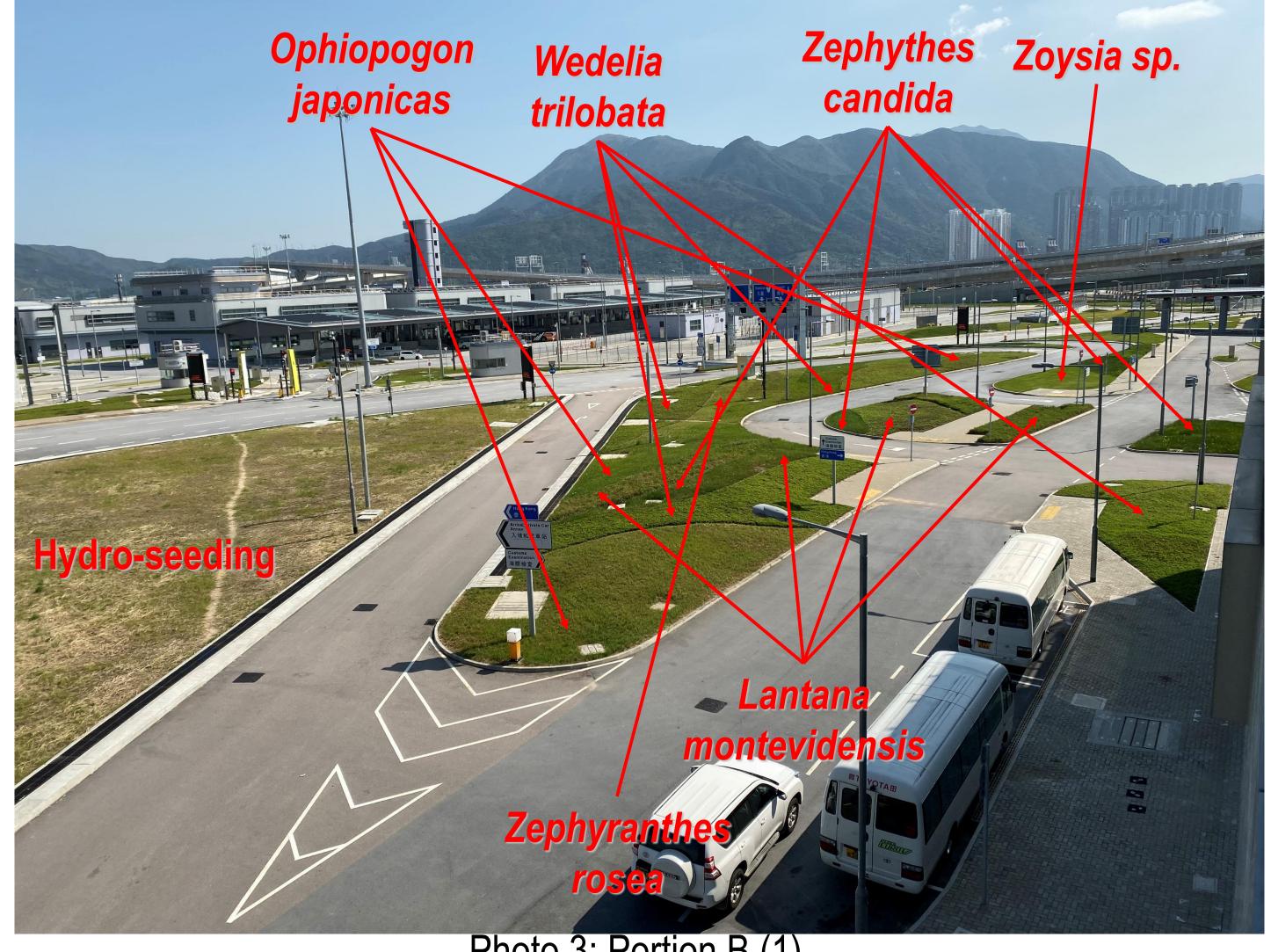


Photo 3: Portion B (1)



Photo 4: Portion B (2)

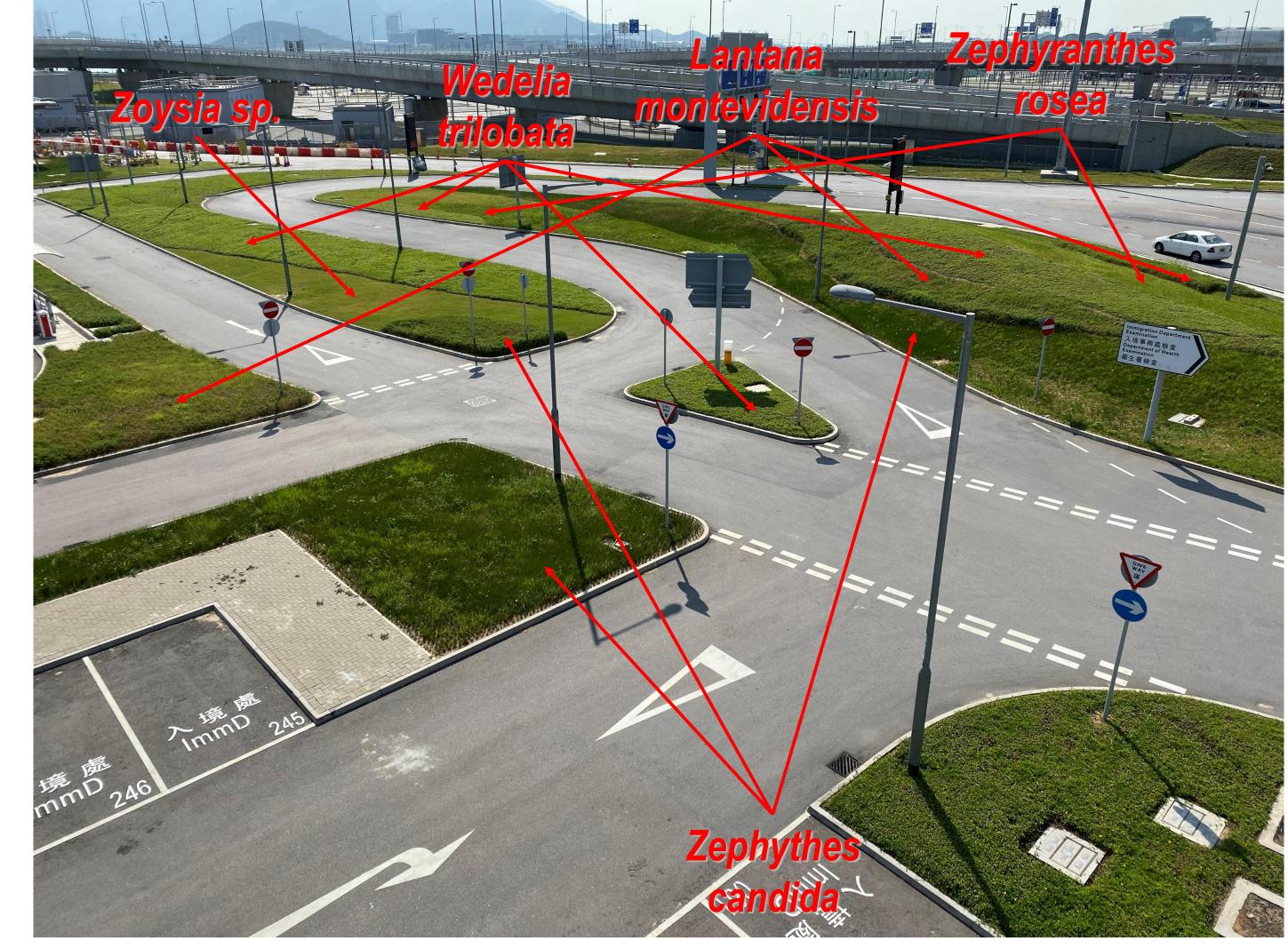


Photo 5: Portion B (3)

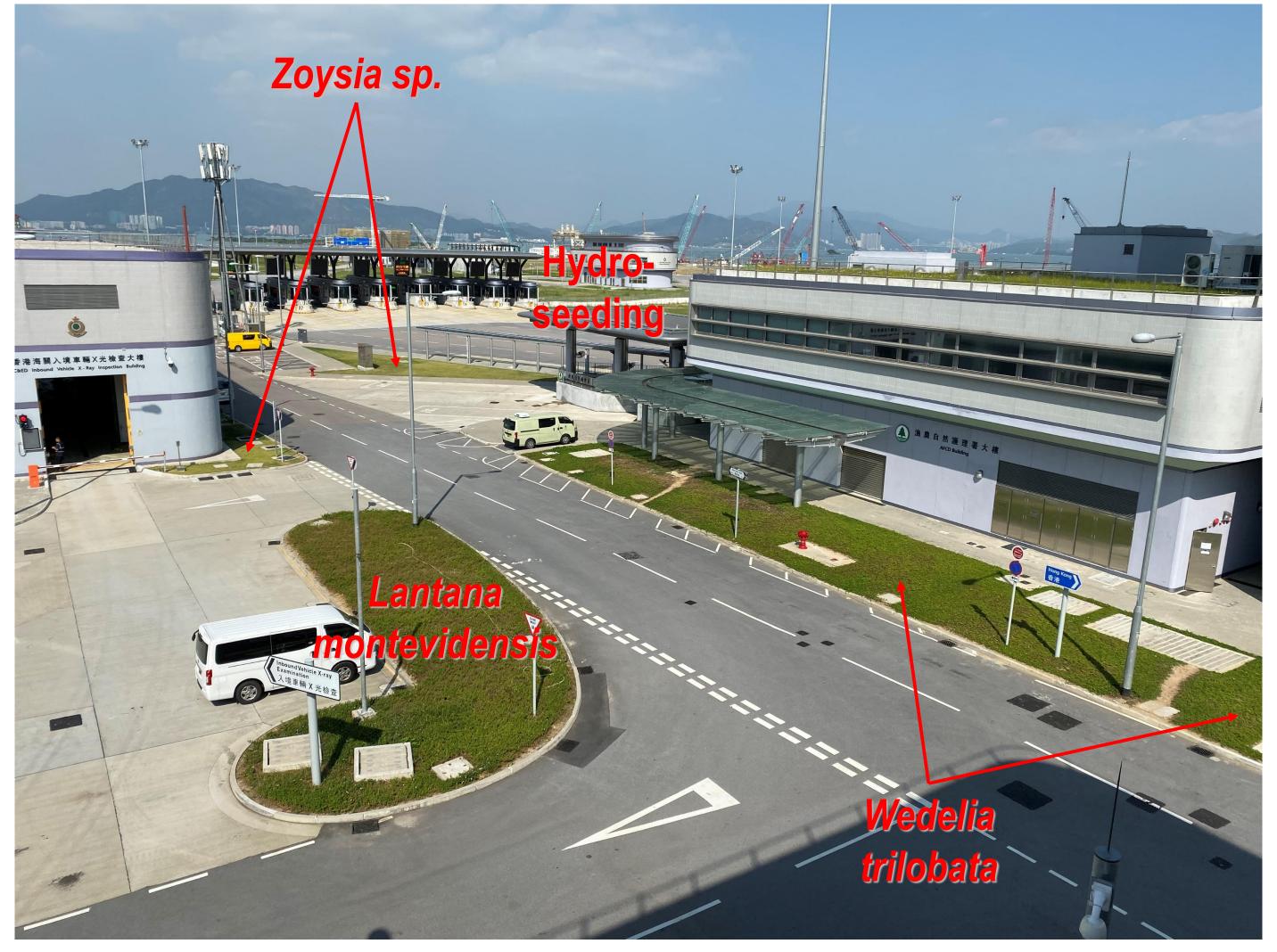


Photo 6: Portion B (4)

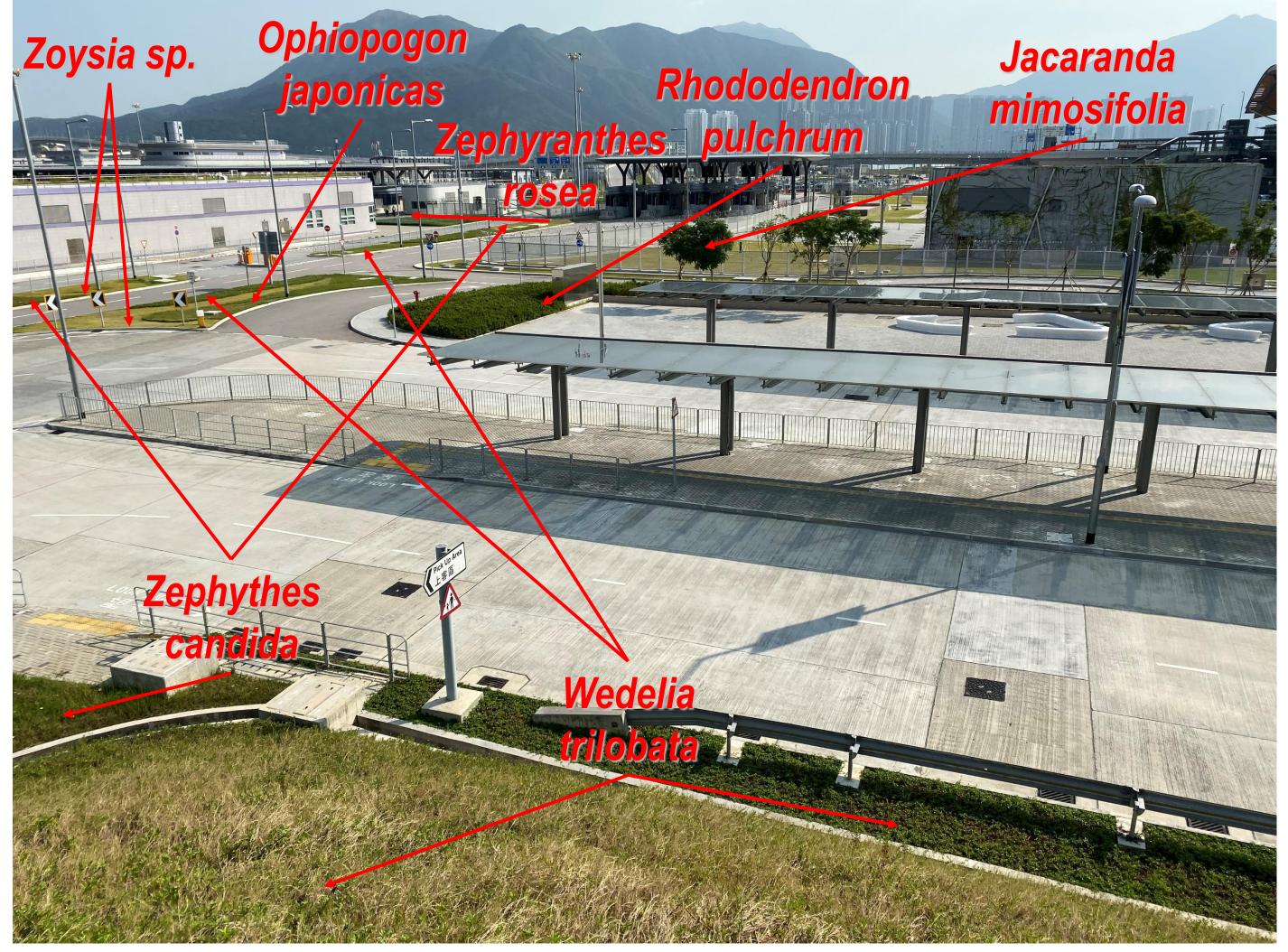


Photo 7: Portion C+E+F (1)

