

Appendix C

Implementation Schedule of Mitigation Measures



EIA Ref.	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main concerns to address	Who to implement the	Location / Timing of implementation of Measures			What requirements or standards for the measures to achieve?
			measures?	D	С	0	-
Construction Phase	(Upgrading Works of Cheung Chau STW and Pak She SPS	(DP Component))	1	I			
S.3.5.5	 Appropriate dust control measures should be implemented during the construction stage in accordance with the requirements in the Air Pollution Control (Construction Dust) Regulation. Dust control techniques should be considered to control dust to a level not exceeding the AQOs as well as the 1-hour TSP guideline level of 500 µg/m³. These measures include, but are not limited to, the following: Adoption of good site practices; Avoid practices likely to raise dust level; Frequent cleaning and damping down of stockpiles and dusty areas of the site; Covering the exposed areas with tarpaulin; Reducing drop height during material handling; Provision of wheel-washing facilities for site vehicles leaving the site; Regular plant maintenance to minimize exhaust emission; and Sweep up dust and debris at the end of each shift. 	Air Quality (fugitive dust) Control during Construction Phase	Contractors		N		Annex 4 and Annex 12 of EIAO -TM, Air Pollution Control (Construction Dust) Regulation
S.3.10.1	All the dust control measures as recommended in the Air Pollution Control (Construction Dust) Regulation, where applicable, should be implemented. Typical dust control measures include:	Air Quality (fugitive dust) Control during Construction Phase	Contractors		V		Annex 4 and Annex 12 of EIAO -TM, Air Pollution Control (Construction Dust) Regulation



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			measures?	D	С	0	
S.3.10.1	Watering every 1.5 hours on active works areas and paved haul roads to reduce dust emissions by 90.9% (e.g. watering intensity at 0.5 litres/m ² . Actual application shall depend on the site condition and weather conditions).	Air Quality (fugitive dust) Control during Construction Phase	Contractors		V		EIA, Annex 4 and Annex 12 of EIAO -TM, Air Pollution Control (Construction Dust) Regulation
S.3.10.1	Watering every hour on unpaved areas and stockpiles of dusty materials (if no tarpaulin is provided) to reduce dust emissions by 90% (e.g. watering intensity at 1.5 litre/m ² during the first hour, subsequent application at 0.2 litre/m ² . Actual application shall depend on the site condition and weather conditions).	Air Quality (fugitive dust) Control during Construction Phase	Contractors		V		EIA, Annex 4 and Annex 12 of EIAO -TM, Air Pollution Control (Construction Dust) Regulation
S.3.10.1	Use of regular watering, with complete coverage, to reduce dust emissions from exposed site surfaces and unpaved roads, particularly during dry weather	Air Quality (fugitive dust) Control during Construction Phase	Contractors		V		Annex 4 and Annex 12 of EIAO -TM, Air Pollution Control (Construction Dust) Regulation
S.3.10.1	Use of frequent watering for particularly dusty construction areas and areas close to ASRs	Air Quality (fugitive dust) Control during Construction Phase	Contractors		V		Annex 4 and Annex 12 of EIAO -TM, Air Pollution Control (Construction Dust) Regulation
S.3.10.1	Vehicle washing facilities should be provided at every vehicle exit point	Air Quality (fugitive dust) Control during Construction Phase	Contractors		V		Annex 4 and Annex 12 of EIAO -TM, Air Pollution Control (Construction Dust) Regulation



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			measures?	D	С	0	
S.3.10.1	Where a site boundary adjoins a road, streets or other areas accessible to the public, hoarding of not less than 2.4 m high from ground level should be provided along the entire length except for a site entrance or exit	Air Quality (fugitive dust) Control during Construction Phase	Contractors		\checkmark		Annex 4 and Annex 12 of EIAO -TM, Air Pollution Control (Construction Dust) Regulation
S.3.10.1	Stockpiles of imported material kept on site shall be contained within hoarding, dampened and/or covered during dry and windy weather	Air Quality (fugitive dust) Control during Construction Phase	Contractors		\checkmark		Annex 4 and Annex 12 of EIAO -TM, Air Pollution Control (Construction Dust) Regulation
S.3.10.1	Material stockpiled alongside trenches should be covered with tarpaulins	Air Quality (fugitive dust) Control during Construction Phase	Contractors		\checkmark		Annex 4 and Annex 12 of EIAO -TM, Air Pollution Control (Construction Dust) Regulation
S.3.10.1	Open stockpiles shall be avoided or covered. Where possible, prevent placing dusty material storage piles near ASRs	Air Quality (fugitive dust) Control during Construction Phase	Contractors		V		Annex 4 and Annex 12 of EIAO -TM, Air Pollution Control (Construction Dust) Regulation



EIA Ref.	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main concerns to address	Who to implement the	impl	Location / Timing of implementation of Measures		What requirements or standards for the measures to achieve?
			measures?	D	С	0	-
S.3.10.1	Any excavated or stockpile of dusty material should be covered entirely by impervious sheeting or spayed with water to maintain the entire surface wet during the non-working hours	Air Quality (fugitive dust) Control during Construction Phase	Contractors		V		Annex 4 and Annex 12 of EIAO -TM, Air Pollution Control (Construction Dust) Regulation
S.3.10.1	All dusty materials shall be sprayed with water prior to any loading, unloading or transfer operation so as to keep the dusty materials wet	Air Quality (fugitive dust) Control during Construction Phase	Contractors		V		Annex 4 and Annex 12 of EIAO -TM, Air Pollution Control (Construction Dust) Regulation
S.3.10.1	Water sprays shall be used during the delivery and handling of sands aggregates and the like	Air Quality (fugitive dust) Control during Construction Phase	Contractors		V		Annex 4 and Annex 12 of EIAO -TM, Air Pollution Control (Construction Dust) Regulation
S.3.10.1	All demolished items that may emit dust particles should be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides within a day of demolition	Air Quality (fugitive dust) Control during Construction Phase	Contractors		V		Annex 4 and Annex 12 of EIAO -TM, Air Pollution Control (Construction Dust) Regulation



