

Appendix A – Environmental Mitigation Implementation Schedule (EMIS) (Non-Radiological)

EISA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?
		<u>Noise</u>					
B2.2(i)	-	The noise level measured at 1m from the most affected external façade of any noise sensitive receivers from the construction work alone during any 30 minute period shall not exceed an equivalent sound level (Leq) of 75 dB(A).	Control construction noise	CC	Whole site	C	Tender Specification 2.13.2 (i)
B2.3	-	Before the commencement of any work, the Employer may require the methods of working, equipment and sound-reducing measures intended to be used on the Site to be made available for inspection and approval to ensure that they are suitable for the project.	Reduce construction noise impact	CC	Whole site	C	Tender Specification 2.13.2 (ii)
B2.4	-	The Contractor shall devise, arrange methods of working and carry the Works in such a manner so as to minimize noise impacts on the surrounding environmental, and shall provide experienced personnel with suitable training to ensure that these methods are implemented.	Reduce construction noise impact	CC	Whole site	C	Tender Specification 2.13.2 (iii) and 2.11.4
-	-	The nature and routing of construction plant both within and outside the Site limits shall be subject to the Employer's approval. Plant used for construction shall be effectively silenced and deployed in such a manner so as to cause as little nuisance to the public as possible.	Reduce construction noise impact	CC	Whole site	C	Tender Specification 2.13.2 (iv)
B2.5	2.3	The Contractor shall ensure that all plant and equipment to be used on Site are properly maintained in good operating condition and noisy construction activities shall be effectively sound-reduced by means of silencers, mufflers, acoustic linings or shields or screens or other means to avoid disturbance to any nearby noise sensitive receivers.	Reduce construction noise impact	CC	Whole site	C	Tender Specification 2.13.2 (v) and 2.11.4
B2.6	-	Notwithstanding the requirement set out in clause B2.2(i) of EISA Ref. above and subject to compliance with statutory requirements, the Employer may upon application in writing by the Contractor, allow the use of any equipment and the carrying out of any construction activities provided that he is	Reduce construction noise impact	CC	Whole site	C	Tender Specification 2.13.2 (vi)

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		satisfied the application is of absolute necessity or of emergency nature, and not in contravention with the Noise Control Ordinance in any respect.					
B2.7	-	For the purposes of the above clauses, any domestic premises, hotels, hostel, temporary housing accommodation, hospital, medical clinic, educational institution, place of public worship, library, court of law, performing arts centre or office building shall be considered a noise sensitive receiver.	Reduce construction noise impact	CC	Whole site	C	Tender Specification 2.13.2 (vii) and 2.11.4
B2.8	2.4	The Contractor shall, when necessary, apply as soon as possible for a construction noise permit in accordance with the Noise Control (General) Regulations, display the permit as required and copy to the Employer.	Reduce construction noise impact	CC	Whole site	C	Tender Specification 2.13.2 (viii)
-	-	Operational noise from the LRWF is subject to the provisions of the Noise Control Ordinance Environmental Guidelines for Planning in Hong Kong and the Technical Memorandum for the Assessment of Noise from Places other than Domestic Premises, Public Places or Construction Sites.	Control noise impact during operation	CC	Within LRWF	O	Tender Specification 2.11.4
		<u>Air Quality</u>					
B3.1	-	The Contractor shall undertake at all times to prevent dust nuisance as a result of his activities. Any air pollution control systems installed shall be operated whenever the plant is in operation.	Reduce construction dust	CC	Whole site	C	Tender Specification 2.13.1 (i)
B3.2	-	The Contractor shall at its own cost, and to the satisfaction of the Employer, install effective dust suppression equipment and take such other measures as may be necessary to ensure that the statutory criteria are not exceeded.	Reduce construction dust	CC	Whole site	C	Tender Specification 2.13.1 (ii)
B3.3	-	In the process of material handling, any material which has the potential to create dust shall be treated with water.	Reduce construction dust	CC	Whole site	C	Tender Specification 2.13.1 (iii)
B3.4	-	Where dusty materials are being discharged to a vehicle from a conveying system at a fixed transfer point, a three-sided roofed enclosure with a flexible curtain across the entry shall be provided. Exhaust should be provided for this enclosure	Reduce construction dust	CC	Whole site	C	Tender Specification 2.13.1 (iv)

