

Annex B

**Implementation Schedule of
Mitigation Measures**

Annex B - Implementation Schedule of Mitigation Measures and Key EM&A Requirements - Construction Phase

Parameter (What)	Mitigation Measures / Key EM&A Requirements (To What Requirement)	Location (Where)	Timing for Implementation (When)	Responsibility (By Whom)
Air Quality	<p>Dust control measures:</p> <ul style="list-style-type: none"> Water shall be sprayed to minimise dust generation. Any debris from the demolition or construction of the Project shall be covered entirely by impervious sheeting or stored in a debris collection area sheltered on the top and at three sides. Any dusty material remaining after a stockpile of cement or other materials is removed shall be wetted and cleared from the surface of roads. Any skip hoist for material transport shall be totally enclosed by impervious sheeting. Vehicle washing facilities, including a high pressure water jet, shall be provided. Every vehicle shall be washed to remove any dusty materials from its body and wheels. Selective area shall be paved with concrete, bituminous materials, hardcore or metal plates and kept clear of dusty materials. Water shall be sprayed to keep the entire road surface wet and to minimise dust generation. Every stock of more than 20 bags of cement shall be covered entirely by impervious sheeting or placed in an area sheltered on the top and at 3 sides. 	<p>Area in which demolition of the existing structure of the STW takes place.</p> <p>General work area / Debris collection area.</p> <p>All works area</p> <p>All works area</p> <p>Designated vehicle exit point in the Project area.</p> <p>Area where vehicle washing takes place and the section of road between the washing facilities and the exit point, and the main haul road to the Project area.</p> <p>The main haul road to the Project area.</p> <p>Cement storage area</p>	<p>Prior to and immediately after demolition activities.</p> <p>All period during the construction of the Project.</p> <p>All period during the construction of the Project</p> <p>All period during the construction of the Project</p> <p>For vehicles immediately before leaving the STW construction site.</p> <p>All period during the construction of the Project.</p> <p>All period during the construction of the Project.</p> <p>All period during the construction of the Project.</p>	<p>DSD's Contractors</p> <p>DSD's Contractors</p> <p>DSD's Contractors</p> <p>DSD's Contractors</p> <p>DSD's Contractors</p> <p>DSD's Contractors</p> <p>DSD's Contractors</p> <p>DSD's Contractors</p>

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	<ul style="list-style-type: none"> Cement bags or any other dusty materials collected during the work shall be disposed of in totally enclosed containers. Every belt conveyor used for the transfer of dusty materials shall be enclosed. Every transfer point between any two belt conveyors shall be totally enclosed. 	<p>All works area.</p> <p>All works area.</p>	<p>All period during the construction of the Project.</p> <p>All period during the construction of the Project.</p>	<p>DSD's Contractors</p> <p>DSD's Contractors</p>
Water Quality	<p>Mitigation measures to minimise and control of water quality impact:</p> <ul style="list-style-type: none"> Surface run-off shall be directed into storm drains via adequately designed sand/silt removal facilities such as sand traps, silt traps and sediment basins. Silt removal facilities, channels and manholes shall be maintained and the deposited silt and grit shall be removed regularly to ensure the effectiveness of the system. Temporarily exposed soil surfaces shall be covered e.g. by tarpaulin, and temporary access roads shall be protected by crushed stone or gravel, as excavation proceeds. Rainwater pumped out from trenches, such as those excavated for pipelaying, shall be discharged into storm drains via silt removal facilities. 	<p>All works area</p> <p>All works area</p> <p>All works area</p> <p>All works area</p>	<p>All period during the construction phase in particular during rainy seasons.</p> <p>On a regular basis, in particular, at the onset of and after each rainstorm during the construction of the Project.</p> <p>When foundation excavation is to be carried out during raining seasons.</p> <p>All period during the construction of the Project.</p>	<p>DSD's Contractors</p> <p>DSD's Contractors</p> <p>DSD's Contractors</p> <p>DSD's Contractors</p>