EIA Ref.		Objectives of the recommended measures & main concerns to address	Who to implement the measures?	Location / Timing of implementation of Measures			What requirements or standards for the measures to achieve?
				D	С	0	
S.3.10.1	Good site practices for concrete batching plant Every stock of more than 20 bags of cement or dry pulverized fuel ash(PFA) should be cover entirely by impervious sheeting or placed in an area sheltered on the top and the sides. Cement or dry PFA delivered in bulk should stored in a closed silo fitted with an audible high level alarm which is interlocked with the material filling line and no overfilling is allowed. Loading, unloading, transfer, handling or storage of bulk cement or dry PFA should be carried out in a totally enclosed system or facility, and any vent or exhaust should be fitted with effective fabric filter or equivalent air pollution control system (Maximum TSP emission factor of Silos and Mising Tower: 50mg/m ³)	Air Quality (fugitive dust) Control during Construction Phase	Contractors		V		Annex 4 and Annex 12 of EIAO -TM, Air Pollution Control (Construction Dust) Regulation Best Practical Means for Cement Works (Concrete Batching Plant) BPM 3/2(93)



EIA Ref.	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main concerns to address	Who to implement the	Location / Timing of implementation of Measures			What requirements or standards for the measures to achieve?
			measures?	D	С	0	-
Construction Phase	(Sewers Works (non-DP Component))						
S.3.5.8	 Appropriate dust control measures should be implemented during the construction stage in accordance with the requirements in the Air Pollution Control (Construction Dust) Regulation. Dust control techniques should be considered to control dust to a level not exceeding the AQOs as well as the 1-hour TSP guideline level of 500 µg/m³. These measures include, but are not limited to, the following: Adoption of good site practices; Avoid practices likely to raise dust level; Frequent cleaning and damping down of stockpiles and dusty areas of the site; Covering the exposed areas with tarpaulin; Reducing drop height during material handling; Regular plant maintenance to minimize exhaust emission; and 	Air Quality (fugitive dust) Control during Construction Phase	Contractors		V		EIA, Air Pollution Control (Construction Dust) Regulation
S.3.10.1	All the dust control measures as recommended in the Air Pollution Control (Construction Dust) Regulation, where applicable, should be implemented. Typical dust control measures include:	Air Quality (fugitive dust) Control during Construction Phase	Contractors		V		EIA, Air Pollution Control (Construction Dust) Regulation
S.3.10.1	Use of regular watering, with complete coverage, to reduce dust emissions from exposed site surfaces and unpaved roads, particularly during dry weather	Air Quality (fugitive dust) Control during Construction Phase	Contractors		\checkmark		EIA, Air Pollution Control (Construction Dust) Regulation



EIA Ref.	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main concerns to address	Who to implement the	Location / Timing of implementation of Measures			What requirements or standards for the measures to achieve?
			measures?	D	С	0	
S.3.10.1	Use of frequent watering for particularly dusty construction areas and areas close to ASRs	Air Quality (fugitive dust) Control during Construction Phase	Contractors		\checkmark		EIA, Air Pollution Control (Construction Dust) Regulation
S.3.10.1	Material stockpiled alongside trenches should be covered with tarpaulins	Air Quality (fugitive dust) Control during Construction Phase	Contractors		\checkmark		EIA, Air Pollution Control (Construction Dust) Regulation
S.3.10.1	Open stockpiles shall be avoided or covered. Where possible, prevent placing dusty material storage piles near ASRs	Air Quality (fugitive dust) Control during Construction Phase	Contractors		\checkmark		EIA, Air Pollution Control (Construction Dust) Regulation
S.3.10.1	Any excavated or stockpile of dusty material should be covered entirely by impervious sheeting or spayed with water to maintain the entire surface wet during the non- working hours	Air Quality (fugitive dust) Control during Construction Phase	Contractors		V		EIA, Air Pollution Control (Construction Dust) Regulation
S.3.10.1	All dusty materials shall be sprayed with water prior to any loading, unloading or transfer operation so as to keep the dusty materials wet	Air Quality (fugitive dust) Control during Construction Phase	Contractors		\checkmark		EIA, Air Pollution Control (Construction Dust) Regulation
S.3.10.1	Water sprays shall be used during the delivery and handling of sands aggregates and the like	Air Quality (fugitive dust) Control during Construction Phase	Contractors		\checkmark		EIA, Air Pollution Control (Construction Dust) Regulation



EIA Ref.	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main concerns to address	Who to implement the measures?	Location / Timing of implementation of Measures			What requirements or standards for the measures to achieve?
			illeasures :	D	С	0	
S.3.5.8	 Appropriate dust control measures should be implemented during the construction stage in accordance with the requirements in the Air Pollution Control (Construction Dust) Regulation. Dust control techniques should be considered to control dust to a level not exceeding the AQOs as well as the 1-hour TSP guideline level of 500 µg/m³. These measures include, but are not limited to, the following: Adoption of good site practices; Avoid practices likely to raise dust level; Frequent cleaning and damping down of stockpiles and dusty areas of the site; Covering the exposed areas with tarpaulin; Reducing drop height during material handling; Regular plant maintenance to minimize exhaust emission; and 	Air Quality (fugitive dust) Control during Construction Phase	Contractors		V		EIA, Air Pollution Control (Construction Dust) Regulation
Operational Phase (Up	grading Works of Cheung Chau STW and Pak She SPS (E	OP Component))					
S.3.10.2	The design of enclosing the odour sources of the upgraded Cheung Chau STW and Pak She SPS and the installation of deodorization units would readily reduce the potential odour impacts. Adverse odour impact from the upgraded Cheung Chau STW and Pak She SPS is not anticipated. The current design information of deodourizing units is summarized in Table 3.13 of EIA	Odour control during operation phase	DSD and Contractors	V	V	N	EIA



