

# **Appendix C. Environmental Mitigation Implementation Schedule (EMIS) for Construction Phase**

# Appendix C Environmental Mitigation Implementation Schedule (EMIS) for Construction Phase

| EIA Ref.                                       | EM&A Ref. | EP Condition | Environmental Protection Measures  | Location / Duration of measures<br>Timing of completion of measures | Mitigation Measures Implemented?^ |
|--|-----------|--------------|--|---|-----------------------------------|
| <b>Air Quality Impact – Construction Phase</b> |           |              |  |   |                                   |
| 5.2.6.2  | 2.1       | -            | <b>Dust Control Measures</b> <ul style="list-style-type: none"> <li>Water spraying for 12 times a day or once every two hours for 24-hour working at all active works area.</li> </ul>   | Within construction site / Duration of the construction phase       | I                                 |
| 5.2.6.3  | 2.1       | -            | <ul style="list-style-type: none"> <li>Covering of at least 80% of the stockpiling area by impervious sheets. Water spraying of all dusty materials immediately prior to any loading transfer operation so as to keep the dusty material wet during material handling.</li> </ul>  | Within construction site / Duration of the construction phase       | I                                 |
| 5.2.6.4  | 2.1       | -            | Dust control practices as stipulated in the Air Pollution Control (Construction Dust) Regulation should be adopted. These practices include:<br>Good Site Management <ul style="list-style-type: none"> <li>Good site management is important to help reducing potential air quality impact down to an acceptable level. As a general guide, the Contractor should maintain high standard of housekeeping to prevent emission of fugitive dust. Loading, unloading, handling and storage of raw materials, wastes or by-products should be carried out in a manner so as to minimise the release of visible dust emission. Any piles of materials accumulated on or around the work areas should be cleaned up regularly. Cleaning, repair and maintenance of all plant facilities within the work areas should be carried out in a manner minimising generation of fugitive dust emissions. The material should be handled properly to prevent fugitive dust emission before cleaning.</li> </ul> | Within construction site / Duration of the construction phase       | I                                 |
|  |           |              | Disturbed Parts of the Roads <ul style="list-style-type: none"> <li>Each and every main temporary access should be paved with concrete, bituminous hardcore materials or metal plates and kept clear of dusty materials; or</li> <li>Unpaved parts of the road should be sprayed with water or a dust suppression chemical so as to keep the entire road surface wet.</li> </ul>   | Within construction site / Duration of the construction phase       | I                                 |
|  |           |              | Exposed Earth <ul style="list-style-type: none"> <li>Exposed earth should be properly treated by compaction, hydroseeding, vegetation planting or seating with latex, vinyl, bitumen within six months after the last construction activity on the site or part of the site where the exposed earth lies.</li> </ul>   | Within construction site / Duration of the construction phase       | N/A                               |

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|----------|-----------|--------------|---|---|-----------------------------------|
|          |           |              | Loading, Unloading or Transfer of Dusty Materials <ul style="list-style-type: none"> <li>▪ All dusty materials should be sprayed with water immediately prior to any loading or transfer operation so as to keep the dusty material wet.</li> </ul>   | Within construction site / Duration of the construction phase       | I                                 |
|          |           |              | Debris Handling <ul style="list-style-type: none"> <li>▪ Any debris should be covered entirely by impervious sheeting or stored in a debris collection area sheltered on the top and the three sides; and</li> <li>▪ Before debris is dumped into a chute, water should be sprayed so that it remains wet when it is dumped.</li> </ul>   | Within construction site / Duration of the construction phase       | I                                 |
|          |           |              | Transport of Dusty Materials <ul style="list-style-type: none"> <li>▪ Vehicle used for transporting dusty materials/spoils should be covered with tarpaulin or similar material. The cover should extend over the edges of the sides and tailboards.</li> </ul>   | Within construction site / Duration of the construction phase       | I                                 |
|          |           |              | Wheel washing <ul style="list-style-type: none"> <li>▪ Vehicle wheel washing facilities should be provided at each construction site exit. Immediately before leaving the construction site, every vehicle should be washed to remove any dusty materials from its body and wheels.</li> </ul>  | Within construction site / Duration of the construction phase       | I                                 |
|          |           |              | Use of vehicles <ul style="list-style-type: none"> <li>▪ The speed of the trucks within the site should be controlled to about 10km/hour in order to reduce adverse dust impacts and secure the safe movement around the site;</li> <li>▪ Immediately before leaving the construction site, every vehicle should be washed to remove any dusty materials from its body and wheels; and</li> <li>▪ Where a vehicle leaving the construction site is carrying a load of dusty materials, the load should be covered entirely by clean impervious sheeting to ensure that the dusty materials do not leak from the vehicle.</li> </ul> | Within construction site / Duration of the construction phase       | I                                 |
|          |           |              | Site hoarding <ul style="list-style-type: none"> <li>▪ Where a site boundary adjoins a road, street, service lane or other area accessible to the public, hoarding of not less than 2.4m high from ground level should be provided along the entire length of that portion of the site boundary except for a site entrance or exit.</li> </ul>  | Within construction site / Duration of the construction phase       | I                                 |
| 5.2.6.5  | 2.1       | -            | <b>Best Practices for Concrete Batching Plant</b><br>The relevant best practices for dust control as stipulated in the Guidance Note on the Best Practicable Means for Cement Works (Concrete Batching Plant) BPM 3/2 as well as in the future Specified Process licence should be adopted. The best practices are recommended to be applied to both the land based and floating concrete batching plants. Best practices include:<br>Cement and other dusty materials  | Within Concrete Batching Plant / Duration of the construction phase | N/A                               |

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|----------|-----------|--------------|---|--|-----------------------------------|
|          |           |              | <ul style="list-style-type: none"> <li>▪ The loading, unloading, handling, transfer or storage of cement, pulverised fuel ash (PFA) and/or other equally dusty materials shall be carried in a totally enclosed system acceptable to EPD. All dust-laden air or waste gas generated by the process operations shall be properly extracted and vented to fabric filtering system to meet the required emission limit;</li> <li>▪ Cement, PFA and/or other equally dusty materials shall be stored in storage silo fitted with audible high level alarms to warn of over-filling. The high-level alarm indicators shall be interlocked with the material filling line such that in the event of the silo approaching an overfilling condition, an audible alarm will operate, and after 1 minute or less the material filling line will be closed;</li> <li>▪ Vents of all silos shall be fitted with fabric filtering system to meet the required emission limit;</li> <li>▪ Vents of cement/PFA weighing scale shall be fitted with fabric filtering system to meet the required emission limit; and</li> <li>▪ Seating of pressure relief valves of all silos shall be checked, and the valves re-seated if necessary, before each delivery.</li> </ul>  |  |                                   |
|          |           |              | <p>Other raw materials</p> <ul style="list-style-type: none"> <li>▪ The loading, unloading, handling, transfer or storage of other raw materials which may generate airborne dust emissions such as crushed rock, sand, stone aggregate, shall be carried out in such a manner to prevent or minimize dust emissions;</li> <li>▪ The materials shall be adequately wetted prior to and during the loading, unloading and handling operations. Manual or automatic water spraying system shall be provided at all unloading areas, stock piles and material discharge points;</li> <li>▪ All receiving hoppers for unloading relevant materials shall be enclosed on three sides up to 3 m above the unloading point. In no case shall these hoppers be used as the material storage devices;</li> <li>▪ The belt conveyor for handling materials shall be enclosed on top and two sides with a metal board at the bottom to eliminate any dust emission due to wind-whipping effect. Other type of enclosure will also be accepted by EPD if it can be demonstrated that the proposed enclosure can achieve same performance;</li> <li>▪ All conveyor transfer points shall be totally enclosed. Openings for the passage of conveyors shall be fitted with adequate flexible seals;</li> <li>▪ Scrapers shall be provided at the turning points of all conveyors to remove dust adhered to the belt surface;</li> <li>▪ Conveyors discharged to stockpiles of relevant materials shall be arranged to minimize free fall as far as practicable. All free falling transfer points from conveyors to stockpiles shall be enclosed with chute(s) and water sprayed;</li> <li>▪ Aggregates with a nominal size less than or equal to 5 mm should be stored in totally enclosed structure such as storage bin and should not be handled in open area. Where there is sufficient buffer area surrounding the concrete batching plant, ground stockpiling may be used;</li> </ul> | <p>Within Concrete Batching Plant / Duration of the construction phase</p> | <p>N/A</p>                        |