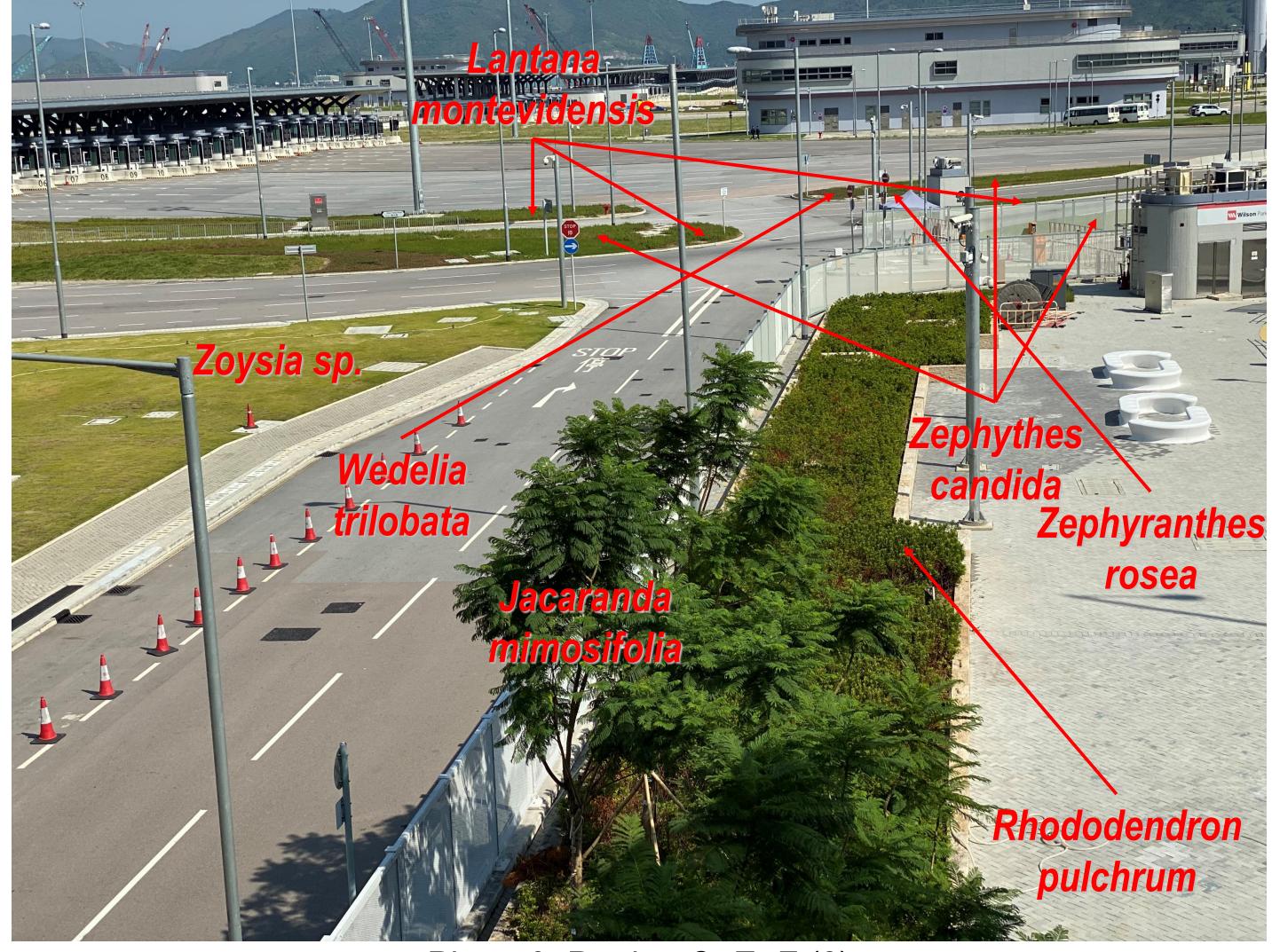


Photo 8: Portion C+E+F (2)

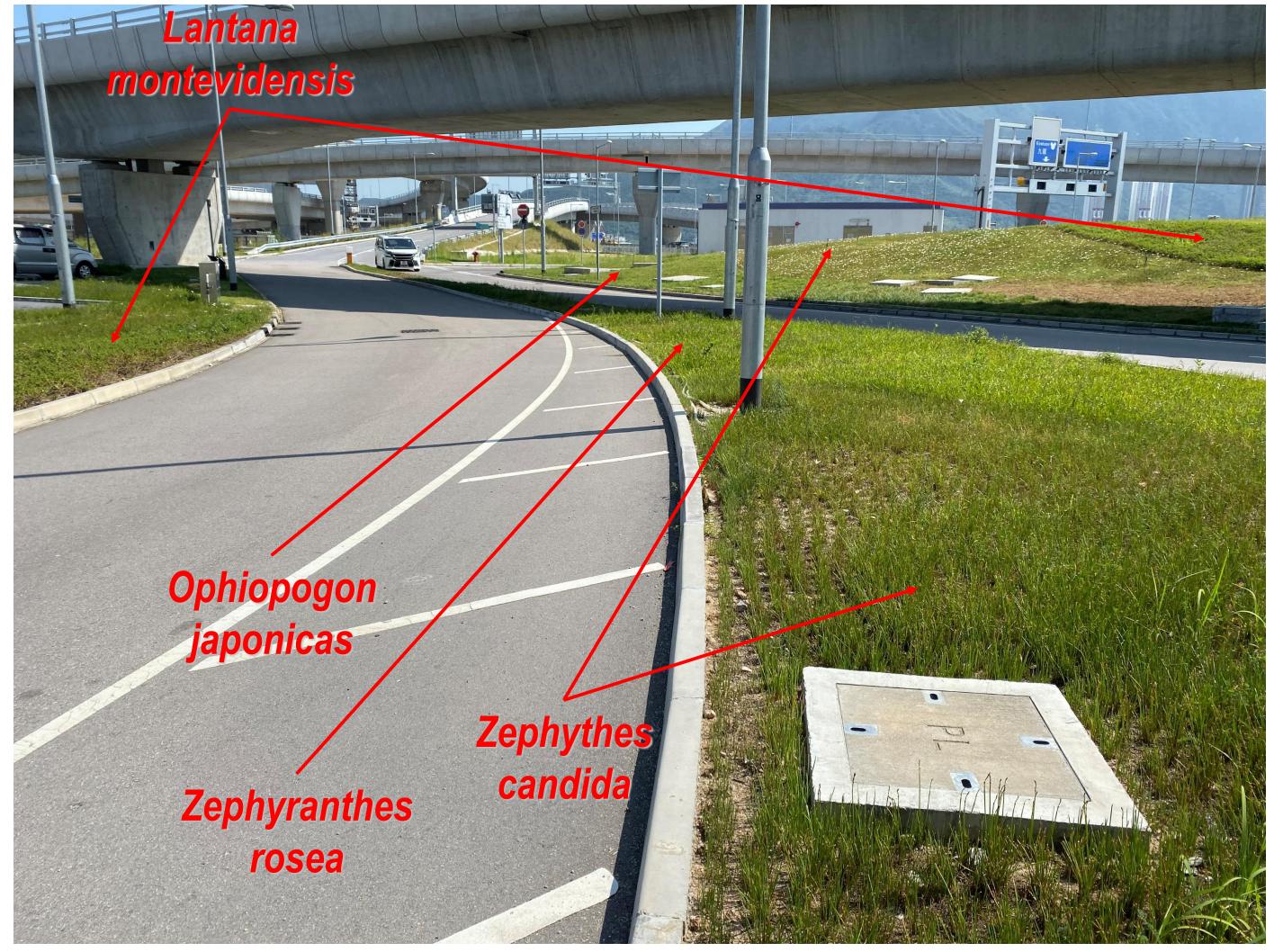


Photo 9: Portion D+G (1)

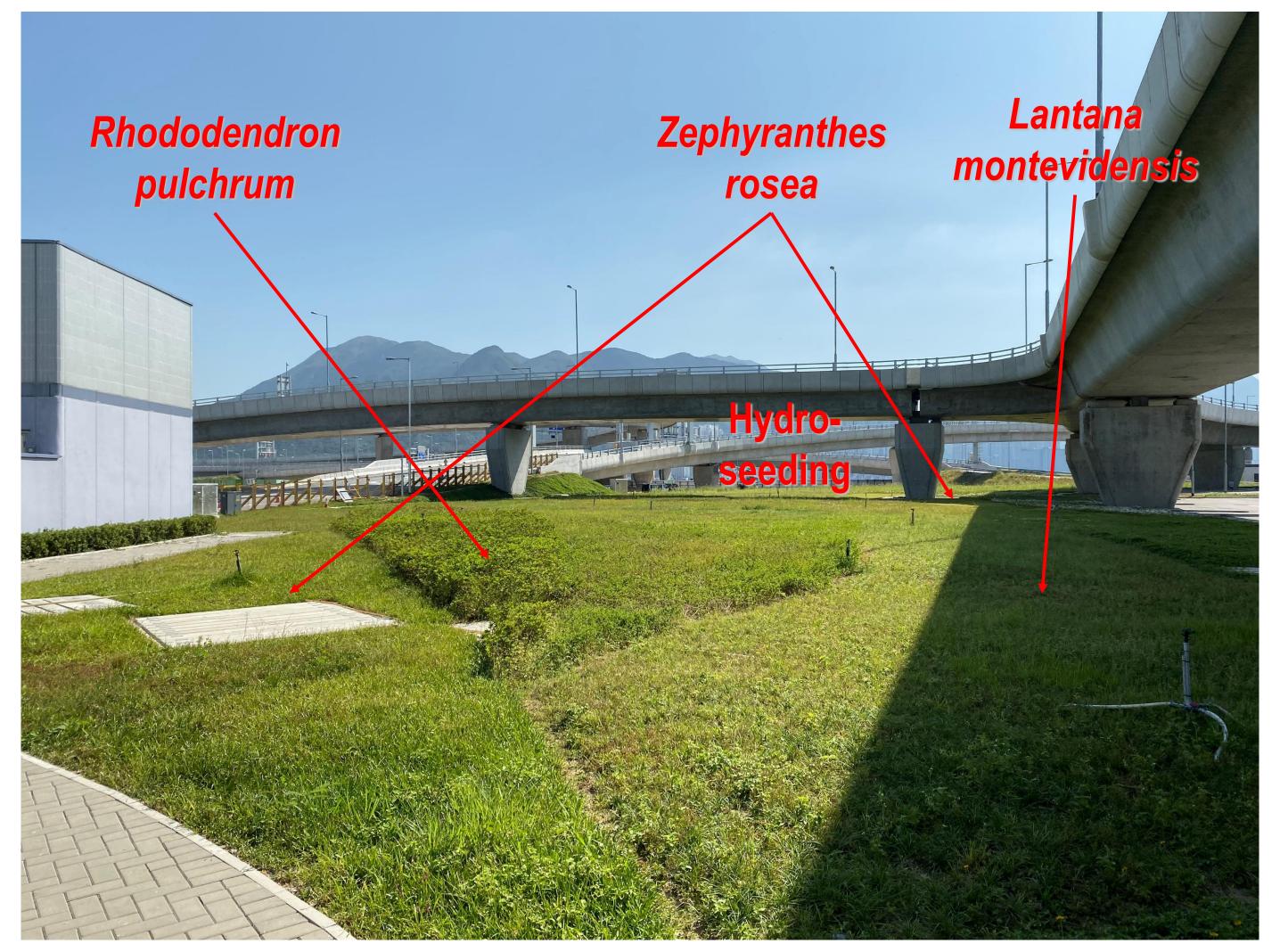


Photo 10: Portion D+G (2)

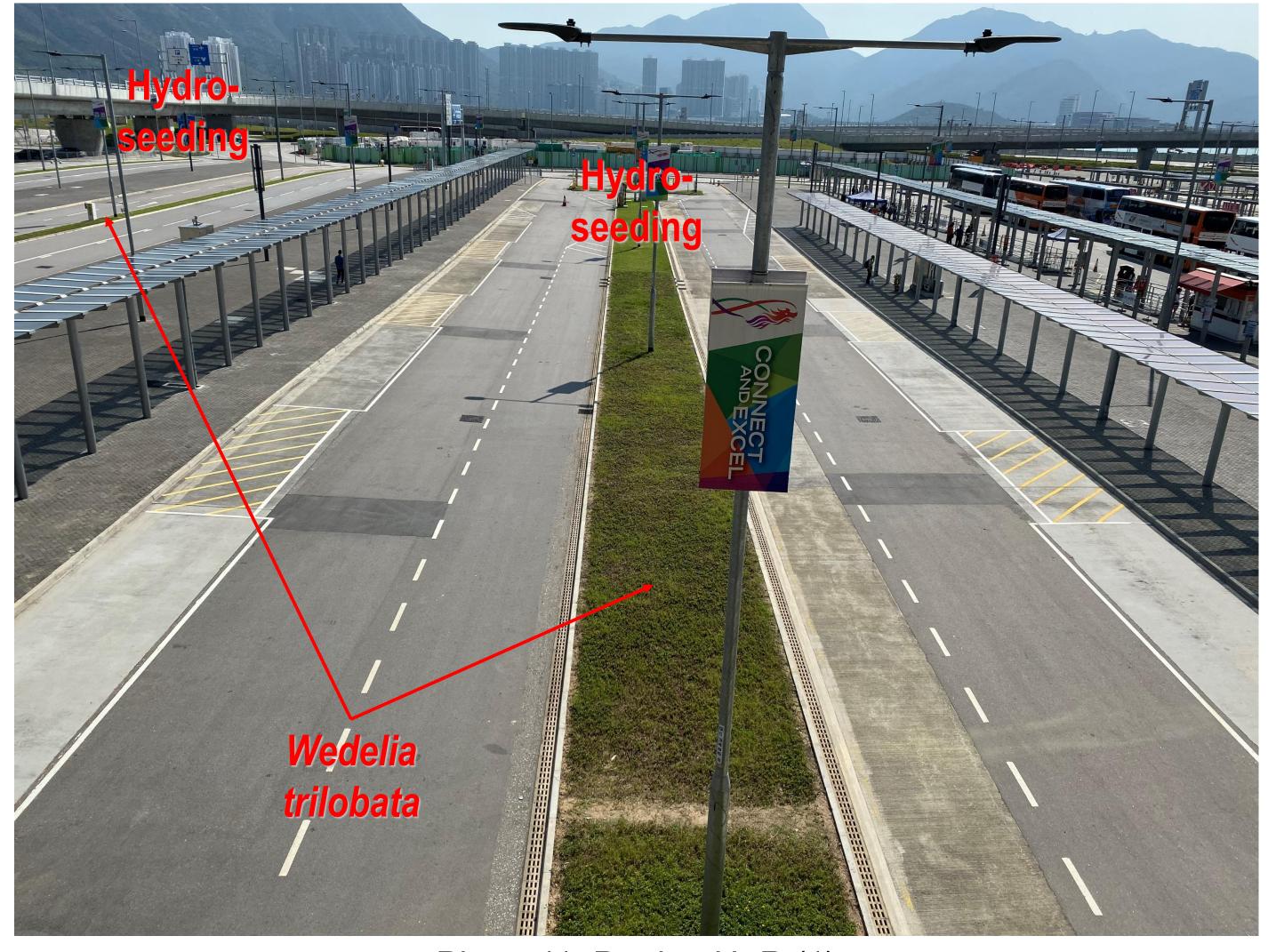


Photo 11: Portion H+R (1)