EIA Ref.	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main concerns to address	Who to implement the measures?	imple	Location / Timing of implementation of Measures		What requirements or standards for the measures to achieve?
			incasures :	D	С	0	
S.3.10.3	 In addition, good housekeeping practices listed below should be followed to control odour emissions from the plant and these standard practices should be included in the plant operator manual: Screens should be cleaned regularly to remove accumulated organic debris; Grit and screening transfer systems should be flushed regularly with water to remove organic debris and grit; Grit and screened materials should be transferred to closed containers to minimize odour escape; Sludge should be frequently withdrawn from tanks to prevent the production of gases; Sludge containers should be flushed with water regularly 	Odour Control during Operation Phase	DSD and Contractors	V	V	~	EIA



Table C2 Implementation Schedule of Recommended Mitigation Measures – Noise

EIA Ref.	Recommended Environmental Protection Measures / Mitigation Measures	Objectives of the recommended measures & main concerns to address	Who to implement the measures?	Location / Timing of implementation of Measures	What requirements or standards for the measures to achieve?
Construction Phase	(Upgrading Works of Cheung Chau STW and Pak She SPS	(DP Component))			
S.4.4.12	Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction works.	Noise control during construction	Contractors	At all construction areas of the site during the entire construction period	EIA, Contractual requirements
S.4.4.12	Machines and plant that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum.	Noise control during construction	Contractors	At all construction areas of the site during the entire construction period	EIA, Contractual requirements
S.4.4.12	Plant known to emit noise strongly in one direction should, where possible, be orientated to direct noise away from the NSRs.	Noise control during construction	Contractors	At all construction areas of the site during the entire construction period	EIA, Contractual requirements
S.4.4.12	Mobile plant should be sited as far away from NSRs as possible.	Noise control during construction	Contractors	At all construction areas of the site during the entire construction period	EIA, Contractual requirements
S.4.4.12	Material stockpiles and other structures should be effectively utilized, where practicable, to screen noise from on-site construction activities.	Noise control during construction	Contractors	At all construction areas of the site during the entire construction period	EIA, Contractual requirements



Upgrading of	Cheung Chau	Sewage	Collection,	Treatment and Disposal Facilities

EIA Ref.	Recommended Environmental Protection Measures / Mitigation Measures	Objectives of the recommended measures & main concerns to address	Who to implement the measures?	Location / Timing of implementation of Measures	What requirements or standards for the measures to achieve?
S.4.4.13	Use of quiet plant (PME): Generator Poker, vibratory, hand-held Breaker, excavator mounted (hydraulic) Excavator Tracked Mobile Crane Vibratory Compactor Dumper Air compressor Concrete Pump Pilling Rig	Noise control during construction	Contractors	At all construction areas of the site during the entire construction period	EIA, Contractual requirements
S.4.4.14	Temporary site hoardings of 2.4 m high are recommended for the works at the Pak She SPS. The hoardings will be erected along the works boundary facing the NSRs. The PME involved in the works would be screened by the erected site hoardings. Without direct line of sight from the affected NSRs, a noise reduction of 10 dB(A) could be achieved provided that the hoardings have no openings or gaps and have a surface mass of at least 7 kg/m ² . Nonetheless, a -5 dB(A) screening correction for site hoardings has been applied as a more conservative approach.	Noise control during construction	Contractors	At Pak She SPS during the entire construction period	EIA
S.4.4.23	For NSRs which would be affected by more than one Works Types, good scheduling works is recommended to minimize the cumulative construction noise impacts due to different Works Types.	Noise control during construction	Contractors	Construction areas near the specified locations during the construction period	EIA, Contractual requirements



EIA Ref.	Recommended Environmental Protection Measures / Mitigation Measures	Objectives of the recommended measures & main concerns to address	Who to implement the measures?	Location / Timing of implementation of Measures	What requirements or standards for the measures to achieve?
S.4.4.29	In order to prevent potential cumulative construction noise impacts to NSRs, the works at Tai Kwai Wan San Tsuen are recommended to be scheduled to avoid concurrent works at the areas near Tai Kwai Wan of the Improvement of Fresh Water Supply to Cheung Chau project.	Noise control during construction	DSD and Contractors	Construction areas near the specified locations during the construction period	EIA, Contractual requirements
S.4.4.30	The contractor shall liaise with "Replacement and Rehabilitation of Water Mains Stage 4, Mains on Hong Kong and Islands – Investigation, Design and Construction"" contractors so as to avoid undertaking works concurrently with the works when they are in the close proximity as far as practicable.	Noise control during construction	DSD and Contractors	Construction areas near the specified locations during the construction period	EIA, Contractual requirements
S.4.4.31	The contractor shall liaise with Improvement to Existing Roads and Drains in Cheung Chau Old Town, Remaining Engineering Works Stage 3 works contractors so as to avoid undertaking works concurrently with the works when they are in the close proximity as far as practicable.	Noise control during construction	DSD and Contractors	Construction areas near the specified locations during the construction period	EIA, Contractual requirements
Construction Phase (Se	ewers Works (non-DP Component))				
S.4.4.18	Quieter equipment shall be adopted as far as possible.	Noise control during construction	Contractors	At all construction areas of the site during the entire construction period	EIA, Contractual requirements