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|----------|-----------|--------------|---|---|-----------------------------------|
|          |           |              | <ul style="list-style-type: none"> <li>▪ The stockpile shall be enclosed at least on top and three sides and with flexible curtain to cover the entrance side;</li> <li>▪ Aggregates with a nominal size greater than 5 mm should preferably be stored in a totally enclosed structure. If open stockpiling is used, the stockpile shall be enclosed on three sides with the enclosure wall sufficiently higher than the top of the stockpile to prevent wind whipping; and</li> <li>▪ The opening between the storage bin and weighing scale of the materials shall be fully enclosed.</li> </ul>  |   |                                   |
|          |           |              | <p>Loading of materials for batching</p> <ul style="list-style-type: none"> <li>▪ Concrete truck shall be loaded in such a way as to minimise airborne dust emissions. The following control measures shall be implemented:                             <ul style="list-style-type: none"> <li>(a) Pre-mixing the materials in a totally enclosed concrete mixer before loading the materials into the concrete truck is recommended. All dust-laden air generated by the pre-mixing process as well as the loading process shall be totally vented to fabric filtering system to meet the required emission limit; and</li> <li>(b) If truck mixing batching or other types of batching method is used, effective dust control measures acceptable to EPD shall be adopted. The dust control measures must have been demonstrated to EPD that they are capable to collect and vent all dust-laden air generated by the material loading/mixing to dust arrestment plant to meet the required emission limit.</li> </ul> </li> <li>▪ The loading bay shall be totally enclosed during the loading process.</li> </ul> | Within Concrete Batching Plant / Duration of the construction phase | N/A                               |
|          |           |              | <p>Vehicles</p> <ul style="list-style-type: none"> <li>▪ All practicable measures shall be taken to prevent or minimize the dust emission caused by vehicle movement; and</li> <li>▪ All access and route roads within the premises shall be paved and adequately wetted.</li> </ul>  | Within Concrete Batching Plant / Duration of the construction phase | N/A                               |
|          |           |              | <p>Housekeeping</p> <ul style="list-style-type: none"> <li>▪ A high standard of housekeeping shall be maintained. All spillages or deposits of materials on ground, support structures or roofs shall be cleaned up promptly by a cleaning method acceptable to EPD. Any dumping of materials at open area shall be prohibited.</li> </ul>  | Within Concrete Batching Plant / Duration of the construction phase | N/A                               |
| 5.2.6.6  | 2.1       | -            | <p><b>Best Practices for Asphaltic Concrete Plant</b></p> <p>The relevant best practices for dust control as stipulated in the Guidance Note on the Best Practicable Means for Tar and Bitumen Works (Asphaltic Concrete Plant) BPM 15 (94) as well as in the future Specified Process licence should be adopted. These include:</p> <p>Design of Chimney</p> <ul style="list-style-type: none"> <li>▪ The chimney shall not be less than 3 metres plus the building height or 8 metres above ground level, whichever is the greater;</li> <li>▪ The efflux velocity of gases from the main chimney shall not be less than 12 m/s at full load condition;</li> </ul>  | Within Concrete Batching Plant / Duration of the construction phase | N/A                               |

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|----------|-----------|--------------|--|--|-----------------------------------|
|          |           |              | <ul style="list-style-type: none"> <li>▪ The flue gas exit temperature shall not be less than the acid dew point; and</li> <li>▪ Release of the chimney shall be directed vertically upwards and not be restricted or deflected.</li> </ul>  |  |                                   |
|          |           |              | <p>Cold feed side</p> <ul style="list-style-type: none"> <li>▪ The aggregates with a nominal size less than or equal to 5 mm shall be stored in totally enclosed structure such as storage bin and shall not be handled in open area;</li> <li>▪ Where there is sufficient buffer area surrounding the plant, ground stockpiling may be used. The stockpile shall be enclosed at least on top and three sides and with flexible curtain to cover the entrance side. If these aggregates are stored above the feeding hopper, they shall be enclosed at least on top and three sides and be wetted on the surface to prevent wind-whipping;</li> <li>▪ The aggregates with a nominal size greater than 5 mm should preferably be stored in totally enclosed structure. Aggregates stockpile that is above the feeding hopper shall be enclosed at least on top and three sides. If open stockpiling is used, the stockpiles shall be enclosed on three sides with the enclosure wall sufficiently higher than the top of the stockpile to prevent wind whipping;</li> <li>▪ Belt conveyors shall be enclosed on top and two sides and provided with a metal board at the bottom to eliminate any dust emission due to the wind-whipping effect. Other type of enclosure will also be accepted by EPD if it can be demonstrated that the proposed enclosure can be achieve the same performance;</li> <li>▪ Scrapers shall be provided at the turning points of all belt conveyors inside the chute of the transfer points to remove dust adhered to the belt surface;</li> <li>▪ All conveyor transfer points shall be totally enclosed. Openings for the passages of conveyors shall be fitted with adequate flexible seals; and</li> <li>▪ All materials returned from dust collection system shall be transferred in enclosed system and shall be stored inside bins or enclosures.</li> </ul> | <p>Within Concrete Batching Plant / Duration of the construction phase</p> | <p>N/A</p>                        |
|          |           |              | <p>Hot feed side</p> <ul style="list-style-type: none"> <li>▪ The inlet and outlet of the rotary dryer shall be enclosed and ducted to a dust extraction and collection system such as a fabric filter. The particulate and gaseous concentration at the exhaust outlet of the dust collector shall not exceed the required limiting values;</li> <li>▪ The bucket elevator shall be totally enclosed and the air be extracted and ducted to a dust collection system to meet the required particulates limiting value;</li> <li>▪ All vibratory screens shall be totally enclosed and dust tight with close-fitted access inspection opening. Gaskets shall be installed to seal off any cracks and edges of any inspection openings;</li> <li>▪ Chutes for carrying hot material shall be rigid and preferably fitted with abrasion resistant plate inside. They shall be inspected daily for leakages;</li> </ul>   | <p>Within Concrete Batching Plant / Duration of the construction phase</p> | <p>N/A</p>                        |

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|----------|-----------|--------------|---|---|-----------------------------------|
|          |           |              | <ul style="list-style-type: none"> <li>▪ All hot bins shall be totally enclosed and dust tight with close-fitted access inspection opening. Gaskets shall be installed to seal off any cracks and edges of any inspection openings. The air shall be extracted and ducted to a dust collection system to meet the required particulates limiting value; and</li> <li>▪ Appropriate control measures shall be adopted in order to meet the required bitumen emission limit as well as the ambient odour level (2 odour units).</li> </ul>  |   |                                   |
|          |           |              | <p>Material transportation</p> <ul style="list-style-type: none"> <li>▪ The loading, unloading, handling, transfer or storage of other raw materials which may generate airborne dust emissions such as crushed rocks, sands, stone aggregates, reject fines, shall be carried out in such a manner as to minimize dust emissions;</li> <li>▪ Roadways from the entrance of the plant to the product loading points and/or any other working areas where there are regular movements of vehicles shall be paved or hard surfaced; and</li> <li>▪ Haul roads inside the Works shall be adequately wetted with water and/or chemical suppressants by water trucks or water sprayers.</li> </ul>   | Within Concrete Batching Plant / Duration of the construction phase | N/A                               |
|          |           |              | <p>Control of emissions from bitumen decanting</p> <ul style="list-style-type: none"> <li>▪ The heating temperature of the particular bitumen type and grade shall not exceed the corresponding temperature limit of the same type listed in Appendix 1 of the Guidance Note;</li> <li>▪ Tamper-free high temperature cut-off device shall be provided to shut off the fuel supply or electricity in case the upper limit for bitumen temperature is reached;</li> <li>▪ Proper chimney for the discharge of bitumen fumes shall be provided at high level;</li> <li>▪ The emission of bitumen fumes shall not exceed the required emission limit; and</li> </ul> <p>The air-to-fuel ratio shall be properly controlled to allow complete combustion of the fuel. The fuel burners, if any, shall be maintained properly and free from carbon deposits in the burner nozzles.</p> | Within Concrete Batching Plant / Duration of the construction phase | N/A                               |
|          |           |              | <p>Liquid fuel</p> <ul style="list-style-type: none"> <li>▪ The receipt, handling and storage of liquid fuel shall be carried out so as to prevent the release of emissions of organic vapours and/or other noxious and offensive emissions to the air.</li> </ul>  | Within Concrete Batching Plant / Duration of the construction phase | N/A                               |
|          |           |              | <p>Housekeeping</p> <ul style="list-style-type: none"> <li>▪ A high standard of housekeeping shall be maintained. Waste material, spillage and scattered piles gathered beneath belt conveyors, inside and around enclosures shall be cleared frequently. The minimum clearing frequency is on a weekly basis.</li> </ul>   | Within Concrete Batching Plant / Duration of the construction phase | N/A                               |
| 5.2.6.7  | 2.1       | -            | <p><b>Best Practices for Rock Crushing Plants</b></p> <p>The relevant best practices for dust control as stipulated in the Guidance Note on the Best Practicable Means for Mineral Works (Stone Crushing Plant) BPM 11/1 (95) as well as in the future Specified Process licence should be adopted. These include:</p>  | Within Concrete Batching Plant / Duration of the construction phase | N/A                               |