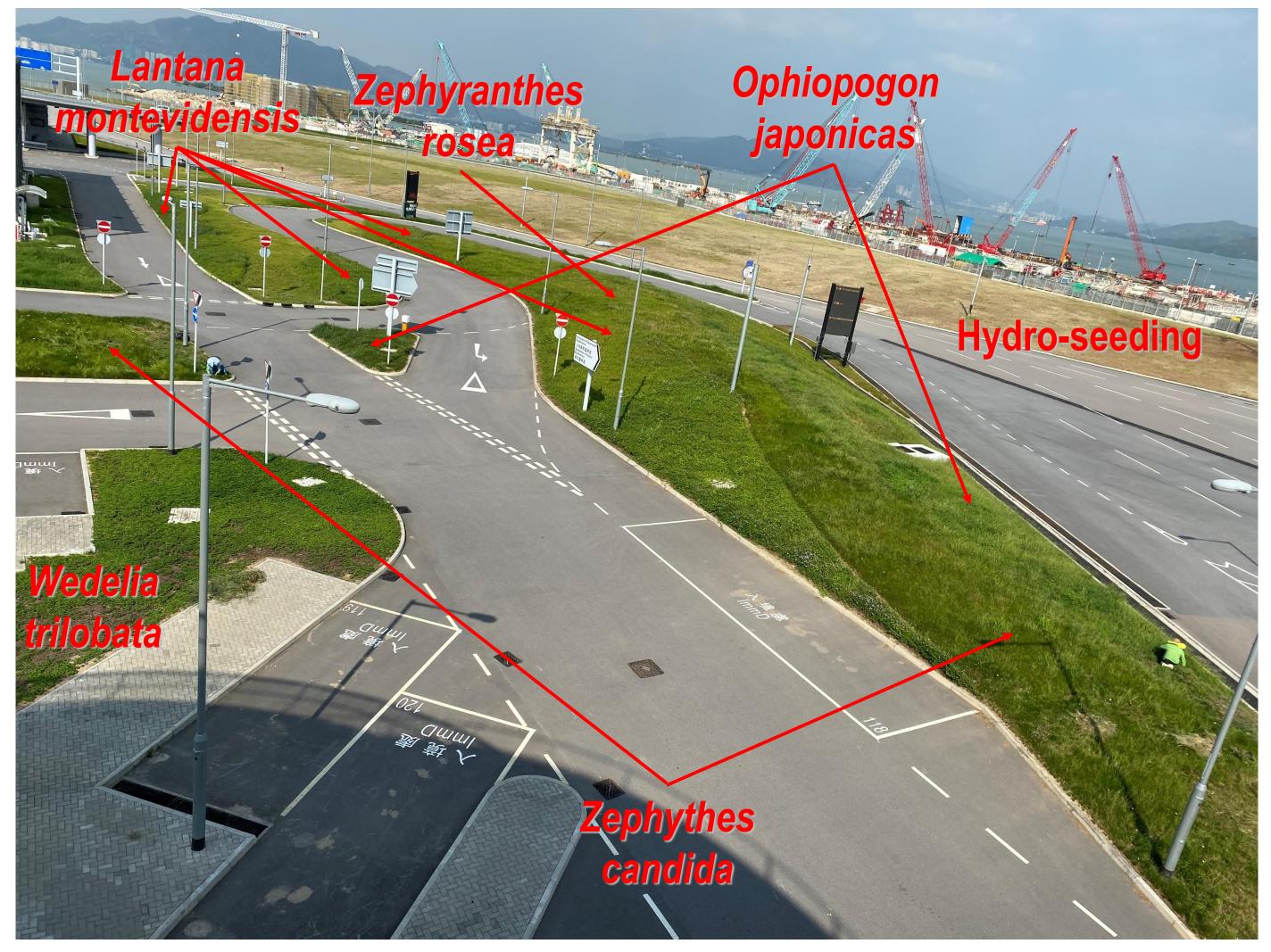


Photo 12: Portion J (1)

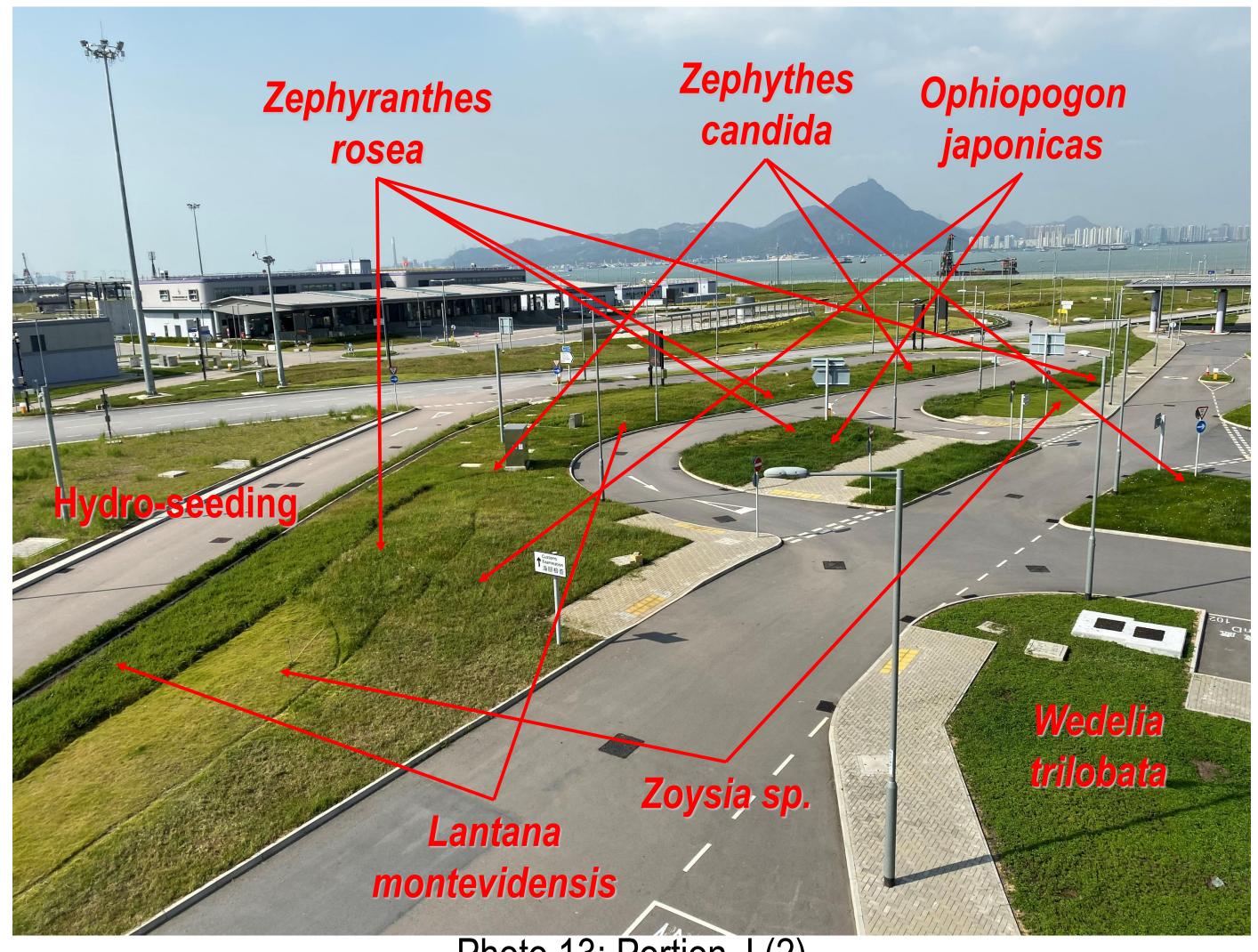


Photo 13: Portion J (2)

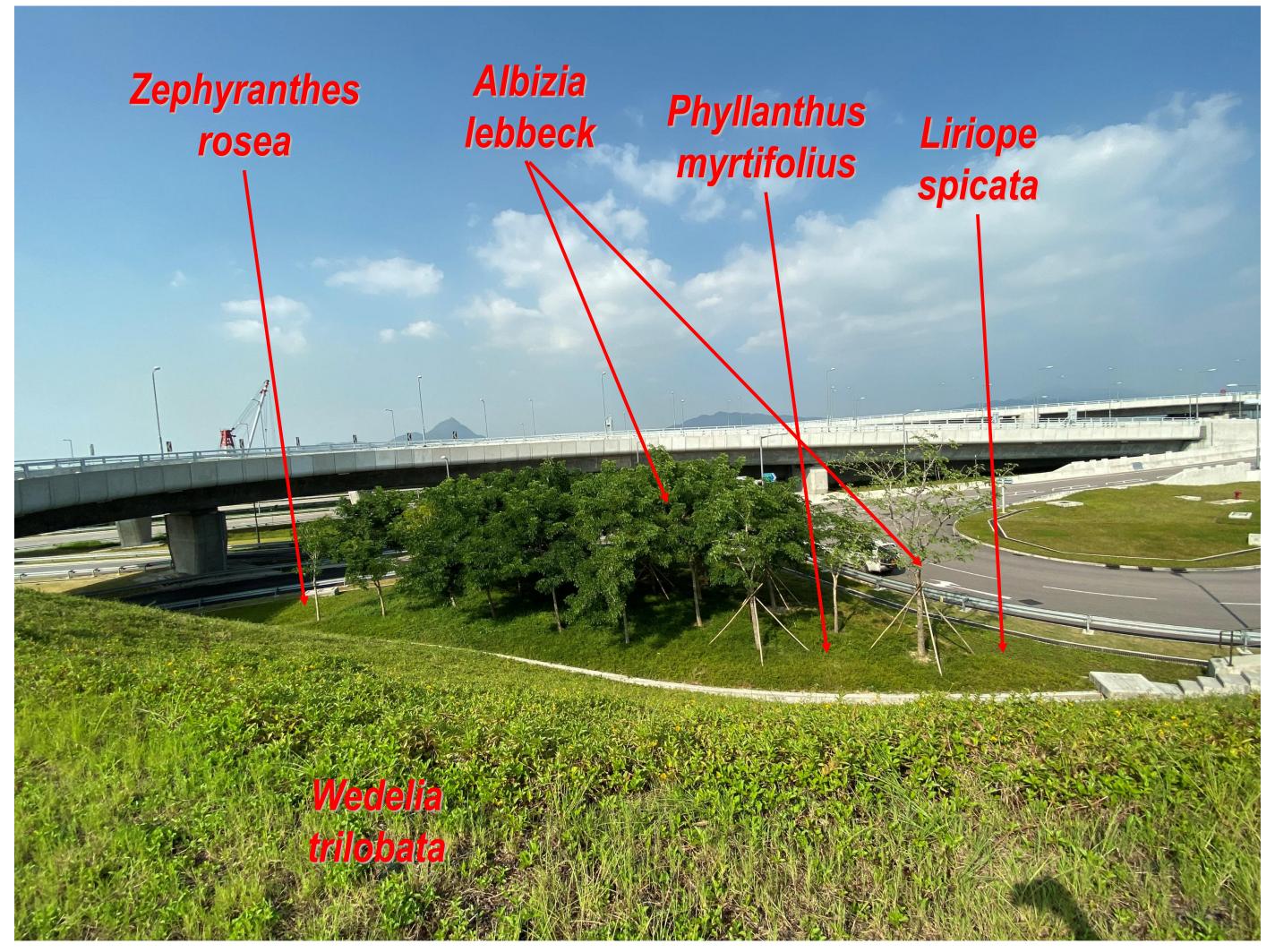


Photo 14: Portion K+L+M+S+T (1)

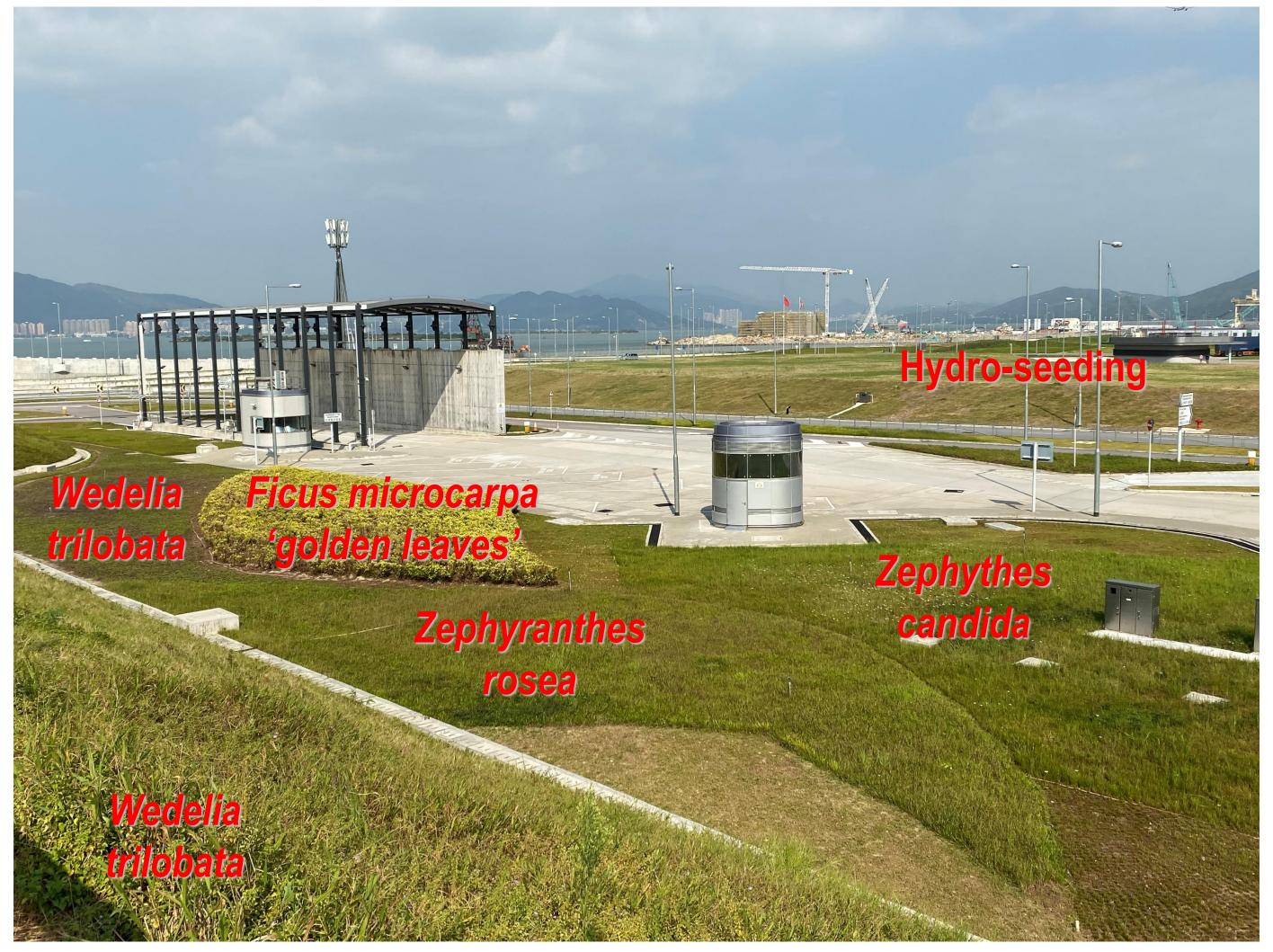


Photo 15: Portion K+L+M+S+T (2)