EIA Ref.	Recommended Environmental Protection Measures / Mitigation Measures	Objectives of the recommended measures & main concerns to address	Who to implement the measures?	Location / Timing of implementation of Measures	What requirements or standards for the measures to achieve?
S.4.4.20	Noise barrier in the form of site hoarding shall be used for the following PMEs where practicable:Backhoe (mini)Breaker, hand-held, mass>10Kg and <20Kg	Noise control during construction	Contractors	At all construction areas of the site close to identified NSRs during the entire construction period	EIA, Contractual requirements
S.4.4.20	The barrier / enclosure material's surface mass shall be in excess of 7kg/m ² .	Noise control during construction	Contractors	At all construction areas of the site during the entire construction period	EIA, Contractual requirements
S.4.4.23	Good scheduling of works is recommended to further mitigate the potential construction noise impacts.	Noise control during construction	Contractors	At all construction areas of the site during the entire construction period	EIA, Contractual requirements



EIA Ref.	Recommended Environmental Protection Measures / Mitigation Measures	Objectives of the recommended measures & main concerns to address	Who to implement the measures?	Location / Timing of implementation of Measures	What requirements or standards for the measures to achieve?
S.4.4.12	Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction works.	Noise control during construction	Contractors	At all construction areas of the site during the entire construction period	EIA, Contractual requirements
S.4.4.12	Machines and plant that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum.	Noise control during construction	Contractors	At all construction areas of the site during the entire construction period	EIA, Contractual requirements
S.4.4.12	Plant known to emit noise strongly in one direction should, where possible, be orientated to direct noise away from the NSRs.	Noise control during construction	Contractors	At all construction areas of the site during the entire construction period	EIA, Contractual requirements
S.4.4.12	Mobile plant should be sited as far away from NSRs as possible.	Noise control during construction	Contractors	At all construction areas of the site during the entire construction period	EIA, Contractual requirements
S.4.4.12	Material stockpiles and other structures should be effectively utilized, where practicable, to screen noise from on-site construction activities.	Noise control during construction	Contractors	At all construction areas of the site during the entire construction period	EIA, Contractual requirements
S.4.4.23	For NSRs which would be affected by more than one Works Types, good scheduling works is recommended to minimize the cumulative construction noise impacts due to different Works Types.	Noise control during construction	Contractors	Construction areas near the specified locations during the construction period	EIA, Contractual requirements



EIA Ref.	Recommended Environmental Protection Measures / Mitigation Measures	Objectives of the recommended measures & main concerns to address	Who to implement the measures?	Location / Timing of implementation of Measures	What requirements or standards for the measures to achieve?
S.4.4.25	The Contractor shall liaise with the schools that are located near the works sites regarding their examination period and schedule the noisy works to avoid the examination period as far as possible.	Noise control during construction	Contractors	At construction areas near schools during the entire construction period	Annex 5 and Annex 13 of EIAO-TM
S.4.4.27	For the soil excavation works, the contractor shall avoid the use of PME as far as possible and adopting hand digging method to reduce the noise impacts if the site condition is allowed.	Noise control during construction	Contractors	At construction areas of constructing sewer (open cut method) and upgrading of existing sewer during the entire construction period.	EIA, Contractual requirements
S.4.4.29	In order to prevent potential cumulative construction noise impacts to NSRs, the works at Tai Kwai Wan San Tsuen are recommended to be scheduled to avoid concurrent works at the areas near Tai Kwai Wan of the Improvement of Fresh Water Supply to Cheung Chau project.	Noise control during construction	DSD and Contractors	Construction areas near the specified locations during the construction period	EIA, Contractual requirements
S.4.4.30	The contractor shall liaise with "Replacement and Rehabilitation of Water Mains Stage 4, Mains on Hong Kong and Islands – Investigation, Design and Construction" contractors so as to avoid undertaking works concurrently with the works when they are in the close proximity as far as practicable.	Noise control during construction	DSD and Contractors	Construction areas near the specified locations during the construction period	EIA, Contractual requirements
S.4.4.31	The contractor shall liaise with Improvement to Existing Roads and Drains in Cheung Chau Old Town, Remaining Engineering Works Stage 3 works contractors so as to avoid undertaking works concurrently with the works when they are in the close proximity as far as practicable.	Noise control during construction	DSD and Contractors	Construction areas near the specified locations during the construction period	EIA, Contractual requirements
Operational Phase ((Upgrading Works of Cheung Chau STW and Pak She SPS (I	DP Component))	1		



EIA Ref.	Recommended Environmental Protection Measures / Mitigation Measures	Objectives of the recommended measures & main concerns to address	Who to implement the measures?	Location / Timing of implementation of Measures	What requirements or standards for the measures to achieve?
S.4.5.6 S.4.5.7 S.4.5.8	All the noisy pumps, mechanically raked fine screen, deodourization fans and blowers are to be enclosed in building structures. Acoustic louvers are to be implemented to all exhausted fans.	Noise Control	DSD	Cheung Chau STW	Annex 5 of EIAO-TM, NCO; Good Practices on Ventilation Systems Noise Control; Good Practices on Pumping Systems Noise Control
S.4.5.8	 The recommended mitigation measures for the operation of SPS and STW and the proposed noise reduction are listed below: <u>Pak She Sewage Pumping Station</u> Submersible pump – enclosed inside SPS building structure(-20 dB(A)) Mechanically raked fine screen – enclosed inside SPS building structure(-20 dB(A)) Deodourization fan – enclosed inside SPS building structure(-20 dB(A)) Deodourization fan – enclosed inside SPS building structure(-20 dB(A)) Deodourization fan – enclosed inside SPS building structure(-20 dB(A)) Cheung Chau Sewage Treatment Works Submersible pump – enclosed inside treatment unit building structure (-20 dB(A)) Mechanically raked fine screen – enclosed inside STW building structure (-20 dB(A)) Deodourization fan – enclosed inside STW building structure (-20 dB(A)) Exhaust fan – provide acoustic louver at discharge point(-10 dB(A)) Blower – enclosed inside STW building structure (-20 dB(A)) Mechanical pump – enclosed inside STW building structure (-20 dB(A)) 	Noise Control	DSD	Cheung Chau STW	EIA



