Queensland Government

Department of
Environment and Heritage Protection

To: Queensland Bulk Water Supply Authority
T/A SEQWATER
C/- PO Box 16146
CITY EAST QLD 4002

Email: hgordon@seqwater.com.au

Attention: Mr Harry Gordon

Your reference: EPPR00881713
Our reference: 288683

Application details

I refer to the amalgamation application that was received by the administering authority on 23-FEB-2016.

Land description: MAROON DAM ; Willowie Crescent CAPALABA WTP Lot 2 Plan RP108087; Gordon Mining Road NORTH STRADBROKE WTP Lot 1 Plan CP818898; Moogerah Dam - block 3 ; Warrill Valley Irrigation Project ; Moogerah Dam - block 2 Lot 8 Plan RP110076; Gilston Road, Advancetown Lot 3 Plan RP171485, Lot 4 Plan SP164198; 4 Boyd Street, TUGUN Lot 32 Plan SP197355, Lot 30 Plan SP240300.

Decision

Your application has been approved and your environmental authority (reference EPPR00881713) is attached.

Additional comments or advice

You are advised that if you are not the owner of the land to which the environmental authority relates, you have 10 business days from receipt of this environmental authority to give each owner of the land, written notice that you have been issued this environmental authority.

Amanda Gray
Government Organisations and Utilities Assessment
Department of Environment and Heritage Protection
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BRISBANE QLD 4001
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Should you have any further enquiries, please contact Amanda Gray on telephone (07) 3330 5567.

Yours sincerely

Signature	Date
C Mooney	15/3/16

Chris Mooney
Department of Environment and Heritage Protection
Delegate of the administering authority
Environmental Protection Act 1994

Enclosed

Permit - environmental authority (reference EPPR00881713)

Permit[1]

Environmental Protection Act 1994

EPPR00881713

Environmental authority

This environmental authority is issued by the administering authority under Chapter 5 of the Environmental Protection Act 1994.

Permit[1] number: EPPR00881713

Environmental authority takes effect upon signing by the Delegate

The anniversary date of this environmental authority is 1 December. An annual return and the payment of the annual fee will be due each year on this day.

Environmental authority holder(s)

Name	Principal address
Queensland Bulk Water Supply Authority T/A SEQWATER	117 Brisbane Street IPSWICH QLD 4305

Environmentally relevant activity and location details

Environmentally relevant activity(ies)	Location(s)
63-(1a)(i) Sewage treatment >21 to 100EP - IT or IR	Gilston Road Advancetown - Lot 4 Plan SP164198
64-(1b) Water treatment >5ML water day seawater 8-(5) Chemical storage >200m3 liquids	Boyd Street, TUGUN - Lot 30 Plan SP240300
64-(3) Water treatment >10ML raw water day	Gordon Mining Road NORTH STRADBROKE WTP - Lot 1 Plan CP818898
64-(3) Water treatment >10ML raw water day	Willowie Crescent CAPALABA WTP - Lot 2 Plan RP108087
63-(1b)(ii) Sewage treatment >100 to 1500EP	Maroon Dam - Education Centre
63-(1a)(i) Sewage treatment >21 to 100EP - IT or IR	Moogerah Dam, south of Kalbar - block 2 Moogerah Dam, south of Kalbar - block 3
16(1a) Dredging >1000t but <10000t yr	Warrill Valley Irigation Project

[1] Permit includes licences, approvals, permits, authorisations, certificates, sanctions or equivalent/similar as required by legislation

Additional information for applicants

Environmentally relevant activities

The description of any environmentally relevant activity (ERA) for which an environmental authority is issued is a restatement of the ERA as defined by legislation at the time the approval is issued. Where there is any inconsistency between that description of an ERA and the conditions stated by an environmental authority as to the scale, intensity or manner of carrying out an ERA, then the conditions prevail to the extent of the inconsistency.

An environmental authority authorises the carrying out of an ERA and does not authorise any environmental harm unless a condition stated by the authority specifically authorises environmental harm.

A person carrying out an ERA must also be a registered suitable operator under the *Environmental Protection Act 1994* (EP Act).

Contaminated land

It is a requirement of the EP Act that an owner or occupier of land give written notice to the chief executive if they become aware of the following:

- a notifiable activity (as defined in Schedule 3) that is being, or has been, carried out on the land (notice must be given within 20 business days)
- an event involving a hazardous contaminant on the land, or a change in the condition of the contaminated land, that is causing, or is reasonably likely to cause, serious or material environmental harm (notice must be given within 24 hours).

For further information, including the form for giving written notice, refer to the Queensland Government website http://www.qld.gov.au/ (using the search term 'managing contaminated land').

CMooney

Signature

15/3/16

Date

Chris Mooney
Department of Environment and Heritage Protection
Delegate of the administering authority
Environmental Protection Act 1994

Enquiries:
Department of Environment and Heritage Protection
GPO Box 2454
BRISBANE QLD 4001
Phone: 1300 130 372
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palm@ehp.qld.gov.au

Obligations under the *Environmental Protection Act 1994*

In addition to the requirements found in the conditions of this environmental authority, the holder must also meet their obligations under the EP Act, and the regulations made under the EP Act. For example, the holder must comply with the following provisions of the Act:

- general environmental duty (section 319)
- duty to notify environmental harm (section 320-320G)
- offence of causing serious or material environmental harm (sections 437-439)
- offence of causing environmental nuisance (section 440)
- offence of depositing prescribed water contaminants in waters and related matters (section 440ZG)
- offence to place contaminant where environmental harm or nuisance may be caused (section 443)

Conditions of environmental authority

Part 1 – Common Conditions for all Activities

Environmentally relevant activity(ies)	Location(s)
63-(1a)(i) Sewage treatment >21 to 100EP - IT or IR	Gilston Road Advancetown - Lot 4 Plan SP164198
64-(1b) Water treatment >5ML water day seawater 8-(5) Chemical storage >200m3 liquids	Boyd Street, TUGUN - Lot 30 Plan SP240300
64-(3) Water treatment >10ML raw water day	Gordon Mining Road NORTH STRADBROKE WTP - Lot 1 Plan CP818898
64-(3) Water treatment >10ML raw water day	Willowie Crescent CAPALABA WTP - Lot 2 Plan RP108087
63-(1b)(ii) Sewage treatment >100 to 1500EP	Maroon Dam - Education Centre
63-(1a)(i) Sewage treatment >21 to 100EP - IT or IR	Moogerah Dam, south of Kalbar - block 2 Moogerah Dam, south of Kalbar - block 3
16(1a) Dredging >1000t but <10000t yr	Warrill Valley Irigation Project

The environmentally relevant activity(ies) must be conducted in accordance with the following conditions of approval.

Agency interest: General	
Condition number	**Condition**
G1-1	Any breach of a condition of this environmental authority must be reported to the administering authority as soon as practicable within 24 hours of becoming aware of the breach. Records must be kept including full details of the breach and any subsequent actions taken.
G1-2	All reasonable and practicable measures must be taken to prevent or minimise environmental harm caused by the activities.
G1-3	The activity must be undertaken in accordance with written procedures that: a) identify potential risks to the environment from the activity during routine operations and emergencies; and b) establish and maintain control measures that minimise the potential for environmental harm; and c) ensure plant, equipment and measures are maintained in a proper and effective condition; and d) ensure plant, equipment and measures are operated in a proper and effective manner; and e) ensure that staff are trained and aware of their obligations under the Environmental Protection Act 1994; and f) ensure that reviews of environmental performance are undertaken at least annually.
G1-4	The operator of an ERA to which this environmental authority relates must record, compile and keep all monitoring results required by this environmental authority and present this information to the administering authority upon request.
G1-5	You must record the following details for all environmental complaints received: a) date and time complaint was received b) name and contact details of the complainant c) nature of the complaint d) investigations undertaken e) conclusions formed f) actions taken.
G1-6	All records must be kept for a period of at least five years and provided to the administering authority upon request.
G1-7	Chemicals and fuels in containers of greater than 15 litres must be stored within a secondary containment system.

Agency interest: Waste	
Condition number	**Condition**
W1-1	All waste generated in carrying out the activity must be lawfully reused, recycled or removed to a facility that can lawfully accept the waste.

Part 2 – Common Conditions for the following activities

Environmentally relevant activity(ies)	**Location(s)**
64-(1b) Water treatment >5ML water day seawater 8-(5) Chemical storage >200m3 liquids	Boyd Street, TUGUN - Lot 30 Plan SP240300
64-(3) Water treatment >10ML raw water day	Gordon Mining Road NORTH STRADBROKE WTP - Lot 1 Plan CP818898
64-(3) Water treatment >10ML raw water day	Willowie Crescent CAPALABA WTP - Lot 2 Plan RP108087

Agency interest: General	
Condition number	**Condition**
G2-1	An experienced and suitably qualified person(s) must conduct any monitoring required by this environmental authority.

Part 3 – Site Specific Conditions

Location: Gilston Road Advancetown - Lot 3 Plan RP171485 and Lot 4 Plan SP164198

Relevant Activities: 63-(1a)(i) Sewage treatment >21 to 100EP - IT or IR

Agency interest: General	
Condition number	**Condition**
G3-1	A competent person must conduct any monitoring required by this environmental authority.
G3-2	An annual monitoring report must be prepared and submitted to the administering authority upon request with the annual return.

Agency interest: Air	
Condition number	**Condition**
A3-1	When requested by the administering authority, monitoring must be undertaken to investigate any complaint of environmental nuisance caused by a release to the atmosphere from a release point at the site, and the results thereof notified to the administering authority within 14 days following completion of monitoring. Monitoring must be carried out by an independent person or body possessing appropriate experience and qualification to perform the required measurements, at a place(s) relevant to the potentially sensitive place and upwind sites.
Agency interest: Noise	
Condition number	**Condition**
N3-1	Noise from the operation of the ERA to which this approval relates must not cause an environmental nuisance at any nuisance sensitive place or commercial place.

Agency interest: Land

Condition number	Condition
L3-1	The only contaminants approved to be released to land are treated sewage effluent to the locations depicted in Figure 1 – Plan SK-INF-01,*'Internal Infrastructure WWTP General Layout', Rev B* - of this approval and in compliance with the limits stated in Table 3-1 - *Contaminant release limits to land* and the conditions of this approval.

TABLE 3-1 – Contaminant release limits to land

	Release Limit					Frequency	
Quality Characteristics	Minimum	Median	50th Percentile (long term)	Maximum	Sampling point	First year	Ongoing
Total Nitrogen			30	40 mg/L	Final Effluent Tank[2]	Weekly	Quarterly
Total Phosphorus			15	20 mg/L		Weekly	Quarterly
Faecal Coli forms (cfu[1]/100mL)		<100				Weekly	Quarterly
pH	6.0			8.5		Weekly	Quarterly
Total Suspended Solids (TSS)		30mg/L		45mg/L		Weekly	Quarterly
Biochemical Oxygen Demand (BOD)		20mg/L		30mg/L		Weekly	Quarterly

[1]Means colony forming units.