Photo 16: Portion K+L+M+S+T (3)

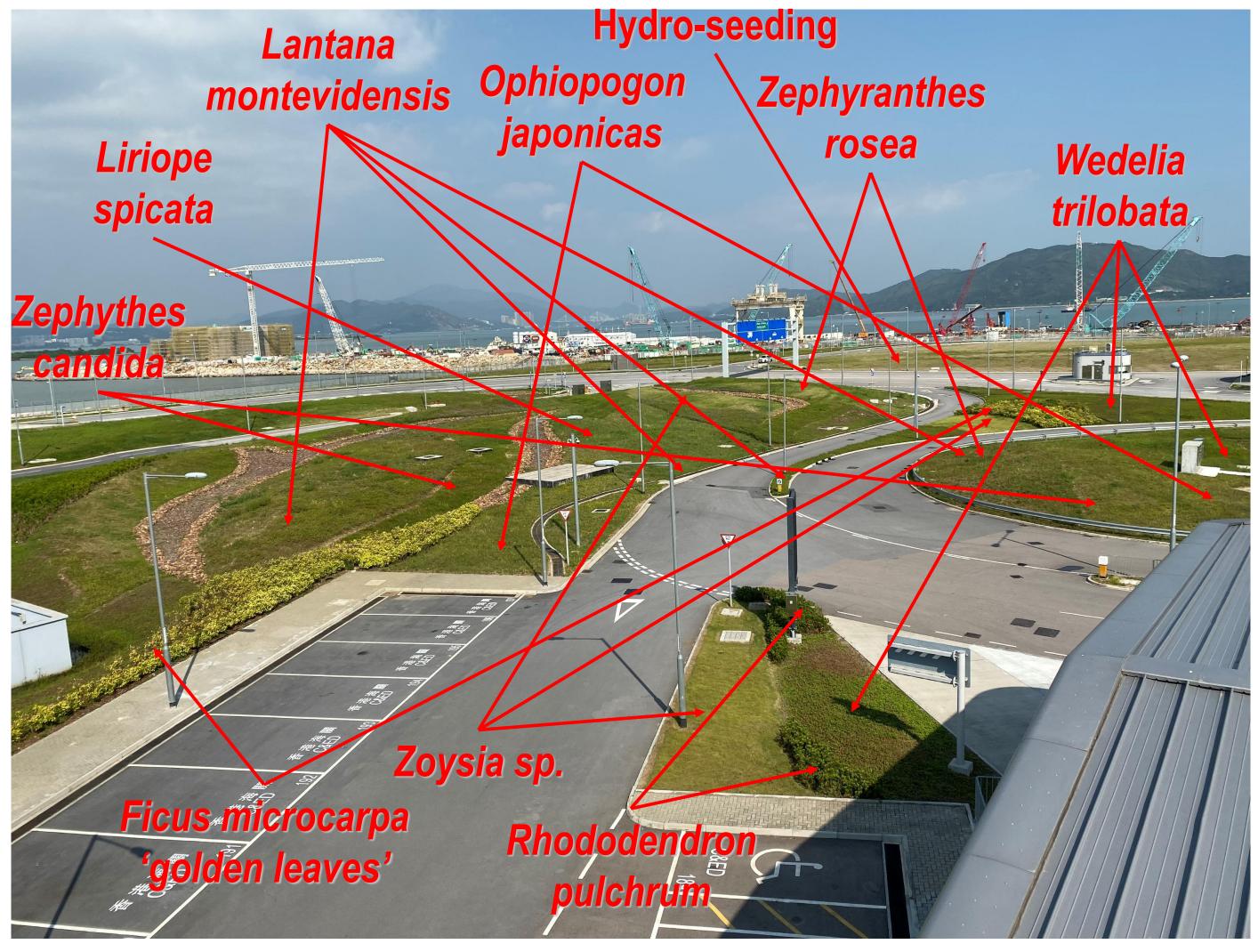


Photo 17: Portion N (1)

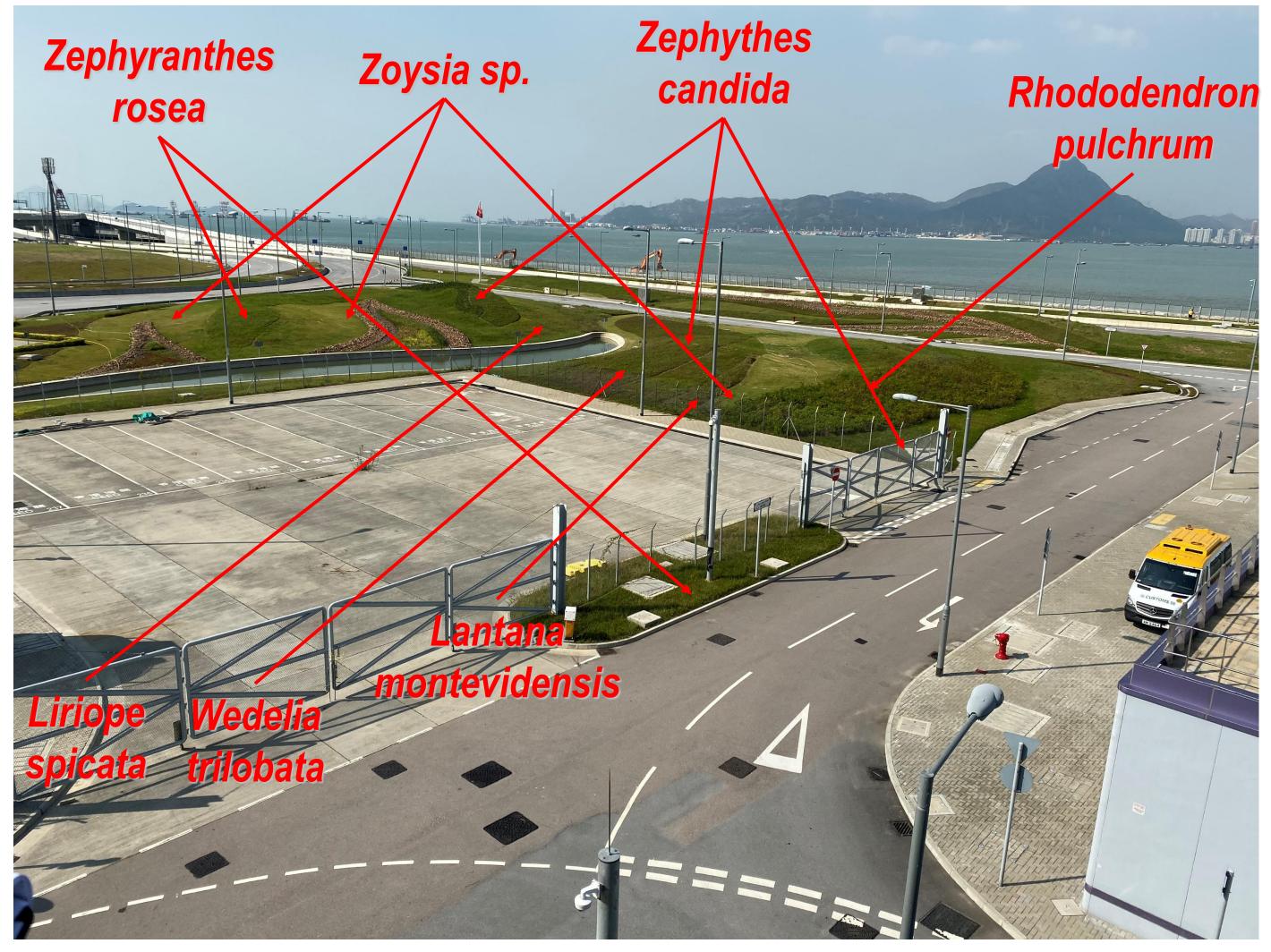


Photo 18: Portion N (2)

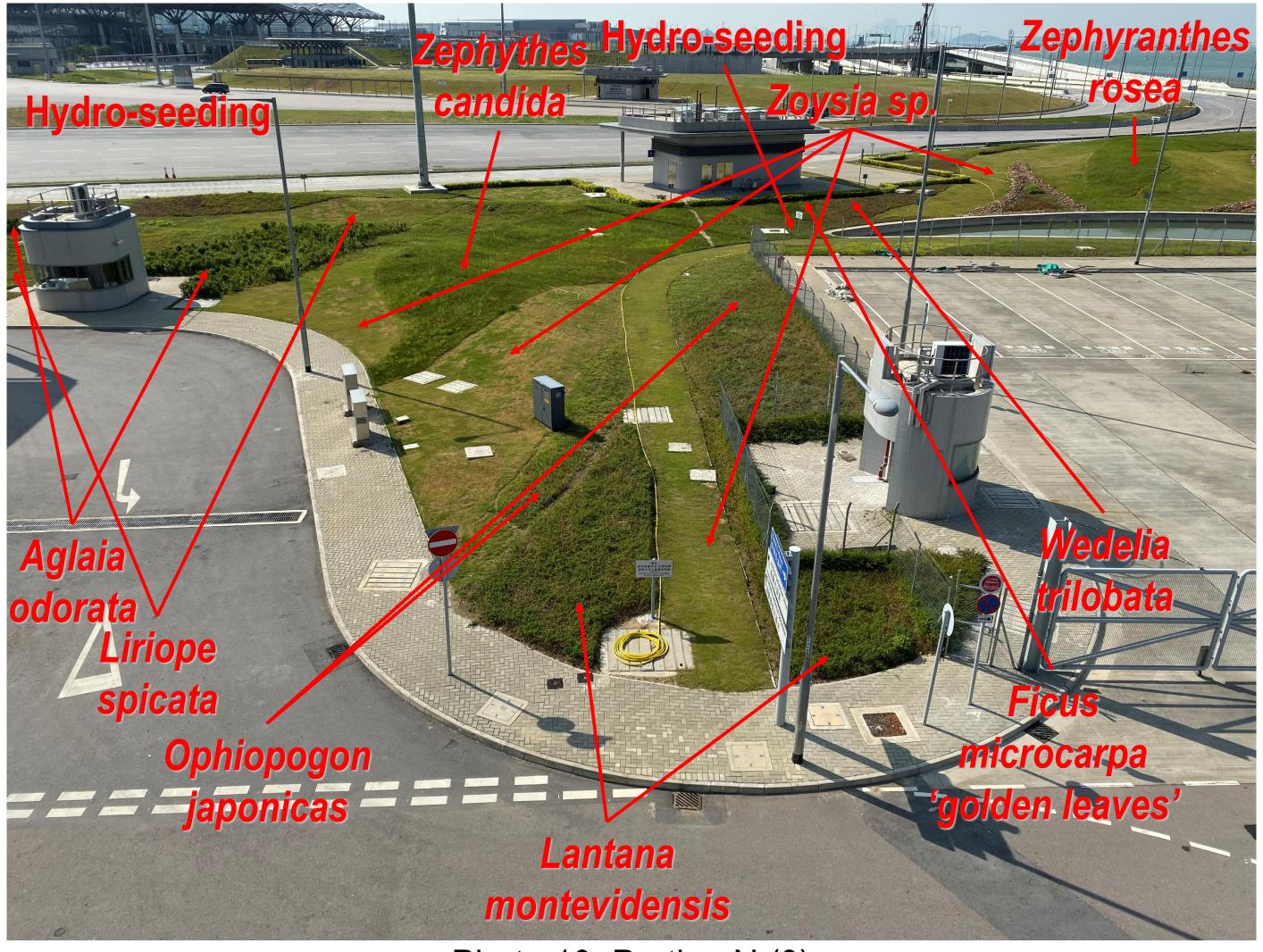


Photo 19: Portion N (3)



Photo 20: Portion P (1)