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	<ul style="list-style-type: none"> • Open stockpiles of construction materials (e.g. aggregates and sand) on site shall be covered with tarpaulin or similar fabric during rainstorms. • Groundwater pumped out of wells, etc. for the lowering of ground water level in foundation construction of the Stage III facilities shall be discharged into storm drains after the removal of silt in silt removal facilities. • Wastewater generated from concreting, plastering, internal decoration, cleaning work and other similar activities, shall undergo large object removal by installing bar traps at the drain inlets. • Sewage from toilets, kitchens and similar facilities for the construction workers shall be discharged into a foul sewer or chemical toilets. • All fuel tanks and chemical storage areas should be provided with locks and be sited on sealed areas. • The storage areas should be surrounded by bunds with a capacity equal to 110% of the storage capacity of the largest tank to prevent spilled oil, fuel and chemicals from reaching the receiving waters. • Guidelines and procedures for immediate clean-up actions following any spillages of oil, fuel or chemicals should be provided. 	<p>All works area</p> <p>All works area</p> <p>All works area</p> <p>All works area</p> <p>Fuel tanks and chemical storage areas</p> <p>Fuel tanks and chemical storage areas</p> <p>All works area</p>	<p>All period during the construction of the Project especially during rainy seasons</p> <p>All period during the construction of the Project</p> <p>All period during the construction of the Project.</p> <p>All period during the construction of the Project.</p> <p>All period during the construction of the Project.</p> <p>All period during the construction of the Project.</p> <p>All period during the construction of the Project.</p>	<p>DSD's Contractors</p> <p>DSD's Contractors</p> <p>DSD's Contractors</p> <p>DSD's Contractors</p> <p>DSD's Contractors</p> <p>DSD's Contractors</p> <p>DSD's Contractors</p>

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Noise	<p>Construction activities shall be limited to the daytime hours (0700 to 1900) on Monday to Saturday.</p> <p>The following mitigation measures shall be followed:</p> <ul style="list-style-type: none"> • The Contractor shall comply with and observe the <i>Noise Control Ordinance</i> and its subsidiary regulations in force in Hong Kong. • Before the commencement of any work, the Engineer 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. • The Contractor shall ensure that all plant and equipment to be used on the Site are properly maintained in a good operating condition. • Only well-maintained plant shall be operated on-site and plant shall be serviced regularly; • Machines and plant (such as trucks) that may be in intermittent use shall be shut down between work periods or shall be throttled down to a minimum; • Plant known to emit noise strongly in one direction, shall, where possible, be orientated so that the noise is directed away from noise sensitive receivers (NSRs); • Silencers or mufflers on construction equipment shall be utilised, if found necessary to further reduce noise, and shall be properly maintained during the construction phase; • Mobile plant shall be sited as far away from NSRs as possible • The plant equipment and sound-reducing measures, if necessary to be used on the site, shall be made available for trial 	<p>All works area</p> <p>All works area</p> <p>All works area</p> <p>All works area</p> <p>All works area</p> <p>All works area</p> <p>All works area</p> <p>All works area</p> <p>All works area</p> <p>All works area</p>	<p>All period during the construction of the Project.</p> <p>All period during the construction of the Project.</p> <p>All period during the construction of the Project.</p> <p>All period during the construction of the Project.</p> <p>All period during the construction of the Project.</p> <p>Time between work periods.</p> <p>All period during the construction of the Project.</p> <p>All period during the construction of the Project.</p> <p>All period during the construction of the Project.</p> <p>All period during the construction of the Project.</p> <p>Before the commencement of any work</p>	<p>DSD's Contractors</p> <p>DSD's Contractors</p> <p>DSD's Contractors</p> <p>DSD's Contractors</p> <p>DSD's Contractors</p> <p>DSD's Contractors</p> <p>DSD's Contractors</p> <p>DSD's Contractors</p> <p>DSD's Contractors</p> <p>DSD's Contractors</p>

Parameter (What)	Mitigation Measures / Key EM&A Requirements (To What Requirement)	Location (Where)	Timing for Implementation (When)	Responsibility (By Whom)
Waste Management	<ul style="list-style-type: none"> • Construction wastes shall be handled and stored in a manner to ensure that they are held securely without loss or leakage. • Licensed waste hauliers for chemical wastes and for dumping at public filling area shall be used and they shall only collect wastes prescribed by their permits. • Construction wastes shall be removed in a timely manner. • Waste storage areas shall be maintained and cleaned regularly. • Windblown litter and dust during transportation shall be minimised by either covering trucks or transporting wastes in enclosed containers. • The necessary waste disposal permits from the appropriate authorities shall be obtained, if required. • Wastes shall be disposed of at licensed waste disposal facilities. 	<p>All works area</p> <p>All works area</p> <p>Waste Storage areas</p> <p>Waste Storage areas</p> <p>Waste handling trucks</p> <p>All works area</p> <p>All works area</p>	<p>All period during the construction of the Project.</p> <p>All period during the construction of the Project.</p> <p>Every 2 days during construction phase.</p> <p>All period during the construction of the Project.</p> <p>After waste collection & before trucks leaving the construction site</p> <p>Before construction of the Project</p> <p>All period during the construction of the Project</p>	<p>DSD's Contractors</p> <p>DSD's Contractors</p> <p>DSD's Contractors</p> <p>DSD's Contractors</p> <p>DSD's Contractors</p> <p>DSD's Contractors</p> <p>DSD's Contractors</p>

