Tidal Lakes Management Plan (no quay line)

2021 – 2031

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Acknowledgements

Council wishes to thank all contributors and stakeholders involved in the development of this document.

Disclaimer

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Contents

1 Introduction

This Lake Management Plan has been prepared by Sunshine Coast Council to promote effective long-term management of artificial tidally-restricted lakes that do not incorporate quay lines and consequently have no provision for privately owned boat ramps, pontoons, decks and jetties.

These lakes include:

1. Lake Magellan;
2. Mountain Creek Lake 1 (Saratoga Drive); and
3. Mountain Creek Lake 2 (Munbilla Close).

1.1 Purpose

The purpose of the Lake Management Plan is to:

- outline the rights and responsibilities of the lake owners, residents and users;
- develop an appropriate inspection and maintenance schedule to meet objectives and performance standards;
- provide guidelines and management actions for ensuring compliance with secondary contact water quality guidelines;
- provide guidelines for acceptable use of the lakes such as sport and recreation; and
- define permitted uses subject to approval such as events, recreational clubs and commercial operations.

1.2 Objectives

The objectives of the Lake Management Plan are specified in Table 1 below.

Table 1: Management plan objectives

Objective	Performance standard	Refer
Public use complies with guidelines outlined in this management plan	• Public, residents and sporting/recreational groups/clubs are informed of acceptable uses, their rights and responsibilities	Section 5
Water quality is maintained to a standard suitable for secondary contact recreation use[1]	• Compliance with water quality guidelines • Effective operation and maintenance of salinity exchange pipes and stormwater infrastructure • Growth of undesirable marine organisms is absent or regulated	Section 6 and 8
Amenity and visual quality of the lake is of an acceptable standard	• The lake is free of litter and debris and/or removed in a timely manner • Growth of undesirable marine organisms is absent or regulated • Structures are designed and located suitably	Section 6 and 8
Lake assets are maintained in a structurally sound and safe condition	• Routine inspections and maintenance are undertaken in accordance with relevant schedules • Funding adequate to maintain assets	Section 8
The lake facilitates effective drainage of stormwater run-off	• Compliance with relevant design criteria • Maintain lake to acceptable tolerances from design profile • Effective operation and maintenance of tidal control structures, revetment walls and stormwater pipes	Section 8.2

[11] Secondary contact recreation is any activity where only the limbs are regularly wet, and swallowing water is unusual. Examples of secondary contact recreation are boating, fishing, rowing, kayaking, dragon boating, wading etc.

2 Site overview

2.1 Lakes

The lakes are defined as the area contained within the concrete revetment walls and the land abutting the lakes are primarily urban residential (refer Figure 1 and Figure 2 below).

Public access is available at designated places along the banks which have been created as public park abutting the lakes.

Water levels in all lakes are reliant on tidal predictions and stormwater inputs, described further for each lake in Table 2 below.

Table 2: Lake specific overview

Lake	Details	Area (ha)
Lake Magellan	The lake has been designed to achieve a semi-saline state via separate inlet and outlet open pipes to regulate neap spring tidal ranges. Incoming tidal flow is controlled using various sized plates which are changed with regard for tidal predictions and seasonal trends in rainfall. Water flows in from the southern end bordered by Sir Joseph Banks Drive and out through the north western pipe to Lamerough Canal The total volume of the lake is exchanged over a period of 21 days on average.	9
Mountain Creek Lake 1 (Saratoga Drive)	The lake has been designed to achieve a semi-saline state via separate inlet and outlet pipes to regulate flows from stormwater inputs and incoming tides. Tidal flow is enabled via a permanently open pipe and lake levels are governed by a weir. Stormwater output is facilitated through one main large pipe which controls flows via a flap valve.	1.8
Mountain Creek Lake 2 (Munbilla Close)	Similar in function to Lake 1 in having a weir, small permanently open pipe for tidal exchange and 5 medium sized pipes with flap valves to allow stormwater output.	2.7