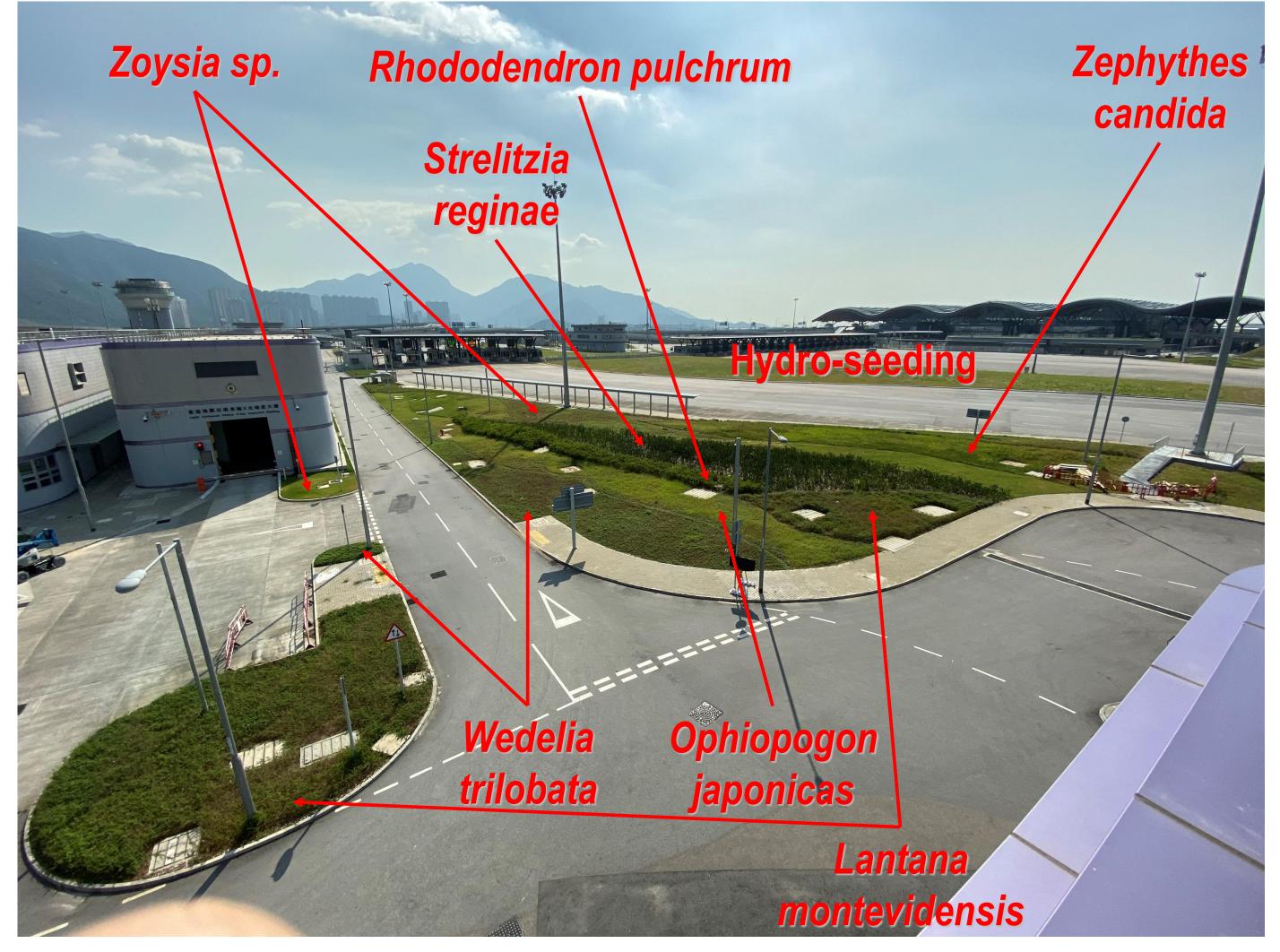
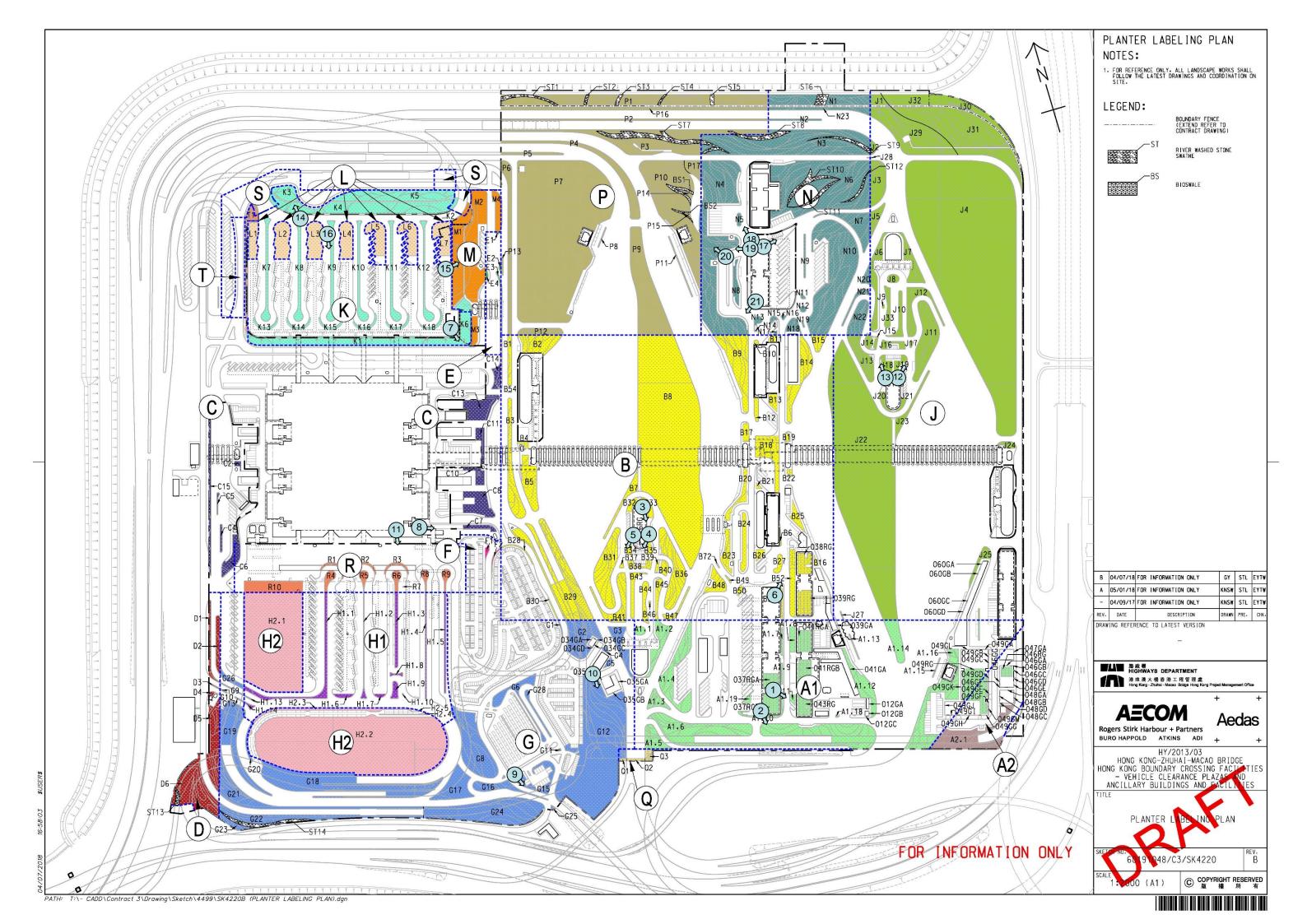


Photo 21: Portion P (2)



| TREE PLANTING (1) |                       |              |                                    |             |  |
|-------------------|-----------------------|--------------|------------------------------------|-------------|--|
| SPECIES CODE      | BOTANICAL NAME        | CHINESE NAME | SIZE [mm]                          | SPACING [m] |  |
| AL **, #          | Albizia lebbeck       | 大葉合歡         | 4000-5000(H) x 3000(SP) x 100(DBH) | 4           |  |
| BV                | Bauhinia variegata    | 宮粉羊蹄甲        | 4000-5000(H) x 3000(SP) x 100(DBH) | 4           |  |
| CV                | Callistemon viminalis | 串錢柳          | 4000-5000(H) x 3000(SP) x 100(DBH) | 4           |  |
| CS **, #          | Cassia siamea         | 鐵刀木          | 4000-5000(H) x 3000(SP) x 100(DBH) | 4           |  |
| GR <sup>#</sup>   | Grevillea robusta     | 銀樺           | 4000-5000(H) x 3000(SP) x 100(DBH) | 4           |  |
| JA <sup>#</sup>   | Jacaranda mimosifolia | 藍花楹          | 4000-5000(H) x 3000(SP) x 100(DBH) | 4           |  |
| JC **             | Juniperus chinensis   | 龍柏           | 4000-5000(H) x 3000(SP) x 100(DBH) | 4           |  |
| TP *, **          | Thespesia populnea    | 恒春黃槿         | 4000-5000(H) x 3000(SP) x 100(DBH) | 4           |  |

| SHRUB PLANTING (1) |                                  |              |                   |              |  |  |
|--------------------|----------------------------------|--------------|-------------------|--------------|--|--|
| SPECIES CODE       | BOTANICAL NAME                   | CHINESE NAME | SIZE [mm]         | SPACING [mm] |  |  |
| Aod #              | Aglaia odorata                   | 米仔蘭          | 700(H) x 500(SP)  | 400          |  |  |
| Cha                | Calliandra haematocephala        | 紅絨球          | 700(H) x 500(SP)  | 400          |  |  |
| Fmi **, #          | Ficus microcarpa 'golden leaves' | 黄金榕          | 1000(H) x 700(SP) | 600          |  |  |
| lch *              | Ixora chinensis                  | 龍船花          | 500(H) x 400(SP)  | 350          |  |  |
| Mar                | Malvaviscus arboreus             | 大紅袍          | 700(H) x 500(SP)  | 450          |  |  |
| Mfi                | Michelia figo                    | 含笑           | 800(H) x 500(SP)  | 400          |  |  |
| Pmy                | Phyllanthus myrtifolius          | 瘤腺葉下珠        | 400(H) x 300(SP)  | 250          |  |  |
| Rpu <sup>#</sup>   | Rhododendron pulchrum            | 錦鏽杜鵑         | 600(H) x 400(SP)  | 300          |  |  |
| Rsi *              | Rhododendron simsii              | 紅杜鵑          | 600(H) x 400(SP)  | 300          |  |  |
| Sco                | Spathiphyllum commutatum         | 白掌           | 300(H) x 300(SP)  | 200          |  |  |
| Sre #              | Strelitzia reginae               | 天堂鳥蕉         | 500(H) x 400(SP)  | 350          |  |  |

| GREEN ROOF GROUND COVER PLANTING <sup>(1)</sup> |                      |              |                  |              |  |
|---|----------------------|--------------|------------------|--------------|--|
| SPECIES CODE                                    | BOTANICAL NAME       | CHINESE NAME | SIZE [mm]        | SPACING [mm] |  |
| Zan   | Zephyranthes candida | 蔥蓮           | 100(H) x 100(SP) | 100          |  |

| CLIMBER PLANTING (1) |                          |              |                  |              |  |
|----------------------|--------------------------|--------------|------------------|--------------|--|
| SPECIES CODE         | BOTANICAL NAME           | CHINESE NAME | SIZE [mm]        | SPACING [mm] |  |
| Pda                  | Parthenocissus dalzielii | 異葉爬山虎        | 300(H) x 250(SP) | 250          |  |
| Pve **               | Pyrostegia venusta       | 炮仗花          | 300(H) x 250(SP) | 250          |  |

#### NOTES:

| GROUND COV           | ER PLANTING <sup>(1)</sup> |              |                  |              |
|----------------------|----------------------------|--------------|------------------|--------------|
| SPECIES CODE         | BOTANICAL NAME             | CHINESE NAME | SIZE [mm]        | SPACING [mm] |
| Aag #                | Agave angustifolia         | 狹葉龍舌蘭        | 200(H) x 300(SP) | 200          |
| Aam #                | Agave americana            | 龍舌蘭          | 100(H) x 100(SP) | 100          |
| Asl #                | Aglaonema 'Silver King'    | 銀王粗肋草        | 150(H) x 150(SP) | 100          |
| Ave #                | Alternanthera versicolor   | 錦繡莧,紅草       | 100(H) x 100(SP) | 100          |
| Ite #                | Iris tectorum              | 鳶尾           | 100(H) x 100(SP) | 100          |
| Lmo <sup>#</sup>     | Lantana montevidensis      | 鋪地臭金鳳        | 200(H) x 300(SP) | 200          |
| Lsp *,#              | Liriope spicata            | 山麥冬          | 100(H) x 100(SP) | 100          |
| Nex *                | Nephrolepis hirsutula      | 毛葉腎蕨         | 150(H) x 200(SP) | 150          |
| Oja * <sup>, #</sup> | Ophiopogon japonicus       | 麥冬           | 150(H) x 150(SP) | 100          |
| Rds #                | Rhoeo discolor             | 紫背萬年青        | 150(H) x 200(SP) | 100          |
| Spo **               | Syngonium podophyllum      | 合果芋          | 200(H) x 200(SP) | 150          |
| Wtr **, #            | Wedelia trilobata          | 蟛蜞菊          | 100(H) x 100(SP) | 100          |
| Zan #                | Zephyranthes candida       | 蔥蓮           | 100(H) x 100(SP) | 100          |
| Zro <sup>#</sup>     | Zephyranthes rosea         | 玫瑰蔥蓮         | 150(H) x 200(SP) | 100          |

| TURFING (1)           |                |              |           |
|-----------------------|----------------|--------------|-----------|
| SPECIES CODE          | BOTANICAL NAME | CHINESE NAME | SIZE [mm] |
| Zja ** <sup>, #</sup> | Zoysia sp.     | 朝鮮草          | 25(H)     |

| HYDROSEEDING (1),(2)                    |   |              |  |  |
|---|---|--------------|--|--|
| SPECIES CODE                            | BOTANICAL NAME                          | CHINESE NAME |  |  |
| Cda * ** **                             | Cynodon dactylon                        | 百慕達草         |  |  |
| Pno <sup>#</sup>                        | Paspalum notatum                        | 百喜草          |  |  |
| Eop * <sup>, #</sup> / Lpe <sup>#</sup> | Eremochloa ophiuroides / Lolium perenne | 假儉草/黑麥草      |  |  |

| INDOOR PLAN  | INDOOR PLANTING IN PASSENGER CLEARANCE BUILDING (1) |              |                               |             |  |  |  |
|--------------|---|--------------|-------------------------------|-------------|--|--|--|
| SPECIES CODE | BOTANICAL NAME                                      | CHINESE NAME | SIZE [mm]                     | SPACING [m] |  |  |  |
| TREE         |   |              |                               | ///         |  |  |  |
| FB **        | Ficus benjamina                                     | 垂榕           | 5000(H) x 4000(SP) x 150(DBH) | N.A.        |  |  |  |
| SHRUB        |   |              |                               |             |  |  |  |
| Ite          | Iris tectorum                                       | 鳶尾           | 300(H) x 200(SP)              | 150         |  |  |  |
| Sco          | Spathiphyllum commutatum                            | 白掌           | 300(H) x 300(SP)              | 200         |  |  |  |



<sup>(1)</sup> All proposed plant species and specifications are subject to change during construction to suit the site conditions.

<sup>(2)</sup> Minimum requirement of grass seed mix for hydroseeding shall follow General Specification for Civil Engineering Works Clause 3.26(3).