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	<ul style="list-style-type: none"> • Careful design, planning and good site management shall be adopted to minimise over-ordering and generation of waste materials such as concrete, mortars and cement grouts. • The handling and disposal of bentonite slurries shall be undertaken in accordance with <i>Practice Note for Professional Persons - Construction Site Drainage</i> (ProPECC PN 1/94) on construction site drainage. • Chemical waste that is produced, during construction shall be handled in accordance with the <i>Code of Practice on the Packaging, Handling and Storage of Chemical Wastes</i>. • Containers used for the storage of chemical wastes shall be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition, and securely closed; and display a label in English and Chinese in accordance with instructions prescribed in <i>Schedule 2 of the Chemical Waste Regulations</i>. • The chemical waste storage area shall also have adequate ventilation; be covered to prevent rainfall entering; and be arranged so that incompatible materials are adequately separated. • Disposal of chemical waste shall be via a licensed waste collector; and to a facility licensed to receive chemical waste. • General refuse shall be stored in enclosed bins. • Construction/demolition waste should be separated from chemical wastes. • Burning of refuse on construction sites is strictly prohibited. 	<p>All works area</p> <p>All works area</p> <p>Chemical waste arising points</p> <p>Chemical waste arising points</p> <p>Chemical waste storage area</p> <p>Chemical waste storage area</p> <p>All works area</p> <p>All works area</p> <p>All works area</p>	<p>All period during the construction of the Project.</p> <p>All period during the construction of the Project.</p> <p>All period during the construction of the Project.</p> <p>All period during the construction of the Project.</p> <p>All period during the construction of the Project.</p> <p>All period during the construction of the Project.</p> <p>All period during the construction of the Project.</p> <p>All period during the construction of the Project.</p>	<p>DSD's Contractors</p> <p>DSD's Contractors</p> <p>DSD's Contractors</p> <p>DSD's Contractors</p> <p>DSD's Contractors</p> <p>DSD's Contractors</p> <p>DSD's Contractors</p> <p>DSD's Contractors</p>

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Contaminated Land	Approximately 1,400 m ³ of contaminated soil shall be disposed of at the SENT landfill.	At locations S4 and S6 of the previous sludge lagoon area as shown in <i>Figure B1</i>	During site formation.	DSD's Contractors
	Potential exposure to the contaminated materials by the construction workers shall be avoided by implementing the following measures.	Previous sludge disposal lagoons (see figure in <i>Annex A</i>)	During excavation of contaminated materials	DSD's Contractors
	<ul style="list-style-type: none"> Bulk earth moving equipment shall be used to minimise potential contact with site construction workers. Exposure to any contaminated materials present shall be minimised by wearing appropriate clothing and personal protective gear when interacting directly with contaminated material, providing adequate hygiene and washing facilities, and preventing smoking and eating during such activities. 	Previous sludge disposal lagoons	During excavation of contaminated materials	DSD's Contractors
	<ul style="list-style-type: none"> The Contractor shall ensure that rainfall and surface run-off is diverted around any areas currently being worked. The use of clean fill shall be considered to bring the site to finished grade. Stockpiling of contaminated soils shall be prohibited unless covered. The Contractor shall obtain the necessary waste disposal permits from the appropriate authorities, if they are required, in accordance to the <i>Waste Disposal Ordinance (Cap 354)</i>, and <i>Waste Disposal (Chemical) Regulations</i>. The Contractor shall obtain an admission ticket from the Facilities Management Group of EPD for disposal of contaminated soil at Landfills. Only licensed waste hauliers shall be employed for contaminated wastes and disposal of waste to appropriately licensed waste facilities. 	Previous sludge disposal lagoons	During excavation of materials and when interacting directly with the contaminated materials	DSD's Contractors
		Previous sludge disposal lagoons	During excavation of contaminated materials	DSD's Contractors
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EM&A	<p>Regular and random environmental audit and site inspection as detailed in Section 3 of the EM&A Manual shall be conducted to ensure the enforcement of all environmental mitigation measures.</p> <p>Baseline Odour Monitoring</p> <ul style="list-style-type: none"> Maintain odour complaint register. Monitor odour concentrations and hydrogen sulphide (H₂S) levels at ASRs and at source as outlined in this EM&A Manual. <p>The odour complaint register as well as the measured results of H₂S will serve as the baseline data set prior to the commissioning the Stage III Extension. These will be compared with the results obtained during the impact monitoring stage.</p> <p>Impact Odour Monitoring</p> <ul style="list-style-type: none"> Impact odour monitoring shall be carried out according to the requirements outlined in this EM&A Manual. If no complaints are received and if impact monitoring does not show significant increase of H₂S concentration compared to the baseline condition after one year of monitoring, the frequency of the H₂S monitoring shall be reduced to once every 6 months, subject to the Director of Environmental Protection's endorsement. 	<p>All works area</p> <p>Sha Tin STW</p> <p>At 4 identified ASRs and 5 source locations as detailed in Figure 5.2a of this EM&A Manual.</p> <p>At 4 identified ASRs and 5 source locations as detailed in this EM&A Manual</p> <p>Ditto</p>	<p>All period during the construction of the Project.</p> <p>Starting 1 year prior to the operation of the Stage III Extension and maintained throughout the life of the STW.</p> <p>Every 3 months starting 1 year before commissioning of Stage III Extension</p> <p>Every 3 months for a period of 1 year after the Project is operational.</p> <p>Every 6 months after the first year of impact monitoring</p>	<p>DSD's Contractors</p> <p>DSD's Sha Tin STW's Operator</p> <p>DSD</p> <p>DSD</p> <p>DSD</p>