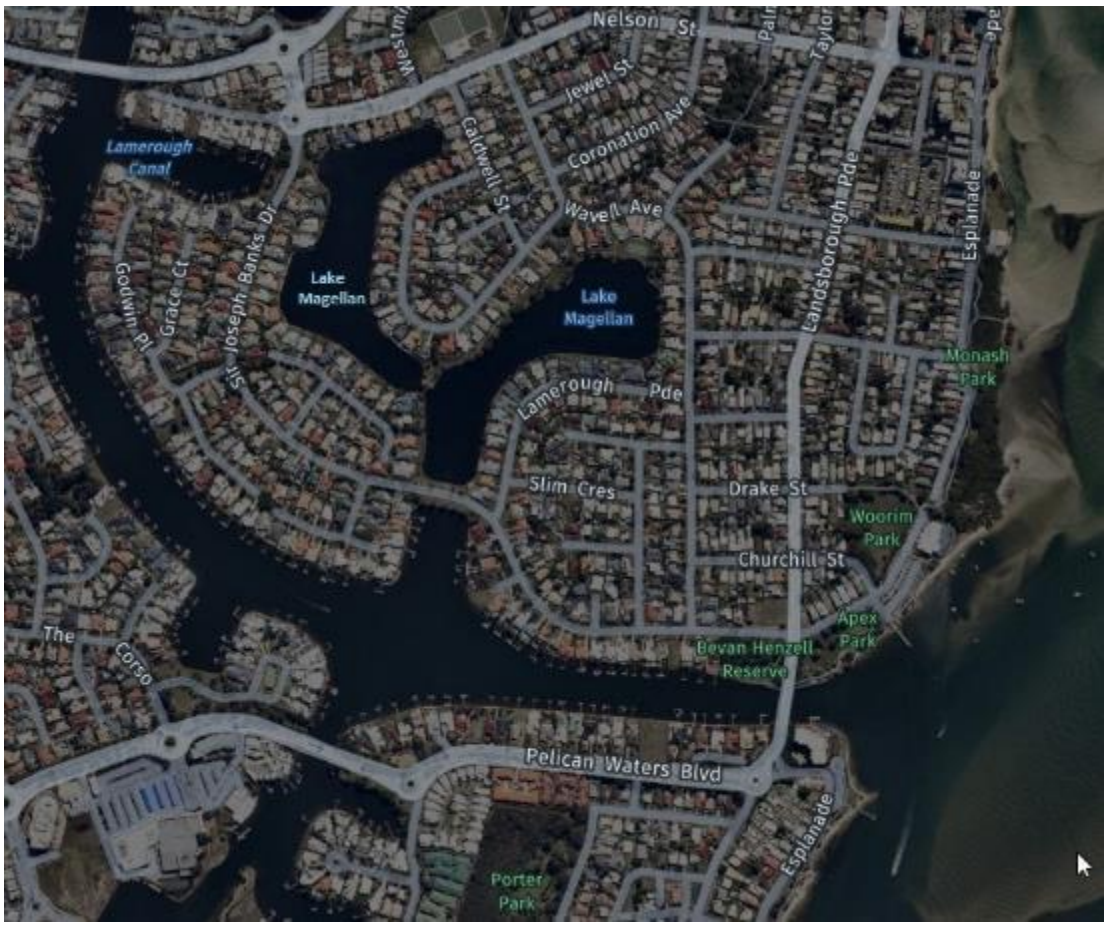


Figure 1: Lake Magellan site

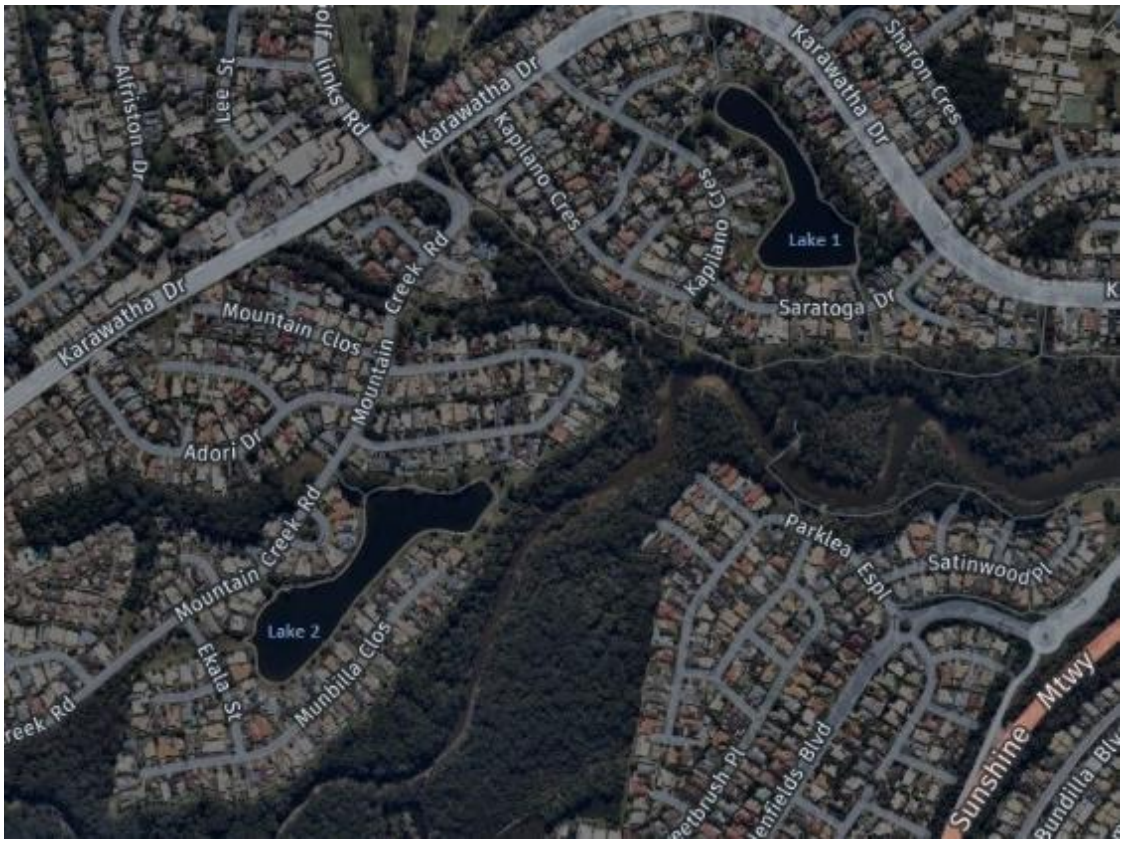


Figure 2: Mountain Creek Lakes site

2.2 Lake assets

The assets included in this management plan are specified in Table 3 below. Only assets managed and maintained by council are included. The location of these assets can be viewed publicly on Council's mapping system at https://maps.sunshinecoast.qld.gov.au.

Table 3: Lake assets

Assets	Description	Lake Magellan	Mt Creek Lake 1	Mt Creek Lake 2
Salinity exchange system	Structures to regulate water levels and water quality resulting from stormwater inputs and incoming tides. Includes weir, pipes, plates and flap valves.	2 pipes Plates	1 weir 1 pipe Flap valves	1 weir 6 pipes Flap valves
Revetment walls	Lake edge abutting public land only - required to maintain the stability of the lake edge, whilst contributing to the aesthetics and usefulness of the lake.	719 m	794 m	998 m
	The top of the revetment wall is approximately:	RL 0.5 m AHD	RL 0.25 m AHD	RL 0.75 m AHD
Rock scour	Rock scour provides protection to revetment walls and associated land assets.	n/a	794 m	998 m
Viewing platform	Platforms built partially over or adjacent to the water to faciliate lake viewing and enjoyment.	n/a	2	n/a
Foot/cycle bridge	Bridges to facilitate access and connectivity for amenity and enjoyment.	1	n/a	n/a
Pathway	Pathways to facilitate access and connectivity for amenity and enjoyment.	133 m	806 m	1011 m
Waterway access	Infrastructure facilitating access from public land to the water, e.g. stairs and ramps. There is 2 access ramps for non-motor powered craft in Lake Magellan.	2	n/a	n/a
Stormwater input pipes/drain	Stormwater pipes draining directly into the lake.	9	7	4
Signs	Public signage associated with lake use and safety.	7	1	4

3 Land tenure and statutory requirements

3.1 History

3.1.1 Lake Magellan

Constructed in 1989 in accordance with the relevant planning approvals granted at the time.