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		and vented to a fabric filter system.					
B3.5	-	Stockpiles of sand and aggregate greater than 20m ³ shall be enclosed on three sides, with a wall extending above the pile and 2 metres beyond the front of the pile. In addition, water sprays shall be provided and used both to dampen stored materials and when receiving raw material.	Reduce construction dust	CC	Whole site	C	Tender Specification 2.13.1 (v)
B3.6	-	The Contractor shall frequently clean and water open areas to minimize the fugitive dust emissions.	Reduce construction dust	CC	Whole site	C	Tender Specification 2.13.1 (vi)
B3.7	-	The Contractor shall restrict all motorized vehicles to a maximum speed of 15 km per hr and confine haulage and delivery vehicles to designated roadways inside the site. Areas of roadway longer than 100m where movement of motorized vehicles exceeds 100 vehicular movements/day or as directed by the Employer shall be furnished with a flexible pavement surfacing.	Reduce construction dust	CC	Whole site	C	Tender Specification 2.13.1 (vii)
B3.8	-	Permanent conveyor belts shall be fitted with windboards, and conveyor transfer points and hopper discharge areas shall be enclosed to minimize emission of dust. All conveyors carrying materials which have the potential to create dust shall be totally enclosed and fitted with belt cleaners.	Reduce construction dust	CC	Whole site	C	Tender Specification 2.13.1 (viii)
-	-	Unless specifically instructed by the Employer, the Contractor shall not light fires on Site for the burning of debris or any other matter.	Avoid burning of debris or any other matter	CC	Whole site	C	Tender Specification 2.13.1 (ix)
B3.9	-	Bulk storage of cement or pulverized fuel ash shall not be permitted.	Control bulk storage of cement or PFA	CC	Whole site	C	Tender Specification 2.13.1 (x)
-	3.9	Operational measures taken to protect workers in the LRWF, such as the negative pressure ventilation system (from less active to potentially most active areas), together with the use of control mechanisms including high efficiency particulate (HEPA) filters, will reduce the potential environmental impacts to negligible levels.	Operational requirement – negative pressure ventilation system	CC	Within LRWF	D&O	Tender Specification 2.11.1

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-	3.10	<p>The Low-level Radioactive Waste Storage Facility will require general ventilation, with a filtration system to trap dust from in-coming air, and remove air borne particles using a High Efficiency Particulate Air Filter from out-going air.</p> <p>The following design and operation features shall be required to be incorporated by the Contractor:</p> <ul style="list-style-type: none"> i) all gases and emissions must pass through a High Efficiency Particulate Air Filter with an efficiency of at least 99.99%; ii) the Facility must be kept under a negative pressure ventilation system (the direction of air currents being from areas least potentially radioactive or contaminated, to areas most potentially radioactive or contaminated); iii) any air pollution control systems installed shall be operated continuously; iv) the Contractor shall not install any furnace, boiler or other plant or equipment or use any fuel that might in any circumstance produce smoke or any other air pollution without the prior approval of the Independent Consultants and consent of the Employer; and v) the Contractor's attention is drawn to the Air Pollution Control Ordinance and its subsidiary legislation, particularly the Air Pollution (Furnaces, Ovens and Chimneys) (Installation and Alternation) Regulations and the Air Pollution Control (Smoke) Regulations. 	Operational requirement – ventilation with filtration system	CC	Within LRWF	D&O	Tender Specification 2.11.1
		<u>Water</u>					
-	-	The Contractor shall operate the LRWF as dry facility with no production of radioactive liquid effluent.	Control production of radioactive liquid effluent	CC	Within LRWF	O	EP-131/2002 and FEP-063/2003 Condition 2.7
-	-	The Contractor shall use ventilated dry latrine type toilets at the LRWF unless otherwise agreed by the Director.	Control sewage discharge	CC	Whole site	C&O	EP-131/2002 and FEP-063/2003 Condition 2.8