Annex B - Implementation Schedule of Mitigation Measures and Key EM&A Requirements - Operation Phase

Parameter (What)	Mitigation Measures / Key EM&A Requirements (To What Requirement)	Location (Where)	Timing for Implementation (When)	Responsibility (By Whom)
Air Quality / Odour	<p>Mitigation Measures:</p> <p>Implement mitigation measures including nitrate dosing (aeration or oxygen injection) on a continuous basis, at the pumping stations upstream of the Sha Tin STW to meet the 5 OUm³ criterion at air sensitive receivers, with a target odour reduction of 55% at source.</p>	Sha Tin and Ma On Shan Pumping Stations	During detailed project design, construction and operation.	DSD
Water Quality	<p>Effluent Quality Monitoring</p> <p>Effluent quality monitoring as specified in the effluent discharge license for the Sha Tin STW under the <i>Water Pollution Control Ordinance (WPCO)</i>.</p> <p>Implement a comprehensive performance verification programme to confirm the predictions of the effluent impact on the water quality.</p>	Sha Tin STW effluent discharge points within the Sha Tin STW site boundary.	Continuous both before and after the commissioning of the Stage III Extension	Sha Tin STW Operator
Waste	<p>Mitigation Measures:</p> <p>Use of fully enclosed containers similar to those used at the Stonecutters Island STW for the transportation of sludge, or by covering the existing sludge skips with tarpaulin covers.</p>	Kai Tak Nullah/Victoria Harbour	During the operation phase.	DSD
	<p>Storage of treatment sludge on site shall be as short as possible and sludge shall be transported off-site for disposal on a daily basis.</p>	Sha Tin STW	During the transportation of sludge from the STW.	Sha Tin STW Operator
	<p>Records of disposal of screenings, grit and dewater sludge shall be kept on-site for regular inspection.</p>	Sha Tin STW	During the operation phase	Sha Tin STW Operator

Parameter (What)	Mitigation Measures / Key EM&A Requirements (To What Requirement)	Location (Where)	Timing for Implementation (When)	Responsibility (By Whom)
Landscape	<p>Mitigation Measures:</p> <p>Tree Planting: Perimeter planting to screen the Stage III site facilities from the Shing Mun River Channel and Ma On Shan viewpoints. Tree planting should be planned and that it does not impede upon operations.</p> <p>Treatments of Structural Forms: Painting of all new tanks of the Stage III Extension with an appropriate tone. As a general enhancement, all existings tanks should also be painted in the same colour as the new tanks in order to improve the general visual amenity of the area and to ensure cohesiveness of the tonal qualities across the site.</p>	<p>As recommended in the Tree Layout Plan presented in <i>Figure B2</i> of this Manual.</p> <p>Sha Tin STW</p>	<p>Six months after the commissioning of the Stage III Extension</p> <p>Six months after the commissioning of the Stage III Extension.</p>	<p>Sha Tin STW Operator</p> <p>Sha Tin STW Operator</p>