Zoned as Open Space with Lotplan 98RP225994 (western segment) and 20RP225989 (eastern segment). Property owner is the State of Queensland and is listed Reserve for Local Government; a common lake area under the control of council.

3.1.2 Mountain Creek Lakes

Constructed in 1990 in accordance with the relevant planning approvals granted at the time.

Zoned as Park with Lotplan 900CG6230 for Lake 1 and 401RP806821 for Lake 2. Property owner is the State of Queensland and is listed as Reserve for Park under the control of council.

Original design drawings are provided in Appendix A.

3.2 Lake ownership details

Name: Sunshine Coast Regional Council

3.3 Lake owner's responsibilities

As owner, council is responsible for ensuring that the lake system and its infrastructure:

- is maintained to a safe and reasonable standard to the best of council's ability;
- provides adequate amenity for residents and general public; and
- facilitates effective drainage of stormwater run-off.

Facilitating water-based recreational use is not a responsibility of council, however guidelines are provided in this plan to allow for this additional community benefit of the lake (refer section 5).

3.4 Private landowners responsibilities (Lake Magellan only)

Private landowners abutting the lake are responsible for:

- their private property and infrastructure;
- stormwater management within their property boundary;
- any pollution or run-off from their property that adversely affects lake water quality; and
- revetment walls fronting their property.

If any maintenance of privately owned revetment walls are required, owners are advised to first speak with council staff and also refer to the following:

- *Sunshine Coast Council Residents' Handbook: Artificial Waterways;*
- standards in section 8.3; and
- recommended typical revetment wall section in Appendix B.

3.5 Legislation

This Lake Management Plan complies with the following statutory legislation and its associated regulations and policies:

- Local Government Act 2009
  - Sunshine Coast Council Local Laws
- Coastal Protection and Management Act 1995
- Planning Act 2016
- Environmental Protection Act 1994
- Waste Reduction and Recycling Act 2011
- Fisheries Act 1994
- Nature Conservation Act 1992
- Transport Operations (Marine Safety) Act 1994
- Transport Operations (Marine Pollution) Act 1995
- Aboriginal Cultural Heritage Act 2003

4 Lake purpose and function

4.1 Intent for use

4.1.1 Lake Magellan

The primary purpose of the lake is to provide amenity and visual quality for the surrounding Pelican Waters residential development. Additional benefits include water-based recreation and a range of passive recreation opportunities associated with an extensive park and pathways network.

The design intent also considered that the lake facilitate effective drainage of stormwater from the surrounding urban run-off.

The cadastral boundary of the lakes is configured so that all revetment walls adjacent to private property are contained within adjacent private allotments and thus the responsibility of the individual land owner.

Access to the lake for the public is available at specific locations around its perimeter as parkland. There are two facilities for launching non-motor powered watercraft only.

The lake is intended to be used by the community in a responsible way for their recreational enjoyment, with minimal adverse impact upon the amenity of those dwellings in proximity to the lake. Contact with the water is proposed as secondary contact only (e.g. kayaks, canoes and stand-up paddle board). Fishing is also allowed within the lake, except as precluded in section 5.3.

4.1.2 Mountain Creek Lakes

The primary purpose of the lakes are to provide amenity and visual quality for the surrounding residential development and offer stormwater detention from the upstream catchment and urban run-off. Additional benefits include a range of passive recreation opportunities associated with the park and pathways network.

The lakes have been designed to achieve a semi-saline state via separate inlet and outlet pipes to regulate flows from stormwater and incoming tides.

Access to the lake for the public is available at specific locations around its perimeter as parkland. The lakes are intended to be used by the community in a responsible way for their recreational enjoyment, with minimal adverse impact upon the amenity of those dwellings in proximity to the lake. Contact with the water is proposed as secondary contact only and fishing is permitted within the lake, except as precluded in section 5.3.

5 Lake use

Permitted and prohibited uses are detailed in the following section and must be adhered to at all times.

5.1 Permitted uses

Lake use is open to the general public or 'sports-based' user groups providing the use is a 'permitted use' as described below.

With the exception of maintenance/enforcement/safety/disaster response purposes, powered craft are not permitted in any of the three lakes systems.

Non-motor powered craft can access Lake Magellan via two ramps. No access is provided in the Mountain Creek lake systems.

Council, as the owner, may from time to time utilise the lake and/or surrounding open space for public events (e.g. markets and public displays).

The following uses and/or actions are permitted in or on the lake:

- human powered craft (e.g. canoe, kayak, row boat and stand-up paddle board (SUP));
- wind powered sail craft;
- model boat;
- recreational fishing, except as precluded in section 5.3;
- approved event-related temporary floating structures (i.e. pontoon);
- approved maintenance, safety, disaster response and enforcement craft;
- approved construction craft (e.g. barges, dredges and support craft);
- use of lake water for fire control purposes (e.g. helicopter fire services); and
- any other activity approved by council from time to time.

Please note:

All lake users are encouraged to exercise a personal duty of care when accessing the lake system and/or participating in water-based recreation. Recreating in constructed tidal lakes has inherent risks, including but not limited to potentially hazardous marine creatures such as sharks and stingers.

The water quality in the lakes are maintained to a secondary contact standard. At times post major rainfall events the water quality within the lake may be diminished below secondary contact standards (refer section 6 for an overview of council's water quality management of the lake).

Due to the above reasons, direct exposure through swimming is not advised.

5.2 Permitted uses subject to approval

5.2.1 Events, recreational clubs and commercial operations

Council may agree to allow certain low-use/low-impact events, group/club recreational activities and commercial operations to occur on the lake that do not negatively impact on surrounding residents and the overall amenity. The activity must be a permitted use as specified in section 5.1, including (but not limited to) non-motor powered water taxi, vessel hire and other water-based activities/events e.g. SUP lessons, dragon boat user groups, model boats etc. For such operations to be considered for approval, council requires a written submission detailing the type of activity and any potential impact the activity will have on surrounding residents, other users of the lake, water quality, council-owned assets and overall amenity.