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|----------|-----------|--------------|---|---|-----------------------------------|
|          |           |              | <p>Crushers</p> <ul style="list-style-type: none"> <li>▪ The outlet of all primary crushers, and both inlet and outlet of all secondary and tertiary crushers, if not installed inside a reasonably dust tight housing, shall be enclosed and ducted to a dust extraction and collection system such as a fabric filter;</li> <li>▪ The inlet hopper of the primary crushers shall be enclosed on top and 3 sides to contain the emissions during dumping of rocks from trucks. The rock while still on the trucks shall be wetted before dumping;</li> <li>▪ Water sprayers shall be installed and operated in strategic locations at the feeding inlet of crushers; and</li> <li>▪ Crusher enclosures shall be rigid and be fitted with self-closing doors and close-fitting entrances and exits. Where conveyors pass through the crusher enclosures, flexible covers shall be installed at entries and exits of the conveyors to the enclosure.</li> </ul>  |   |                                   |
|          |           |              | <p>Vibratory screens and grizzlies</p> <ul style="list-style-type: none"> <li>▪ All vibratory screens shall be totally enclosed in a housing. Screenhouses shall be rigid and reasonably dust tight with self-closing doors or close-fitted entrances and exits for access. Where conveyors pass through the screenhouse, flexible covers shall be installed at entries and exits of the conveyors to the housing. Where containment of dust within the screenhouse structure is not successful then a dust extraction and collection system shall be provided; and</li> <li>▪ All grizzlies shall be enclosed on top and 3 sides and sufficient water sprayers shall be installed at their feeding and outlet areas.</li> </ul>  | Within Concrete Batching Plant / Duration of the construction phase | N/A                               |
|          |           |              | <p>Belt conveyors</p> <ul style="list-style-type: none"> <li>▪ Except for those conveyors which are placed within a totally enclosed structure such as a screenhouse or those erected at the ground level, all conveyors shall be totally enclosed with windshield on top and 2 sides;</li> <li>▪ Effective belt scraper such as the pre-cleaner blades made by hard wearing materials and provided with pneumatic tensioner, or equivalent device, shall be installed at the head pulley of designated conveyor as required to dislodge fine dust particles that may adhere to the belt surface and to reduce carry-back of fine materials on the return belt. Bottom plates shall also be provided for the conveyor unless it has been demonstrated that the corresponding belt scraper is effective and well maintained to prevent falling material from the return belt; and</li> <li>▪ Except for those transfer points which are placed within a totally enclosed structure such as a screenhouse, all transfer points to and from conveyors shall be enclosed. Where containment of dust within the enclosure is not successful, then water sprayers shall be provided. Openings for any enclosed structure for the passage of conveyors shall be fitted with flexible seals.</li> </ul> | Within Concrete Batching Plant / Duration of the construction phase | N/A                               |



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|--|-----------|--------------|---|--|-----------------------------------|
|  |           |              | <p>Storage piles and bins</p> <ul style="list-style-type: none"> <li>Where practicable, free falling transfer points from conveyors to stockpiles shall be fitted with flexible curtains or be enclosed with chutes designed to minimize the drop height. Water sprays shall also be used where required.</li> <li>The surface of all surge piles and stockpiles of blasted rocks or aggregates shall be kept sufficiently wet by water spraying wherever practicable;</li> <li>All open stockpiles for aggregates of size in excess of 5 mm shall be kept sufficiently wet by water spraying where practicable; or</li> <li>The stockpiles of aggregates 5 mm in size or less shall be enclosed on 3 sides or suitably located to minimize wind-whipping. Save for fluctuations in stock or production, the average stockpile shall stay within the enclosure walls and in no case the height of the stockpile shall exceed twice the height of the enclosure walls.</li> <li>Scattered piles gathered beneath belt conveyors, inside and around enclosures shall be cleared regularly.</li> </ul> | Within Concrete Batching Plant / Duration of the construction phase                      | N/A                               |
|  |           |              | <p>Rock drilling equipment</p> <ul style="list-style-type: none"> <li>Appropriate dust control equipment such as a dust extraction and collection system shall be used during rock drilling activities.</li> </ul>  | Within Concrete Batching Plant / Duration of the construction phase                      | N/A                               |
| <b>Hazard to Human Life – Construction Phase</b> |           |              |   |  |                                   |
| Table 6.40                                       | 3.2       | -            | <ul style="list-style-type: none"> <li>Precautionary measures should be established to request barges to move away during typhoons.</li> </ul>  | Construction Site / Construction Period  | I                                 |
| Table 6.40                                       | 3.2       | -            | <ul style="list-style-type: none"> <li>An appropriate marine traffic management system should be established to minimize risk of ship collision.</li> </ul>   | Construction Site / Construction Period  | I                                 |
| Table 6.40                                       | 3.2       | -            | <ul style="list-style-type: none"> <li>Location of all existing hydrant networks should be clearly identified prior to any construction works.</li> </ul>   | Construction Site / Construction Period  | N/A                               |
| <b>Noise Impact – Construction Phase</b>         |           |              |   |  |                                   |
| 7.5.6  | 4.3       | -            | <p><b>Good Site Practice</b></p> <p>Good site practice and noise management can significantly reduce the impact of construction site activities on nearby NSRs. The following package of measures should be followed during each phase of construction:</p> <ul style="list-style-type: none"> <li>only well-maintained plant to be operated on-site and plant should be serviced regularly during the construction works;</li> <li>machines and plant that may be in intermittent use to be shut down between work periods or should be throttled down to a minimum;</li> </ul>  | Within the Project site / During construction phase / Prior to commencement of operation | I                                 |

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|--|-----------|--------------|--|---|-----------------------------------|
|  |           |              | <ul style="list-style-type: none"> <li>▪ plant known to emit noise strongly in one direction, should, where possible, be orientated to direct noise away from the NSRs;</li> <li>▪ mobile plant should be sited as far away from NSRs as possible; and</li> <li>▪ material stockpiles and other structures to be effectively utilised, where practicable, to screen noise from on-site construction activities.</li> </ul> |   |                                   |
| 7.5.6  | 4.3       | -            | <p><b>Adoption of QPME</b></p> <ul style="list-style-type: none"> <li>▪ QPME should be adopted as far as applicable.</li> </ul>  | Within the Project site /<br>During construction phase / Prior to commencement of operation | I                                 |
| 7.5.6  | 4.3       | -            | <p><b>Use of Movable Noise Barriers</b></p> <ul style="list-style-type: none"> <li>▪ Movable noise barriers should be placed along the active works area and mobile plants to block the direct line of sight between PME and the NSRs.</li> </ul>  | Within the Project site /<br>During construction phase / Prior to commencement of operation | I                                 |
| 7.5.6  | 4.3       | -            | <p><b>Use of Noise Enclosure/ Acoustic Shed</b></p> <ul style="list-style-type: none"> <li>▪ Noise enclosure or acoustic shed should be used to cover stationary PME such as air compressor and generator.</li> </ul>  | Within the Project site /<br>During construction phase / Prior to commencement of operation | I                                 |
| <b>Water Quality Impact – Construction Phase</b> |           |              |  |   |                                   |

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|---------------------|-----------|--------------|--|---|--|
| 8.8.1.2 and 8.8.1.3 | 5.1       | 2.26         | <p><b>Marine Construction Activities</b></p> <p><u>General Measures to be Applied to All Works Areas</u></p> <ul style="list-style-type: none"> <li>Barges or hoppers shall not be filled to a level which will cause overflow of materials or pollution of water during loading or transportation;</li> <li>Use of Lean Material Overboard (LMOB) systems shall be prohibited;</li> <li>Excess materials shall be cleaned from the decks and exposed fittings of barges and hopper dredgers before the vessels are moved;</li> <li>Plants should not be operated with leaking pipes and any pipe leakages shall be repaired quickly;</li> <li>Adequate freeboard shall be maintained on barges to reduce the likelihood of decks being washed by wave action;</li> <li>All vessels shall be sized such that adequate clearance is maintained between vessels and the sea bed at all states of the tide to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash;</li> <li>The works shall not cause foam, oil, grease, litter or other objectionable matter to be present in the water within and adjacent to the works site; and</li> <li>For ground improvement activities including DCM, the wash water from cleaning of the drilling shaft should be appropriately treated before discharge. The Contractor should ensure the waste water meets the WPCO/TM requirements before discharge. No direct discharge of contaminated water is permitted.</li> </ul> | Within construction site / Duration of the construction phase       | I  |
|                     |           |              | <p><u>Specific Measures to be Applied to All Works Areas</u></p> <ul style="list-style-type: none"> <li>The daily maximum production rates shall not exceed those assumed in the water quality assessment in the EIA report;</li> <li>A maximum of 10 % fines content to be adopted for sand blanket and 20 % fines content for marine filling below +2.5 mPD prior to substantial completion of seawall (until end of Year 2017) shall be specified in the works contract document;</li> </ul>  | Within construction site / Duration of the construction phase       | I  |
|                     |           |              | <ul style="list-style-type: none"> <li>An advance seawall of at least 200m to be constructed (comprising either rows of contiguous permanent steel cells completed above high tide mark or partially completed seawalls with rock core to high tide mark and filter layer on the inner side) prior to commencement of marine filling activities;</li> </ul>  |   | N/A  |
|                     |           |              | <ul style="list-style-type: none"> <li>Closed grab dredger shall be used to excavate marine sediment;</li> <li>Silt curtains surrounding the closed grab dredger shall be deployed in accordance with the Silt Curtain Deployment Plan; and</li> </ul>   |   | N/A<br>*(The arrangement of silt curtain has been modified. The details can be referred to Silt Curtain Deployment Plan) |
|                     |           |              | <ul style="list-style-type: none"> <li>The Silt Curtain Deployment Plan shall be implemented.</li> </ul>   |   | I  |