[2]Means final effluent tank E1 or E2 as per Figure 2 - Plan INF-123 *'Internal Road Network Visitor's Centre WWTP Set out Plan'*, Rev 0.

Associated Requirements

1. Monitoring must be undertaken and records kept of a monitoring program of contaminant released to the irrigation area at the sampling points, frequency, and for the parameters specified in Table 3-1 -*Contaminant release limits to land.*
2. Monitoring must be in accordance with the administering authority's Water Quality Sampling Manual and all monitoring devices must be effectively calibrated and maintained.
3. The total quantity of treated effluent released daily to the effluent release area must not exceed 22,000 litres per day.
4. Irrigation of treated effluent must be by surface means.
5. The daily volume of contaminants released to land must be determined or estimated by an appropriate method, for example a flow meter, and records kept of such determinations and estimates.
6. A minimum area of not less than 5000 square metres of controlled access land, excluding any necessary buffer zones must be provided for the irrigation of treated effluent as depicted in Figure 1 -Plan SK-INF-01, 'Internal Infrastructure WWTP General Layout', Rev B. and Figure 3- INF- 094, 'Batch Plant Remediation and Overflow Carpark Layout Plan', Rev 1.

L3-2	The irrigation of treated effluent must be carried out in a manner such that: (a) vegetation is not damaged; (b) soil erosion and soil structure damage is avoided; (c) there is no surface ponding and/or runoff of treated effluent; (d) percolation of effluent beyond the plant root zone is minimised; (e) the capacity of the land to assimilate nitrogen, phosphorus, salts, organic matter as measured by oxygen demand and water is not exceeded; and (f) the quality of ground water is not adversely affected.
L3-3	Vegetation clippings must be removed from the irrigation area upon harvesting.
L3-4	Notices must be prominently displayed on areas undergoing effluent irrigation, warning the public that the area is irrigated with treated effluent and not to use or drink the effluent. These notices must be maintained in a visible and legible condition.
L3-5	When weather conditions or soil conditions preclude the release of treated sewage effluent to land, effluent must not be irrigated to land.
L3-6	When conditions prevent the irrigation of treated effluent to land (such as during or following rain events), the contaminants must be directed to a wet weather storage or alternative measures must be taken to store/lawfully dispose of effluent (such as wet weather storage or tanking off site to another treatment plant or sewer). A record must be kept of any removal or discharge off site, including destination, transporter, dates and volumes.
L3-7	The registered operator must develop and implement an Irrigation Management Plan (IMP) which details how the irrigation process will be effectively and appropriately managed so as to ensure that the release of treated effluent to land is carried out in an environmentally sustainable manner. As a minimum, the IMP must include: a) strategies to ensure the irrigation is carried out in a manner such that meets the condition L3-1 of this approval; b) procedures for the management of irrigation when soil moisture conditions are such that surface runoff, ponding or pooling beyond the property boundary is likely to occur; c) procedures to ensure the irrigation of land will not result in adverse public health issues; and d) procedures for educating and training staff about public health issues associated with the irrigation on-site e) a Site Plan of the irrigation area showing the irrigation pipe layout and any monitoring points.
L3-8	A copy of the Irrigation Management Plan must be kept at the premises to which this environmental authority relates and be available to an officer authorised under the *Environmental Protection Act 1994* upon request.

L3-9

The registered operator of an ERA to which this approval relates must monitor and keep records of the soil characteristics and at the frequency specified in Table 3-2 -Soil impact monitoring

Table 3-2 -Soil impact monitoring

QUALITY CHARACTERISTICS	UNITS	MONITORING FREQUENCY
pH	pH scale	On commencement and Biannually thereafter
Total Nitrogen as N	mg/kg	On commencement and Biennially thereafter
Extractable Phosphorus	mg/kg	On commencement and Biennially thereafter
Specific Conductance or Electrical Conductivity	µS/cm	On commencement and Biennially thereafter
Sodium Adsorption Ratio		On commencement and Biennially thereafter
Potassium	mg/kg	On commencement and Biennially thereafter
Calcium	mg/kg	On commencement and Biennially thereafter
Magnesium	mg/kg	On commencement and Biennially thereafter
Cation Exchange Capacity	meq/100g	On commencement and Biennially thereafter
Exchangeable Calcium	meq/100g	On commencement and Biennially thereafter
Exchangeable Sodium	meq/100g	On commencement and Biennially thereafter
Exchangeable Magnesium	meq/100g	On commencement and Biennially thereafter
Exchangeable Aluminium	meq/100g	On commencement and Biennially thereafter
Exchangeable Potassium	meq/100g	On commencement and Biennially thereafter

Figure 1 – Plan SK-INF-01, "Internal Infrastructure WWTP General Layout", Rev B.



Figure 2 – Plan INF-123, "Internal Road Network Visitor's Centre WWTP Setout Plan", Rev 0.

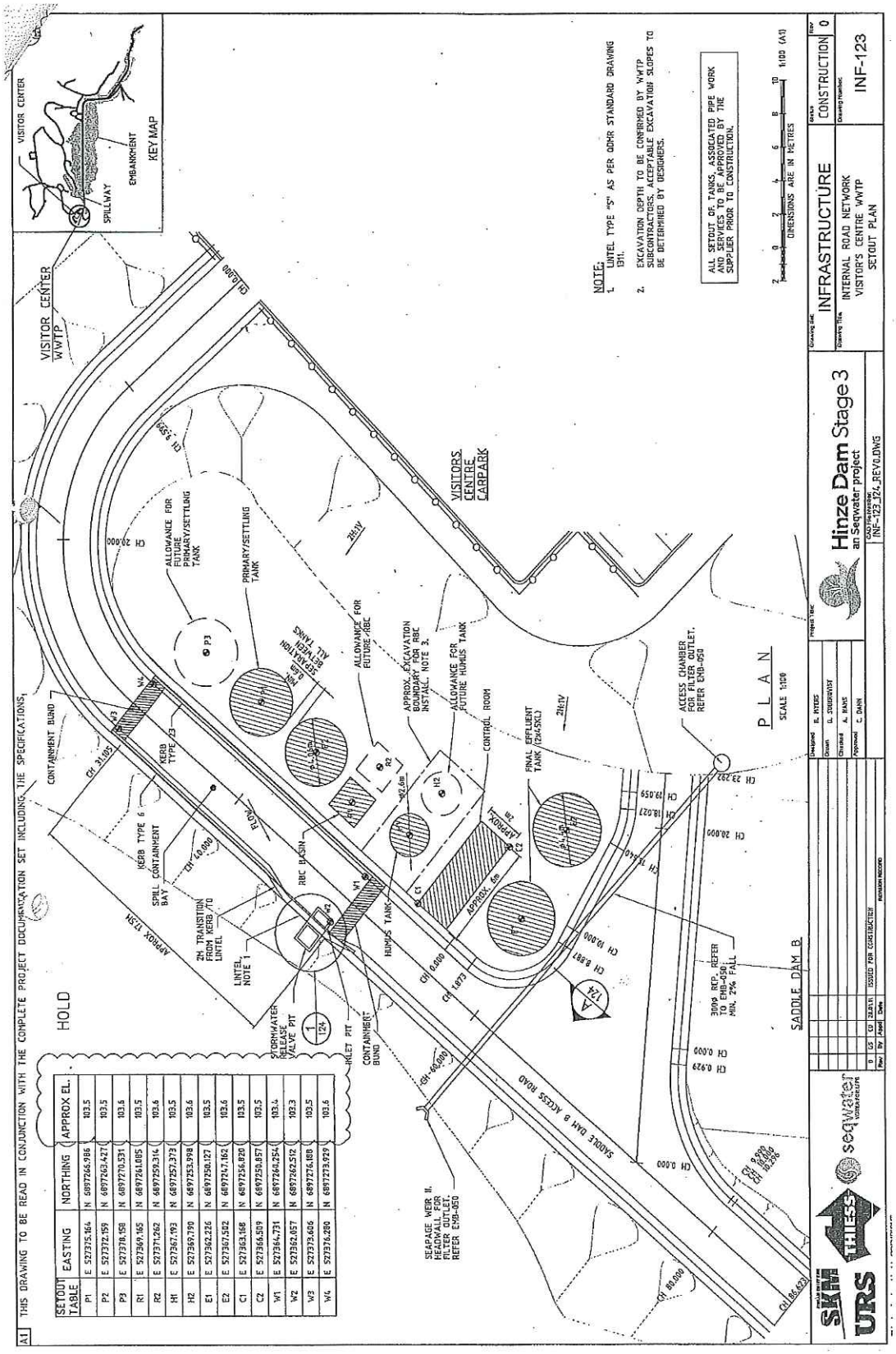
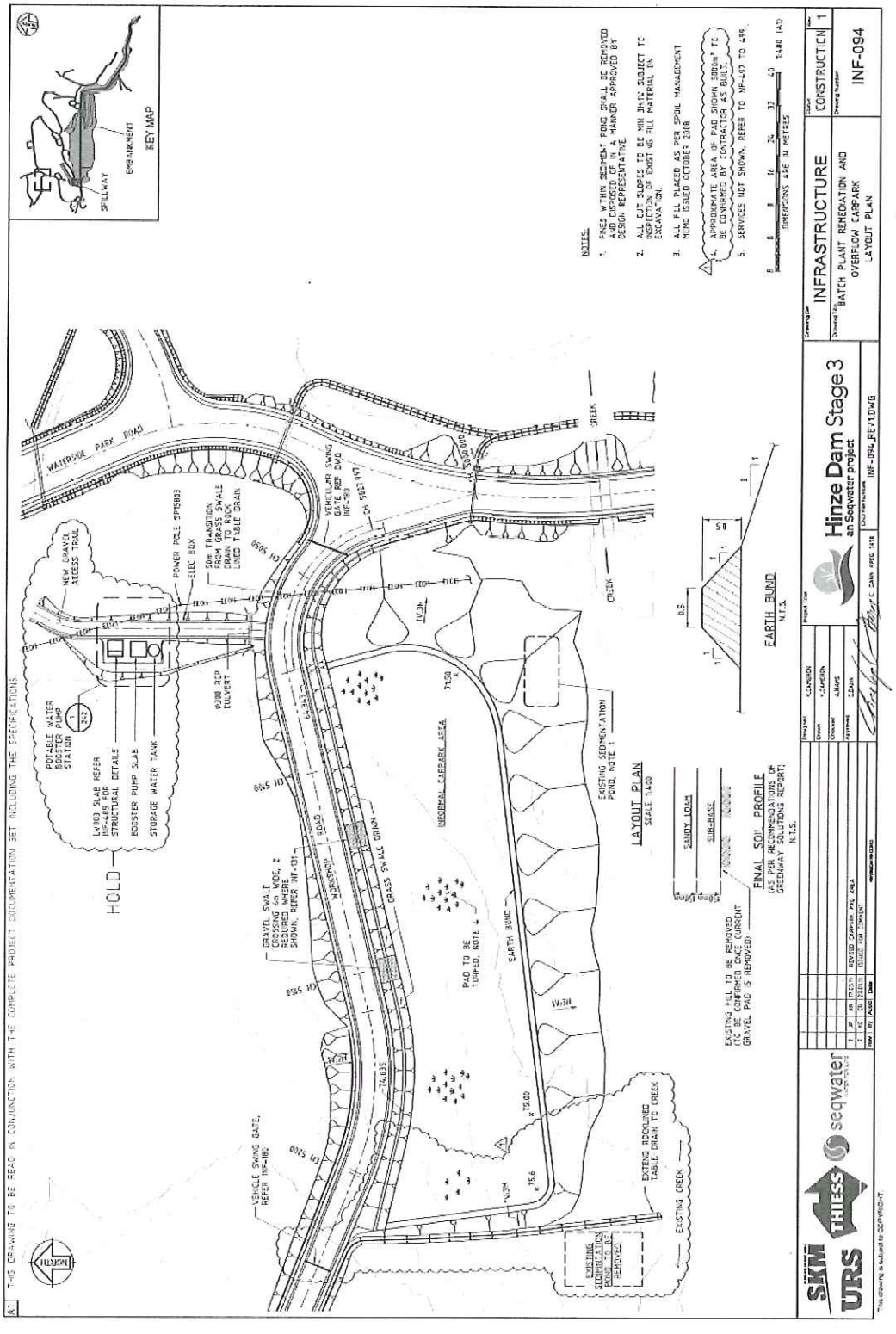


Figure 3 – Plan INF-094, "Batch Plant Remediation and Overflow Carpark Layout Plan", Rev 1.