Refer to council's Community Land and Complementary Commercial Activity Policy for more information.

5.3 Prohibited uses and practices

The following uses or actions are prohibited in the lake:

- events/recreational clubs/commercial operations (SCC approved permits excepted, refer section 5.2.1);
- construction of ramps/pontoons/decks/jetties (SCC owned structures excepted);
- temporary moorings (SCC approved event/recreational club/commercial permits excepted, refer section 5.2.1);
- diving or jumping off any structure over or in the lake;
- fishing from bridges and weirs;
- motor powered craft (with the exception of approved maintenance/enforcement/safety/disaster response craft);
- living on watercraft whether temporarily, intermittently or permanently;
- the construction, reconstruction, refitting or undertaking of structural repairs on or to watercraft;
- unmarked fishing equipment (e.g. crab pots);
- releasing, dumping or depositing of any wastes (including garden wastes), contaminants or other pollutants into the lake, adjoining waterways or in a place (e.g. road-side gutter or stormwater drain) where it could reasonably be expected to enter, blow or wash into the lake or adjoining waterways; and
- any other activity prescribed by council from time to time.

5.4 Temporary restricted use

Council reserves the right to restrict lake use for a specific purpose at any time if such action is required to either protect public health and safety or prevent pollution of the lake.

5.5 Abutting public land

Abutting public land is under the control of council. All normal activities that are permitted in parks are permitted on abutting public land fronting the lake except as may be restricted elsewhere in this Lake Management Plan, or by approved signs erected on such land.

5.6 Future development

No further development within the lakes or on adjacent public land is intended by council, unless determined necessary to support the primary purpose and function of the lake.

6 Water quality management

The lake systems are best described as a lower catchment flow through systems, i.e., an artificial waterway which acts as an estuary in some part, where the flow through rate is determined by salinity exchange pipes.

Influences on water quality in the lake systems are therefore principally impacted by:

- sufficient salinity exchange;
- up-stream catchment practices;
- surrounding urban runoff (e.g. hydrocarbons, particulates, pesticides and herbicides); and
- colonisation by marine organisms. Certain species may proliferate at times of elevated nutrient levels and cause other environment and human health risks (e.g. algal blooms)

Table 4 provides a framework to effectively manage these influences to ensure acceptable water quality is maintained.

Table 4: Water quality management overview

Objective	Water quality is maintained to a standard suitable for secondary contact recreation
Performance standards	• Water quality is maintained in accordance with scheduled water quality objectives for secondary contact recreation in the Environmental Protection (Water and Wetland Biodiversity) Policy 2019 and Guidelines for Managing Risks in Recreational Water (NHMRC 2008) • Reactive water quality sampling is in accordance with the methods prescribed in the Queensland Monitoring and Sampling Manual (2018) • Growth of undesirable marine organisms is absent or regulated
Management controls	1. Maintain impervious and/or vegetated overland flow paths in accordance with routine inspection and maintenance schedules 2. Maintain stormwater drainage systems in accordance with routine inspection and maintenance schedules 3. Maintain weir (where applicable) and salinity exchange pipes in accordance with routine inspection and maintenance schedules 4. Educate residents and public to reduce pollutant run-off and/or input (e.g. signage, residents' handbook and website)
Corrective action	• Respond to issues negatively affecting water quality in a timely manner • Erection of temporary signage if determined necessary • If the relevant water quality guidelines are exceeded, or a trend of declining water quality develops over an extended period, it will be considered to indicate the need for reassessment of the appropriateness and effectiveness of existing water quality management controls
Monitoring	• Visual monitoring to be undertaken concurrent with routine inspections and/or maintenance schedules • Water quality sampling will be undertaken on a reactive basis if requested and determined necessary • Maintain customer service request records and incident/non-compliance register
Reporting	The results of monitoring will be made available to the public at council's discretion and by request only
Responsibility	SCC

7 Incident, non-compliance and complaint management

Table 5: Incident, non-compliance and complaint management overview

Objective	To ensure prompt and efficient response to pollution, incidents, complaints and non-compliance
Performance standards	• Prompt removal of pollution spillages from waterways with minimum risk to the public and the environment • All incidents, complaints and non-compliance are dealt with promptly and efficiently, in accordance with council's Compliance and Enforcement Policy 2018 (or referred to the relevant agency if not already outlined in the policy) • Appropriate investigations are undertaken to determine the source of pollution and the cause of environmental incidents (e.g. oil spills, fish kills and algal blooms)
Management controls	1. Adherence to asset management plans 2. Asset inspections and routine maintenance schedules met 3. Adherence to water quality management procedures (refer section 6) 4. Sufficient signage to communicate safety matters and prohibitions outlined in this management plan (refer section 5.3)
Corrective action	• Pollution spill, fish kill or other environmental incident - report to the Department of Environment and Science to ensure that appropriate investigations and testing are undertaken • Address and/or rectify incident, complaint and/or non-compliance • Review customer service requests and incident/non-compliance register and implement improvement to processes and/or signage where deemed necessary
Monitoring	• Follow up monitoring to be undertaken in the event of an environmental incident • Maintain customer service request records and incident/non-compliance register
Reporting	Complete the appropriate incident report/debrief when required or requested
Responsibility	SCC

8 Maintenance

8.1 General

Maintenance of the lakes and their assets are the responsibility of council and includes routine, planned and reactive maintenance work activities.

Maintenance work is managed through an asset management system and includes activities such as inspection, assessing condition, prioritising, scheduling, actioning the work and reporting what was done to develop a maintenance history and improve maintenance and service delivery performance.

Routine maintenance is performed on a regular cycle to upkeep visual amenity and/or replacement of components/sub-components of assets. This work generally falls below the capital threshold. Planned maintenance comprises larger scale repair work (below the capital threshold) or asset renewal (capital work). Reactive maintenance is unplanned repair work carried out in response to service requests and management/supervisory directions.