| EIA Ref. | EM&A Ref. | EP Condition | Environmental Protection Measures   | Location / Duration of measures<br>Timing of completion of measures | Mitigation Measures Implemented?^   |
|----------|-----------|--------------|---|---|---|
|          |           |              | <p><u>Specific Measures to be Applied to Land Formation Activities prior to Commencement of Marine Filling Works</u></p> <ul style="list-style-type: none"> <li>▪ Double layer 'Type III' silt curtains to be applied around the active eastern works areas prior to commencement of sand blanket laying activities. The silt curtains shall be configured to minimise SS release during ebb tides. A silt curtain efficiency test shall be conducted to validate the performance of the silt curtains;</li> <li>▪ Double layer silt curtains to enclose WSRs C7a and silt screens installed at the intake points for both WSR C7a and C8 prior to commencement of construction; and</li> </ul> | Within construction site / Duration of the construction phase       | <p>NA</p> <p>*(The arrangement of silt curtain has been modified. The details can be referred to Silt Curtain Deployment Plan)</p> <p>For C7a, I</p> <p>For C8, N/A</p> <p>*(The requirement of silt curtain / screen has been modified. The details can be referred to Silt Curtain Deployment Plan)</p> |
|          |           |              | <ul style="list-style-type: none"> <li>▪ The silt curtains and silt screens should be regularly checked and maintained.</li> </ul>  |   | I   |
|          |           |              | <p><u>Specific Measures to be Applied to Land Formation Activities during Marine Filling Works</u></p> <ul style="list-style-type: none"> <li>▪ Double layer 'Type II' or 'Type III' silt curtains to be applied around the eastern openings between partially completed seawalls prior to commencement of marine filling activities. The silt curtains shall be configured to minimise SS release during ebb tides;</li> </ul>   | Within construction site / Duration of the construction phase       | <p>N/A *(The arrangement of silt curtain has been modified. The details can be referred to Silt Curtain Deployment Plan)</p>  |
|          |           |              | <ul style="list-style-type: none"> <li>▪ Double layer silt curtains to be applied at the south-western opening prior to commencement of marine filling activities;</li> </ul>   |   | <p>N/A *(The arrangement of silt curtain has been modified. The details can be referred to Silt Curtain Deployment Plan)</p>  |
|          |           |              | <ul style="list-style-type: none"> <li>▪ Double layer silt curtain to enclose WSR C7a and silt screens installed at the intake points for both WSR C7a and C8 prior to commencement of marine filling activities; and</li> </ul>  |   | <p>N/A</p> <p>*(The requirement of silt curtain / screen has been modified. The details can be referred to Silt Curtain Deployment Plan)</p>  |
|          |           |              | <ul style="list-style-type: none"> <li>▪ The silt curtains and silt screens should be regularly checked and maintained.</li> </ul>  |   | N/A   |

| EIA Ref.           | EM&A Ref. | EP Condition | Environmental Protection Measures  | Location / Duration of measures<br>Timing of completion of measures   | Mitigation Measures Implemented?^ |
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|                    |           |              | <p><u>Specific Measures to be Applied to the Field Joint Excavation Works for the Submarine Cable Diversion</u></p> <ul style="list-style-type: none"> <li>Only closed grabs designed and maintained to avoid spillage shall be used and should seal tightly when operated. Excavated materials shall be disposed at designated marine disposal area in accordance with the Dumping and Sea Ordinance (DASO) permit conditions; and</li> <li>Silt curtains surrounding the closed grab dredger to be deployed as a precautionary measure.</li> </ul>   | Within construction site / Duration of the construction phase         | N/A                               |
| 8.8.1.4            | 5.1       | -            | <p><b>Modification of the Existing Seawall</b></p> <ul style="list-style-type: none"> <li>Silt curtains shall be deployed around the seawall modification activities to completely enclose the active works areas, and care should be taken to avoid splashing of rockfill / rock armour into the surrounding marine environment. For the connecting sections with the existing outfalls, works for these connection areas should be undertaken during the dry season in order that individual drainage culvert cells may be isolated for interconnection works.</li> </ul>  | At the existing northern seawall / Duration of the construction phase | N/A                               |
| 8.8.1.5            | 5.1       | -            | <p><b>Construction of New Stormwater Outfalls and Modifications to Existing Outfalls</b></p> <ul style="list-style-type: none"> <li>During operation of the temporary drainage channel, runoff control measures such as bunding or silt fence shall be provided on both sides of the channel to prevent accumulation and release of SS via the temporary channel. Measures should also be taken to minimise the ingress of site drainage into the culvert excavations.</li> </ul>  | Within construction site / Duration of the construction phase         | N/A                               |
| 8.8.1.6<br>8.8.1.7 | 5.1       | 2.27         | <p><b>Piling Activities for Construction of New Runway Approach Lights and HKIAAA Marker Beacons</b></p> <p>Silt curtains shall be deployed around the piling activities to completely enclose the piling works and care should be taken to avoid spillage of excavated materials into the surrounding marine environment.</p> <p><u>For construction of the eastern approach lights at the CMPs</u></p> <ul style="list-style-type: none"> <li>Ground improvement via DCM using a close-spaced layout shall be completed prior to commencement of piling works;</li> <li>Steel casings shall be installed to enclose the excavation area prior to commencement of excavation;</li> <li>The excavated materials shall be removed using a closed grab within the steel casings;</li> <li>No discharge of the cement mixed materials into the marine environment will be allowed; and</li> <li>Excavated materials shall be treated and reused on-site.</li> </ul> | Within construction site / Duration of the construction phase         | N/A                               |
| 8.8.1.8            | 5.1       | -            | <p><b>Construction of Site Runoff and Drainage</b></p> <p>The site practices outlined in ProPECC Note PN 1/94 should be followed as far as practicable in order to minimise surface runoff and the chance of erosion. The following measures are recommended:</p> <ul style="list-style-type: none"> <li>Install perimeter cut-off drains to direct off-site water around the site and implement internal drainage, erosion and sedimentation control facilities. Channels, earth bunds or sand bag barriers should be provided on site to direct storm water to silt removal facilities. The design of the temporary on-site</li> </ul>   | Within construction site / Duration of the construction phase         | I                                 |

| EIA Ref.             | EM&A Ref. | EP Condition | Environmental Protection Measures  | Location / Duration of measures<br>Timing of completion of measures | Mitigation Measures Implemented?^ |
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|                      |           |              | <p>drainage system should be undertaken by the Contractors prior to the commencement of construction (for works areas located on the existing Airport island) or as soon as the new land is completed (for works areas located on the new landform);</p> <hr/> <ul style="list-style-type: none"> <li>▪ Sand/silt removal facilities such as sand/silt traps and sediment basins should be provided to remove sand/silt particles from runoff to meet the requirements of the TM-DSS standards under the WPCO. The design of efficient silt removal facilities should make reference to the guidelines in Appendix A1 of ProPECC Note PN 1/94. Sizes may vary depending upon the flow rate. The detailed design of the sand/silt traps should be undertaken by the Contractors prior to the commencement of construction;</li> </ul> <hr/> <ul style="list-style-type: none"> <li>▪ All drainage facilities and erosion and sediment control structures should be regularly inspected and maintained to ensure proper and efficient operation at all times and particularly during rainstorms. Deposited silt and grit should be regularly removed, at the onset of and after each rainstorm to ensure that these facilities are functioning properly;</li> </ul> <hr/> <ul style="list-style-type: none"> <li>▪ Measures should be taken to minimize the ingress of site drainage into excavations. If excavation of trenches in wet periods is necessary, they should be dug and backfilled in short sections wherever practicable. Water pumped out from foundation excavations should be discharged into storm drains via silt removal facilities;</li> </ul> <hr/> <ul style="list-style-type: none"> <li>▪ In the event that contaminated groundwater is identified at excavation areas, this should be treated on-site using a suitable wastewater treatment process. The effluent should be treated according to the requirements of the TM-DSS standards under the WPCO prior to discharge to foul sewers or collected for proper disposal off-site. No direct discharge of contaminated groundwater is permitted; and</li> </ul> <hr/> <ul style="list-style-type: none"> <li>▪ All vehicles and plant should be cleaned before leaving a construction site to ensure no earth, mud, debris and the like is deposited by them on roads. An adequately designed and sited wheel washing facility should be provided at construction site exits. Wash-water should have sand and silt settled out and removed regularly to ensure the continued efficiency of the process. The section of access road leading to, and exiting from, the wheel-wash bay to the public road should be paved with sufficient backfall toward the wheel-wash bay to prevent vehicle tracking of soil and silty water to public roads and drains. All washwater should be treated according to the requirements of the TM-DSS standards under the WPCO prior to discharge.</li> </ul> |   | I                                 |
| 8.8.1.9              | 5.1       | -            | <p><b>Sewage Effluent from Construction Workforce</b></p> <ul style="list-style-type: none"> <li>▪ Temporary sanitary facilities, such as portable chemical toilets, should be employed on-site where necessary to handle sewage from the workforce. A licensed contractor should be employed to provide appropriate and adequate portable toilets and be responsible for appropriate disposal and maintenance.</li> </ul>   | Within construction site / During construction phase                | I                                 |
| 8.8.1.10<br>8.8.1.11 | 5.1       |              | <p><b>General Construction Activities</b></p> <ul style="list-style-type: none"> <li>▪ Construction solid waste, debris and refuse generated on-site should be collected, handled and disposed of properly to avoid entering any nearby storm water drain. Stockpiles of cement and other construction materials should be kept covered when not being used; and</li> </ul>  | Within construction site / During construction phase                | I                                 |