<sup>\*</sup> Species native to Hong Kong according to the Hong Kong Herbarium website <a href="http://www.herbarium.gov.hk">http://www.herbarium.gov.hk</a>

<sup>\*\*</sup> Species which is salt spray tolerant

<sup>\*</sup> Species proposed on landscape berms

Covering Period:No.6: 24 Aug 2019 to 23 Oct 2019Reported By:Eva KeungTime: $\underline{10:50 \sim 11:05}$  and  $\underline{14:00 \sim 14:45}$ Weather Condition:Sunny

Participants: Chan Pak Kin (AECOM); Golden Cheung (AECOM); Ray Yan (IEC/ENPO), Eva Keung (Atkins)

|   | <b>-</b>  | N/A or not          | Yes         | No | Remarks /          |
|---|---|---------------------|-------------|----|--------------------|
| 1   | Building 022 at-grade planting  | observed            |             |    | Photo              |
| 1.1   | Is watering provided to all plants to ensure satisfactory growth and health (manual and automatic irrigation)?  |                     |             |    |                    |
| 1.2   | After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove dead plants and plant debris from the site?  |                     |             |    |                    |
| 1.3   | Are litter and debris removed?  |                     | $\boxtimes$ |    |                    |
| 1.4   | Are planting areas matched with the approved landscape plan?  |                     | $\boxtimes$ |    |                    |
| 1.5   | Is planting pattern matched with the approved landscape plan?   |                     | $\boxtimes$ |    |                    |
| 1.6   | Are planting locations and spacing matched with the approved landscape plan?  |                     | $\boxtimes$ |    |                    |
| 1.7   | Are the planting species on site matched with Figure 3.6 of the approved landscape plan?  |                     |             |    |                    |
| 1.8   | Are the plants in satisfied condition?  |                     | $\boxtimes$ |    |                    |
|   |   |                     |             |    |                    |
|   |   |                     |             |    |                    |
|   |   |                     |             |    |                    |
| 2   | Building 023 at-grade planting  | N/A or not observed | Yes         | No | Remarks /<br>Photo |
| <b>2</b><br>2.1   | Is watering provided to all plants to ensure satisfactory growth and health   |                     | Yes<br>⊠    | No |                    |
|   | Is watering provided to all plants to ensure satisfactory growth and health (manual and automatic irrigation)?  After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove  | observed            |             |    |                    |
| 2.1   | Is watering provided to all plants to ensure satisfactory growth and health (manual and automatic irrigation)?  After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have  | observed            | $\boxtimes$ |    |                    |
| 2.1   | Is watering provided to all plants to ensure satisfactory growth and health (manual and automatic irrigation)?  After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove dead plants and plant debris from the site?  | observed            |             |    | Photo              |
| <ul><li>2.1</li><li>2.2</li><li>2.3</li></ul>                         | Is watering provided to all plants to ensure satisfactory growth and health (manual and automatic irrigation)?  After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove dead plants and plant debris from the site?  Are litter and debris removed?  | observed            |             |    | Photo              |
| <ul><li>2.1</li><li>2.2</li><li>2.3</li><li>2.4</li></ul>             | Is watering provided to all plants to ensure satisfactory growth and health (manual and automatic irrigation)?  After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove dead plants and plant debris from the site?  Are litter and debris removed?  Are planting areas matched with the approved landscape plan?  | observed            |             |    | Photo              |
| <ul><li>2.1</li><li>2.2</li><li>2.3</li><li>2.4</li><li>2.5</li></ul> | Is watering provided to all plants to ensure satisfactory growth and health (manual and automatic irrigation)?  After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove dead plants and plant debris from the site?  Are litter and debris removed?  Are planting areas matched with the approved landscape plan?  Is planting pattern matched with the approved landscape plan?  Are planting locations and spacing matched with the approved landscape | observed            |             |    | Photo              |

| 3                                      | Building 023 roof greening  | N/A or not          | Yes         | No | Remarks /          |
|--|---|---------------------|-------------|----|--------------------|
| <b>3</b> .1                            |   | observed            | _           | _  | Photo              |
| 3.1                                    | Is watering provided to all plants to ensure satisfactory growth and health (manual and automatic irrigation)?  |                     | $\boxtimes$ |    |                    |
| 3.4                                    | After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove dead plants and plant debris from the site?  |                     |             |    |                    |
| 3.5                                    | Are litter and debris removed?  |                     | $\boxtimes$ |    |                    |
| 3.6                                    | Are planting areas matched with the approved landscape plan?  |                     | $\boxtimes$ |    |                    |
| 3.7                                    | Is planting pattern matched with the approved landscape plan?   |                     | $\boxtimes$ |    |                    |
| 3.8                                    | Are planting locations and spacing matched with the approved landscape plan?  |                     | $\boxtimes$ |    |                    |
| 3.9                                    | Are the planting species on site matched with Figure 3.6 of the approved landscape plan?  |                     | $\boxtimes$ |    |                    |
| 3.10                                   | Are the plants in satisfied condition?  |                     | $\boxtimes$ |    |                    |
|  |   |                     |             |    |                    |
|  |   |                     |             |    |                    |
|  |   |                     |             |    |                    |
| 4                                      | Building 025 at-grade planting  | N/A or not observed | Yes         | No | Remarks /<br>Photo |
| <b>4</b><br>4.1                        | Building 025 at-grade planting  Is watering provided to all plants to ensure satisfactory growth and health (manual and automatic irrigation)?  |                     | Yes         | No |                    |
|  | Is watering provided to all plants to ensure satisfactory growth and health   | observed            |             |    |                    |
| 4.1                                    | Is watering provided to all plants to ensure satisfactory growth and health (manual and automatic irrigation)?  After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove  | observed            | $\boxtimes$ |    |                    |
| 4.1<br>4.2                             | Is watering provided to all plants to ensure satisfactory growth and health (manual and automatic irrigation)?  After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove dead plants and plant debris from the site?  | observed            |             |    | Photo              |
| 4.1<br>4.2<br>4.3                      | Is watering provided to all plants to ensure satisfactory growth and health (manual and automatic irrigation)?  After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove dead plants and plant debris from the site?  Are litter and debris removed?  | observed            |             |    | Photo              |
| 4.1<br>4.2<br>4.3<br>4.4               | Is watering provided to all plants to ensure satisfactory growth and health (manual and automatic irrigation)?  After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove dead plants and plant debris from the site?  Are litter and debris removed?  Are planting areas matched with the approved landscape plan?  | observed            |             |    | Photo              |
| 4.1<br>4.2<br>4.3<br>4.4<br>4.5        | Is watering provided to all plants to ensure satisfactory growth and health (manual and automatic irrigation)?  After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove dead plants and plant debris from the site?  Are litter and debris removed?  Are planting areas matched with the approved landscape plan?  Is planting locations and spacing matched with the approved landscape   | observed            |             |    | Photo              |
| 4.1<br>4.2<br>4.3<br>4.4<br>4.5<br>4.6 | Is watering provided to all plants to ensure satisfactory growth and health (manual and automatic irrigation)?  After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove dead plants and plant debris from the site?  Are litter and debris removed?  Are planting areas matched with the approved landscape plan?  Is planting pattern matched with the approved landscape plan?  Are planting locations and spacing matched with the approved landscape plan?  Are the planting species on site matched with Figure 3.6 of the approved | observed            |             |    | Photo              |

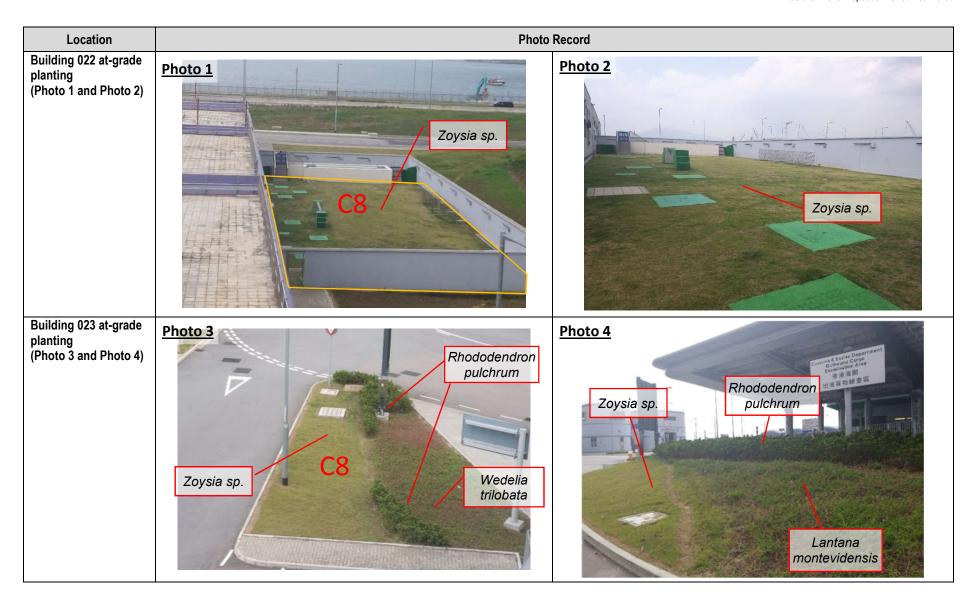
| 5   | Building 025 roof greening  | N/A or not          | Yes         | No | Remarks /          |
|---|---|---------------------|-------------|----|--------------------|
|   |   | observed            |             |    | Photo              |
| 5.1   | Is watering provided to all plants to ensure satisfactory growth and health (manual and automatic irrigation)?  |                     | $\boxtimes$ |    |                    |
| 5.2   | After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove dead plants and plant debris from the site?  |                     |             |    |                    |
| 5.3   | Are litter and debris removed?  |                     | $\boxtimes$ |    |                    |
| 5.4   | Are planting areas matched with the approved landscape plan?  |                     | $\boxtimes$ |    |                    |
| 5.5   | Is planting pattern matched with the approved landscape plan?   |                     | $\boxtimes$ |    |                    |
| 5.6   | Are planting locations and spacing matched with the approved landscape plan?  |                     | $\boxtimes$ |    |                    |
| 5.7   | Are the planting species on site matched with Figure 3.6 of the approved landscape plan?  |                     | $\boxtimes$ |    |                    |
| 5.8   | Are the plants in satisfied condition?  |                     | $\boxtimes$ |    |                    |
|   |   |                     |             |    |                    |
|   |   |                     |             |    |                    |
|   |   |                     |             |    |                    |
| 6   | Building 032 at-grade planting  | N/A or not observed | Yes         | No | Remarks /<br>Photo |
| <b>6</b> 6.1  | Building 032 at-grade planting Is watering provided to all plants to ensure satisfactory growth and health (manual and automatic irrigation)?   |                     | Yes         | No |                    |
|   | Is watering provided to all plants to ensure satisfactory growth and health   | observed            |             |    |                    |
| 6.1   | Is watering provided to all plants to ensure satisfactory growth and health (manual and automatic irrigation)?  After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove  | observed            | $\boxtimes$ |    |                    |
| 6.1<br>6.2  | Is watering provided to all plants to ensure satisfactory growth and health (manual and automatic irrigation)?  After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove dead plants and plant debris from the site?  | observed            |             |    | Photo              |
| <ul><li>6.1</li><li>6.2</li><li>6.3</li></ul>                         | Is watering provided to all plants to ensure satisfactory growth and health (manual and automatic irrigation)?  After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove dead plants and plant debris from the site?  Are litter and debris removed?  | observed            |             |    | Photo              |
| <ul><li>6.1</li><li>6.2</li><li>6.3</li><li>6.4</li></ul>             | Is watering provided to all plants to ensure satisfactory growth and health (manual and automatic irrigation)?  After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove dead plants and plant debris from the site?  Are litter and debris removed?  Are planting areas matched with the approved landscape plan?  | observed            |             |    | Photo              |
| <ul><li>6.1</li><li>6.2</li><li>6.3</li><li>6.4</li><li>6.5</li></ul> | Is watering provided to all plants to ensure satisfactory growth and health (manual and automatic irrigation)?  After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove dead plants and plant debris from the site?  Are litter and debris removed?  Are planting areas matched with the approved landscape plan?  Is planting pattern matched with the approved landscape plan?  Are planting locations and spacing matched with the approved landscape   | observed            |             |    | Photo              |
| 6.1<br>6.2<br>6.3<br>6.4<br>6.5<br>6.6                                | Is watering provided to all plants to ensure satisfactory growth and health (manual and automatic irrigation)?  After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove dead plants and plant debris from the site?  Are litter and debris removed?  Are planting areas matched with the approved landscape plan?  Is planting pattern matched with the approved landscape plan?  Are planting locations and spacing matched with the approved landscape plan?  Are the planting species on site matched with Figure 3.6 of the approved | observed            |             |    | Photo              |

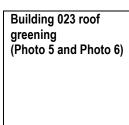
| 7                                      | Building 032 roof greening  | N/A or not          | Yes         | No | Remarks /          |
|--|---|---------------------|-------------|----|--------------------|
| ,<br>7.1                               | Is watering provided to all plants to ensure satisfactory growth and health   | observed            |             |    | Photo              |
| 7.1                                    | (manual and automatic irrigation)?  |                     | $\boxtimes$ |    |                    |
| 7.2                                    | After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove dead plants and plant debris from the site?  |                     |             |    |                    |
| 7.3                                    | Are litter and debris removed?  |                     | $\boxtimes$ |    |                    |
| 7.4                                    | Are planting areas matched with the approved landscape plan?  |                     | $\boxtimes$ |    |                    |
| 7.5                                    | Is planting pattern matched with the approved landscape plan?   |                     | $\boxtimes$ |    |                    |
| 7.6                                    | Are planting locations and spacing matched with the approved landscape plan?  |                     | $\boxtimes$ |    |                    |
| 7.7                                    | Are the planting species on site matched with Figure 3.6 of the approved landscape plan?  |                     | $\boxtimes$ |    |                    |
| 7.8                                    | Are the plants in satisfied condition?  |                     | $\boxtimes$ |    |                    |
|  |   |                     |             |    |                    |
|  |   |                     |             |    |                    |
|  |   |                     |             |    |                    |
| 8                                      | Building 044 roof greening  | N/A or not observed | Yes         | No | Remarks /<br>Photo |
| <b>8</b><br>8.1                        | Building 044 roof greening  Is watering provided to all plants to ensure satisfactory growth and health (manual and automatic irrigation)?  |                     | Yes         | No |                    |
|  | Is watering provided to all plants to ensure satisfactory growth and health   | observed            |             |    |                    |
| 8.1                                    | Is watering provided to all plants to ensure satisfactory growth and health (manual and automatic irrigation)?  After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove  | observed            | $\boxtimes$ |    |                    |
| 8.1<br>8.2                             | Is watering provided to all plants to ensure satisfactory growth and health (manual and automatic irrigation)?  After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove dead plants and plant debris from the site?  | observed            |             |    |                    |
| 8.1<br>8.2<br>8.3                      | Is watering provided to all plants to ensure satisfactory growth and health (manual and automatic irrigation)?  After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove dead plants and plant debris from the site?  Are litter and debris removed?  | observed            |             |    |                    |
| 8.1<br>8.2<br>8.3<br>8.4               | Is watering provided to all plants to ensure satisfactory growth and health (manual and automatic irrigation)?  After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove dead plants and plant debris from the site?  Are litter and debris removed?  Are planting areas matched with the approved landscape plan?  | observed            |             |    |                    |
| 8.1<br>8.2<br>8.3<br>8.4<br>8.5        | Is watering provided to all plants to ensure satisfactory growth and health (manual and automatic irrigation)?  After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove dead plants and plant debris from the site?  Are litter and debris removed?  Are planting areas matched with the approved landscape plan?  Is planting pattern matched with the approved landscape plan?  Are planting locations and spacing matched with the approved landscape   | observed            |             |    |                    |
| 8.1<br>8.2<br>8.3<br>8.4<br>8.5<br>8.6 | Is watering provided to all plants to ensure satisfactory growth and health (manual and automatic irrigation)?  After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove dead plants and plant debris from the site?  Are litter and debris removed?  Are planting areas matched with the approved landscape plan?  Is planting pattern matched with the approved landscape plan?  Are planting locations and spacing matched with the approved landscape plan?  Are the planting species on site matched with Figure 3.6 of the approved | observed            |             |    |                    |