Types of maintenance may include:

- on-going maintenance of salinity exchange pipes;
- removal of siltation from bed and banks of the lake, as required, to ensure that it does not become a constraint on the function of the lake;
- removal of debris, rubbish and undesirable marine organisms/weeds from the lake and public foreshore areas;
- maintaining the revetment walls where they front public lands; and
- maintaining scour that supports all revetment walls.

Refer Table 6 which outlines the entire maintenance framework and regimes.

8.2 Maintenance management

The following section provides an overview of the maintenance framework for lake features and public assets to meet specific management plan objectives outlined in Table 1.

Table 6: Maintenance framework overview

Feature / asset	Performance standard	Performance indicator	Comments / considerations	Inspection frequency	Routine maintenance frequency	Responsibility
Waterway feature						
Litter, debris etc.	Waterways are free of litter and debris that are impacting on amenity, health and/or safety	a) Inspection and maintenance schedules met b) Reactive works undertaken in a timely manner c) No complaints	• Officers undertaking litter removal should ensure that appropriate precautions are taken against hazardous objects such as discarded hypodermic syringes • Collected litter should be recorded in AMDI database and disposed of at council's refuse tip • A public education programme should be considered by council if litter is a persistent problem • If fishing equipment (e.g. crab pot or fish trap) is found either unmarked and/or in state of disrepair to a point of it being non-functional then it shall be removed as marine litter (report to DAFF for their agency to remove)	6 monthly	No routine maintenance. Any required works are determined based on inspection condition assessment	SCC Lakes and Wetlands team Engagement with Response Services and/or Healthy Places where required and/or for illegal dumping incidents
Undesirable marine organisms / weeds	Growth of undesirable marine organisms is absent or regulated	a) Inspection schedule met b) Reactive works undertaken in a timely manner c) No complaints	• Any vegetation or plant material, living or dead, located below the level of the highest astronomical tide (Approximately RL 1.05m AHD) is classified as "marine vegetation" under the Fisheries Act. Refer to relevant fisheries accepted development requirements before undertaking any works involving marine vegetation • Although herbicides are a possible means of weed control, only herbicides registered for use in aquatic environments should be used • All removed vegetation should be disposed of at council's refuse tip • In the event of algal blooms, refer to Queensland Harmful Algal Bloom Response Plan 2014. Appropriate laboratory testing should be undertaken to determine the species present and likely cause of the outbreak. If testing indicates the presence of toxic species, specialist advice should be sought regarding any necessary health precautions.	Mt Creek Lakes - 6 monthly Lake Magellan - weekly	Mt Creek Lakes - no routine maintenance. Any required works are determined based on inspection condition assessment Lake Magellan – weekly seagrass removal	SCC Lakes and Wetlands team
Lake profile	Lake is maintained to acceptable tolerances from design profile	a) Survey completed as scheduled b) Maintenance is undertaken in a timely manner before degradation of waterway profile affects the stability of revetment walls or water quality c) No complaints	• Appropriate geotechnical and chemical testing should be undertaken of material proposed to be dredged or excavated in maintenance operations • Approvals to undertake dredging, or other excavation, within a waterway are required under the Planning Act 2016, Coastal Protection and Management Act 1995 (Tidal Works) and the Environmental Protection Act 1994 (ERA 16) (dependant on volume of material to be managed)	10 yearly	No routine maintenance performed. Any required works are determined based on visual observation and 10 yearly lake survey	SCC Coast & Canals team
Infrastructure						
Tidal exchange system (pipes and weir)	The system is operating as designed and providing sufficient saline water flushing	a) Inlet and outlet structures are not impeded by marine growth (flora and fauna) or sedimentation b) Inspection and maintenance schedules met c) Reactive works undertaken in a timely manner d) No complaints	Underwater inspections of the structures are likely required approximately every 12 months. A qualified submarine drone operator or commercial diver should be employed for this work and the required safety measures implemented. Refer Appendix A for drainage infrastructure design drawings (Mt Creek Lakes only)	Annually	No routine maintenance. Any required works are determined based on inspection condition assessment	SCC Coast & Canals team
Revetment walls	Revetment walls are maintained in a suitable condition to provide	a) Structure maintained to design b) Inspection schedules met	• The stability of revetment walls and other concrete structures is heavily reliant on the condition of the associated scour (see scour maintenance below)	Annually	No routine maintenance. Any required works are determined based on	SCC Coast & Canals team