Part 4 – Site specific conditions

Location: Boyd Street, TUGUN – Lot 30 Plan SP240300

Relevant activities: 64-(1b) Water treatment >5ML water/day seawater
8-(5) Chemical storage >200m^3 liquids

The environmentally relevant activities conducted at the location as described above must be conducted in accordance with the following site specific conditions of approval.

Agency interest: General	
Condition number	**Condition**
G4-1	The works must be undertaken in accordance with the documents and plans listed.
G4-2	The operator of an ERA to which this environmental authority relates must implement the following operational management plans/programs:- a. Gold Coast Desalination Plant Water Quality Management Program (GCDPWQMP) comprises Receiving Environment Monitoring Program (REMP), Entrained Organisms Monitoring Program (EOMP), Marine Contaminants Risk Assessment (MCRA)]; and b. Gold Coast Desalination Plant Noise Management Plan (GCDPNMP); and c. Gold Coast Desalination Plant Hazardous Materials Management Plan (GCDPHMMP); and d. Gold Coast Desalination Plant Groundwater Monitoring Program (GCDPGMP);
G4-3	When treating and managing ASS, the operator of an ERA to which this environmental authority relates must comply with: a. the Queensland Environmental Protection Agency's *Instructions for the treatment and management of acid sulfate soils (2001)* or more recent editions or supplements to that document as such become available; and/or b. the Queensland Department of Natural Resources and Mines *Queensland Acid Sulfate Soil Technical Manual (Version 2.2 September 2004)* or more recent editions or supplements to that document as such become available.
G4-4	Any excavation or disturbance to potential or actual ASS during the carrying out or establishment of the ERA(s) must be done in accordance with an appropriate ASS Management Plan and (if applicable) a Dewatering Management Plan, based on provisions of the *State Planning Policy 2/02 Guideline, Planning and Managing Development involving Acid Sulfate Soils* and the Queensland Department of Natural Resources and Mines Queensland *Acid Sulfate Soil Technical Manual (Version 2.2 September 2004).*
G4-5	ASS must be managed in a way so that contaminants are not directly or indirectly released to any waters, including surface water and groundwater, to an extent that would cause environmental harm.

G4-6	All ponds used for the storage or treatment of ASS or other contaminants must be constructed, installed and maintained: a. so as to prevent any release of contaminants through the bed or banks of the pond to any waters (including groundwater) to an extent that would cause environmental harm; b. so that a freeboard of not less than 0.5 metres is maintained at all times; c. so as to ensure the stability of the ponds' construction; and d. so as to prevent the ingress of stormwater.
G4-7	Any temporary or permanent dewatering ponds or water bodies used to contain or treat ASS must not be constructed on a watercourse.
G4-8	Suitable banks and/or diversion drains must be installed and maintained to exclude stormwater runoff from entering any ponds or other structures used for the storage or treatment of contaminants including ASS or other wastes.
G4-9	All disturbed ASS or potential ASS must be disposed to a landfill licensed to accept such material.
G4-10	All analyses and tests (except continuous online measurements, bund and pit testing and stormwater testing) required to be conducted under this environmental authority must be carried out by a laboratory that has NATA certification for such analyses and tests, except as otherwise authorised by the administering authority.
G4-11	The operator of an ERA to which this environmental authority relates must ensure that the results of all the monitoring performed in accordance with this environmental authority for the period covered by the annual return are kept at the premises to which this environmental authority relates.
G4-12	The operator of an ERA to which this environmental authority relates must submit an annual environmental report (by calendar year), within 60 days of the end of each calendar year.
G4-13	The report required pursuant to condition G4-12 shall include the following information: a. the daily total volume in kilolitres and daily average flow rate in m^3/s of seawater influent treated pursuant to condition WA4-13; and b. the daily total volume in kilolitres and daily average flow rate in m^3/s of the desalination effluent discharged to marine waters determined pursuant to condition WA4-14; and c. the daily total volume in kilolitres and daily average flow rate in m^3/s of the brine component of the desalination effluent discharged to marine waters determined pursuant to condition WA4-15; and d. a summary of monitoring results obtained under any monitoring programs required under this environmental authority and, in graphical form showing relevant limits, a comparison of the previous twelve (12) months monitoring results to both this environmental authority limits and to relevant prior results; and e. an evaluation/explanation of the data from any monitoring programs; and f. a summary of the record of equipment failures or events recorded for any site under this environmental authority; and g. an outline of actions taken or proposed to minimise the environmental risk from any deficiency identified by the monitoring or recording programs.

Agency interest: Air

Condition number	**Condition**
A4-1	The release of noxious or offensive odours or any other noxious or offensive airborne contaminants resulting from the activities must not cause an environmental nuisance at an Odour Sensitive Place.

A4-2	The release of dust and/or particulate matter resulting from the activities must not cause an environmental nuisance at any Dust Sensitive Place.
A4-3	Dust and particulate matter must not exceed the following levels when measured at any dust sensitive place: a. Dust deposition of 120 milligrams per square metre per day, when monitored in accordance with Australian Standard AS 3580.10.1 of 2003 (or more recent editions).
A4-4	Upon request by the administering authority, dust and particulate monitoring must be undertaken to investigate any complaint of environmental nuisance caused by dust and/or particulate matter, and the results notified within 14 days to the administering authority following completion of monitoring. Monitoring must be carried out at a place(s) relevant to the potentially affected dust sensitive place and at upwind control sites and must include: a. for a complaint alleging dust nuisance, dust deposition.
Agency interest: Noise	
Condition number	**Condition**
N4-1	All noise from the ERA(s) must not exceed the levels specified in Table 4-1 - Noise Limits, at any noise sensitive place.
N4-2	Upon request by the administering authority, noise monitoring must be undertaken to investigate any complaint of noise nuisance, and the results notified within 14 days to the administering authority. Monitoring must include: a. background noise level ($L_{Ag0,1\ hour}$); b. $L_{Aeq,\ 1\ hour}$ noise level; c. the level and frequency of occurrence of impulsive or tonal noise; d. atmospheric conditions including wind speed and direction; e. effects due to extraneous factors such as traffic noise; and f. location, date and time of recording.
N4-3	The method of measurement and reporting of noise levels must comply with the administering authority's latest addition of the Noise Measurement Manual, and supplements to that document as they become available.
N4-4	The process plant will operate continuously and will be staffed during periods of operation. Maintenance activities will generally take place during the day only, unless plant shutdown is required. These times can only vary with the prior approval of management or in the event of an emergency situation.
Agency interest: Land	
Condition number	**Condition**
L4-1	All chemical tanks must have High Level Alarms connected to a system that allows on-line real-time monitoring with suitable alarms for chemicals stored in tanks.
L4-2	All bunding must have level alarms that are connected to a system that allows on-line real-time monitoring with suitable alarms.

L4-3	Wastewater collected within any bunded area or service pit containing chemical transfer lines must be monitored and disposed of in accordance with the following conditions: a. Wastewater must only be released to the bio-retention basin via overland flow when compliance with the release limits specified in Table 4-5 - Bund and Pit Testing and Release Criteria is met; b. Wastewater which complies with the fluoride limit specified in Table 4-5 - Bund and Pit Testing and Release Criteria but fails to comply with any other parameter as detailed in Table 4-5 - Bund and Pit Testing and Release Criteria is to be treated on site via the neutralisation tank, disposed of via tradewaste or disposed of offsite; and c. Wastewater which fails to comply with the fluoride limit specified in Table 4-5 Bund and Pit Testing and Release Criteria, and any other parameter detailed in Table 4-5 Bund and Pit Testing and Release Criteria, is to be transferred to temporary storage within a bunded area prior to off-site disposal.
L4-4	Where a collection sump and drainage outlet are provided to facilitate removal of liquid collected within the bunded area, that outlet must be kept closed and secured at all times.
L4-5	Spillage of all chemicals must be contained within an on-site containment system and be controlled in a manner that prevents environmental harm.
Agency interest: Water	
Condition number	**Condition**
WA4-1	Contaminants must not be directly or indirectly released from the site to any waters, including groundwater, or the bed and banks of any waters except as permitted in this environmental authority, or to a sewer as permitted or otherwise agreed from time to time by the relevant Government Authority, to an extent that would cause environmental harm.
WA4-2	The operator of an ERA to which this environmental authority relates must not cause or allow any stormwater, other than clean water, to be released from the land located at Boyd Street, Tugun and more particularly described as Lot 30 Plan SP240300. For the purposes of this environmental authority, "clean water" means water that does not exceed the limits stated in Table 4-6 - Stormwater Release Criteria.
WA4-3	The operator of an ERA to which this environmental authority relates must implement an on-going Groundwater Monitoring Program (GMP), including the development of a suitable groundwater monitoring network, to monitor the quality of groundwater potentially impacted by any direct or indirect release of contaminants associated with any ongoing operations and/or any ERAs and/or Notifiable Activities.
WA4-4	The groundwater monitoring network referred to in condition WA4-3 must be maintained by a suitably qualified and experienced person.