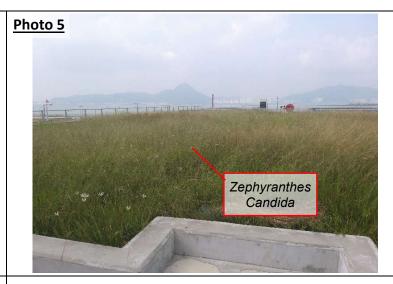
| •  | B 1111 045 6 1  | N/A or not          | Yes         | No | Remarks /          |
|--|---|---------------------|-------------|----|--------------------|
| 9  | Building 045 roof greening  | observed            |             |    | Photo              |
| 9.1  | Is watering provided to all plants to ensure satisfactory growth and health (manual and automatic irrigation)?  |                     | $\boxtimes$ |    |                    |
| 9.2  | After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove dead plants and plant debris from the site?  |                     |             |    |                    |
| 9.3  | Are litter and debris removed?  |                     | $\boxtimes$ |    | - <u></u>          |
| 9.4  | Are planting areas matched with the approved landscape plan?  |                     | $\boxtimes$ |    |                    |
| 9.5  | Is planting pattern matched with the approved landscape plan?   |                     | $\boxtimes$ |    |                    |
| 9.6  | Are planting locations and spacing matched with the approved landscape plan?  |                     | $\boxtimes$ |    |                    |
| 9.7  | Are the planting species on site matched with Figure 3.6 of the approved landscape plan?  |                     | $\boxtimes$ |    |                    |
| 9.8  | Are the plants in satisfied condition?  |                     | $\boxtimes$ |    |                    |
|  |   |                     |             |    |                    |
|  |   |                     |             |    |                    |
|  |   |                     |             |    |                    |
| 10   | Building 053 at-grade planting  | N/A or not observed | Yes         | No | Remarks /<br>Photo |
| <b>10</b> 10.1                                   | Building 053 at-grade planting Is watering provided to all plants to ensure satisfactory growth and health (manual and automatic irrigation)?   |                     | Yes         | No |                    |
|  | Is watering provided to all plants to ensure satisfactory growth and health   | observed            |             |    |                    |
| 10.1   | Is watering provided to all plants to ensure satisfactory growth and health (manual and automatic irrigation)?  After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove  | observed            | $\boxtimes$ |    |                    |
| 10.1<br>10.2                                     | Is watering provided to all plants to ensure satisfactory growth and health (manual and automatic irrigation)?  After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove dead plants and plant debris from the site?  | observed            |             |    | Photo              |
| <ul><li>10.1</li><li>10.2</li><li>10.3</li></ul> | Is watering provided to all plants to ensure satisfactory growth and health (manual and automatic irrigation)?  After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove dead plants and plant debris from the site?  Are litter and debris removed?  | observed            |             |    | Photo              |
| 10.1<br>10.2<br>10.3<br>10.4                     | Is watering provided to all plants to ensure satisfactory growth and health (manual and automatic irrigation)?  After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove dead plants and plant debris from the site?  Are litter and debris removed?  Are planting areas matched with the approved landscape plan?  | observed            |             |    | Photo              |
| 10.1<br>10.2<br>10.3<br>10.4<br>10.5             | Is watering provided to all plants to ensure satisfactory growth and health (manual and automatic irrigation)?  After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove dead plants and plant debris from the site?  Are litter and debris removed?  Are planting areas matched with the approved landscape plan?  Is planting pattern matched with the approved landscape plan?  Are planting locations and spacing matched with the approved landscape   | observed            |             |    | Photo              |
| 10.1<br>10.2<br>10.3<br>10.4<br>10.5<br>10.6     | Is watering provided to all plants to ensure satisfactory growth and health (manual and automatic irrigation)?  After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove dead plants and plant debris from the site?  Are litter and debris removed?  Are planting areas matched with the approved landscape plan?  Is planting pattern matched with the approved landscape plan?  Are planting locations and spacing matched with the approved landscape plan?  Are the planting species on site matched with Figure 3.6 of the approved | observed            |             |    | Photo              |

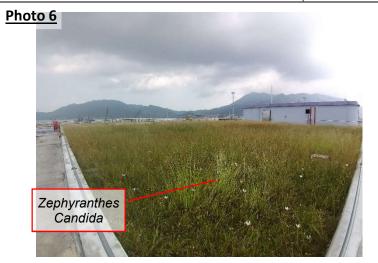
| 11   | Duilding 050 at grade planting   | N/A or not             | Yes         | No | Remarks /          |
|------|--|------------------------|-------------|----|--------------------|
|      | Building 058 at-grade planting   | observed               |             |    | Photo              |
| 11.1 | Is watering provided to all plants to ensure satisfactory growth and health (manual and automatic irrigation)?   |                        | $\boxtimes$ |    |                    |
| 11.2 | After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove dead plants and plant debris from the site? |                        |             |    |                    |
| 11.3 | Are litter and debris removed?   |                        | $\boxtimes$ |    |                    |
| 11.4 | Are planting areas matched with the approved landscape plan?   |                        | $\boxtimes$ |    |                    |
| 11.5 | Is planting pattern matched with the approved landscape plan?  |                        | $\boxtimes$ |    |                    |
| 11.6 | Are planting locations and spacing matched with the approved landscape plan?   |                        | $\boxtimes$ |    |                    |
| 11.7 | Are the planting species on site matched with Figure 3.6 of the approved landscape plan?   |                        |             |    |                    |
| 11.8 | Are the plants in satisfied condition?   |                        | $\boxtimes$ |    |                    |
|      |  |                        |             |    |                    |
|      |  |                        |             |    |                    |
| 12   | Building 059 at-grade planting   | N/A or not<br>observed | Yes         | No | Remarks /<br>Photo |
| 12.1 | Is watering provided to all plants to ensure satisfactory growth and health (manual and automatic irrigation)?   |                        |             |    |                    |
| 12.2 | After exceptional weather conditions, are proper action implemented to replace dead plants, repair damaged plants, bed in all plants that have blown over, firm up all other plants and immediately thereafter, remove dead plants and plant debris from the site? |                        |             |    |                    |
| 12.3 | Are litter and debris removed?   |                        | $\boxtimes$ |    |                    |
| 12.4 | Are planting areas matched with the approved landscape plan?   |                        | $\boxtimes$ |    |                    |
| 12.5 | Is planting pattern matched with the approved landscape plan?  |                        | $\boxtimes$ |    |                    |
| 12.6 | Are planting locations and spacing matched with the approved landscape plan?   |                        | $\boxtimes$ |    |                    |
| 12.7 | Are the planting species on site matched with Figure 3.6 of the approved landscape plan?   |                        |             |    |                    |
| 12.8 | Are the plants in satisfied condition?   |                        |             |    |                    |
|      |  |                        |             |    |                    |
| 13   | General Document   | N/A or not observed    | Yes         | No | Remarks /<br>Photo |
| 13.1 | Are the records of watering, fertilizing, weeding, pruning and mowing kept for checking?   |                        |             |    | Remark [1]         |

| Follow up actions for p                               | revious Site Audit:   |                  |  |
|---|---|------------------|--|
| Observations:  1. All plants (shrubs, gr              | ound cover and turf) were in reasonable condi   | tion.            |  |
| Corrective Actions (if a                              | nv);  |                  |  |
| N/A   | -37   |                  |  |
| Remark: 1. The maintenance lar checking.              | ndscape works were handed over to the mana  | gement office of | of related buildings. No record is available for |
| hoisted from 1 to 3 Set<br>2. All plants (shrubs, gro | I was hoisted on 24, 28 August 2019 respective ptember 2019. Found cover and turf) were in reasonable condition most of the plants are groundcover, turf and so | on. No tree plar | nting within the contract boundary for Contract  |
| Reported by (ET's Representative):                    | Eva Keung   | Title:           | ET's Representative                              |
| Signature:  | Era   | Date:            | 17 October 2019                                  |
| (AECOM Landscape<br>Representative):                  | CHAN Pak Kin  | _ Title: _       | RSFO(2)  |
| Signature:  | Contraction of the second   | _ Date: _        | 17 OCT 2019                                      |
| Contractor's<br>Representative:                       | Box Kunk  | _ Title: _       | Site Agent                                       |
| Signature:  | 20  | _ Date: _        | 18 Oct 2019                                      |
| Checked by (IEC's Representative):                    | Ray Yan   | _ Title: _       | IEC  |
| Signature:  | Ray   | Date:            | 17 October 2019                                  |

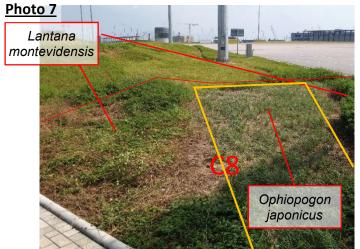








Building 025 at-grade planting (Photo 7 and Photo 8)