Feature / asset	Performance standard	Performance indicator	Comments / considerations	Inspection frequency	Routine maintenance frequency	Responsibility
	satisfactory protection to adjacent land and assets	c) Reactive works undertaken in a timely manner d) No complaints	• The maintenance of revetment walls is the responsibility of the abutting landowner (i.e. council for public land only). However, council are responsible for the associated scour and thus must ensure it is adequate to protect private landowners' revetment wall • Refer Appendix A for Mt Creek Lake design drawings and Appendix B for Lake Magellan revetment wall typical section		inspection condition assessment	
Scour	Scour are maintained in a suitable condition to provide satisfactory protection to revetment walls	a) Structure maintained to design b) Inspection schedules met c) Reactive works undertaken in a timely manner d) No complaints	• The stability of revetment walls and other concrete structures can be rapidly compromised due to the loss of foundation support if the associated scour are not well maintained • Council are responsible for maintaining all scour including those abutting private land	2 yearly	No routine maintenance. Any required works are determined based on inspection condition assessment	SCC Coast & Canals team
Stormwater outlets	Provides effective drainage of stormwater run-off	a) Structure maintained to design standards b) Inspection and maintenance schedules met c) Reactive works undertaken in a timely manner d) No complaints	• Piping failures, resulting in loss of support behind and beneath stormwater drainage outlet structures can result in rapid deterioration of these structures. This damage can quickly spread to adjacent revetment walls. It is important, for the longevity of these structures, to ensure that piping problems are promptly addressed • The need for any underwater inspections are determined based on the assessment of above-water inspections • Refer Appendix A for drainage infrastructure design drawings (Mt Creek Lakes only)	Reactive	No routine maintenance. Any required works are determined based on reactive inspection condition assessment	Inspections - SCC Stormwater Services team Maintenance - SCC Civil Asset Management team
Waterway accesses	Accessible, user-friendly and safe, providing additional access and enjoyment of the lake	a) Structure maintained to design b) Open for use 90% of the time c) Clear of marine fouling and debris d) Inspection schedule met e) Reactive works undertaken in a timely manner f) No complaints	Applicable for Lake Magellan only.	Annually	No routine maintenance. Any required works are determined based on inspection condition assessment	SCC Coast & Canals team
Viewing platform	Accessible and safe, providing additional enjoyment around the lake	a) Structure maintained to design b) Open for use 90% of the time c) Inspection schedule met d) Reactive works undertaken in a timely manner e) No complaints		Annually	No routine maintenance. Any required works are determined based on inspection condition assessment	SCC Civil Asset Management team
Pathways and bridges	Accessible and safe, providing additional access and enjoyment around the lake	a) Structure maintained to design b) Inspection schedule met c) Reactive works undertaken in a timely manner d) No complaints	Bridge applicable for Lake Magellan only.	Annually	No routine maintenance. Any required works are determined based on inspection condition assessment	SCC Civil Asset Management team
Signs	Signs are reader-friendly, clearly visible, safe, and do not impact on the visual qualities of the lake	a) Structure maintained to design b) Inspection schedule met c) Reactive works undertaken in a timely manner d) Public are compliant with signs relating to local law regulations e) No complaints	If non-compliance and/or complaints register indicate a growing trend of users whom are not complying with regulations, assess suitability of all forms of public education, including signage. Implement any improvements where determined necessary (see more section 7)	Annually	No routine maintenance. Any required works are determined based on inspection condition assessment	SCC Coast & Canals team

8.3 Standards and specifications

Maintenance work is carried out in accordance with the following standards and specifications:

1. Building Code of Australia
   a) BCA Vol 2 Part 3.1.2.0 – Drainage (AS 3500.3.2)
   b) BCA Vol 2 Part 3.1.2.2 (d) – Excavation and Piling near Sewers and Drains
   c) BCA Vol 2 Part 3.1.1 – Earthworks
2. Australian Standards
   a) AS 1141.Methods for sampling and testing aggregates
   b) AS 1428: Design for Access and Mobility
   c) AS 1604: Treatment of piles
   d) AS 1664.1: Aluminium Structures Code
   e) AS 1665: Welding
   f) AS 1170.1 and 1170.2: Loading Codes
   g) AS 1650 Galvanising
   h) AS 1720: Timber Structures Code
   i) AS 2159: Piling Code
   j) AS 2239: Galvanic (Sacrificial) Anodes for Cathodic protection
   k) AS 2312 Two Pack Epoxy Paints
   l) AS 2832.3 Guide to the Cathodic protection of metals-fixed immersed structures.
   m) AS 3500: Part 3.2, Stormwater Drainage – Acceptable Solutions
   n) AS 3600: Concrete Structures Code
   o) AS 3700: Masonry Structures Code
   p) AS 3706: Geotextiles Methods of test
   q) AS/NZ 3004: Marinas and Recreational Boats
   r) ANZECC: Guidelines for fresh and Marine Water Quality
   s) AS 3962: Guidelines for Design of Marinas Code
   t) AS 4110: Steel Structures Code
   u) AS 4133: Methods of testing rocks for engineering purposes
   v) AS 4997: Guidelines for the design of maritime structures
3. SEQ Restoration Framework, Guideline & Manual
4. Healthy Waterways – Water sensitive Urban Design – Technical Design Guidelines for SEQ
5. Healthy Waterways – Water by Design Construction and Establishment Guidelines
6. Any other relevant regulations, policies, codes and/or guidelines that fall under the Acts listed in section 3.4

9 Contacts

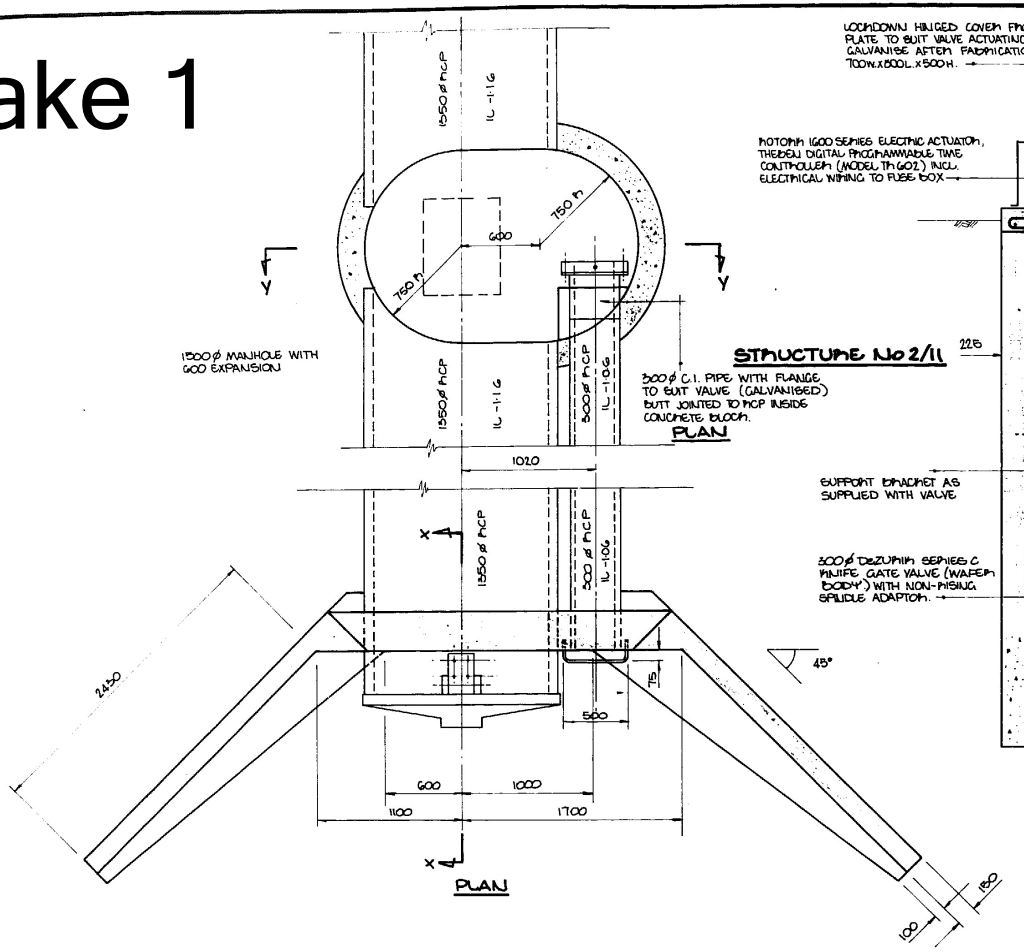
Entity	Contact details	Enquiry type
Sunshine Coast Council - Customer Service	(07) 5475 7272 1300 007 272	All
Maritime Safety Queensland	(07) 5373 2310 A/H (07) 3305 1700	Marine safety and marine pollution, including oil spills
Sunshine Coast District Water Police	(07) 5457 6711 A/H 0438 200 705	Search and rescue, on-water criminal matters and marine safety complaints
Queensland Boating and Fisheries Patrol	(07) 5444 4599 (Mooloolaba)	Marine safety and fisheries complaints
Department of Environment & Science	1300 130 372	Involving pollution, environmental harm, fish kills and marine strandings
Department of Agriculture and Fisheries	(07) 3404 6999	Involving marine plants
RSPCA QLD	1300 ANIMAL (1300 264 625)	Involving injured wildlife. Will likely be attended by Queensland Parks and Wildlife Service (QPWS)