| EIA Ref.   | EM&A Ref. | EP Condition | Environmental Protection Measures   | Location / Duration of measures<br>Timing of completion of measures | Mitigation Measures Implemented?^              |
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| 8.8.1.12<br>8.8.1.13                                     | 5.1       | 2.28         | <ul style="list-style-type: none"> <li>Oils and fuels should only be stored in designated areas which have pollution prevention facilities. To prevent spillage of fuels and solvents to any nearby storm water drain, all fuel tanks and storage areas should be provided with locks and be sited on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank. The bund should be drained of rainwater after a rain event.</li> </ul> <p><b>Drilling Activities for the Submarine Aviation Fuel Pipelines</b></p> <p>To prevent potential water quality impacts at Sha Chau, the following measures shall be applied:</p> <ul style="list-style-type: none"> <li>A 'zero-discharge' policy shall be applied for all activities to be conducted at Sha Chau;</li> <li>No bulk storage of chemicals shall be permitted; and</li> <li>A containment pit shall be constructed around the drill holes. This containment pit shall be lined with impermeable lining and bunded on the outside to prevent inflow from off-site areas.</li> </ul>  | Within construction site / During construction phase                | I  |
|  |           |              | <p>At the airport island side of the drilling works, the following measures shall be applied for treatment of wastewater:</p> <ul style="list-style-type: none"> <li>During pipe cleaning, appropriate desilting or sedimentation device should be provided on site for treatment before discharge. The Contractor should ensure discharge water from the sedimentation tank meet the WPCO/TM requirements before discharge; and</li> <li>Drilling fluid used in drilling activities should be reconditioned and reused as far as possible. Temporary enclosed storage locations should be provided on-site for any unused chemicals that needs to be transported away after all the related construction activities are completed. The requirements in ProPECC Note PN 1/94 should be adhered to in the handling and disposal of bentonite slurries.</li> </ul>  | Within construction site / During construction phase                | I  |
| <b>Waste Management Implication – Construction Phase</b> |           |              |   |   |  |
| 10.5.1.1   | 7.1       | -            | <p>Opportunities to minimise waste generation and maximise the reuse of waste materials generated by the project have been incorporated where possible into the planning, design and construction stages, and the following measures have been recommended:</p> <ul style="list-style-type: none"> <li>The relevant construction methods (particularly for the tunnel works) and construction programme have been carefully planned and developed to minimise the extent of excavation and to maximise the on-site reuse of inert C&amp;D materials generated by the project as far as practicable. Temporary stockpiling areas will also be provided to facilitate on-site reuse of inert C&amp;D materials;</li> <li>Priority should be given to collect and reuse suitable inert C&amp;D materials generated from other concurrent projects and the Government's PFRF as fill materials for the proposed land formation works;</li> <li>Only non-dredged ground improvement methods should be adopted in order to completely avoid the need for dredging and disposal of marine sediment for the proposed land formation work;</li> <li>Excavation work for constructing the APM tunnels, BHS tunnels and airside tunnels will not be down to the CMPs beneath the fill materials in order to avoid excavating any sediments; and</li> </ul> | Project Site Area / During design and construction phase            | I<br><br><br><br>I<br><br><br>I<br><br><br>N/A |

| EIA Ref. | EM&A Ref. | EP Condition | Environmental Protection Measures   | Location / Duration of measures<br>Timing of completion of measures | Mitigation Measures Implemented?^ |
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|          |           |              | <ul style="list-style-type: none"> <li>▪ For the marine sediments expected to be excavated from the piling works of TRC, APM &amp; BHS tunnels, airside tunnels and other facilities on the proposed land formation area, piling work of marine sections of the approach lights and HKIAAA beacons, basement works for some of T2 expansion area and excavation works for the proposed APM depot should be treated and reused on-site as backfilling materials, although required treatment level / detail and the specific re-use mode are under development.</li> </ul>   |   | N/A                               |
| 10.5.1.1 | 7.1       | -            | <p>The following good site practices should be performed during the construction activities include:</p> <ul style="list-style-type: none"> <li>▪ Nomination of an approved person, such as a site manager, to be responsible for good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site;</li> <li>▪ Training of site personnel in proper waste management and chemical waste handling procedures;</li> <li>▪ Provision of sufficient waste disposal points and regular collection for disposal;</li> <li>▪ Appropriate measures to minimise windblown litter and dust during transportation of waste by either covering trucks by tarpaulin/ similar material or by transporting wastes in enclosed containers. The cover should be extended over the edges of the sides and tailboards;</li> <li>▪ Stockpiles of C&amp;D materials should be kept wet or covered by impervious sheets to avoid wind-blown dust;</li> <li>▪ All dusty materials including C&amp;D materials should be sprayed with water immediately prior to any loading transfer operation so as to keep the dusty material wet during material handling at the barging points/ stockpile areas;</li> <li>▪ C&amp;D materials to be delivered to and from the project site by barges or by trucks should be kept wet or covered to avoid wind-blown dust;</li> <li>▪ The speed of the trucks including dump trucks carrying C&amp;D or waste materials within the site should be controlled to about 10 km/hour in order to reduce the adverse dust impact and secure the safe movement around the site; and</li> <li>▪ To avoid or minimise dust emission during transport of C&amp;D or waste materials within the site, each and every main temporary access should be paved with concrete, bituminous hardcore materials or metal plates and kept clear of dusty materials. Unpaved parts of the road should be sprayed with water or a dust suppression chemical so as to keep the entire road surface wet.</li> </ul> | Project Site Area / Construction Phase                              | I                                 |
| 10.5.1.3 | 7.1       | -            | <p>The following practices should be performed to achieve waste reduction include:</p> <ul style="list-style-type: none"> <li>▪ Use of steel or aluminium formworks and falseworks for temporary works as far as practicable;</li> <li>▪ Adoption of repetitive design to allow reuse of formworks as far as practicable;</li> <li>▪ Segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal;</li> </ul>  | Project Site Area / Construction Phase                              | I                                 |