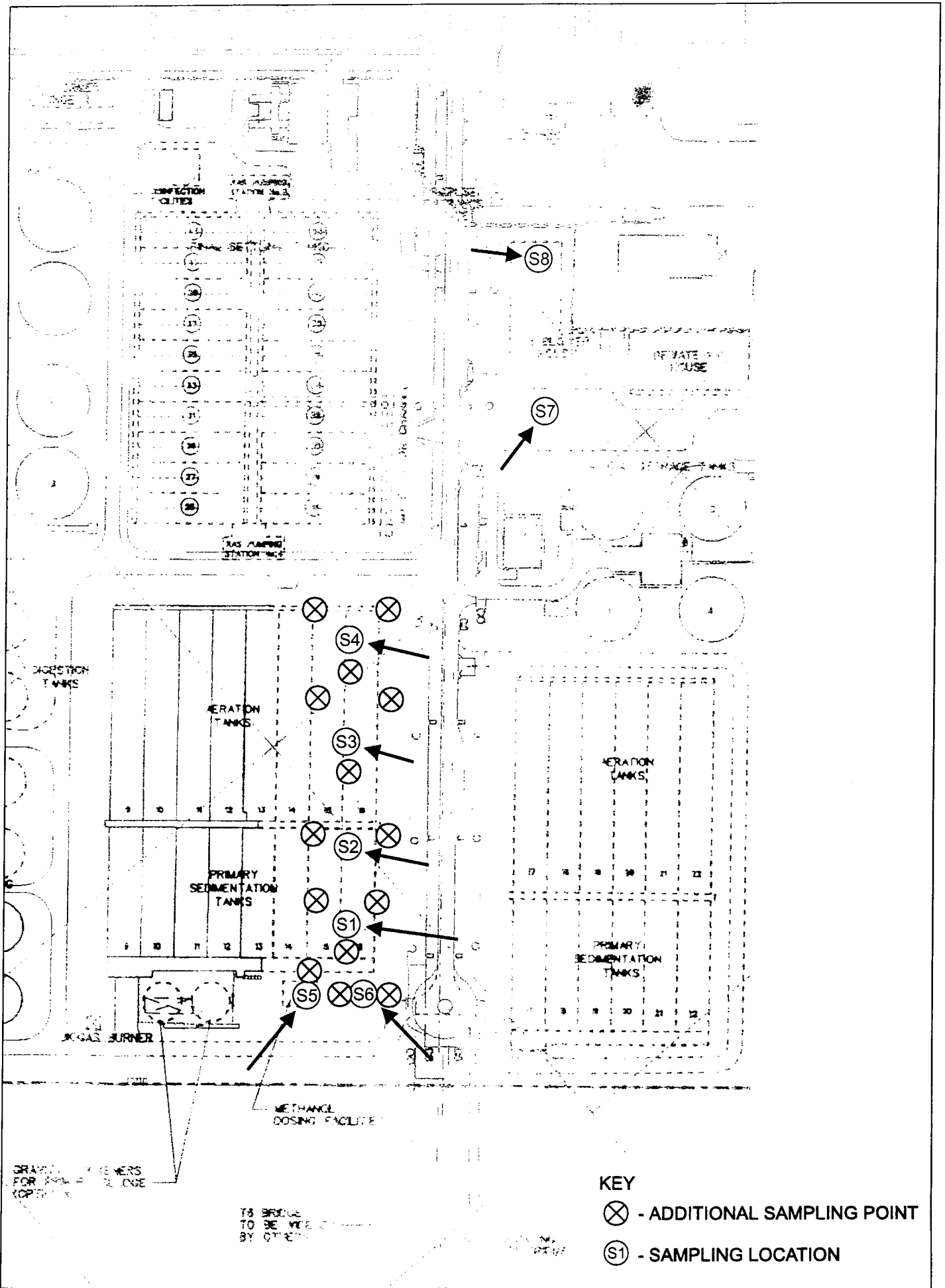



FIGURE B1 SOIL SAMPLING LOCATIONS

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DATE: 18/03/99

Environmental Resources Management



NOTES:

All trees shall be heavy standard planting and be large-scale tree species with non-invasive root systems and have dense, full evergreen foliage for screening purposes.