10 Review

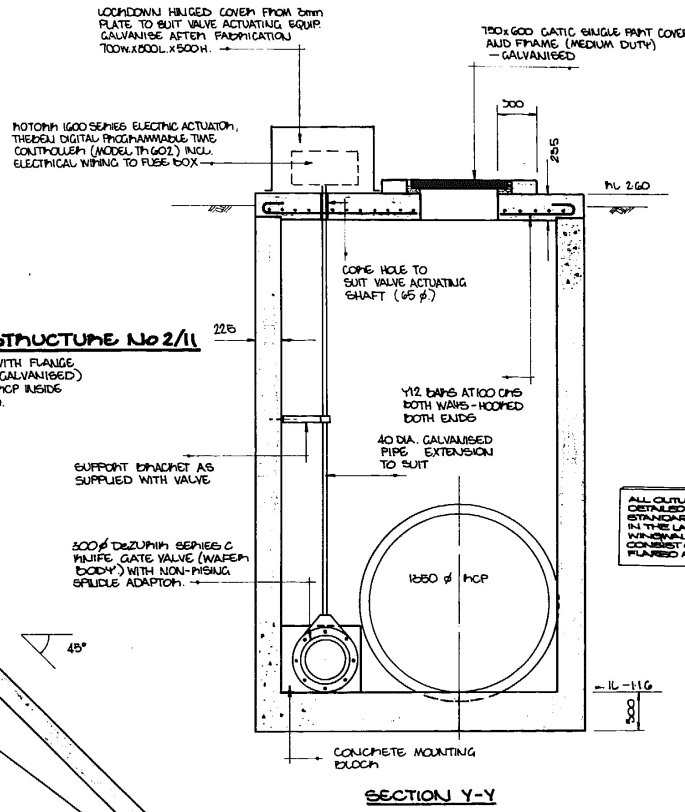
This document may be reviewed and updated as determined necessary by council in response to new information, challenges in implementation or changing external factors such as technology, land use, the environment, legislation and community values.

Appendix A: Design drawings

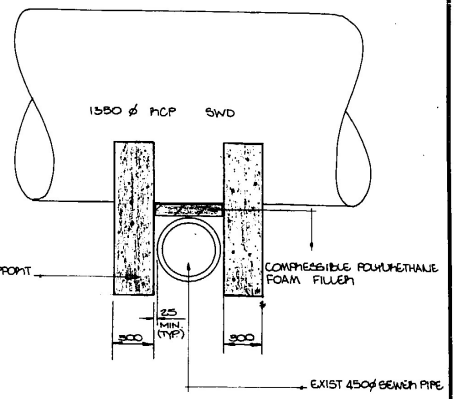
Lake 1



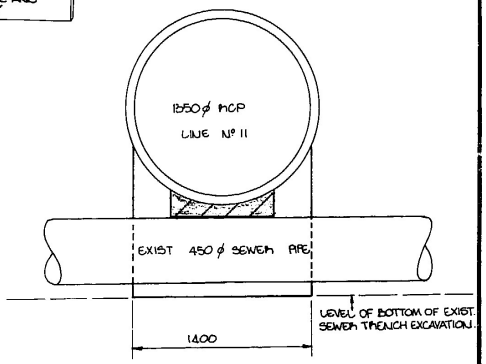
STRUCTURE No 2/11



ALL OUTLET STRUCTURES NOT DETAILED SHALL BE TO M.R.D. STANDARD OUTLET STRUCTURES IN THE LAKE SHALL HAVE HEADWALLS OMITTED AND WILL CONSIST OF ENDWALL AND FLARED APRON ONLY.