| EIA Ref.  | EM&A Ref. | EP Condition | Environmental Protection Measures   | Location / Duration of measures<br>Timing of completion of measures | Mitigation Measures Implemented?^ |
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|           |           |              | <ul style="list-style-type: none"> <li>Encourage collection of aluminium cans, PET bottles and paper by providing separate labelled bins to enable these wastes to be segregated from other general refuse generated by the work force;</li> <li>Any unused chemicals or those with remaining functional capacity should be collected for reused as far as practicable;</li> <li>Proper storage and site practices to minimise the potential for damage or contamination of construction materials; and</li> <li>Plan and stock construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste.</li> </ul>  |   |                                   |
| 10.5.1.5  | 7.1       |              | <ul style="list-style-type: none"> <li>Inert and non-inert C&amp;D materials should be handled and stored separately to avoid mixing the two types of materials.</li> </ul>   | Project Site Area / Construction Phase                              | I                                 |
| 10.5.1.5  | 7.1       | -            | <ul style="list-style-type: none"> <li>Any recyclable materials should be segregated from the non-inert C&amp;D materials for collection by reputable licensed recyclers whereas the non-recyclable waste materials should be disposed of at the designated landfill site by a reputable licensed waste collector.</li> </ul>   | Project Site Area / Construction Phase                              | I                                 |
| 10.5.1.6  | 7.1       | -            | <ul style="list-style-type: none"> <li>A trip-ticket system promulgated shall be developed in order to monitor the off-site delivery of surplus inert C&amp;D materials that could not be reused on-site for the proposed land formation work at the PFRF and to control fly tipping.</li> </ul>  | Project Site Area / Construction Phase                              | I                                 |
| 10.5.1.6  | 7.1       | 2.32         | <ul style="list-style-type: none"> <li>The Contractor should prepare and implement a Waste Management Plan detailing various waste arising and waste management practices.</li> </ul>   | Construction Phase  | I                                 |
| 10.5.1.16 | 7.1       | -            | <p>The following mitigation measures are recommended during excavation and treatment of the sediments:</p> <ul style="list-style-type: none"> <li>On-site remediation should be carried out in an enclosed area in order to minimise odour/dust emissions;</li> <li>The loading, unloading, handling, transfer or storage of treated and untreated sediment should be carried out in such a manner to prevent or minimise dust emissions;</li> <li>All practical measures, including but not limited to speed control for vehicles, should be taken to minimise dust emission;</li> <li>Good housekeeping should be maintained at all times at the sediment treatment facility and storage area;</li> <li>Treated and untreated sediment should be clearly separated and stored separately; and</li> <li>Surface runoff from the enclosed area should be properly collected and stored separately, and then properly treated to levels in compliance with the relevant effluent standards as required by the Water Pollution Control Ordinance before final discharge.</li> </ul> | Project Site Area / Construction Phase                              | N/A                               |
| 10.5.1.18 | 7.1       | -            | <p>The marine sediments to be removed from the cable field joint area would be disposed of at the designated disposal sites to be allocated by the MFC. The following mitigation measures should be strictly</p>  | Project Site Area / Construction Phase                              | N/A                               |

| EIA Ref.                                       | EM&A Ref. | EP Condition | Environmental Protection Measures  | Location / Duration of measures<br>Timing of completion of measures                     | Mitigation Measures Implemented?^ |
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|  |           |              | <p>followed to minimise potential impacts on water quality during transportation of the sediments requiring Type 1 disposal:</p> <ul style="list-style-type: none"> <li>Bottom opening of barges shall be fitted with tight fitting seals to prevent leakage of material;</li> <li>Monitoring of the barge loading shall be conducted to ensure that loss of material does not take place during transportation. Transport barges or vessels shall be equipped with automatic self-monitoring devices as specified by EPD; and</li> <li>Barges or hopper barges shall not be filled to a level that would cause the overflow of materials or sediment laden water during loading or transportation.</li> </ul>   |   |                                   |
| 10.5.1.19                                      | 7.1       | -            | <p>Contractor should register with the EPD as a chemical waste producer and to follow the relevant guidelines. The following measures should be implemented:</p> <ul style="list-style-type: none"> <li>Good quality containers compatible with the chemical wastes should be used;</li> <li>Incompatible chemicals should be stored separately;</li> <li>Appropriate labels must be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the chemical waste, such as explosive, flammable, oxidizing, irritant, toxic, harmful, corrosive, etc.; and</li> <li>The contractor will use a licensed collector to transport and dispose of the chemical wastes at the approved Chemical Waste Treatment Centre or other licensed recycling facilities, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.</li> </ul> | Project Site Area / Construction Phase  | I                                 |
| 10.5.1.20                                      | 7.1       | -            | <ul style="list-style-type: none"> <li>General refuse should be stored in enclosed bins or compaction units separated from inert C&amp;D material. A reputable waste collector should be employed by the contractor to remove general refuse from the site for disposal at designated landfill sites. An enclosed and covered area should be provided to reduce the occurrence of 'wind blown' light material.</li> </ul>  | Project Site Area / Construction Phase  | I                                 |
| 10.5.1.21                                      | 7.1       | -            | <ul style="list-style-type: none"> <li>The construction contractors will be required to regularly check and clean any refuse trapped or accumulated along the newly constructed seawall. Such refuse will then be stored and disposed of together with the general refuse.</li> </ul>  | Project Site Area / Construction Phase  | N/A                               |
| <b>Land Contamination – Construction Phase</b> |           |              |  |   |                                   |
| 11.10.1.2 to 11.10.1.3                         | 8.1       | 2.32         | <p>For areas inaccessible during site reconnaissance survey</p> <ul style="list-style-type: none"> <li>Further site reconnaissance would be conducted once the areas are accessible in order to identify any land contamination concern for the areas.</li> </ul>  | Project Site Area inaccessible during site reconnaissance / Prior to Construction Phase | I                                 |
|  |           |              | <ul style="list-style-type: none"> <li>Subject to further site reconnaissance findings, a supplementary Contamination Assessment Plan (CAP) for additional site investigation (SI) (if necessary) may be prepared and submitted to EPD for endorsement prior to the commencement of SI at these areas.</li> </ul>  |   | I                                 |

| EIA Ref.   | EM&A Ref. | EP Condition | Environmental Protection Measures   | Location / Duration of measures<br>Timing of completion of measures                | Mitigation Measures Implemented?^ |
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|  |           |              | <ul style="list-style-type: none"> <li>After completion of SI, the Contamination Assessment Report (CAR) will be prepared and submitted to EPD for approval prior to start of the proposed construction works at the golf course, the underground and above-ground fuel storage tank areas, emergency power generation units, airside petrol filling station and fuel tank room.</li> </ul>   |  | N/A                               |
|  |           |              | <ul style="list-style-type: none"> <li>Should remediation be required, Remediation Action Plan (RAP) and Remediation Report (RR) will be prepared for EPD's approval prior to commencement of the proposed remediation and any construction works respectively.</li> </ul>  |  | N/A                               |
| 11.8.1.2   | 8.1       | -            | <p>If contaminated soil is identified, the following mitigation measures are for the excavation and transportation of contaminated materials (if any):</p> <ul style="list-style-type: none"> <li>To minimize the incidents of construction workers coming in contact with any contaminated materials, bulk earth-moving excavation equipment should be employed;</li> <li>Contact with contaminated materials can be minimised by wearing appropriate clothing and personal protective equipment such as gloves and masks (especially when working directly with contaminated material), provision of washing facilities and prohibition of smoking and eating on site;</li> <li>Stockpiling of contaminated excavated materials on site should be avoided as far as possible;</li> <li>The use of any contaminated soil for landscaping purpose should be avoided unless pre-treatment was carried out;</li> <li>Vehicles containing any excavated materials should be suitably covered to reduce dust emissions and/or release of contaminated wastewater;</li> <li>Truck bodies and tailgates should be sealed to prevent any discharge;</li> <li>Only licensed waste haulers should be used to collect and transport contaminated material to treatment/disposal site and should be equipped with tracking system to avoid fly tipping;</li> <li>Speed control for trucks carrying contaminated materials should be exercised. 8km/h is the recommended speed limit;</li> <li>Strictly observe all relevant regulations in relation to waste handling, such as Waste Disposal Ordinance (Cap 354), Waste Disposal (Chemical Waste) (General) Regulation (Cap 354) and obtain all necessary permits where required; and</li> <li>Maintain records of waste generation and disposal quantities and disposal arrangements.</li> </ul> | Project Site Area / Construction Phase   | N/A                               |
| <b>Terrestrial Ecological – Construction Phase</b> |           |              |   |  |                                   |
| 12.10.1.1  | 9.2       | 2.14         | <p><b>Pre-construction Egretty Survey</b></p> <ul style="list-style-type: none"> <li>Conduct ecological survey for Sha Chau egretty to update the latest boundary of the egretty.</li> </ul>  | Breeding season (April - July) prior to commencement of HDD drilling works at HKIA | I                                 |