Table C3 Implementation Schedule of Recommended Mitigation Measures – Wat	ter Quality
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EIA Ref.	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main	Who to implement the measures?	When to implement the measures?			What requirements or standards for the
		concerns to address	incasures :	D	С	0	measures to achieve?
Construction Phase (U	ograding Works of Cheung Chau STW and Pak She SPS (DP Com	ponent) and Sewers Work	s (non-DP Compo	nent))			
S.5.7.1	 Practices outlined in ProPECC PN 1/94 Construction Site Drainage are recommended, as highlighted below: Perimeter channels are to be installed in works areas to intercept runoff at the site boundary prior to the commencement of any earthworks. Surface runoff should be discharged into storm drains via sand/ silt removal facilities with an adequate capacity; Works programme should be designed to minimize works areas to reduce soil exposure and site runoff; Silt removal facilities, channels and manholes should be maintained and cleaned regularly to ensure their proper functions; Works programme should be carefully planned to minimize the scale of soil excavation during the rainy season; Earthworks surfaces should be well compacted and subsequent permanent works or surface protection measures should be carried out immediately; All vehicles should be washed before they leave the construction site to avoid earth, mud, and debris being carried off from the site. Wash-water should be treated to remove sand and silt at least on a weekly basis to ensure the continued efficiency of the washing facility; 	Water Quality Control	Contractors		√		 WPCO; TM –Effluent Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Water



EIA Ref.	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main	Who to implement the measures?	When to implement the measures?			What requirements or standards for the
		concerns to address	measures ?	D	С	0	measures to achieve?
(cont)	 Open stockpiles of construction materials on site should be covered with tarpaulin or similar fabric materials during storms; For sections of pipes that need to be laid underneath water courses with the open cut method, site works should be carried out during the dry season with a temporary drainage diversion; and; Any construction works along Hak Pai Road immediately by the Kwun Yam beach and Cheung Chau Tung Wan beach should be avoided during the swimming season. 	Water Quality Control	Contractors		V		 WPCO; TM –Effluent Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Water
S.5.7.2 and S.5.7.3	 Mitigations Measures for General Construction Activities: Good site practices should be adopted to regularly clean the construction sites to avoid rubbish, debris and litter from entering to nearby water bodies; and Good construction and site management practices should be implemented to ensure that litter, fuels, and solvents would not enter the public drainage systems. 	Water Quality Control	Contractors		1		 WPCO; TM –Effluent Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Water



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			ineasures :	D	С	0	measures to achieve?
S.5.7.4	Domestic sewage generated by workforce would be collected and discharged to the STW for proper treatment. Portable toilets should be provided by the Contractor, where necessary, to handle sewage from the workforce. The Contractor should also be responsible for waste disposal.	Water Quality Control	Contractors		V		 WPCO; TM –Effluent Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Water
S.5.7.5 and S.5.7.6	 Mitigations Measures for Spillage of Chemicals: Registration to EPD as a Chemical Waste Producer if chemical wastes are generated and need to be disposed of; Illegal disposal of chemicals should be strictly prohibited; and Oils and fuels should only be used and stored in the designated area which has polluting prevention facilities. 	Water Quality Control	Contractors		V		 WPCO; TM –Effluent Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Water



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		concerns to address	measures?	D	С	0	measures to achieve?
Operational Phase (Upg	rading Works of Cheung Chau STW and Pak She SPS (DP Compo	onent))				1	
S.5.7.7	The STW operator should maintain a good line of communication with various parties involved in an emergency discharge event.	Water Quality Control	DSD			~	 WPCO; TM –Effluent Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Water
S.5.7.8	 Standby facilities for the main treatment units and standby pumps, accessories/ equipment parts should be provided. Storm Tanks would also be incorporated to provide temporary storage of flow under extremely high flow conditions. Dual power supply or standby power sources should also be provided for Cheung Chau STW. 	Water Quality Control	DSD	V			 WPCO; TM –Effluent Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Water



EIA Ref.	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main concerns to address	Who to implement the measures?	When to implement the measures?			What requirements or standards for the
			incasures :	D	С	0	measures to achieve?
S.5.7.9	 A contingency plan should be developed to deal with the occurrence of an emergency discharge during the operation of the STW. 	Water Quality Control	Contractors			\checkmark	 WPCO; TM –Effluent Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Water
S.5.7.10	 Standby pump and backup power supply should be provided for Pak She SPS and will continue to be provided after the upgrading to cater for breakdown and maintenance of duty pumps to reduce the chance of occurrence of sewage bypass; A backup power supply would be provided to secure electrical power supply; and Regular maintenance and checking of equipment should be carried out to prevent equipment failure. 	Water Quality Control	DSD			\checkmark	 WPCO; TM –Effluent Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Water



EIA Ref.	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main concerns to address	Who to implement the measures?		to impl measu		What requirements or standards for the	
				D	С	0	measures to achieve?	
S.5.7.11	A contingency plan should be developed to deal with the emergency discharges the contingency plan should include the following:		DSD			\checkmark	WPCO; TM –Effluent	
	Locations of the sensitive receivers in vicinity of the emergency discharge;							Standards for Effluents
	• A list of relevant governmental bodies to inform of and to ask for assistance in the event of an emergency discharge, including key contact persons and telephone numbers;						Discharged into Drainage and Sewerage Systems, Inland	
	Reporting procedures required in the event of an emergency discharge;						and Coastal Water	
	Responsibility and procedure for clean-up of the affected water body/sensitive receivers after the emergency discharge; and							
	• Procedures listing the most effective means in rectifying the breakdown of the pumping station to minimize the discharge duration.							