WA4-5	The operator of an ERA to which this environmental authority relates must conduct a GMP which complies with the following requirements: a. All determinations of the quality of contaminants released to waters must be made in accordance with, but are not limited to, methods prescribed in: i. AS/NZS 5667:11:1998 - Water Quality- Sampling - Guidance on sampling of groundwaters, or more recent editions or supplements to that document as such become available; and/or ii. The administering authority's latest edition of the Monitoring and Sampling Manual, or supplements to that document as they become available. b. Groundwater samples taken from the bores must be analysed for, but are not limited to, the water quality parameters required in Table 4-2 Groundwater Water Quality Parameters and Sampling Frequencies. c. Standing water levels and total well depths in metres must be measured and recorded on during each sampling event relative to the Australian Height Datum. Such measurements must be undertaken prior to any disturbance by sampling activities and must be reported as the depth in metres from the top edge of the highest point of the casing collar to the water surface within the bore. d. Groundwater samples taken from the bores must be representative of the aquifer(s). e. Groundwater quality must be monitored as often as necessary, but not less frequently than required in Table 4-2 Groundwater Water Quality Parameters and Sampling Frequencies. f. Groundwater samples must be taken from each of the bores during each sampling event.
WA4-6	Any record made of the results of groundwater quality monitoring made in accordance with condition WA4-5 must be kept for not less than fifteen (15) years from the date the record was made.
WA4-7	The operator of an ERA to which this environmental authority relates must ensure that the groundwater monitoring data gathered in accordance with this environmental authority is analysed and interpreted to access the nature and extent of any environmental harm of the ERA(s) and/or Notifiable Activities. The assessment must also include; but not be limited to, the location, nature (confined, unconfined etc.) and quality of each aquifer, define groundwater contours, and indicate direction of flow. The data collation, analysis and assessment must be conducted by a suitably qualified and experienced person and must be submitted to the administering authority upon request.
WA4-8	Contaminants must not be directly or indirectly released from the place to which this environmental authority relates to any waters or the bed and banks of any waters except desalination effluent in compliance with the corresponding release limits listed in Table 4-3 – Contaminant release water quality limits and release locations and Table 4-4 - Maximum permitted quantity of release, and in accordance with the conditions of this environmental authority.
WA4-9	The release of contaminants from the premises must not: a. produce any slick, discoloration of ambient waters or visible evidence of oil or grease, nor contain visible floating oil, grease, scum, litter or other objectionable matter; nor b. have any other properties nor contain any other contaminants in concentrations that may cause environmental harm beyond the edge of the mixing zone.
WA4-10	The operator of an ERA to which this environmental authority relates must undertake monitoring of contaminants released from the Gold Coast Desalination Plant at the monitoring point, and must keep records, for the quality characteristics and the frequency specified in Table 4-3 - Contaminant release water quality limits and release locations.
WA4-11	All determinations of the quality of contaminants in desalination effluent released must be made on samples that are representative of the discharge via flow-proportioned or time-based composite sample taken over 24 hours at intervals not greater than 2 hours.

WA4-12	The operator of an ERA to which this environmental authority relates must ensure there is sufficient backup power available to operate monitoring equipment associated with the Gold Coast Desalination Plant at all times
WA4-13	The daily volume and daily average flow rate of seawater influent treated must be determined or estimated by an appropriate method with an accuracy of +/- 5%, and records kept of such determinations.
WA4-14	The daily volume and daily average flow rate of desalination effluent released from the premises must be determined or estimated by an appropriate method with an accuracy of +/- 5%, and records kept of such determinations.
WA4-15	The daily volume and daily average flow rate in m^3/s of the brine component of the desalination effluent discharged to marine waters must be determined or estimated by an appropriate method with an accuracy of +/- 5%, and records kept of such determinations.
WA4-16	Monitoring of seawater influent for pH, temperature, turbidity, and conductivity must involve instrumentation that is continuous, on-line, real-time and be able to be recorded and alarmed.
WA4-17	Monitoring of desalination effluent for pH, chlorine, dissolved oxygen concentration and percent saturation, temperature, turbidity, and conductivity must involve instrumentation that is continuous, on-line, real-time and be able to be recorded and alarmed.
WA4-18	The operator of an ERA to which this environmental authority relates must finalise a Water Quality Management Program comprising the following: a. A Receiving Environment Monitoring Program (REMP) that is designed to: i. monitor the physicochemical characteristics of the marine water in the vicinity of the discharge that will ascertain whether there has been an ecologically significant impact on either near- or far-field environmental values, and ii. detect, qualify and quantify the ecological effects of the desalination effluent and its constituent contaminants released into the receiving environment from the discharge diffuser. b. An Entrained Organisms Monitoring Program (EOMP) that is designed to: i. monitor the impact of the seawater intake riser in regards to entrainment of marine organisms, and ii. qualify and quantify the significance of the ecological effect(s) of the desalination plants' seawater intake in regards to entrained marine organisms. c. A Marine Contaminant Risk Assessment (MCRA) that will quantify the risk posed by each and all chemical additives used in the treatment process that are likely to be retained as a residual in the desalination plant effluent stream. This MCRA process should follow the hierarchical approach as detailed in the Australian & New Zealand Environment & Conservation Council's "Australian Water Quality Guidelines for Fresh and Marine Water Quality", December 2000 (ANZECC 2000). In the case where there is insufficient pre-existing data to accurately quantify or estimate the risk posed by a particular chemical additive or mixture to marine organisms, there may be a requirement, at the administering-authority's discretion, to perform: i. A Toxicological Bioassay (TB), and/or ii. Direct Toxicity Assessment (DTA).

WA4-19	The proposal for the REMP must include but not be limited to the following: a. description of potentially affected environment including key flora and fauna communities, sediment and ambient water quality; and b. description of water quality objectives and biological objectives to be achieved; and c. description of selected physicochemical (including pH, total nitrogen, total phosphorus, dissolved iron, salinity, dissolved oxygen concentration and percent saturation, water clarity analyses) and biological indicators (including chlorophyll 'a' and macro algal monitoring) and reasons for their inclusion; and d. the details of and justification for the impact site, reference site, and in-situ monitoring station locations, including any monitoring transects away from the outfall (diffuser) of the approved release; and e. the sampling depths for ambient water quality and vertical water profile sampling; and f. the water quality characteristics of receiving waters to be determined; and g. the frequency of water, sediment and biological sampling and analysis; and h. a detailed, complete and comprehensive description of the administering authority approved sampling methods, techniques, equipment, maintenance protocols and quality assurance strategies to be employed for all field-related monitoring and sampling activities; and i. any historical data sets to be relied upon; and j. description of the statistical basis on which conclusions are drawn.
WA4-20	The proposal for the REMP must also consider, but not be limited to, the following: a. Water quality criteria specified in ANZECC 2000; b. the *Environmental Protection (Water) Policy 2009* and any other Environmental Protection Policies enacted under Queensland's *Environmental Protection Act 1994* concerning the receiving environment; c. relevant reports produced as a consequence of the Department of Environment and Heritage Protection's Environmental Monitoring Programs d. any other requirements arising due to the inclusion of the receiving environment, within which the REMP is proposed, as part of any Marine Park and/or Fish Habitat Areas, if applicable; e. relevant reports prepared by other governmental or professional research organisations that relate to the receiving environment within which the REMP is proposed; and f. spatial and temporal controls to exclude potential confounding factors.
WA4-21	The proposal for the EOMP must include but not be limited to an assessment of the impact that the entrainment of marine organisms is having on the local marine ecology, and the recreational and commercial fishing activities of the area. This should include (but not be limited to) the projected long-term impacts if the observed rate of entrainment (to-date) was to continue.

WA4-22	The proposal for the MCRA must include but not be limited to the following: a. A critical review process built within a risk assessment framework aimed at quantifying the risks posed by any and all compounds that could be considered a contaminant to marine environments or potentially toxic to the organisms found in and around the waters of the discharge point, or b. In the case where condition WA4-22(a) cannot be satisfied, or the administering authority judges that the assessment of a contaminant has determined the risk posed to the environment to be unacceptable, that there be a provision to perform one or more: i. TBs to demonstrate that, the contaminant does not pose an acute toxicity risk to the appropriate test specimens when exposed to the contaminant at concentrations observed within the near-field mixing zone, or ii. DTAs to demonstrate that the contaminant does not pose an acute toxicity risk to the appropriate test specimens when exposed to the contaminant at concentrations observed within the near-field mixing zone. c. In the case where one or more TB and/or DTAs need to be performed, they are to be performed on five organism taxa from four taxonomical groups as per ANZECC 2000, and be approved by the administering authority, and: i. be conducted on the post-commissioning desalination effluent once the treatment process has stabilised (so that the waste stream being produced is indicative of the likely effluent to be discharged from the diffusers in the foreseeable future), and ii. be repeated each time there is a change in either: 1. the treatment process, that the administering authority believes may constitute a significant change in the toxicological characteristics of the desalination plant effluent, or 2. the diffuser discharge characteristics that the administering authority believes may constitute a significant change in the dilution characteristics of the desalination effluent. iii. demonstrate that there is no observable effect in any of the DTA test organisms after 24-hours, and if an observable effect is recorded, then: 1. the Incident Management Program (IMP) comes into effect, and 2. the outcome of the IMP be that there is no observable effect in any of the test organisms after an identical DTA is repeated.

Table 4-1 - Noise Limits

Sound Pressure Level dB(A)	Monday to Saturday			Sundays and public holidays		
	7am - 6pm	6pm - 10pm	10pm - 7am	9am - 6pm	6pm - 10pm	10pm - 9am
	Noise measured at a 'Noise sensitive place'					
$L_{Aeq\ 1hour}$	Background +3 dB(A)	Background +3 dB(A)	Background +3 dB(A)	Background +3 dB(A)	Background +3 dB(A)	Background +3 dB(A)

Where "Background" means background minLA90,1 hour sound pressure level measured in accordance with the latest edition of the Department of Environment and Resource Management Noise Measurement Manual and the Planning for Noise Control Guideline

Table 4-2 – Groundwater Water Quality Parameters and Sampling Frequencies

ERA	Water Quality Parameter	Monitoring Frequency
ERA 8(5)	pH (pH scale)	Annually
	Major Anions (Chloride, Sulphate, Fluoride) (mg/L)	
	Major Cations (Calcium, Magnesium, Sodium, Potassium, Iron) (mg/L)	
ERA 64(1(b))	Electrical Conductivity (mS/cm)	
	Total Dissolved Solids (mg/L)	
	Total Nitrogen (as Nitrogen, mg/L)	
	Nitrite Nitrogen (as Nitrogen, mg/L)	
	Nitrate Nitrogen (as Nitrogen, mg/L)	
	Total Phosphorus (mg/L as Phosphorus)	

Table 4-3 – Contaminant Release Water Quality Limits and Release Locations

Release Limits							Monitoring Frequency
Monitoring Point	Release Point Quality characteristic	Units	Min	5%ile	95%ile[1]	Max	
P1 – Outfall Shaft	Turbidity	NTU	-	-	BG* + 5[2]	BG* + 20[2]	Online continuous[3][4]
	Dissolved Oxygen (DO)	mg/L	3.4	-	-	-	Online continuous[4]
	Salinity	PSU	-	-	< or = 67 if BG**<38 otherwise 67 x BG**/38	< or = 75 if BG**<38 otherwise 75 x BG**/38	Calculated continuously ##[3][4]
	Electrical Conductivity	mS/cm	-	-	Salinity equivalent	Salinity equivalent	Online continuous[3][4]
	pH	-	5.5	6.5	8.5	9.5	Online continuous[4]
	Total Chlorine	µg/L	-	-	120	700	Online continuous[4]
	Temperature	°C	-	-	-	-	Online

							continuous[(4)]
	Total Suspended Solids	mg/L	-	-	10 if BG*** < 10 else BG*** +2	20 if BG*** < 10 else BG*** +10	Weekly of composite sample[###(3)(4)]
	Total Nitrogen[#]	µg/L as N	-	-	-	-	Weekly of composite sample[###(4)]
	Total Phosphorus[#]	µg/L as P	-	-	-	-	Weekly of composite sample[###(4)]

P1 Monitoring Point P1 – Outlet of Gold Coast Desalination Plant i.e - the outfall shaft located at the desalination plant site, refer Figure Three.