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-	-	The Contractor shall use electric powered vehicles at the LRWF unless otherwise agreed by the Director.	Use electric powered vehicles	CC	Whole site	C&O	EP-131/2002 and FEP-063/2003 Condition 2.9
-	-	The Contractor shall not discharge directly or indirectly (by runoff) or cause or permit or suffer to be discharged into any channel, stream-course or sea any effluent or foul or contaminated water or cooling or hot water without the prior consent of the Employer who may require the Contractor to provide, operate and maintain at the Contractor's own expense, within the premises or otherwise, suitable works for the treatment and disposal of such effluent or foul or contaminated or cooling or hot water. The design of such treatment works shall be submitted to the Independent Consultants or, as the case may be, the Employer for approval.	Control surface runoff	CC	Whole site	D&C	Tender Specification 2.13.3
-	-	All water and other liquid waste products arising on the Site shall be collected, removed from Site via a suitable and properly designed temporary drainage system and disposed of at a location and in a manner that shall not cause either pollution or nuisance. In addition, the effluent shall comply with the standards stated in the "Technical Memorandum on Standards for Effluent discharged into Drainage and Sewerage Systems, Inland and Costal Waters" for the appropriate Water Control Zone, whether or not the Zone has been declared as one subject to control of discharges.	Control of effluent	CC	Whole site	C&O	Tender Specification 2.13.3
-	-	If any office, site canteen or toilet facilities are erected, foul water effluent shall be directed to a foul sewer or to a sewage treatment facility either directly or indirectly by means of pumping or other means approved by the Independent Consultants or, as the case may be, the Employer.	Control of foul water	CC	Whole site	C&O	Tender Specification 2.13.3
-	-	The Contractor's attention is drawn to the Building Ordinance, Water Pollution Control Ordinance and the Technical Memorandum "Standards for Effluent Discharged into Drainage and Sewerage Systems, Inland and Costal Waters" issued by EPD.	Compliance with relevant ordinance	CC	Whole site	C&O	Tender Specification 2.13.3

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-	-	The Contractor shall operate the Facility under the principle of minimising the volume of water or other liquids that shall be used in areas where potential radioactive contamination exists, to minimize the generation of contaminated effluents and discharges.	Measure to minimize contaminated effluents	CC	Within Facility	D&O	Tender Specification 2.11.2
-	4.38	Carry out earth works in dry season as much as possible.	Avoid surface runoff	CC	Whole site	C	-
-	4.38	Cover areas of exposed earth.	Avoid surface runoff	CC	Whole site	C	-
-	4.38	Install sand traps or catchpits at all drainage discharge points.	Avoid surface runoff	CC	Whole site	C	-
-	4.38	Oil and fuel bunkers to be bunded.	Avoid surface runoff	CC	Whole site	C	-
-	4.38	Immediate disposal and correct handling of any chemical spill.	Avoid surface runoff	CC	Whole site	C	-
-	4.38	Prevent surface runoff into coastal water through construction of bunds between works area and sea shore.	Avoid surface runoff	CC	Whole site	C	-
-	4.38	Provide proper sewage treatment facilities for site workers.	Provision of sewage treatment facilities	CC	Whole site	C&O	-
		<i>Good site practices to be undertaken during marine works:</i>					
-	4.38	Unnecessary disturbance to the seabed will be minimized by exerting care when lowering and lifting the tools/equipment into seabed;	Reduce water pollution	CC	Whole site	C	-
-	4.38	All vessels will be sized such that adequate clearance (i.e. minimum clearance of 0.6 m) is maintained between vessels and the seabed in all tide conditions, to ensure that undue turbidity is not generated by turbulence from vessel movement or propeller wash;	Reduce water pollution	CC	Whole site	D&C	-
-	4.38	Use of silt curtains surrounding the dredger and the dredged area during dredging;	Reduce water pollution	CC	Whole site	C	-
-	4.38	Barges will be used which are fitted with tight fitting seals to their bottom openings to prevent leakage of material;	Reduce water pollution	CC	Whole site	C	-