Table C4 Implementation Schedule of Recommended Mitigation Measures – Waste Management Implication

EIA Ref.	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main concerns to address	Who to implement the measures?	When to implement the measures?			What requirements or standards for the
			ineasures !	D	С	0	measures to achieve?
Construction Phase	(Upgrading Works of Cheung Chau STW and Pak She SPS (DP Comp	oonent) and Sewers Work	s (non-DP Compor	ent))			
S.6.6.1	The Contractor shall prepare a Waste Management Plan in accordance with the requirements set out in the ETWB TCW No. 19/2005, Waste Management on Construction Site, for the ER's approval. The WMP shall include monthly and yearly Waste Flow Tables that indicate the amounts of waste generated, recycled and disposed of (including final disposal site).	Waste management during construction	Contractors		V		ETWB TCW No. 19/2005, Waste Management on Construction Sites
S.6.6.1	The Contractor's waste management practices and effectiveness shall be audited by the Engineer's Representative on regular basis.	Waste management during construction	DSD		\checkmark		Waste Disposal Ordinance
S.6.6.1	The Contractor shall provide training for site staff concept of site cleanliness and appropriate waste management procedures, including waste reduction, reuse and recycling.	Waste management during construction	Contractors		V		Waste Disposal Ordinance
S.6.6.1	Sufficient waste disposal points and regular collection of waste shall be provided.	Waste management during construction	Contractors		V		Waste Disposal Ordinance
S.6.6.1	Trucks with covering for the open-box bed and enclosed container shall be used to minimise windblown litter and dust during transportation of waste.	Waste management during construction	Contractors		V		Waste Disposal Ordinance
S.6.6.1	Regular cleaning and maintenance programme for drainage systems, pumps and oil interceptors.	Waste management during construction	Contractors		\checkmark		Waste Disposal Ordinance



EIA Ref.	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main concerns to address	Who to implement the measures?	When to implement the measures?			What requirements or standards for the
			ineasures !	D	С	0	measures to achieve?
S.6.6.1	Separation of chemical wastes for special handling and appropriate treatment at a Chemical Waste Treatment Facility (CWTF).	Waste management during construction	Contractors		V		Waste Disposal (Chemical Waste) (General) Regulation
S.6.6.1	Encourage collection of aluminium cans, paper and plastic bottles by providing separate labelled bins to enable these wastes to be segregated from other general refuse generated by the workforce.	Waste management during construction	Contractors		V		Waste Disposal Ordinance
S.6.6.1	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.	Waste management during construction	Contractors		V		Waste Disposal Ordinance
S.6.6.1	A recording system for the amount of wastes generated, recycled and disposed (including disposal sites) should be proposed.	Waste management during construction	Contractors		\checkmark		Waste Disposal Ordinance
S.6.6.1	Plan and stock construction materials to minimise amount of waste generated and avoid unnecessary generation of waste.	Waste management during construction	Contractors		V		Waste Disposal Ordinance
S.6.6.2	Alternatives C&D materials such as steel frameworks and plastic fencing can be considered to increase the chances for reuse.	Waste management during construction	Contractors		V		Waste Disposal Ordinance
S.6.6.3	In order to minimise the potential environmental impacts resulting from collection and transportation of C&D materials for off-site disposal, the excavated materials comprising fill materials should be reused on-site as backfilling materials as far as practicable.	Waste management during construction	Contractors		\checkmark		Waste Disposal Ordinance



EIA Ref.	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main concerns to address	Who to implement the measures?		to impl measu		What requirements or standards for the	
			ineasures !	D	С	0	measures to achieve?	
S.6.6.4	C&D waste, such as wood, plastic, steel and other metals should be reused or recycled and, as a last resort, disposed of to landfill sites. A suitable area should be designated within the site for temporary stockpiling of C&D materials and to facilitate the sorting process. In order to monitor the disposal of C&D materials at the designated public fill reception facility and landfill and to control fly-tipping, a trip ticket system should be included. Reference can be made to Development Bureau Technical Circular (Works) (TC(W)) No. 6/2010 for details.	during construction	Contractors		\checkmark		Development Bureau Technical Circular (Works) (TC(W)) No. 6/2010, Waste Disposal Ordinance	
S.6.6.5	The C&D materials to be disposed of at public filling reception facilities shall be only materials consist of brick, concrete, cement plaster, soil and inert building debris. The materials shall be free from plastics, chemical waste, industrial metals and other materials that are considered unsuitable at the facility.	Waste management during construction	Contractors		V		Waste Disposal Ordinance	
S.6.6.6	General refuse should be stored in enclosed bins or compaction units separate from C&D materials. A reputable waste collector should be employed by the contractor to remove general refuse from the site regularly, separately from C&D materials. An enclosed and covered area is preferred to reduce the occurrence of 'wind blown' light materials. In addition, a sufficient number of enclosed bins shall be provided on site for containment of general refuse to prevent visual impacts and nuisance to the sensitive surrounding.	Waste management during construction	Contractors		V		Waste Disposal Ordinance	