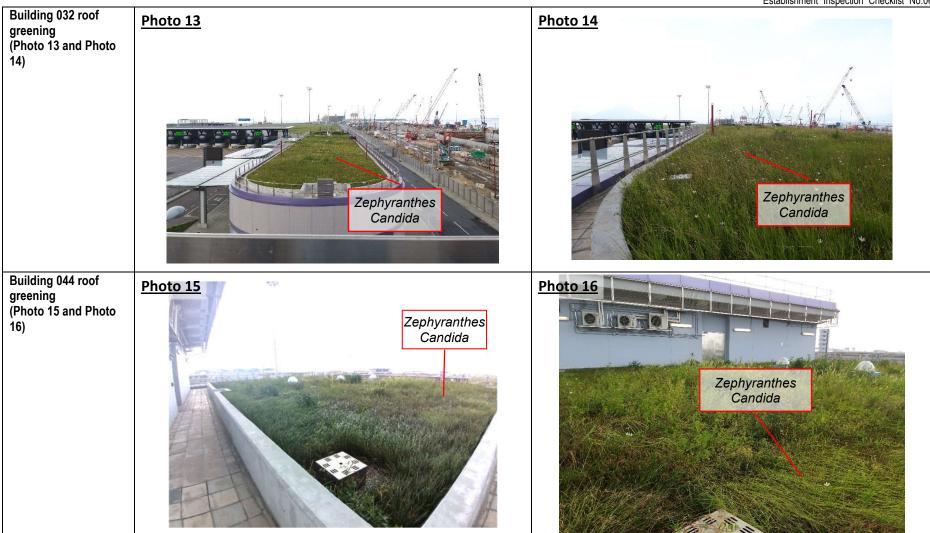


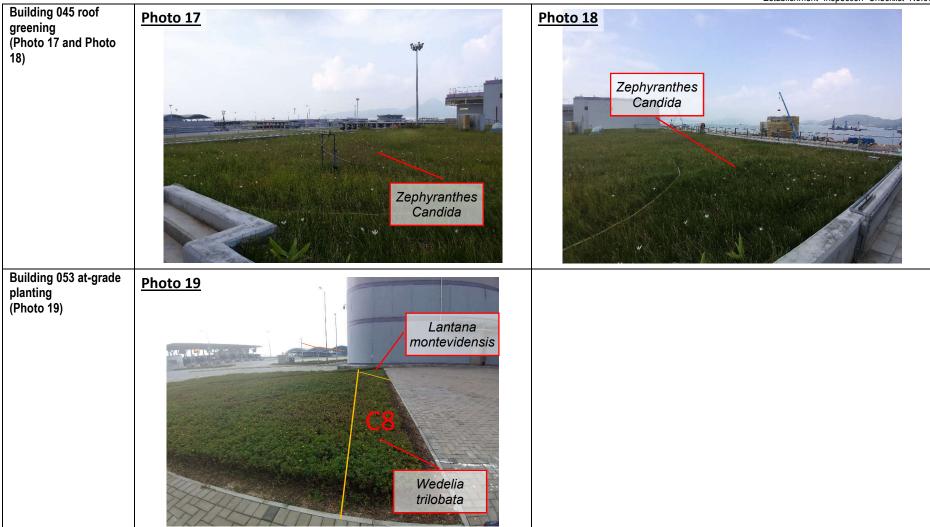


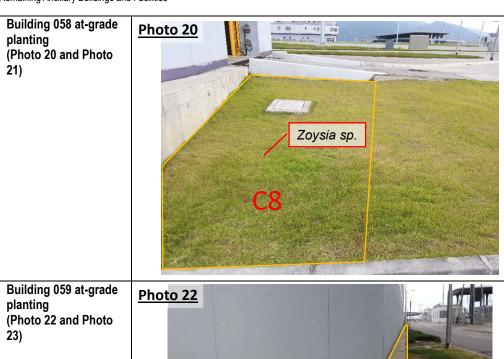


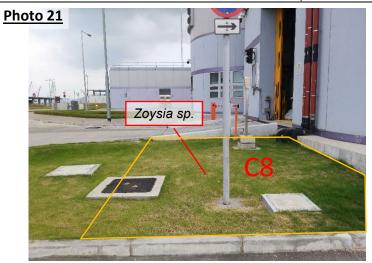


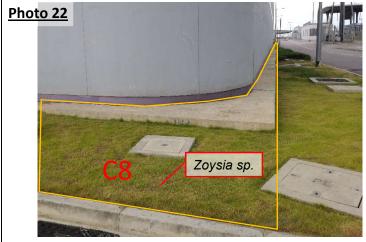


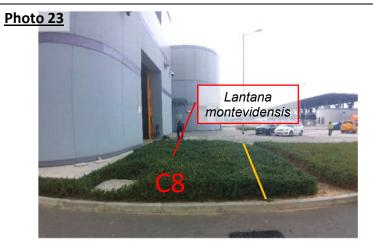


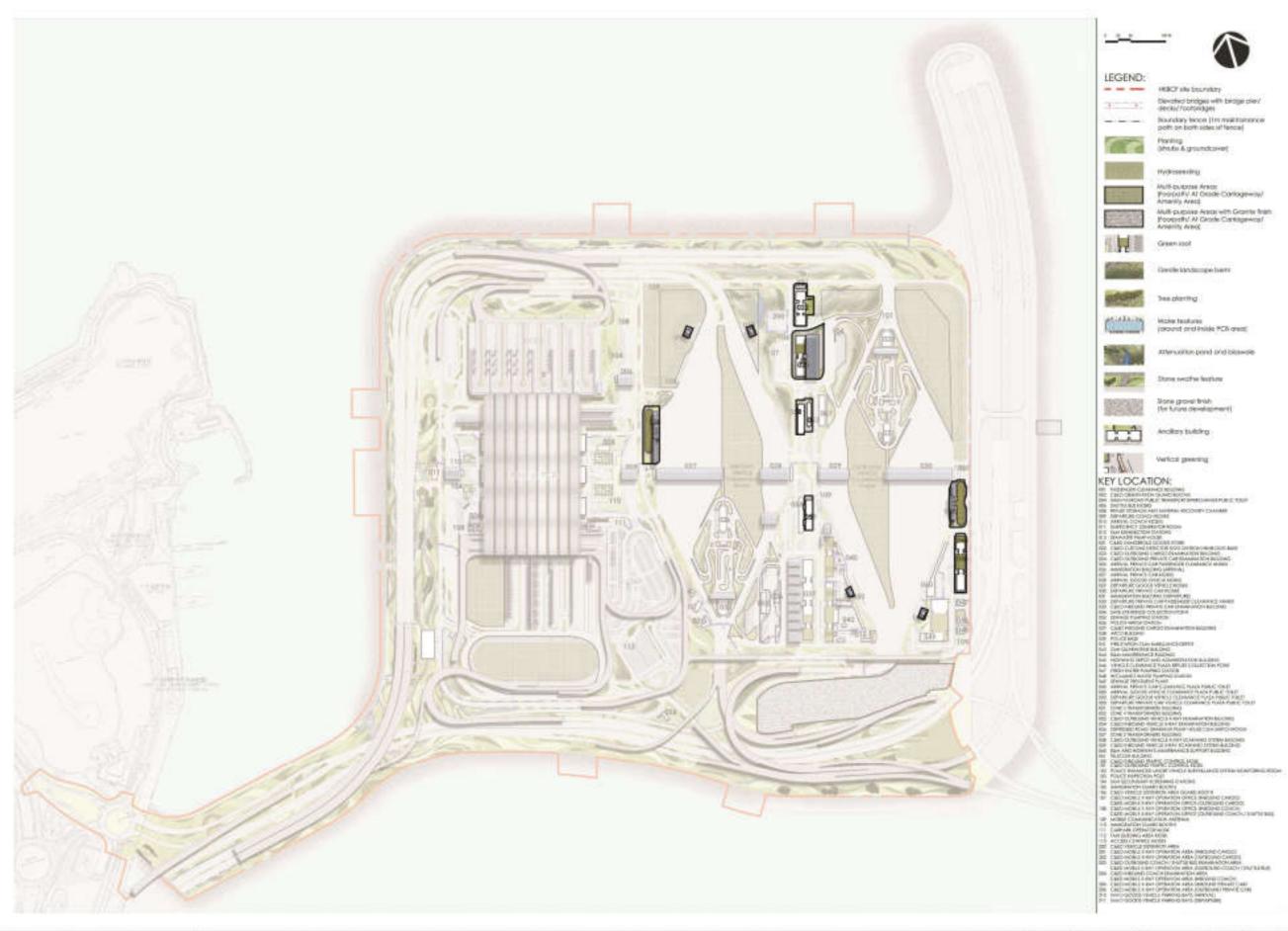










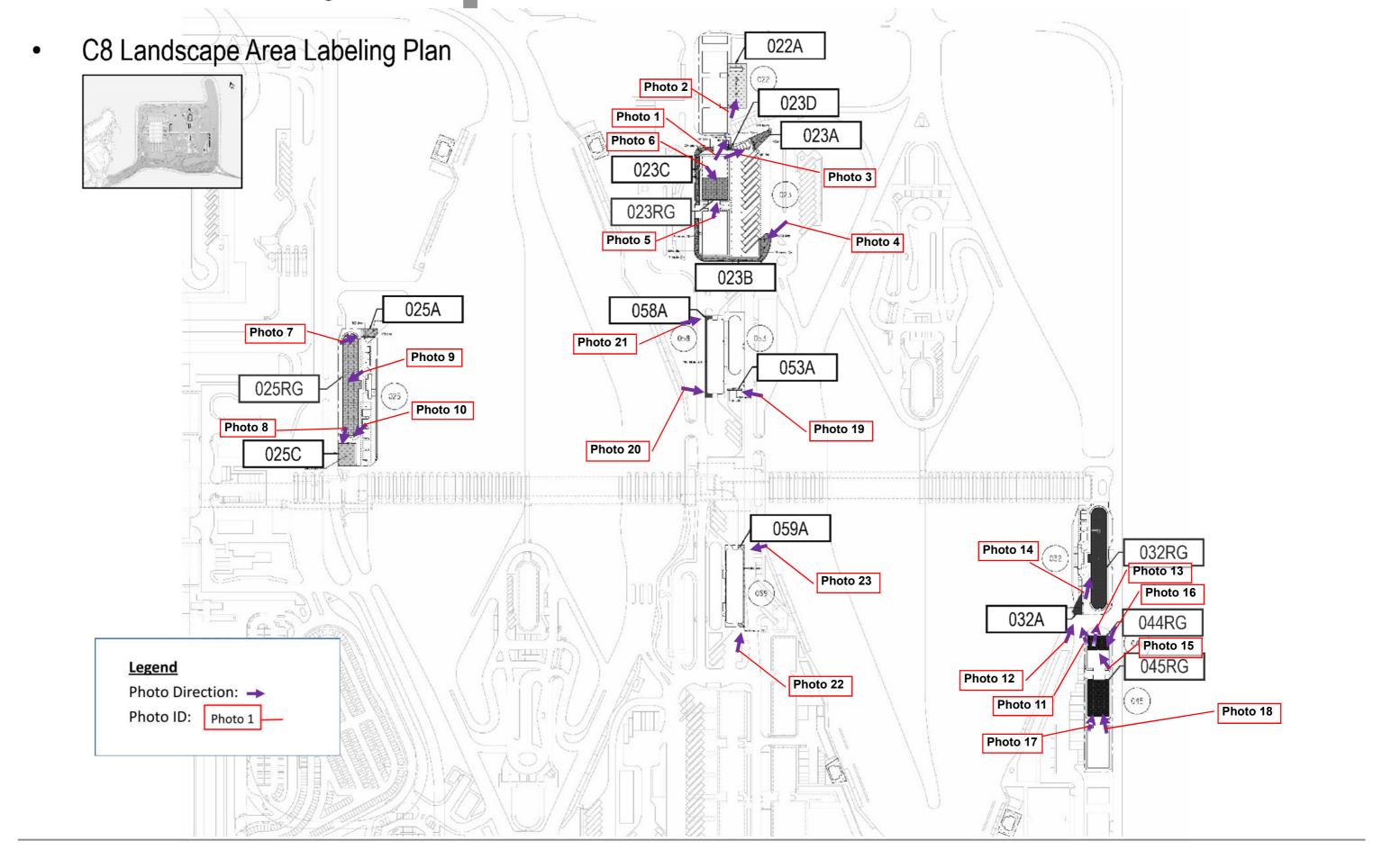




AGREEMENT No. CE 13/2016 (CE)
HONG KONG - ZHUHAI - MACAO BRIDGE HONG KONG BOUNDARY CROSSING FACILITIES
(SUPERSTRUCTURES AND INFRASTRUCTURES) - DESIGN AND CONSTRUCTION
MASTER LANDSCPE PLAN FOR CONTRACT NO. HY/2014/05 (C8) (LEVEL: TOP VIEW)

| STALE   | NA.                   | DATE       | MAY 2018 |
|---------|-----------------------|------------|----------|
| CHEEK   | ELK                   | DHEBIL     | TRT      |
| J09 No. | Water Control Control | BRANNS No. | REV      |
|         | AECMP01               |            | B.5c *   |

# 1. Planter Labeling Plans



| TREE PLANTING (1) |                       |              |                                    |             |  |  |
|-------------------|-----------------------|--------------|------------------------------------|-------------|--|--|
| SPECIES CODE      | BOTANICAL NAME        | CHINESE NAME | SIZE [mm]                          | SPACING [m] |  |  |
| AL **             | Albizia lebbeck       | 大葉合歡         | 4000-5000(H) x 3000(SP) x 100(DBH) | 3 - 4       |  |  |
| BV                | Bauhinia variegata    | 宮粉羊蹄甲        | 4000-5000(H) x 3000(SP) x 100(DBH) | 3 - 4       |  |  |
| CV                | Callistemon viminalis | 串錢柳          | 4000-5000(H) x 3000(SP) x 100(DBH) | 3 - 4       |  |  |
| CS **             | Cassia siamea         | 鐵刀木          | 4000-5000(H) x 3000(SP) x 100(DBH) | 3 - 4       |  |  |
| GR                | Grevillea robusta     | 銀樺           | 4000-5000(H) x 3000(SP) x 100(DBH) | 3 - 4       |  |  |
| JA                | Jacaranda mimosifolia | 藍花楹          | 4000-5000(H) x 3000(SP) x 100(DBH) | 3 - 4       |  |  |
| JC **             | Juniperus chinensis   | 龍柏           | 4000-5000(H) x 3000(SP) x 100(DBH) | 3 - 4       |  |  |
| TP *, **          | Thespesia populnea    | 恒春黃槿         | 4000-5000(H) x 3000(SP) x 100(DBH) | 3 - 4       |  |  |

| SHRUB PLANTING <sup>(1)</sup> |                                  |              |                   |              |  |
|-------------------------------|----------------------------------|--------------|-------------------|--------------|--|
| SPECIES CODE                  | BOTANICAL NAME                   | CHINESE NAME | SIZE [mm]         | SPACING [mm] |  |
| Aod                           | Aglaia odorata                   | 米仔蘭          | 700(H) x 500(SP)  | 400          |  |
| Cha                           | Calliandra haematocephala        | 紅絨球          | 700(H) x 500(SP)  | 400          |  |
| Fmi **                        | Ficus microcarpa 'golden leaves' | 黄金榕          | 1000(H) x 700(SP) | 600          |  |
| Ite                           | Iris tectorum                    | 鳶尾           | 300(H) x 200(SP)  | 150          |  |
| Ich *                         | Ixora chinensis                  | 龍船花          | 500(H) x 400(SP)  | 350          |  |
| Mar                           | Malvaviscus arboreus             | 大紅袍          | 700(H) x 500(SP)  | 450          |  |
| Mfi                           | Michelia figo                    | 含笑           | 800(H) x 500(SP)  | 400          |  |
| Pmy                           | Phyllanthus myrtifolius          | 瘤腺葉下珠        | 400(H) x 300(SP)  | 250          |  |
| Rpu                           | Rhododendron pulchrum            | 錦鏽杜鵑         | 600(H) x 400(SP)  | 300          |  |
| Rsi *                         | Rhododendron simsii              | 紅杜鵑          | 600(H) x 400(SP)  | 300          |  |
| Sco                           | Spathiphyllum commutatum         | 白掌           | 300(H) x 300(SP)  | 200          |  |
| Sre                           | Strelitzia reginae               | 天堂鳥蕉         | 500(H) x 400(SP)  | 350          |  |

| Zan          | Zephyranthes candida     | 蔥蓮           | 100(H) x 100(SP) | 100         |  |  |  |  |  |
|--------------|--------------------------|--------------|------------------|-------------|--|--|--|--|--|
|              |                          |              |                  |             |  |  |  |  |  |
| CLIMBER PLA  | CLIMBER PLANTING (1)     |              |                  |             |  |  |  |  |  |
| SPECIES CODE | BOTANICAL NAME           | CHINESE NAME | SIZE [mm]        | SPACING [mm |  |  |  |  |  |
| Pda          | Parthenocissus dalzielii | 異葉爬山虎        | 300(H) x 250(SP) | 250         |  |  |  |  |  |
| Pve **       | Pyrostegia venusta       | 炮仗花          | 300(H) x 250(SP) | 250         |  |  |  |  |  |

CHINESE NAME

SIZE [mm]

| GROUND COVER PLANTING (1) |                          |              |                  |              |  |  |
|---------------------------|--------------------------|--------------|------------------|--------------|--|--|
| SPECIES CODE              | BOTANICAL NAME           | CHINESE NAME | SIZE [mm]        | SPACING [mm] |  |  |
| Aag                       | Agave angustifolia       | 狹葉龍舌蘭        | 200(H) x 300(SP) | 200          |  |  |
| Aam                       | Agave americana          | 龍舌蘭          | 100(H) x 100(SP) | 100          |  |  |
| Asl                       | Aglaonema 'Silver King'  | 銀王粗肋草        | 150(H) x 150(SP) | 100          |  |  |
| Ave                       | Alternanthera versicolor | 錦繡莧,紅草       | 100(H) x 100(SP) | 100          |  |  |
| Ite                       | Iris tectorum            | 鳶尾           | 100(H) x 100(SP) | 100          |  |  |
| Lmo                       | Lantana montevidensis    | 鋪地臭金鳳        | 200(H) x 300(SP) | 200          |  |  |
| Lsp *                     | Liriope spicata          | 山麥冬          | 100(H) x 100(SP) | 100          |  |  |
| Nex *                     | Nephrolepis hirsutula    | 毛葉腎蕨         | 150(H) x 200(SP) | 150          |  |  |
| Oja *                     | Ophiopogon japonicus     | 麥冬           | 150(H) x 150(SP) | 100          |  |  |
| Rds                       | Rhoeo discolor           | 紫背萬年青        | 150(H) x 200(SP) | 100          |  |  |
| Spo **                    | Syngonium podophyllum    | 合果芋          | 200(H) x 200(SP) | 150          |  |  |
| Spo **<br>Wtr **          | Wedelia trilobata        | 蟛蜞菊          | 100(H) x 100(SP) | 100          |  |  |
| Zan                       | Zephyranthes candida     | 蔥蓮           | 100(H) x 100(SP) | 100          |  |  |
| Zro                       | Zephyranthes rosea       | 玫瑰蔥蓮         | 150(H) x 200(SP) | 100          |  |  |

| ┨      | TURFING (1)  |                |              |           |  |  |  |  |
|--------|--------------|----------------|--------------|-----------|--|--|--|--|
| П      | SPECIES CODE | BOTANICAL NAME | CHINESE NAME | SIZE [mm] |  |  |  |  |
|        | Zja **       | Zoysia sp.     | 朝鮮草          | 25(H)     |  |  |  |  |
| $\neg$ |              |                |              |           |  |  |  |  |

| Н    | HYDROSEEDING <sup>(1),(2)</sup> |   |              |  |  |
|------|---------------------------------|---|--------------|--|--|
| SI   | PECIES CODE                     | BOTANICAL NAME                          | CHINESE NAME |  |  |
|      | da * <sup>,</sup> **            | Cynodon dactylon                        | 百慕達草         |  |  |
| ] Pr | no                              | Paspalum notatum                        | 百喜草          |  |  |
| Ec   | op * / Lpe                      | Eremochloa ophiuroides / Lolium perenne | 假儉草/黑麥草      |  |  |

|      | SPACING [mm] | INDOOR PLANTING IN PASSENGER CLEARANCE BUILDING (1) |                          |              |                               |             |  |  |  |  |
|------|--------------|---|--------------------------|--------------|-------------------------------|-------------|--|--|--|--|
|      | 100          | SPECIES CODE  | BOTANICAL NAME           | CHINESE NAME | SIZE [mm]                     | SPACING [m] |  |  |  |  |
| TREE |              |   |                          |              |                               |             |  |  |  |  |
|      |              | FB **   | Ficus benjamina          | 垂榕           | 5000(H) x 4000(SP) x 150(DBH) | N.A.        |  |  |  |  |
|      | SPACING [mm] | SHRUB   |                          |              |                               |             |  |  |  |  |
| ٦    | 250          | Ite   | Iris tectorum            | 鳶尾           | 300(H) x 200(SP)              | 150         |  |  |  |  |
| 1    | 250          | Sco   | Spathiphyllum commutatum | 白掌           | 300(H) x 300(SP)              | 200         |  |  |  |  |

## NOTES:

GREEN ROOF GROUND COVER PLANTING (1)

SPECIES CODE | BOTANICAL NAME



SCALE

<sup>(1)</sup> All proposed plant species and specifications are subject to change during construction to suit the site conditions.

<sup>(2)</sup> Minimum requirement of grass seed mix for hydroseeding shall follow General Specification for Civil Engineering Works Clause 3.26(3).

<sup>\*</sup> Species native to Hong Kong according to the Hong Kong Herbarium website <a href="http://www.herbarium.gov.hk">http://www.herbarium.gov.hk</a>

<sup>\*\*</sup> Species which is salt spray tolerant