| EIA Ref.   | EM&A Ref. | EP Condition | Environmental Protection Measures  | Location / Duration of measures<br>Timing of completion of measures                   | Mitigation Measures Implemented?^ |
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| 12.7.2.3 and 12.7.2.6                                    | 9.1       | 2.30         | <b>Avoidance and Minimisation of Direct Impact to Egret</b> <ul style="list-style-type: none"> <li>The daylighting location will avoid direct encroachment to the Sheung Sha Chau egret. The daylighting location and mooring of flat top barge, if required, will be kept away from the egret;</li> <li>In any event, controls such as demarcation of construction site boundary and confining the lighting within the site will be practised to minimise disturbance to off-site habitat at Sheung Sha Chau Island; and</li> <li>The containment pit at the daylighting location shall be covered or camouflaged.</li> </ul> | During construction phase at Sheung Sha Chau Island                                   |                                   |
| 12.7.2.5   | 9.1       | 2.30         | <b>Preservation of Nesting Vegetation</b> <ul style="list-style-type: none"> <li>The proposed daylighting location and the arrangement of connecting pipeline will avoid the need of tree cutting, therefore the trees that are used by ardeids for nesting will be preserved.</li> </ul>  | During construction phase at Sheung Sha Chau Island                                   |                                   |
| 12.7.2.4 and 12.7.2.6                                    | 9.1       | 2.30         | <b>Timing the Pipe Connection Works outside Ardeid's Breeding Season</b> <ul style="list-style-type: none"> <li>All HDD and related construction works on Sheung Sha Chau Island will be scheduled outside the ardeids' breeding season (between April and July). No night-time construction work will be allowed on Sheung Sha Chau Island during all seasons.</li> </ul>   | During construction phase at Sheung Sha Chau Island                                   |                                   |
| 12.10.1.1  | 9.3       | -            | <b>Ecological Monitoring</b> <ul style="list-style-type: none"> <li>During the HDD construction works period from August to March, ecological monitoring will be undertaken monthly at the HDD daylighting location on Sheung Sha Chau Island to identify and evaluate any impacts with appropriate actions taken as required to address and minimise any adverse impact found.</li> </ul>   | at Sheung Sha Chau Island   |                                   |
| <b>Marine Ecological Impact – Pre-construction Phase</b> |           |              |  |   |                                   |
| 13.11.4.1  | 10.2.2    | -            | <ul style="list-style-type: none"> <li>Pre-construction phase Coral Dive Survey.</li> </ul>  | HKIAAA artificial seawall   |                                   |
| <b>Marine Ecological Impact – Construction Phase</b>     |           |              |  |   |                                   |
| 13.11.1.3 to 13.11.1.6                                   | -         | -            | <b>Minimisation of Land Formation Area</b> <ul style="list-style-type: none"> <li>Minimise the overall size of the land formation needed for the additional facilities to minimise the overall loss of habitat for marine resources, especially the CWD population.</li> </ul>   | Land formation footprint / during detailed design phase to completion of construction |                                   |
| 13.11.1.7 to 13.11.1.10                                  | -         | 2.31         | <b>Use of Construction Methods with Minimal Risk/Disturbance</b> <ul style="list-style-type: none"> <li>Use of non-dredge method for the main land formation and ancillary works including the diversion of the aviation fuel pipeline to the AFRF;</li> <li>Use of Deep Cement Mixing (DCM) method instead of conventional seabed dredging for the land formation works to reduce the risk of negative impacts through the elevation of suspended solids and contaminants on CWDs, fisheries and the marine environment;</li> </ul>   | During construction phase at marine works area  |                                   |

| EIA Ref.               | EM&A Ref. | EP Condition | Environmental Protection Measures   | Location / Duration of measures<br>Timing of completion of measures | Mitigation Measures Implemented?^ |
|------------------------|-----------|--------------|---|---|-----------------------------------|
|                        |           |              | <ul style="list-style-type: none"> <li>Use of bored piling in short duration to form the new approach lights and marker beacons for the new runway;</li> </ul>  |   | N/A                               |
|                        |           |              | <ul style="list-style-type: none"> <li>Avoid bored piling during CWD peak calving season (Mar to Jun);</li> </ul>   |   |                                   |
|                        |           |              | <ul style="list-style-type: none"> <li>Prohibition of underwater percussive piling; and</li> </ul>  |   |                                   |
|                        |           |              | <ul style="list-style-type: none"> <li>Use of horizontal directional drilling (HDD) method and water jetting methods for placement of submarine cables and pipelines to minimise the disturbance to the CWDs and other marine ecological resources.</li> </ul>  |   |                                   |
| 13.11.2.1 to 13.11.2.7 | -         | -            | <p><b>Mitigation for Indirect Disturbance due to Deterioration of Water Quality</b></p> <ul style="list-style-type: none"> <li>Water quality mitigation measures during construction phases include consideration of alternative construction methods, deployment of silt curtain and good site practices;</li> <li>Alternative construction methods including use of non-dredge methods for ground improvement (e.g. Deep Cement Mixing (DCM), prefabricated vertical drains (PVD), sand compaction piles, steel cells, stone columns and vertical sand drains);</li> <li>Use of bored piling in short duration to form the new approach lights and marker beacons for the new runway; and</li> </ul> <p>Use of horizontal directional drilling (HDD) method and water jetting methods for placement of undersea cables and pipelines to minimise the disturbance to the CWDs and other marine ecological resources.</p> | All works area during the construction phase                        |                                   |
|                        |           |              |   |   |                                   |
|                        |           |              |   |   | N/A                               |
|                        |           |              |   |   |                                   |
| 13.11.1.12             | -         | -            | <p><b>Strict Enforcement of No-Dumping Policy</b></p> <ul style="list-style-type: none"> <li>A policy prohibiting dumping of wastes, chemicals, oil, trash, plastic, or any other substance that would potentially be harmful to dolphins and/or their habitat in the work area;</li> <li>Mandatory educational programme of the no-dumping policy be made available to all construction site personnel for all project-related works;</li> <li>Fines for infractions should be implemented; and</li> <li>Unscheduled, on-site audits shall be implemented.</li> </ul>  | All works area during the construction phase                        |                                   |
| 13.11.1.13             | -         | -            | <p><b>Good Construction Site Practices</b></p> <ul style="list-style-type: none"> <li>Regular inspection of the integrity and effectiveness of all silt curtains and monitoring of effluents to ensure that any discharge meets effluent discharge guidelines;</li> <li>Keep the number of working or stationary vessels present on-site to the minimum anytime; and</li> <li>Unscheduled, on-site audits for all good site practice restrictions should be conducted, and fines or penalties sufficient to be an effective deterrent need to be levied against violators.</li> </ul>   | All works area during the construction phase                        |                                   |
| 13.11.1.3 to 13.11.1.6 | -         | -            | <p><b>Minimisation of Land Formation Area</b></p> <ul style="list-style-type: none"> <li>Minimise the overall size of the land formation needed for the additional facilities to minimise the overall loss of habitat for marine resources, especially the CWD population.</li> </ul>   | Land formation footprint / during detailed design phase             |                                   |

| EIA Ref.                 | EM&A Ref. | EP Condition | Environmental Protection Measures   | Location / Duration of measures<br>Timing of completion of measures   | Mitigation Measures Implemented?^ |
|--------------------------|-----------|--------------|---|---|-----------------------------------|
| 13.11.5.4 to 13.11.5.13  | 10.3.1    | -            | <p><b>SkyPier High Speed Ferries' Speed Restrictions and Route Diversions</b></p> <ul style="list-style-type: none"> <li>SkyPier HSFs operating to / from Zhuhai and Macau would divert north of SCLKC Marine Park with a 15 knot speed limit to apply for the part-journeys that cross high CWD abundance grid squares as indicatively shown in <b>Drawing No. MCL/P132/EIA/13-023</b> of the EIA Report. Both the alignment of the northerly route and the portion of routings to be subject to the speed limit of 15 knots shall be finalised prior to commencement of construction based on the future review of up-to-date CWD abundance and EM&amp;A data and taking reference to changes in total SkyPier HSF numbers; and</li> <li>A maximum of 10 knots will be enforced through the designated SCLKC Marine Park area at all times.</li> </ul> <p><b>Other mitigation measures</b></p> <ul style="list-style-type: none"> <li>The ET will audit various parameters including actual daily numbers of HSFs, compliance with the 15-knot speed limit in the speed control zone and diversion compliance for SkyPier HSFs operating to / from Zhuhai and Macau; and</li> <li>The effectiveness of the CWD mitigation measures after implementation of initial six month SkyPier HSF diversion and speed restriction will be reviewed.</li> </ul> | to completion of construction<br><br>Area between the footprint and SCLKC Marine Park during construction phase |                                   |
| 13.11.5.14 to 13.11.5.18 | 10.3.1    | 2.31         | <p><b>Dolphin Exclusion Zone</b></p> <ul style="list-style-type: none"> <li>Establishment of a 24 hr Dolphin Exclusion Zone (DEZ) with a 250 m radius around the land formation works areas;</li> <li>A DEZ would also be implemented during ground improvement works (e.g. DCM), water jetting works for submarine cables diversion, open trench dredging at the field joint locations and seawall construction; and</li> <li>A DEZ would also be implemented during bored piling work but as a precautionary measure only.</li> </ul>   | Marine waters around land formation works area during construction phase  |                                   |
| 13.11.5.19               | 10.4      | 2.31         | <p><b>Acoustic Decoupling of Construction Equipment</b></p> <ul style="list-style-type: none"> <li>Air compressors and other noisy equipment that must be mounted on steel barges should be acoustically-decoupled to the greatest extent feasible, for instance by using rubber or air-filled tyres; and</li> <li>Specific acoustic decoupling measures shall be specified during the detailed design of the project for use during the land formation works.</li> </ul>   | Around coastal works area during construction phase   |                                   |
| 13.11.5.20               | 10.6.1    | 2.29         | <p><b>Spill Response Plan</b></p> <ul style="list-style-type: none"> <li>An oil and hazardous chemical spill response plan is proposed to be established during the construction phase as a precautionary measure so that appropriate actions to prevent or reduce risks to CWDs can be undertaken in the event of an accidental spillage.</li> </ul>   | Construction phase  |                                   |