EIA Ref.	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main concerns to address	Who to implement the measures?	When to implement the measures?			What requirements or standards for the
			incasures :	D	С	0	measures to achieve?
S.6.6.7	For the disposal of chemical wastes produced at the construction site, the Contractor is required to register with the EPD as a Chemical Waste Producer and to follow the requirements stated in the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes. Good quality containers compatible with the chemical wastes should be used. Appropriate labels should be securely attached on each chemical waste container indicating the chemical characteristics of the chemical waste, such as explosives, flammable oxidizing, irritant, toxic, harmful, corrosive, etc. The Contractor shall also use a licensed waste collector engaged to transport and dispose of the chemical wastes in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.	Waste management during construction	Contractors		V		Waste Disposal (Chemical Waste) (General) Regulation
S.6.6.8	Chemical toilets to be provided on-site shall be regularly cleaned and the night-soil collected and transported by a licensed contractor to a Government Sewage Treatment Works facility for disposal.	Waste management during construction	Contractors		V		Waste Disposal Ordinance
Operational Phase (Upg	rading Works of Cheung Chau STW and Pak She SPS (DP Comp	onent))	•				
S.6.6.9	The major waste generated during the operational phase will be screenings, silt and debris, grits and dewatered sludge. The screenings, silt and debris and grits are considered similar in nature to general refuse and will be disposed of at landfill sites regularly by a reputable waste collector to reduce pest, odour and litter impacts. As the project will be commissioned in 2019, it is expected that dewatered sludge will be disposed of at Sludge Treatment Facilities regularly.	Waste management during construction	DSD			V	Waste Disposal Ordinance
S.6.6.10	For chemical waste generated during the operational phase, the handling procedures and disposal method are the same as those presented in Section 6.6.7 of EIA.	Waste management during construction	DSD			V	Waste Disposal (Chemical Waste) (General) Regulation



Table C5	Implementation Schedule of Recommended Mitigation Measures - Cultural Heritage
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EIA Ref.	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main concerns to address	Who to implement the measures?	When to implement the measures?			What requirements or standards for the measures to
			medoures :	D	С	0	achieve?
Construction Phase (S	Sewers Works (non-DP Component))				-		
S.10.3.15, S.10.3.22	Undertake an archaeological watching brief programme at Tai San Street, Tai San Back Street, Chung Hing Street and Chung Hing Back Street, Cheung Chau Rock Carving and Tung Wan Road. Note: Archaeological Watching Brief should be undertaken by a qualified archaeologist, who must apply for a licence under the Antiquities and Monuments Ordinance (Cap. 53) from the Antiquity Authority before the commencement of archaeological fieldwork.	Identification, retrieval and recording of potential archaeological material and deposits.	DSD and Contractors		√		EIAO-TM and Antiquities and Monuments Ordinance
S.10.3.19 and Carving, and the constructor is not allowed under the contract to carry any works outside of the designated works area. Buffer zone should	Since the proposed works area is at a distance of at least 6m from the Rock Carving, and the constructor is not allowed under the contract to carry out any works outside of the designated works area. Buffer zone should be provided to ensure that the Declared Monument and its environs are not infringed upon during the construction works.	Prevention of damage to the rock carving from contact with equipment and machinery during the construction works.	DSD and Contractors		\checkmark		EIAO-TM and Antiquities and Monuments Ordinance
	Within the buffer zone, construction works as well as storage of construction materials are not allowed. Erection of temporary fencing/barriers to demarcate the buffer zone is not required.						
	In addition, access to the rock carving should be maintained and directional signages should be erected or installed at appropriate location(s) near the rock carving to facilitate visitors to access the rock carving during the construction phase.						
	In addition, periodic monitoring of the declared monument is recommended. It is recommended to conduct inspection of the site every 3 months during the construction phase. Inspection record supplemented with the site photos showing the condition of the overall declared monument should be submitted to AMO for record purposes.						
	For auditing purposes the Independent Environmental Checker (IEC) mensure that the above periodic monitoring is conducted properly and that the information from the site inspection is delivered promptly to the Engineer and the AMO.						



EIA Ref.	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main concerns to address	Who to implement the measures?	When to implement the measures?			What requirements or standards for the measures to
				D	С	0	achieve?
S.10.4.32 to S.10.4.33	Condition survey must be carried out by qualified building surveyor or engineer in advance of works for Graded Historic Buildings and structures and Nil Grade heritage structures that may be affected by ground borne vibration. The condition survey report for Graded Historic Buildings must be submitted to AMO before construction activities commence. The contractor must implement the approved monitoring and precautionary measures.	Records of the existing structures, identification of fragile elements, and recommend monitoring and precautionary measures if necessary	DSD and Contractors		V		EIAO-TM
S.10.4.34	Conduct vibration monitoring on structures as stated in the requirements of the condition survey report.	Prevention of damage from ground borne vibration during the construction phase.	DSD and Contractors		\checkmark		EIAO-TM
S.10.4.35	A buffer zone should be provided to separate the building from the construction works. The buffer zone should be clearly marked out by temporary fencing. The buffer zone should be made as large as the site restrictions allow.	Prevention of damage to heritage structures	DSD and Contractors		V		EIAO-TM
S.10.4.36	Provision of protective covering for external surfaces of heritage structures that are situated 5 m or closer to construction works.	Prevention of damage to heritage structures from contact with equipment and machinery during the construction works	DSD and Contractors		V		EIAO-TM
S.10.4.37	Provision of safe public access to temples, shrines, ancestral halls and any other heritage buildings and structures for public use that are 5 m or closer to construction works.	To ensure the safety of members of the public when using heritage structures during the construction works	DSD and Contractors		V		EIAO-TM
Operational Phase							
N/A	None specific	N/A	N/A	N/A	N/A	N/A	N/A



Table C6 Implementation Schedule of Recommended Mitigation Measures - Landscape & Visual

EIA Ref.	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main concerns to address	Who to implement the measures?	When to implement the measures?			What requirements or standards for the			
				D	С	0	measures to achieve?			
Construction Phase	Construction Phase (Upgrading Works of Cheung Chau STW (DP Component))									
Table 11.8	Visual Screen/Hoarding Decorative hoarding or boundary fence for construction sites shall be considered, and designed to be compatible to the surroundings.	To minimise the potential visual impacts	Contractors		\checkmark		N/A			