BG* Indicates intake seawater turbidity at time of measurement. The intake seawater turbidity to be measured at the outlet of the drum screens.

BG** Indicates intake seawater salinity as calculated from a conductivity and temperature measurement, at time of measurement. The intake seawater conductivity to be measured at the outlet of the drum screens when available.

BG*** Indicates intake seawater total suspended solids at time of measurement. The intake seawater suspended solids to be measured at the inlet of the drum screens when available.

N Nitrogen

P Phosphorous

< Indicates less than

= Indicates equals

Data for these parameters will be used as part of the REMP

Indicates Salinity to be calculated from conductivity measurements. The site specific conductivity is converted to Salinity using the UNESCO Practical Salinity Scale (PSS-78).

"weekly of composite sample" means a sample taken over a 24 hour period once per week. The sample to be made up of a composite of samples taken at least every 2 hours and being representative of the flow.

(1) indicates that any on-line continuous monitoring must have a minimum frequency of every 5 minutes and is calculated over the last 12 hours.

(2) where on line continuous monitoring results for turbidity exceed the nominated criteria for a sustained period of more than 3 minutes.

(3) background monitoring not required during periods of no intake flow.

(4) monitoring exempt during periods of cleaning of the outfall shaft sample pump

Table 4-4 - Maximum permitted quantity of release

Maximum permitted quantity of release	
Release point	Maximum release on any one day
P1	360 ML[(1)]

(1) indicates excluding flows during "commissioning period."

Table 4-5 - Bund and Pit Testing and Release Criteria

Parameter	Release Limit	Limit Type	Monitoring Location
pH (pH units)	6.5-8.5	Range	Water from within all bunds/pits is to be sampled and analysed prior to release, treatment or disposal in accordance with Condition L4-3
Electrical conductivity (µS/cm)	1500	Maximum	
Turbidity (NTU)	30	Maximum	
Total chlorine (mg/L)	0.05	Maximum	
Iron (mg/L)	0.05*	Maximum	
Fluoride (mg/L)	1.0**	Maximum	

Footnotes:
* = Only tested when the pit or bund contains Ferric Sulphate storage or transfer lines.
** = Only tested when the pit or bund contains Fluoride storage or transfer lines.

Table 4-6 - Stormwater Release Criteria

Parameter	Release Limit	Limit Type	Monitoring Location
pH (pH units)	6.5-8.5	Range	SW1 (see Figure Two)
Electrical conductivity (µS/cm)	1500	Maximum	
Turbidity (NTU)	30	Maximum	