| EIA Ref.                                     | EM&A Ref. | EP Condition | Environmental Protection Measures  | Location / Duration of measures<br>Timing of completion of measures                   | Mitigation Measures Implemented?^ |
|--|-----------|--------------|--|---|-----------------------------------|
| 13.11.5.21 to 13.11.5.23                     | 10.6.1    | -            | <b>Construction Vessel Speed Limits and Skipper Training</b> <ul style="list-style-type: none"> <li>A speed limit of 10 knots should be strictly observed for construction vessels at areas with the highest CWD densities; and</li> <li>Vessels traversing through the work areas should be required to use predefined and regular routes (which would presumably become known to resident dolphins) to reduce disturbance to cetaceans due to vessel movements. Specific marine routes shall be specified by the Contractor prior to construction commencing.</li> </ul>   | All areas north and west of Lantau Island during construction phase                   | I                                 |
| <b>Fisheries Impact – Construction Phase</b> |           |              |  |   |                                   |
| 14.9.1.2 to 14.9.1.5                         | -         | -            | <b>Minimisation of Land Formation Area</b> <ul style="list-style-type: none"> <li>Minimise the overall size of the land formation needed for the additional facilities to minimise the overall loss of habitat for fisheries resources.</li> </ul>   | Land formation footprint / during detailed design phase to completion of construction | I                                 |
| 14.9.1.6                                     | -         | -            | <b>Use of Construction Methods with Minimal Risk/Disturbance</b> <ul style="list-style-type: none"> <li>Use of non-dredge method for the main land formation and ancillary works including the diversion of the aviation fuel pipeline to the AFRF;</li> <li>Use of Deep Cement Mixing (DCM) method instead of conventional seabed dredging for the land formation works to reduce the risk of negative impacts through the elevation of suspended solids and contaminants on fisheries and the marine environment;</li> <li>Use of bored piling in short duration to form the new approach lights and marker beacons for the new runway; and</li> <li>Use of horizontal directional drilling (HDD) method and water jetting methods for placement of undersea cables and pipelines to minimise the disturbance to fisheries resources.</li> </ul> | During construction phase at marine works area  | I<br><br>I<br><br>N/A<br><br>I    |
| 14.9.1.11                                    | -         | -            | <b>Strict Enforcement of No-Dumping Policy</b> <ul style="list-style-type: none"> <li>A policy prohibiting dumping of wastes, chemicals, oil, trash, plastic, or any other substance that would potentially be harmful to dolphins and/or their habitat in the work area;</li> <li>Mandatory educational programme of the no-dumping policy be made available to all construction site personnel for all project-related works;</li> <li>Fines for infractions should be implemented; and</li> <li>Unscheduled, on-site audits shall be implemented.</li> </ul>  | All works area during the construction phase  | I                                 |
| 14.9.1.12                                    | -         | -            | <b>Good Construction Site Practices</b> <ul style="list-style-type: none"> <li>Regular inspection of the integrity and effectiveness of all silt curtains and monitoring of effluents to ensure that any discharge meets effluent discharge guidelines;</li> <li>Keep the number of working or stationary vessels present on-site to the minimum anytime; and</li> </ul>   | All works area during the construction phase  | I                                 |

| EIA Ref.  | EM&A Ref. | EP Condition | Environmental Protection Measures   | Location / Duration of measures<br>Timing of completion of measures                | Mitigation Measures Implemented?^ |
|---|-----------|--------------|---|--|-----------------------------------|
| 14.9.1.13 to 14.9.1.18                                  | -         | -            | <ul style="list-style-type: none"> <li>▪ Unscheduled, on-site audits for all good site practice restrictions should be conducted, and fines or penalties sufficient to be an effective deterrent need to be levied against violators.</li> </ul> <p><b>Mitigation for Indirect Disturbance due to Deterioration of Water Quality</b></p> <ul style="list-style-type: none"> <li>▪ Water quality mitigation measures during construction phases include consideration of alternative construction methods, deployment of silt curtain and good site practices;</li> <li>▪ Alternative construction methods including use of non-dredge methods for ground improvement (e.g. Deep Cement Mixing (DCM), prefabricated vertical drains (PVD), sand compaction piles, steel cells, stone columns and vertical sand drains);</li> <li>▪ Use of bored piling in short duration to form the new approach lights and marker beacons for the new runway; and</li> <li>▪ Use of horizontal directional drilling (HDD) method and water jetting methods for placement of undersea cables and pipelines to minimise the disturbance to fisheries resources.</li> </ul> | All works area during the construction phase                                       |                                   |
| <b>Landscape and Visual Impact – Construction Phase</b> |           |              |   |  |                                   |
| Table 15.6  | 12.3      | -            | <b>CM1</b> - The construction area and contractor’s temporary works areas should be minimised to avoid impacts on adjacent landscape.   | All works areas for duration of works;<br>Upon handover and completion of works.   |                                   |
| Table 15.6  | 12.3      | -            | <b>CM2</b> - Reduction of construction period to practical minimum.   | All works areas for duration of works;<br>Upon handover and completion of works.   |                                   |
| Table 15.6  | 12.3      | -            | <b>CM3</b> - Phasing of the construction stage to reduce visual impacts during the construction phase.  | All works areas for duration of works;<br>Upon handover and completion of works.   |                                   |
| Table 15.6  | 12.3      | -            | <b>CM4</b> - Construction traffic (land and sea) including construction plants, construction vessels and barges should be kept to a practical minimum.  | All works areas for duration of works;<br>Upon handover and completion of works.   |                                   |
| Table 15.6  | 12.3      | -            | <b>CM5</b> - Erection of decorative mesh screens or construction hoardings around works areas in visually unobtrusive colours.  | All works areas for duration of works;<br>Upon handover and completion of works. – |                                   |



| EIA Ref.   | EM&A Ref. | EP Condition | Environmental Protection Measures   | Location / Duration of measures<br>Timing of completion of measures  | Mitigation Measures Implemented?^ |
|--|-----------|--------------|---|--|-----------------------------------|
|  |           |              |   | may be disassembled in phases  |                                   |
| Table 15.6   | 12.3      | -            | <b>CM6</b> - Avoidance of excessive height and bulk of site buildings and structures.   | New passenger concourse, terminal 2 expansion and other proposed airport related buildings and structures under the project;<br>Upon handover and completion of works. | N/A                               |
| Table 15.6   | 12.3      | -            | <b>CM7</b> - Control of night-time lighting by hooding all lights and through minimisation of night working periods.  | All works areas for duration of works;<br>Upon handover and completion of works. – may be disassembled in phases   | I                                 |
| Table 15.6   | 12.3      | -            | <b>CM8</b> - All existing trees shall be carefully protected during construction. Detailed Tree Protection Specification shall be provided in the Contract Specification. Under this specification, the Contractor shall be required to submit, for approval, a detailed working method statement for the protection of trees prior to undertaking any works adjacent to all retained trees, including trees in contractor’s works areas. | All existing trees to be retained;<br>Upon handover and completion of works.   | I                                 |
| Table 15.6   | 12.3      | -            | <b>CM9</b> - Trees unavoidably affected by the works shall be transplanted where practical. A detailed Tree Transplanting Specification shall be provided in the Contract Specification, if applicable. Sufficient time for necessary tree root and crown preparation periods shall be allowed in the project programme.  | All existing trees to be affected by the works;<br>Upon handover and completion of works.  | N/A                               |
| Table 15.6   | 12.3      | -            | <b>CM10</b> - Land formation works shall be followed with advanced hydroseeding around taxiways and runways as soon as practical.   | All affected existing grass areas around runways and verges/Duration of works;<br>Upon handover and completion of works.   | N/A                               |
| <b>Cultural Heritage Impact – Construction Phase</b> |           |              |   |  |                                   |
| Not applicable.                                      |           |              |   |  |                                   |

# Expansion of Hong Kong International Airport into a Three-Runway System



| EIA Ref.                                  | EM&A Ref. | EP Condition | Environmental Protection Measures | Location / Duration of measures<br>Timing of completion of measures | Mitigation Measures Implemented?^ |
|---|-----------|--------------|-----------------------------------|---|-----------------------------------|
| <b>Health Impact – Aircraft Emissions</b> |           |              |                                   |   |                                   |
| Not applicable.                           |           |              |                                   |   |                                   |
| <b>Health Impact – Aircraft Noise</b>     |           |              |                                   |   |                                   |
| Not applicable.                           |           |              |                                   |   |                                   |

Notes:

I= implemented where applicable;

N/A= not applicable to the construction works implemented during the reporting month.

^ Checked by ET during site inspection