EIA Ref.	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main concerns to address	Who to implement the measures?		to impl measur		What requirements or standards for the
				D	С	0	measures to achieve?
Table 11.8	Protection to Existing Trees within Works Areas All existing trees which are not in direct conflict with the proposed works will be retained. The existing trees proposed to be retained shall be properly maintained and protected by means of fencing to prevent vehicular or pedestrian intrusion that may potentially damage tree canopies, trunks and root zones. Detailed tree protection specifications shall be allowed and included in the Contract Specification, which specifying the tree protection requirement, submission and approval system, and tree monitoring system. For trees with high preservation value, individual tree assessments and continuous tree monitoring reports shall be provided by a certified Arborist, Landscape Architect or related professional during construction. All retained trees shall be recorded photographically at the commencement of contract. Root pruning to the retained trees should be prohibited. Retained trees should be well-preserved by setting up a tree protection zone throughout the construction period for protecting the retained trees from damages. To maximize protection to existing trees and ground vegetation, construction contracts may designate "No-intrusion Zone" to various areas within the site boundary with rigid and durable fencing for each individual no-intrusion zone. The contractor should close monitor and restrict the site working staff not to enter the "no-intrusion zone", even for non-direct construction activities and storage of equipment.	Landscape mitigation measures	DSD and Contractors	V	V		EIA, Annex 10 and Annex 18 of EIAO- TM



EIA Ref.	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main concerns to address	Who to implement the		to impl measu	What requirements or standards for the	
			measures?	D	С	0	measures to achieve?
Table 11.8	Tree Transplanting Existing trees to be affected shall be directly transplanted to the proposed tree receiving sites, or to temporary tree nurseries alternatively. Temporary tree nurseries may be set up for the transplanted tree and proposed trees at an early stage to allow small trees to grow during the construction stage. By the time when planting area becomes available, trees have been mature and required minimal pruning and suffer much less damage during transplanting. The construction programme should also allow sufficient time for root pruning and root ball preparation prior to transplanting, if necessary, and transplanting operations to be carried out in planting season. Tree pruning such as topping, lion tailing would be prohibited as far as possible. Also, frequent keep watering would be necessary for transplanting trees. The proposed tree preservation measures during construction would be carried out and approved by the competent persons.	Landscape mitigation measures	DSD and Contractors	V	V		EIA, Annex 10 and Annex 18 of EIAO- TM
Table 11.8	Construction Light Security floodlight for construction areas shall be controlled, such as equipped with adjustable shield, frosted diffusers and reflective covers, at night to avoid excessive glare to the nearby areas and residents. Other security measures shall also be considered to minimize the visual impacts by construction light.	To reduce the night-time glare effect to the surrounding environs.	Contractors		V		EIA, Annex 10 and Annex 18 of EIAO- TM



EIA Ref.	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main concerns to address	Who to implement the measures?	When to implement the measures?			What requirements or standards for the
				D	С	0	measures to achieve?
Table 11.8	Dust and Erosion Control for Exposed Soil Excavation works and demolition of existing building blocks shall be well planned with precautions to suppress dust. Exposed soil shall be covered or watered often. Areas that are expected to be left with bare soul for a long period of time after excavation shall be properly covered with suitable protective fabric. Suitable drainage shall be provided around construction sites to avoid discharge of contaminants and sediments into sensitive water-based habitats.	To minimise the disturbance to existing landscape resources and minimise the impacts on the visual amenity of the area	Contractors		\checkmark		EIA, Annex 10 and Annex 18 of EIAO- TM
Table 11.8	Reinstatement of Works Areas The affected works areas shall be properly reinstated to the satisfaction of relevant government departments.	Landscape mitigation measures	Contractors		V		EIA, Annex 10 and Annex 18 of EIAO- TM
Operational Phas	se (Upgrading Works of Cheung Chau STW (DP Component))					1	
Table 11.9	Architectural and Landscape Design The appearance of the proposed structures shall be properly designed, including a careful selection of material, colour and texture, so as to fit into the existing suburban, natural to semi-natural surroundings. The aesthetic design of the proposed structures will follow the requirements in the Guidelines on Aesthetic Design of Pumping Station Buildings and submitted to Vetting Committee on Aesthetic Design of Pumping Station Buildings (VCAB) for approval in accordance with DSD TC No. 9/2006, and circulated to ASD for comment in accordance with ETWB TCW No. 8/2005. Sufficient planting shall be considered and provided around the boundary fence of the proposed buildings for screening. Buffer planting will also be considered during the detailed design.	content, and avoid cluster effect.	DSD	V		V	EIA, Annex 10 and Annex 18 of EIAO- TM



EIA Ref.	Recommended Environmental Protection Measures/ Mitigation Measures	Objectives of the recommended measures & main concerns to address	Who to implement the measures?	When to implement the measures?			What requirements or standards for the
				D	С	0	measures to achieve?
Table 11.9	Establishment Period A 12-month establishment period for the soft landscape works shall be allowed in the main contract for contractor to carry out routine horticultural operations, including watering, pruning, weeding, pest control, replacement of dead plants etc. to ensure healthy establishment of new planting during a 12 month establishment period. This period can also serves as a kind of warranty/guarantee on the quality of the plants supplied and installed by the contractor. Monthly monitoring during the first year of establishment period is recommended.	from the construction of the proposed works, visually integrate the proposals within its existing landscape framework and provide an	DSD and Contractors			V	EIA, Annex 10 and Annex 18 of EIAO- TM

Notes: D – Design, C – Construction, O - Operation

BD – Building Ordinance

ETWB TCW - Environmental and Transport Works Bureau Technical Circular

HKPSG – Hong Kong Planning Standards and Guidelines

EIAO-TM – Technical Memorandum on Environmental Impact Assessment Process

TPO – Town Planning Ordinance

WBTC – Works Bureau Technical Circulars