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-	4.38	Barge loading will be ensured accurately to avoid splashing of loading material to the surrounding water;	Reduce water pollution	CC	Whole site	C	-
-	4.38	Adequate freeboard (i.e. minimum of 200mm) will be maintained on barges to ensure that decks are not washed by wave action;	Reduce water pollution	CC	Whole site	C	-
-	4.38	Grabs (if any) will be closed tightly and that hoist speed will be suitably low; and	Reduce water pollution	CC	Whole site	C	-
-	4.38	No visible foam, oil, grease, scum, litter or other objectionable matter will be present on the water within the site or dumping grounds.	Reduce water pollution	CC	Whole site	C	-
		<u>Waste Management</u>					
		<i>Liquid waste:</i>					
B5.1	6.6	The Contractor will not permit any sewage, waste water or effluent containing sand, cement, silt or any other suspended or dissolved material to flow from the site onto any adjoining land or sea or allow any waste matter or refuse to be deposited anywhere within the site or onto adjoining land and will have all such matter removed from the site.	Measures to control liquid waste	CC	Whole site	C	-
B5.3	6.8	The Contractor will be responsible for temporary training, diverting or conducting of open streams or drains intercepted by any works and for reinstating these to their original courses on completion of the Works.	Measures to control liquid waste	CC	Whole site	C	-
B5.4	6.9	The Contractor will be responsible for adequately maintaining any existing site drainage system at all times including removal of solids in sand traps, manholes and stream beds.	Measures to control liquid waste	CC	Whole site	C	-
B5.5	6.10	Any proposed stream course and nullah temporary diversions will be submitted to the Employer for agreement one month prior to such diversion works being commenced. Diversions will be constructed to allow the water flow to discharge	Measures to control liquid waste	CC	Whole site	C	-

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		without overflow, erosion or washout. The area through which the temporary diversion runs is to be reinstated to its original condition or as agreed by the Employer after the permanent drainage system has been completed.					
B5.6	6.11	The Contractor will furnish, for the Employer's information, particulars of the Contractor's arrangements for ensuring that material from any earthworks does not wash into the drainage system. If at any time such arrangements prove to be ineffective the Contractor will take such additional measures as the Employer will deem necessary and will remove all silt which may have accumulated in the drainage system whether with the Site or not.	Measures to control liquid waste	CC	Whole site	C	-
		<i>Solid waste:</i>					
B5.7	6.12	The Contractor will segregate all inert construction waste material suitable for reclamation or land formation and will dispose of such material at such public dumping area(s) as may be specified from time to time by the Director of Civil Engineering Services.	Measures to control solid waste	CC	Whole site	C	-
B5.8	6.13	Inert material deemed unsuitable for reclamation or land formation and all non-inert construction waste material deemed unsuitable for reclamation or land formation and all other waste material will be disposed of at a public landfill.	Measures to control solid waste	CC	Whole site	C	-
B5.9	6.14	Chemical waste as defined by Schedule 1 of the Waste Regulations (Chemical 1992), will be stored in accordance with approved methods defined in the Regulations and the chemical waste disposed of at the Chemical Waste Treatment Facility located at Tsing Yi.	Measures to control solid waste	CC	Whole site	C	-
B5.10	-	The Contractor's attention is drawn to the Waste Disposal Ordinance, the Public Health the Municipal Services Ordinance and the Water Pollution Control Ordinance.	Measures to control solid waste	CC	Whole site	C	-
B5.11	6.15	Any dredged material will be disposed of at an approved marine dumping ground.	Measures to control solid waste	CC	Whole site	C	-

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-	6.16	The Contractor will operate the Facility under the principle of minimising the volume of consumables or other materials that will be taken into areas where potential radioactive contamination exists, to minimise the generation of contaminated waste. Volumes of material entering the active areas are to be kept to a minimum, for instance by the removal of packaging from incoming waste, prior to transfer into the active areas and only allowing essential items into such areas.	Measures to control solid waste	CC	Within Facility	D&O	Tender Specification 2.11.3
		<u>Ecology</u>					
-	5.7	The Contractor shall restore the grassland and low shrub habitat affected by the construction works with the use of native, local grass and shrub species. Shotcrete shall not be used for re-establishment of the cut slope behind the LRWF.	Reduce ecological impact	CC	Whole site	C	EP-131/2002 and FEP-063/2003 Condition 2.6
-	-	The Contractor shall ensure that work takes place only within agreed site boundaries, that care shall be taken to minimise damage within the area and that materials are not burnt on site. Discharges and disposal of waste to sea will not be permitted and measures shall be taken to minimise the risk of spillage.	Reduce ecological impact	CC	Whole site	D,C&O	Tender Specification 2.13.5
-	-	No smoking, cooking or any fires shall be allowed on the Siu A Chau Island and all staff shall be made aware of the high fire risk of the construction site. Should a fire accidentally break out due to site work, the contractor shall supply adequate manpower and equipment to fight the fire.	Reduce ecological impact	CC	Whole site	C&O	Tender Specification 2.13.5
-	-	All topsoil and soil on site shall be suitably stored at an agreed location for reuse on site once the project is completed.	Reduce ecological impact	CC	Whole site	C	Tender Specification 2.13.5
-	-	Whenever possible, machinery that does not require water shall be utilised. If machinery does require water, then this shall be imported onto site. This is to ensure that water courses are retained in their natural state. No substances shall be discharged into existing water courses on or near the working areas or into the marine environment.	Reduce ecological impact	CC	Whole site	C	Tender Specification 2.13.5