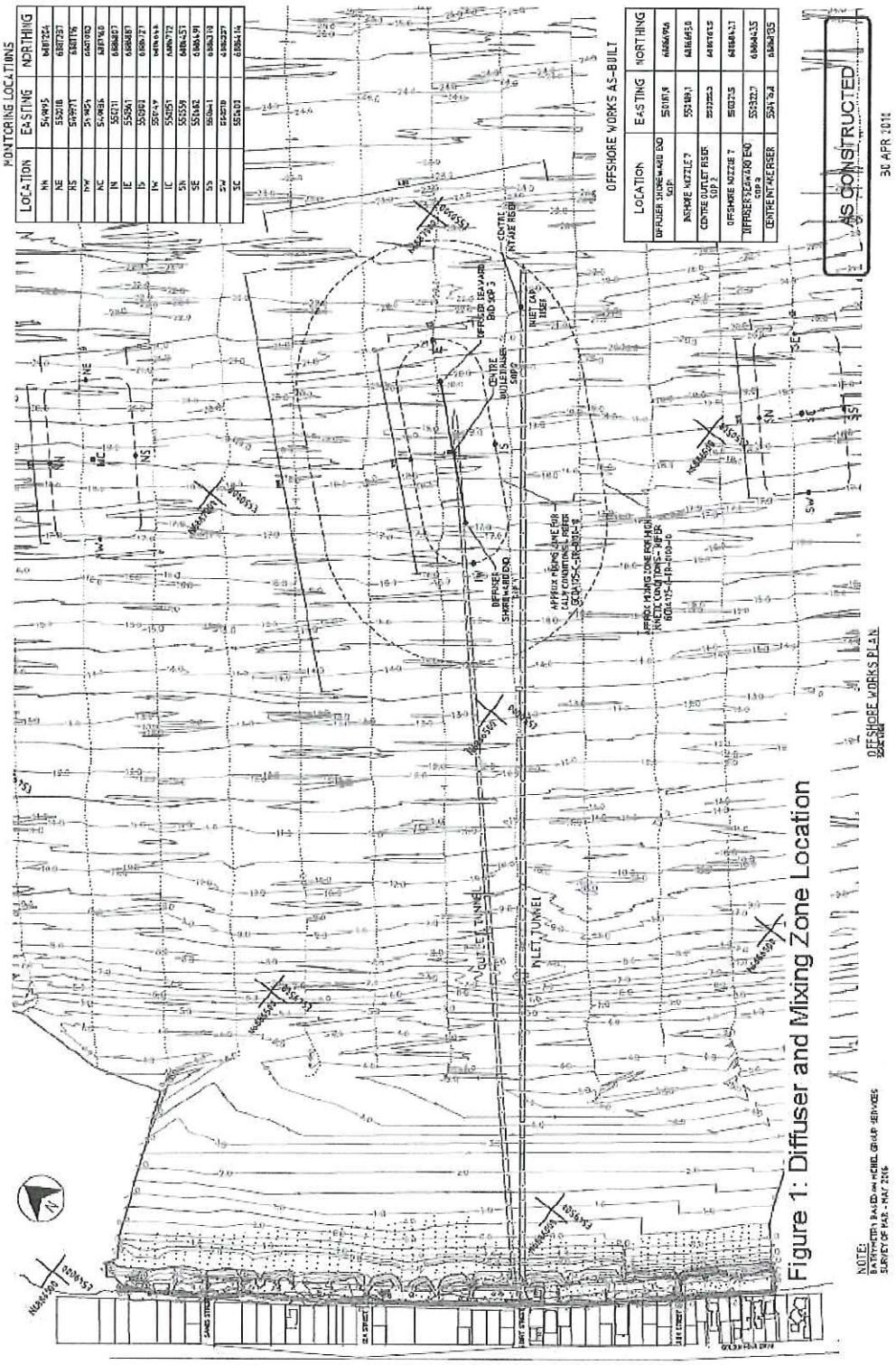


Figure One (4-1) – Diffuser and Mixing Zone Location

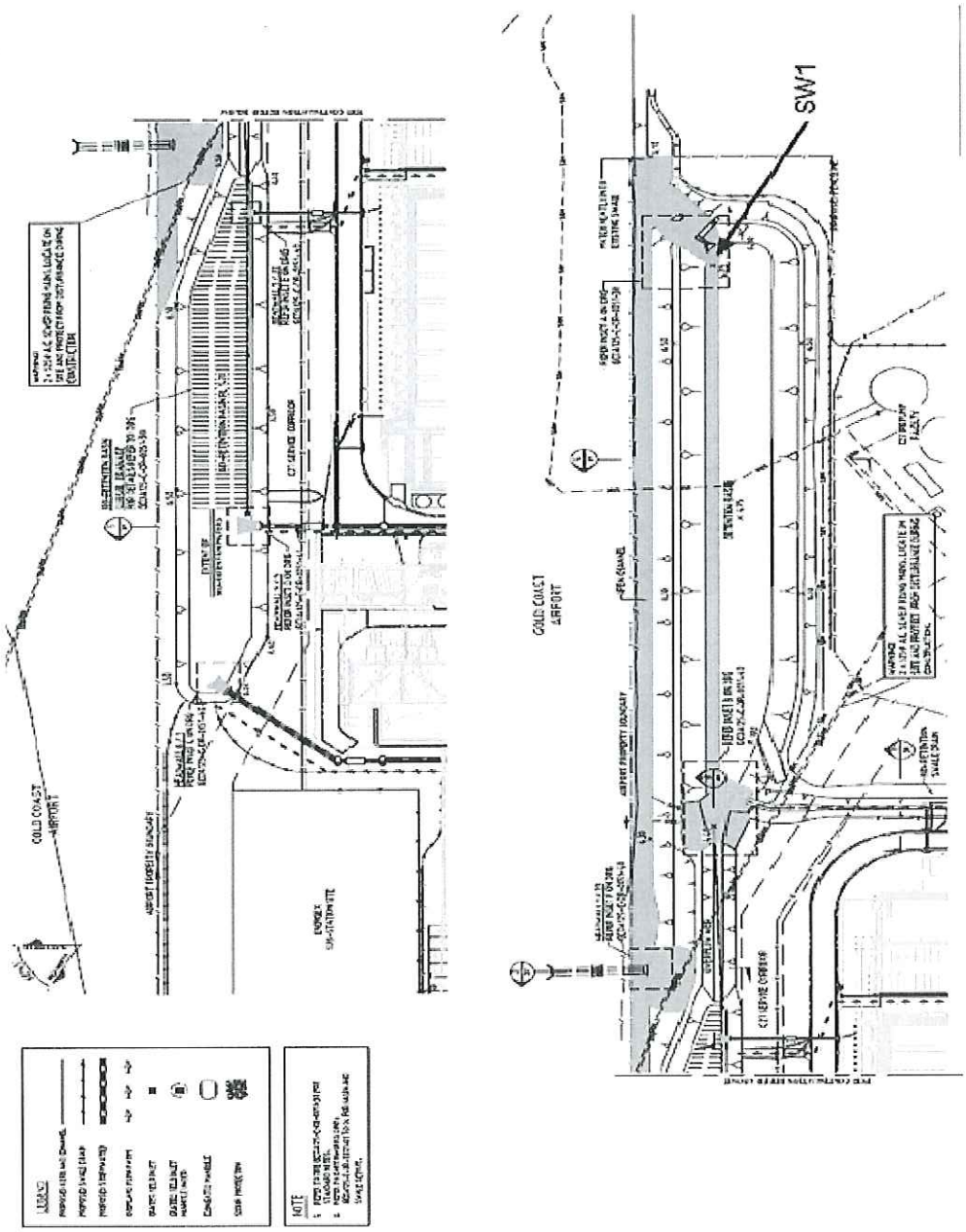


Figure Two (4-2) – Stormwater Drainage Basin Layout and Monitoring Location SW1

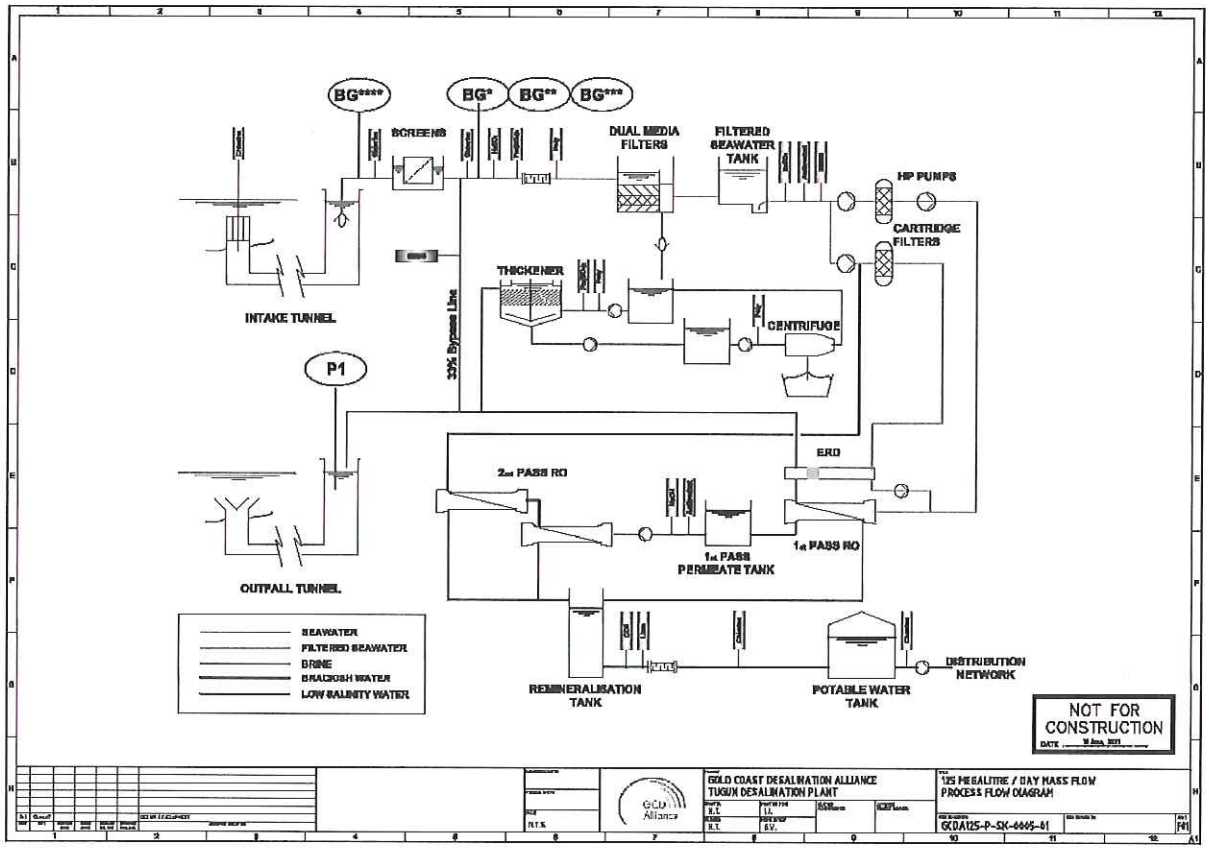


Figure Three (4-3)
Location of Sampling Point (P1) at the Gold Coast Desalination Plant

Part 5 – Site specific conditions

Location: **Gordon Mining Road NORTH STRADBROKE WTP - Lot 1 Plan CP818898**

Relevant activities: **64-(3) Water treatment >10ML raw water/day**

The environmentally relevant activities conducted at the location as described above must be conducted in accordance with the following site specific conditions of approval

Agency interest: Air	
Condition number	**Condition**
A5-1	Except as otherwise provided by the conditions of the air schedule of this environmental authority, the environmentally relevant activity must be carried out by such practicable means necessary to prevent the release or likelihood of release of contaminants, that will or may cause environmental harm to the atmosphere
A5-2	Where it is not practicable to prevent a release of contaminants to the atmosphere as required by condition A5-1, the environmentally relevant activity must be carried out by such practicable means necessary to minimise the release or likelihood of any such release of contaminants to the atmosphere. The reasonable and practicable means adopted to comply with conditions A5-1 and A5-2 must be incorporated into the relevant site based environmental management plan for the premises
Agency interest: Water	
Condition number	**Condition**
WA5-1	Contaminants must not be directly or indirectly released from the premises to any waters or the bed and banks of any waters except: a. as permitted under the stormwater management schedule; or b. to a sewer as permitted or otherwise agreed from time to time by the relevant Local Government
WA5-2	Sludge and other waste generated in carrying out the environmentally relevant activity must not be placed or stored in a position from which it is likely that the said sludge or waste or any leachate from the said sludge or waste could be reasonably likely to be released to any waters (including the bed or banks of any such waters), for example in a position immediately adjacent to waters. "Leachate" for the purposes of this condition means a liquid that has passed through or emerged from sludge or other waste disposed of or stored and contains soluble, suspended or miscible materials removed from such sludge or other waste.

WA5-3	Except as otherwise provided by the conditions of the stormwater management schedule and the water schedule of this environmental authority, the environmentally relevant activity must be carried out by such practicable means necessary to prevent and/or minimise the release or likelihood of release of contaminated runoff from the premises to any stormwater drain or waters or the bed or banks of any such waters. "Contaminated runoff" for the purposes of this condition means stormwater and/or stormwater runoff that contains contaminants that may cause environmental harm, for example, suspended solids, turbidity, oil and grease and salinity
Agency interest: Noise	
Condition number	**Condition**
N5-1	In the event of a complaint about noise that constitutes intrusive noise being made to the administering authority, that the administering authority considers is not frivolous or vexatious, then the emission of noise from the premises must not result in levels greater than those specified in Table 5-1 – Noise Limits.
N5-2	For the purposes of checking compliance with condition N5-1 of Table 5-1 – Noise Limits, monitoring and recording of the noise levels from the activity/activities must be undertaken for the following descriptors, characteristics and conditions: a. $L_{Amax, Adj T}$; b. $L_{Abg, T \text{ or } LA90, T}$; c. $L_{AN, T}$ (where N equals statistical levels of 1, 10, 50, 90 and 99); d. $L_{pA T}$; e. $L_{Aeq, T}$; f. The level and frequency of occurrence of impulsive or tonal noise; g. Atmospheric conditions including temperature, relative humidity and wind speed and direction; and h. Effects due to extraneous factors such as traffic noise.
N5-3	In conjunction with the measurement and recording of noise, the following parameters and conditions must be recorded: a. Location, date and time of recording.
N5-4	Monitoring must also be undertaken to investigate any complaint of noise annoyance upon receipt of a written request from the administering authority to carry out such monitoring.
N5-5	The method of measurement and reporting of noise levels must comply with the administering authority's latest edition Noise Measurement Manual, or supplements to that document as become available.
N5-6	The measurement and reporting of noise levels must be undertaken by a person or body possessing appropriate experience and qualifications to perform the required measurements.

Agency interest: Monitoring and Reporting	
Condition number	**Condition**
M5-1	The operator must notify the administering authority in writing of any monitoring result which indicates an exceedance of or non-compliance with any licence limit within twenty eight (28) days of completion of analysis
M5-2	The written notification required by condition number M5-1 above must include: a. the full analysis results, and b. details of investigation or corrective actions taken, and c. any subsequent analysis.

Table 5-1 – Noise Limits

NOISE LIMITS AT A NOISE SENSITIVE PLACE	
Period	***Noise Level at a Noise Sensitive Place Measured as the Adjusted Maximum Sound Pressure Level*** $L_{Amax\ adj,\ T}$
7 am - 6 pm	Background noise level plus 5 dB(A)
6 pm - 10 pm	Background noise level plus 5 dB(A)
10 pm - 7 am	Background noise level plus 5 dB(A)
NOISE LIMITS AT A COMMERCIAL PLACE	
7 am - 6 pm	Background noise level plus 10 dB(A)
6 pm - 10 pm	Background noise level plus 10 dB(A)
10 pm - 7 am	Background noise level plus 10 dB(A)

Part 6 – Site specific conditions

Location: **Willowie Crescent CAPALABA WTP - Lot 2 Plan RP108087**

Relevant activities: **64-(3) Water treatment >10ML raw/water day**

The environmentally relevant activities conducted at the location as described above must be conducted in accordance with the following site specific conditions of approval

Agency interest: Air	
Condition number	**Condition**
A6-1	Except as otherwise provided by the conditions of the air schedule of this environmental authority, the environmentally relevant activity must be carried out by such practicable means necessary to prevent the release or likelihood of release of contaminants, that will or may cause environmental harm to the atmosphere.

A6-2	Where it is not practicable to prevent a release of contaminants to the atmosphere as required by condition A6-1, the environmentally relevant activity must be carried out by such practicable means necessary to minimise the release or likelihood of any such release of contaminants to atmosphere. The reasonable and practicable means adopted to comply with conditions A6-1 and A6-2 must be incorporated into the relevant site based environmental management plan for the premises.
Agency interest: Water	
Condition number	**Condition**
WA6-1	Contaminants must not be directly or indirectly released from the premises to any waters or the bed and banks of any waters except: a. As permitted under the stormwater management schedule; or b. To a sewer as permitted or otherwise agreed from time to time by the relevant Local Government.
WA6-2	Sludge and other waste generated in carrying out the environmentally relevant activity must not be placed or stored in a position from which it is likely that the said sludge or waste or any leachate from the said sludge or waste could be reasonably likely to be released to any waters (including the bed or banks of any such waters), for example in a position immediately adjacent to waters. "Leachate" for the purposes of this condition means a liquid that has passed through or emerged from sludge or other waste disposed of or stored and contains soluble, suspended or miscible materials removed from such sludge or other waste.
WA6-3	Except as otherwise provided by the conditions of the stormwater management schedule and the water schedule of this environmental authority, the environmentally relevant activity must be carried out by such practicable means necessary to prevent and/or minimise the release or likelihood of release of contaminated runoff from the premises to any stormwater drain or waters or the bed or banks of any such waters. "Contaminated runoff" for the purposes of this condition means stormwater and/or stormwater runoff that contains contaminants that may cause environmental harm, for example, suspended solids, turbidity, oil and grease and salinity.
Agency interest: Noise	
Condition number	**Condition**
N6-1	In the event of a complaint about noise that constitutes intrusive noise being made to the administering authority, that the administering authority considers is not frivolous or vexatious, then the emission of noise from the premises must not result in levels greater than those specified in Table 6-1 – Noise Limits.