LEGEND:

STAGE 3 MAJOR WORKS

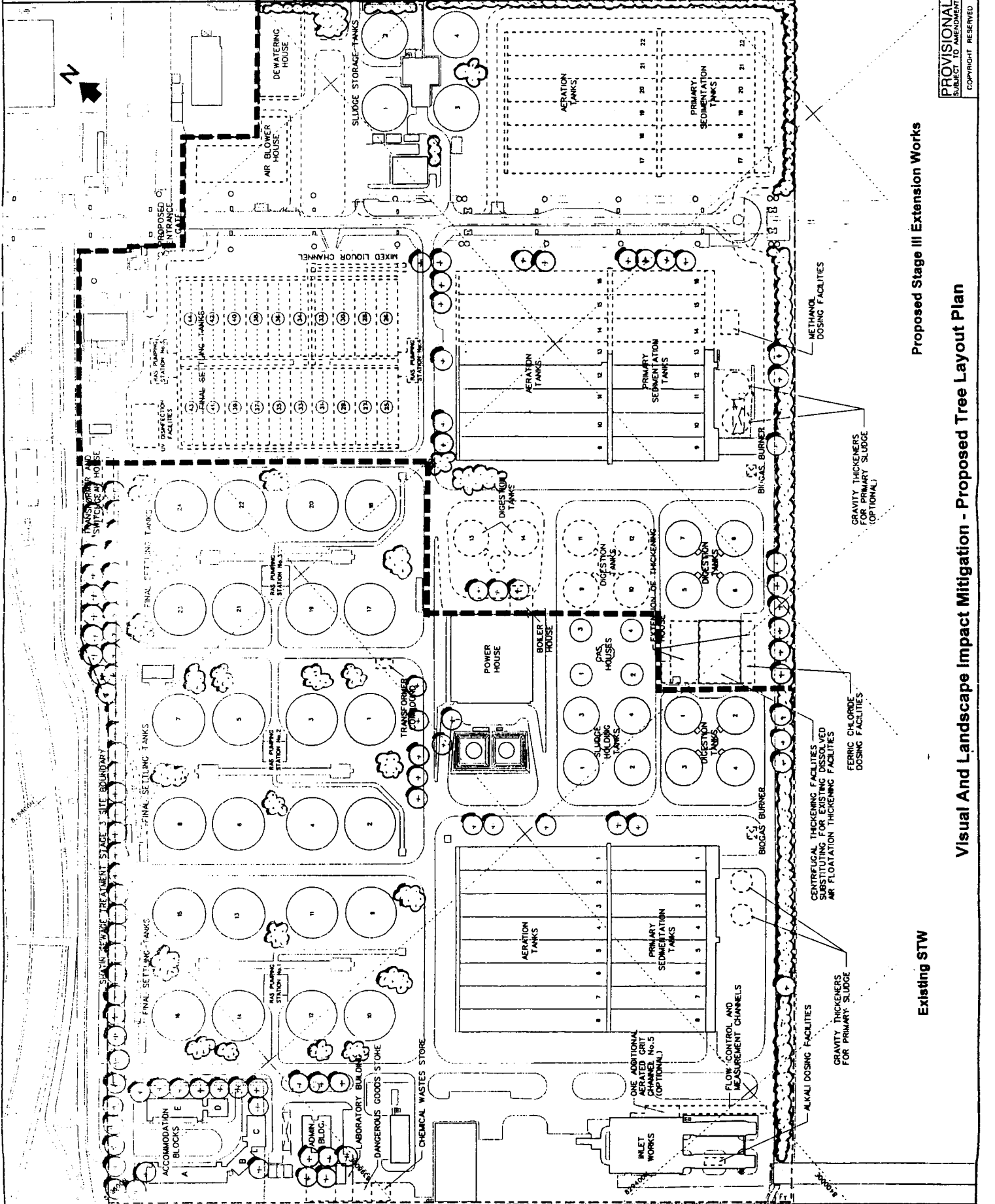
- Existing Trees
- Proposed Trees

SHARH SEWAGE TREATMENT WORKS
STAGE 3
Visual And Landscape Impact Mitigation
- Proposed Tree Layout Plan

Scale: 1:2000
Drawing No: Figure B2

SEWERAGE PROJECTS DIVISION

DRAINAGE SERVICES DEPARTMENT
GOVERNMENT OF THE HONG KONG SPECIAL ADMINISTRATIVE REGION



Proposed Stage III Extension Works

Visual And Landscape Impact Mitigation - Proposed Tree Layout Plan

Existing STW

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