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-	-	The Contractor shall specify whether underwater blasting and use of explosives is proposed and if so, bubble curtains shall be used to minimise damage to the marine environment. The Contractor shall specify the methods to be used for jetty construction and these shall be agreed, with suitable mitigating measures to minimise damage or nuisance to the marine environment, prior to carrying out the work.	Reduce ecological impact	CC	Whole site	C	Tender Specification 2.13.5
-	-	Following construction, the Site shall be restored to an agreed plan using plants native to the area and which have been recorded within the Site prior to the construction.	Reduce ecological impact	CC	Whole site	C	Tender Specification 2.13.5
-	-	The Contractor shall design the Facility under the principle of minimising the detrimental impact on the ecology of the terrestrial and marine environment.	Reduce ecological impact	CC	Whole site	D&C	Tender Specification 2.11.6
-	-	Prior to carrying out any work on site, a detailed vegetation survey of the habitats and plant species present on the site, their abundance and density shall be undertaken. This is for the purposes of establishing the species to be affected and for the restoration of the site once it is completed.	Reduce ecological impact	CC	Whole site	Prior to construction	Tender Specification 2.11.6
-	-	The Contractor's attention is drawn to the need to comply with the various Government Ordinances covering the protection of wildlife and countryside.	Reduce ecological impact	CC	Whole site	C	Tender Specification 2.11.6
	-	<u>Historical and Cultural Heritage</u>					
-	-	During construction works the Contractor shall allow site access to representatives of the Antiquities and Monuments Office, to enable observation of construction in new of the proximity of Siu A Chau Special Site Archaeological Interest (SSAI/NT2). The Contractor shall inform the Antiquities and Monuments Office of the Leisure and Cultural Services Department of HKSARG immediately if antiquities are discovered during construction work.	Measures on antiquities being discovered	CC	Within whole site	C	Tender Specification 2.13.6
-	-	<u>Visual Impact</u>					

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-	-	The maximum building height shall not exceed 14mPD.	Reduce visual impact	CC	Within whole site	D,C&O	EP-131/2002 and FEP-063/2003 Condition 2.10
-	-	The LRWF shall be an enclosed structure constructed with reinforced concrete or structural steel frame of area about 44m by 24m and with an elevation of 6.5m.	Reduce visual impact	CC	Within whole site	D,C&O	EP-131/2002 and FEP-063/2003 Condition 2.11
-	-	The LRWF shall be constructed with a sloping flat tiled roof fitted with waterproofing materials. The column and the external wall of the LRWF shall be wrapped with natural stone cradding to help integrate the structure into the nature setting.	Reduce visual impact	CC	Within whole site	D,C&O	EP-131/2002 and FEP-063/2003 Condition 2.12
-	-	The hardstanding area of the LRWF shall be constructed on the costal side of the Facility.	Reduce visual impact	CC	Within whole site	D,C&O	EP-131/2002 and FEP-063/2003 Condition 2.13
-	-	The external surfaces of the LRWF shall be in subdued colour to match with the surroundings before operation.	Reduce visual impact	CC	Within whole site	D,C&O	EP-131/2002 and FEP-063/2003 Condition 2.14
-	-	The building appearance and architectural features of the final design of the LRWF shall harmonise with the surroundings to minimise visual impact.	Reduce visual impact	CC	Within whole site	D,C&O	Tender Specification 2.11.5
-	-	During the construction of the LRWF the Contractor shall ensure that the construction area is limited to the minimum commensurate with the construction programme as a means of reducing the levels of potential visual impact.	Reduce visual impact	CC	Within whole site	C	Tender Specification 2.13.4

* D=Design; C=Construction; O=Operation; CC=Construction Contractor