N6-2	For the purposes of checking compliance with condition N6-1 of Table 6-1 – Noise Limits, monitoring and recording of the noise levels from the activity/activities must be undertaken for the following descriptors, characteristics and conditions: a. $L_{Amax, Adj\ T}$; b. $L_{Abg, T\ or\ LA90, T}$; c. $L_{AN, T}$ (where N equals statistical levels of 1, 10, 50, 90 and 99); d. $L_{pA\ T}$; e. $L_{Aeq, T}$; f. The level and frequency of occurrence of impulsive or tonal noise; g. Atmospheric conditions including temperature, relative humidity and wind speed and direction; and h. Effects due to extraneous factors such as traffic noise
N6-3	In conjunction with the measurement and recording of noise, the following parameters and conditions must be recorded: a. Location, date and time of recording.
N6-4	Monitoring must also be undertaken to investigate any complaint of noise annoyance upon receipt of a written request from the administering authority to carry out such monitoring.
N6-5	The method of measurement and reporting of noise levels must comply with the administering authority's latest edition Noise Measurement Manual, or supplements to that document as become available.
N6-6	The measurement and reporting of noise levels must be undertaken by a person or body possessing appropriate experience and qualifications to perform the required measurements.
Agency interest: Monitoring and Report	
Condition number	**Condition**
M6-1	The operator must notify the administering authority in writing of any monitoring result which indicates an exceedance of or non-compliance with any licence limit within twenty eight (28) days of completion of analysis
M6-2	The written notification required by condition number M6-1 above must include: a. The full analysis results, and b. Details of investigation or corrective actions taken, and c. Any subsequent analysis.

TABLE 6-1 – Noise Limits

NOISE LIMITS AT A NOISE SENSITIVE PLACE	
Period	***Noise Level at a Noise Sensitive Place Measured as the Adjusted Maximum Sound Pressure Level*** $L_{Amax\ adj,\ T}$
7 am - 6 pm	Background noise level plus 5 dB(A)
6 pm - 10 pm	Background noise level plus 5 dB(A)
10 pm - 7 am	Background noise level plus 5 dB(A)
NOISE LIMITS AT A COMMERCIAL PLACE	
Period	***Noise Level at a Commercial Place measured as the Adjusted Maximum Sound Pressure Level***

	$L_{Amax\ adj,\ T}$
7 am - 6 pm	Background noise level plus 10 dB(A)
6 pm - 10 pm	Background noise level plus 10 dB(A)
10 pm - 7 am	Background noise level plus 10 dB(A)

Part 7 – Site Specific Conditions

Location: Maroon Dam - Education Centre

Relevant Activities: 63-(1b)(ii) Sewage treatment >100 to 1500EP

Agency interest: General	
Condition number	**Condition**
G7-1	The registered operator must submit to the administering authority, a report proposing a long term strategy for management of wastes from toilets and ablution facilities aimed at keeping the environmental impacts to a practical minimum, by use of reasonable and practicable means such as the following: i. installation of composting or other toilets not requiring flushing water, including programmed replacement of existing flush toilets by other types over a stated number of years; ii. disposal of composted waste or sludge outside the dam catchment; iii. disposal of composted waste or sludge outside the recreation area where practicable, for example, by use as garden fertilizer; iv. disposal of composted waste or sludge by distribution over suitably wide areas within the recreation area to keep any adverse environmental impacts to a practical minimum; v. encouraging minimal use of water in showers and other washing facilities, by means such as: a. installation and maintenance of appropriate fittings, such as spring-loaded taps, and shower nozzles designed for low volumetric flow at high velocity; b. limiting available maximum flow-rates by limiting the height of water-supply head tanks; and The registered operator must have due regard to any comment by the administering authority in implementing the management strategy.
G7-2	All septic tanks used in the ERA must be inspected at least twice annually to determine whether sludge removal is required. Whenever a septic tank is found to require sludge removal, this must be carried out promptly.
G7-3	The ground surface near all effluent disposal trenches and areas must be inspected at least once every month for any signs of effluent percolation at the soil surface; the inspection must include ground up-slope and down-slope from each disposal trench or area. If effluent percolation is detected, the registered operator must take all reasonable and practicable measures to prevent further percolation of effluent.

Agency interest: Land

Condition number	Condition
L7-1	Sludge removed by the registered operator from sewage treatment plant must be disposed of by application to land in such a way as will keep to a practical minimum to risk of environmental harm. (a) All areas used for sludge disposal must be located at least 100 metres horizontally from any surface waters and at least 30 metres horizontally from any building. (b) In carrying out application of sludge to land, the registered operator must comply with the following requirements: i. The waste must be deposited in a trench or other excavation in soil which can absorb the waste; and ii. The waste must be completely covered with soil on the same day it is deposited.

Agency interest: Water

Condition number	Condition
WA7-1	The only release permitted from the approved place at the release point listed in Table 1, is the sewage treatment effluent from the sewerage system serving the respective area listed in the Table.

Table 1 - Release Point and Waste

Approved Place	Release Point No.	Release Point Description	Monthly Average of Daily Quantity
Maroon Dam	1	Sewage treatment plant for Education Centre - release to Burnett Creek	11m3 per day

WA7-2	The monthly average of the daily quantity of wastes released from the Release Point Listed in Table 1 must not exceed the quantity shown in the Table 1.
WA7-3	The releases to waters from Release Point No. 1 must comply, at the sampling and in situ monitoring point specified in Table1, with each of the limits specified in Table 2 for each quality characteristic.

Table 2 - Quality Characteristics of Releases to Waters

Quality Characteristic	Release Limit	Limit Type
5-day Biochemical Oxygen Demand (mg/L)	20	Maximum
Suspended Solids (mg/L)	30	Maximum
pH (pH units)	6.5 - 8.5	Range
Dissolved Oxygen (mg/L)	2	Minimum

Part 8 – Site Specific Conditions

Location: Moogerah Dam, south of Kalbar - block 2

Moogerah Dam, south of Kalbar - block 3

Relevant Activities: 63-(1a)(i) Sewage treatment >21 to 100EP - IT or IR

Agency interest: General	
Condition number	**Condition**
G8-1	The registered operator must submit to the administering authority, a report proposing a long term strategy for management of wastes from toilets and ablution facilities aimed at keeping the environmental impacts to a practical minimum, by use of reasonable and practicable means such as the following: i. installation of composting or other toilets not requiring flushing water, including programmed replacement of existing flush toilets by other types over a stated number of years; ii. disposal of composted waste or sludge outside the dam catchment; iii. disposal of composted waste or sludge outside the recreation area where practicable, for example, by use as garden fertilizer; iv. disposal of composted waste or sludge by distribution over suitably wide areas within the recreation area to keep any adverse environmental impacts to a practical minimum; v. encouraging minimal use of water in showers and other washing facilities, by means such as: a. installation and maintenance of appropriate fittings, such as spring-loaded taps, and shower nozzles designed for low volumetric flow at high velocity; b. limiting available maximum flow-rates by limiting the height of water-supply head tanks; and The registered operator must have due regard to any comment by the administering authority in implementing the management strategy.
G8-2	All septic tanks used in the ERA must be inspected at least twice annually to determine whether sludge removal is required. Whenever a septic tank is found to require sludge removal, this must be carried out promptly.
G8-3	The ground surface near all effluent disposal trenches and areas must be inspected at least once every month for any signs of effluent percolation at the soil surface; the inspection must include ground up-slope and down-slope from each disposal trench or area. If effluent percolation is detected, the registered operator must take all reasonable and practicable measures to prevent further percolation of effluent.

Agency interest: Land	
Condition number	**Condition**
L8-1	Sludge removed by the registered operator from sewage treatment plant must be disposed of by application to land in such a way as will keep to a practical minimum to risk of environmental harm. (a) All areas used for sludge disposal must be located at least 100 metres horizontally from any surface waters and at least 30 metres horizontally from any building. (b) In carrying out application of sludge to land, the registered operator must comply with the following requirements: i. The waste must be deposited in a trench or other excavation in soil which can absorb the waste; and ii. The waste must be completely covered with soil on the same day it is deposited.

Part 9 – Site Specific Conditions

Location: Warrill Valley Irrigation Project

Relevant Activities: 16(1a) Dredging >1000t but <10000t yr

Agency interest: Water	
Condition number	**Condition**
WA9-1	The licensee must take reasonable and practicable measures to ensure that **de-silting spoil** is disposed of in a location and in a manner which keeps to a practical minimum the risk of its being eroded and carried by wind or rainwater or other natural means into waters.

Agency interest: Waste	
Condition number	**Condition**
W9-1	The licensee must carry out a study which will enable identification of those of its irrigation areas where it is reasonable to expect that, as a result of agricultural practices, **de-silting spoil** could contain pesticides in concentrations liable to cause environmental harm. For purposes of this condition, an example of environmental harm is the presence of pesticide residues in meat as a result of disposal of **de-silting spoil** on land grazed by livestock. The study must include appropriate sampling and analysis to determine concentrations of pesticides for the purposes of the study. The study must cover at least the following aspects i. types of pesticides used in the irrigation areas; and ii. nature and properties of the pesticides, including half-life; and iii. likely environmental effects of the pesticides; and iv. typical pesticide concentrations in sediments of channels and drains at times of year when de-silting is likely to be carried out; and v. likely pathways of exposure of animals and humans to any pesticide residues in **de-silting spoil**.

Definitions

Key terms and/or phrases used in this document are defined in this section. Applicants should note that where a term is not defined, the definition in the *Environmental Protection Act 1994*, its regulations or environmental protection policies must be used. If a word remains undefined it has its ordinary meaning.

"**Act**" means the *Environmental Protection Act 1994*.
"activity" means the environmentally relevant activities, whether resource activities or prescribed activities, to which the environmental authority relates.

"administering authority" means the Department of Environment Heritage Protection (EHP) or its successor.

"acid sulfate soil" means a soil, sand, mud or clay containing significant levels of pyrite (iron sulphide), which on exposure to oxidising conditions has resulted in or has the capacity to result in the generation of sulphuric acid in quantities greater than the inherent buffer capacity of the soil.

"Acid Sulfate Soil Analysis Requirements" means:

1. All soil sampling and analysis must be made in accordance with methods prescribed in the draft "Sampling and Analysis Procedure for Lowland Acid Sulfate Soils in Queensland - 5 June 1996" M. Ahem and C. Ahem, or more recent additions or supplements to that document as such become available; and
2. All soil sampling, analysis and description must be performed by a suitably qualified and experienced person or body; and
3. Where practicable, samples taken to assess an area of excavated materials must be representative of the area which they are being used to assess;
4. A visual inspection of the premises and for a distance of 100 metres distant from the premises will be made following each rainfall event and on a monthly basis during dry periods to determine the presence of and assess the extent of:
    i. any unexplained scalding, degradation or death of vegetation (aquatic or terrestrial);and
    ii. any unexplained death or disease in aquatic organisms including invertebrates and fish; and
    iii. the formation of the mineral jarosite in exposed or excavated soils; and
    iv. areas of green-blue water or extremely clear water; and
    v. rust coloured deposits on plants and on the banks of drains, water bodies and water courses,
5. Soil characteristics to be determined for each horizon using methods including:
    i. field descriptions of each horizon using the nomenclature of the "Australian Soil and Land Survey Field Handbook" for each site or borehole; and
    ii. field texture, colour and pH; and
    iii. location of each site or borehole and its existing surface height (Australian Height Datum); and
    iv. net acid-generating potential (NAGP) (laboratory determination); and
    v. total oxidisable sulphur (TOS); and
    vi. levels of oxidisable sulphur (So_x) (laboratory determination).

"AMTD" means Adopted Middle Thread Distance as per the Queensland Water Resources Commission publication entitled "Atlas of AMTD Maps, January 1984."

"annoyance" - In determining what constitutes "annoyance", regard must be had to Australian Standard 1055.2 - 1989 Acoustics - Description and Measurement of Environmental Noise Part 2 - Application to Specific Conditions.

"annual return" means the return required by the annual notice (under section 308 of the *Environment Protection Act 1994*).

"authorised person" means a person holding office as an authorised person under an appointment under the *Environmental Protection Act 1994* by the chief executive or chief executive officer of a local government.

"background noise level" means either:

$L_{A90, T}$ being the A-weighted sound pressure level exceeded for 90 percent of the time period not less than 15 minutes, using Fast response, or

$L_{Abg, T}$ being the arithmetic average of the minimum readings measured in the absence of the noise under investigation during a representative time period of not less than 15 minutes, using Fast response

"brine" means the hypersaline by-product of seawater desalination.

"°C" means degrees Centigrade (or degrees Celsius)

"cfu" means colony forming units.

"commercial place" means a place used as an office or for business or commercial purposes.

"commissioning" for purposes of this environmental authority, means the first release of effluent from the brine tunnel to marine waters

"composite" in respect of sampling means either time based taken at hourly intervals to cover the period in the 24 hours of the sampling day during which a contaminant release occurs; or taken after set flow volumes to cover the period of the sampling day during which the contaminant release occurs.

"Department of Environment and Heritage Protection" (EHP) means the department or agency (whatever called) administering the *Coastal Protection and Management Act 1995* or the *Environmental Protection Act 1994*.

"desalination effluent" means any liquid by-product and product water including permeate and potable water discharged from the premises into marine waters;

"de-silting spoil" means material taken from the bed or banks of irrigation channels or tailwater drains by using dredging equipment or other equipment designed for use in extraction of earthen material.

"diffuser" for the specific purpose of this environmental authority means a 202m long, 1.2 m OD 14 port structure designed to facilitate uniform mixing of the desalination seawater concentrate in seawater where the eastern end is located at 550187.9E 688691.6N and the western end is located at 550322.7E and 6886843.5N as shown in Figure 1.

"DO" means '**Dissolved Oxygen'** in water or effluent, calculated either as percent oxygen saturation (%) or concentration (mg/L) at ambient temperature and salinity conditions.

"dry weather day" refers to a day during which no rainfall is recorded at any rainfall measuring station recognised by the Commonwealth Bureau of Meteorology within the sewered area connected to the sewage treatment plant, or if no such measuring station exists, at the nearest such station to the sewage treatment plant. The term also excludes days during which recorded rainfall over the three preceding days exceeds 100 mm.

"dry weather flow" refers to a day during which no rain falls within the catchment of the sewage treatment plant for the commencement of measurement for that day. The term also excludes days during which measurement is made which occur within three days following cumulative rainfall of 100mm over the three preceding days.

"DTA" or **"Direct Toxicity Assessment"** means ecotoxicology testing conducted by an independent testing laboratory

"**dust sensitive place**" means:

- a dwelling (other than a caretakers residence), residential allotment, mobile home or caravan park, residential marina or other residential premises; or;
- a library, childcare centre, kindergarten, school, college, university or other educational institution;
- a hospital, surgery or other medical institution;
- a protected area, or an area identified under a conservation plan as a critical habitat or an area of major interest, under the Nature Conservation Act 1992;
- a park or garden that is open to the public (whether or not on payment of money) for use other than for sport or organised entertainment.

"dwelling" means any of the following structures or vehicles that is principally used as a residence – a house, unit, motel, nursing home or other building or part of a building. NB: This does not include a caretaker's residence.

"edge of the mixing zone" means:

- under calm or ambient conditions, the edge of the mixing zone area will relate to an area that is 120 metres x 319 metres centred on the diffuser structure (refer Figure 1);
- under "high kinetic conditions" (as defined in the REMP), the edge of the mixing zone area will be 200 metres from any diffuser port on the diffuser structure.

'environmental authority' means an environmental authority issued under section 195 of the *Environmental Protection Act 1994* that approves an environmentally relevant activity applied for in an application.

"environmental nuisance" as defined under Chapter 1 of the *Environmental Protection Act 1994.*

"environmental value" as defined under Chapter 1 of the *Environmental Protection Act 1994.*

"intrusive noise" means noise that, because of its frequency, duration, level, tonal characteristics, impulsiveness or vibration -

(a) is clearly audible to, or can be felt by, an individual; and
(b) annoys the individual.

In determining whether a noise annoys an individual, regard must be had to Australian Standard 1055.2 - 1997 Acoustics - Description and Measurement of Environmental Noise- Application to Specific Situations.

"$L_{Aeq\ 1\ hour}$" means the A-weighted equivalent sound pressure level over the reference time interval, (adjusted for tonal character and impulsiveness of the sound) using Fast response.

"$L_{Amaxadj,\ T}$ " means the average maximum A-weighted sound pressure level, adjusted for noise character and measured over a time period of not less than 15 minutes, using Fast response

"land" in the "land schedule" of this document means land excluding waters and the atmosphere.

"**licensed**" means the person operating the facility mentioned in that condition holds a relevant licence under the *Environmental Protection Act 1994* to carry out an environmentally relevant activity mentioned in that condition.

"long term 80 percentile compliance" means that not more than ten (10) of the measured values of the quality characteristic are to exceed the stated release limit for any fifty (50) consecutive samples where:

1. the consecutive samples are taken over a one year period;
2. the consecutive samples are taken at approximately equal periods; and
3. the time interval between the taking of each consecutive sample is not less than six days.

"long term 50 percentile compliance" means that the median value of the measured values in ranked order of the quality characteristic is not to exceed the stated release limit for any fifty (50) consecutive samples where:

1. the consecutive samples are taken over a one year period;
2. the consecutive samples are taken at approximately equal periods; and
3. the time interval between the taking of each consecutive sample is not less than six days.

"MaxL_{pAT}" means the maximum A-weighted sound pressure level measured over a time period of not less than 15 minutes, using Fast response

"maximum" means that the measured value of the quality characteristic or contaminant must not be greater than the release limit stated.

"measures" has the broadest interpretation and includes plant, equipment, physical objects, bunding, containment systems, monitoring, procedures, actions, directions and competency.

"median" means the middle value, where half the data are smaller, and half the data are larger. If the number of samples is even, the median is the arithmetic average of the two middle values.

"mg/L" means milligrams per litre.

"minimum" means that the measured value of the quality characteristic or contaminant must not be less than the release limit stated.

"m^3/s" means cubic metres per second.

"mS/cm" milliSiemens per centimetre

"NATA" means National Association of Testing Authorities.

"noxious" means harmful or injurious to health or physical wellbeing.

"NTU" means nephelometric turbidity units.

"noise sensitive place" includes –

- a dwelling (other than a caretakers residence), residential allotment, mobile home or caravan park, residential marina or other residential premises; or;
- a library, childcare centre, kindergarten, school, college, university or other educational institution;
- a hospital, surgery or other medical institution;
- a protected area, or an area identified under a conservation plan as a critical habitat or an area of major interest, under the Nature Conservation Act 1992;
- a park or garden that is open to the public (whether or not on payment of money) for use other than for sport or organised entertainment.

"odour sensitive place" means;

- a dwelling (other than a caretakers residence), residential allotment, mobile home or caravan park, residential marina or other residential premises; or;
- a library, childcare centre, kindergarten, school, college, university or other educational institution;
- a hospital, surgery or other medical institution;
- a protected area, or an area identified under a conservation plan as a critical habitat or an area of major interest, under the Nature Conservation Act 1992;
- a park or garden that is open to the public (whether or not on payment of money) for use other than for sport or organised entertainment.

"offensive" means causing offence or displeasure; is disagreeable to the sense; disgusting, nauseous or repulsive.

"operation" means the first release of desalinated water via the potable water pumps into the distribution network

"**permit**" means includes licences, approvals, permits, authorisations, certificates, sanctions or equivalent/similar as required by legislation.

"process plant" means all equipment fixed at the approved premises associated with the operation of the desalination operations under which this environmental authority relates.

"protected area" means –

- a protected area under the *Nature Conservation Act 1992*; or
- a marine park under the *Marine Parks Act 2004*; or
- a World Heritage Area.

"ppt" means parts per thousand.

"range" means that the measured value of the quality characteristic or contaminant must not be greater than the higher release limit stated nor less than the lower release limit stated.

"regulated waste" means non-domestic waste mentioned in Schedule 7 of the *Environmental Protection Regulation 2008* (whether or not it has been treated or immobilised), and includes -

- for an element - any chemical compound containing the element; and
- anything that has contained the waste.

"salinity" means a calculated measure of marine water salinity based on a measured electrical conductivity value. The electrical conductivity to salinity transformation calculation should be performed as per the *Water Quality Sampling Manual* for use in testing for compliance with the *Environmental Protection Act 1994,* EHP 1999.

"short term 80 percentile compliance" means that not more than one (1) of the measured values of the quality characteristic are to exceed the stated release limit for any five (5) consecutive samples where:

1. the consecutive samples are taken over a five week period;
2. the consecutive samples are taken at approximately equal periods; and
3. the time interval between the taking of each consecutive sample is not less than six days.

"short term 50 percentile compliance" means that the median value of the measured values in ranked order of the quality characteristic is not to exceed the stated release limit for any five (5) consecutive samples where:

1. the consecutive samples are taken over a five week period;
2. the consecutive samples are taken at approximately equal periods; and
3. the time interval between the taking of each consecutive sample is not less than six days

"site" means land or tidal waters on or in which it is proposed to carry out the development approved under this environmental authority.

"TB" or Toxicological Bioassays, means screening tests that indicate whether toxicity is present in the sample.

"total Nitrogen" means the sum of Organic Nitrogen, Ammonia, Nitrite plus Nitrate, as mg/L of Nitrogen.

"total Phosphorus" means the sum of the reactive phosphorus, acid-hydrolysable phosphorus and organic phosphorus, as mg/L of Phosphorus. This includes both the inorganic and organic fraction of phosphorous

"tidal water" means the sea and any part of a harbour or watercourse ordinarily within the ebb and flow of the tide at spring tides.

"**unreasonable noise**" means noise that:

(a) causes unlawful environmental harm; and
(b) is not declared to be reasonable

"wastewater" means aqueous waste collected within any bunded area or service pit containing chemical transfer lines, and includes contaminated stormwater.

"watercourse" means a river, creek or stream in which water flows permanently or intermittently-
in a natural channel, whether artificially improved or not; or
in an artificial channel that has changed the course of the watercourse.

"waters" includes river, stream, lake, lagoon, pond, swamp, wetland, unconfined surface water, unconfined water natural or artificial watercourse, bed and bank of any waters, dams, non-tidal or tidal waters (including the sea), stormwater channel, stormwater drain, roadside gutter, stormwater run-off, and groundwater and any part-thereof.

"works" or "operation" means the development approved under this environmental authority.

"**you"** means the holder of this environmental authority or owner / occupier of the land which is the subject of this environmental authority.

END OF PERMIT