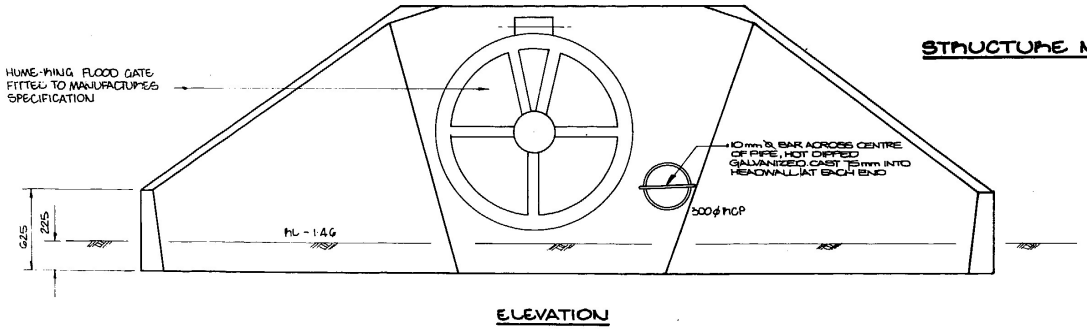
ELEVATION



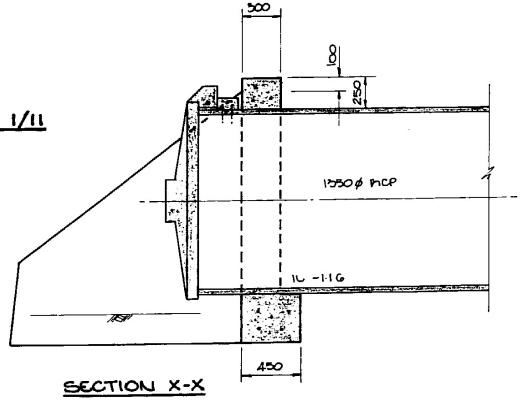
SECTION

CONCRETE SUPPORT AT EXIST SEWER & LINE No 11

STRUCTURE No. 1/11



ELEVATION



SECTION X-X

GENERAL NOTES

1. CONCRETE TO BE 20 MPa.
2. ALL EXPOSED CONCRETE EDGES TO BE CHAMFERED 15mm.
3. ALL STEELWORK TO BE HOT DIP GALVANISED.

ROD TATE & PARTNERS PTY. LTD.
CONSULTING CIVIL & STRUCTURAL ENGINEERS

21 GEORGE STREET . MAROOCHYDORE PO BOX 204 . PHONE.... (071) 432300

DESIGN	RJP	AUG 86	CHECKED		
DRAWN	RJP	AUG 86	APPROVED		26/9/86
SCALE	1:20		DATUM	AHD	

Tender Purpose Only Not For Construction Use

No	DATE	AMENDMENT	DATE	ISSUED
A	23-1-87	NOTE ADDED & BAR ACROSS 300 ø RCP, STRUCT. 1/11	30-10-86 G-4-87	M.S.C. JOHN PAGE

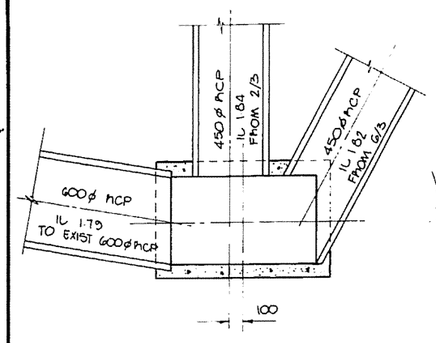
PROPOSED ROADWORKS AND DRAINAGE
STAGE 5, MOUNTAIN CREEK ESTATE, MOOLOOLABA
FOR SALTBUSH PTY. LTD.

4251

DETAILS OF DRAINAGE STRUCTURES 1/11 & 2/11

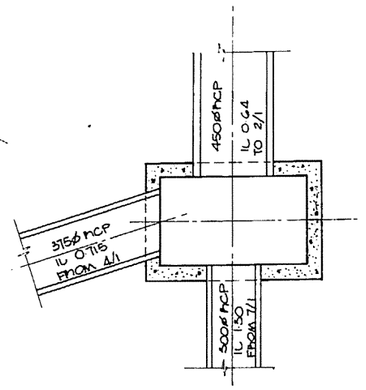
DRAWING No C20|86|R21A
SHEET 21 OF 30

Lake 2



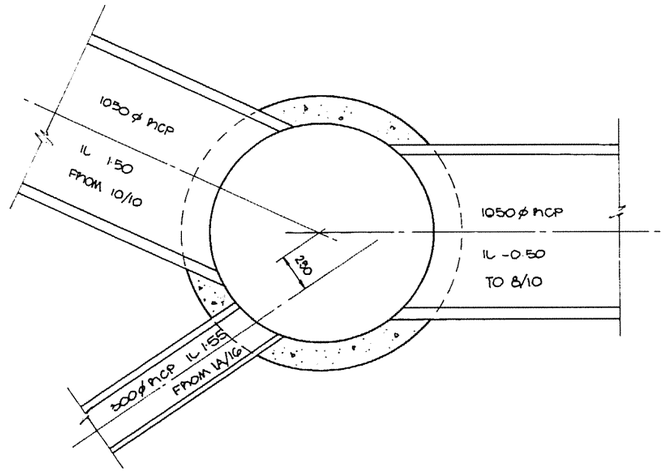
STANDARD CATCHPIT

DETAIL STRUCTURE NO. 1/3



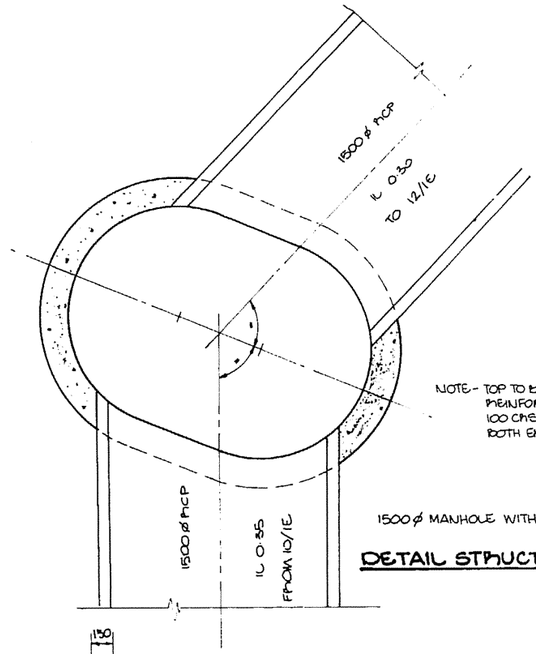
STANDARD CATCHPIT

DETAIL STRUCTURE Nº 3/1



STANDARD 1500ø MANHOLE

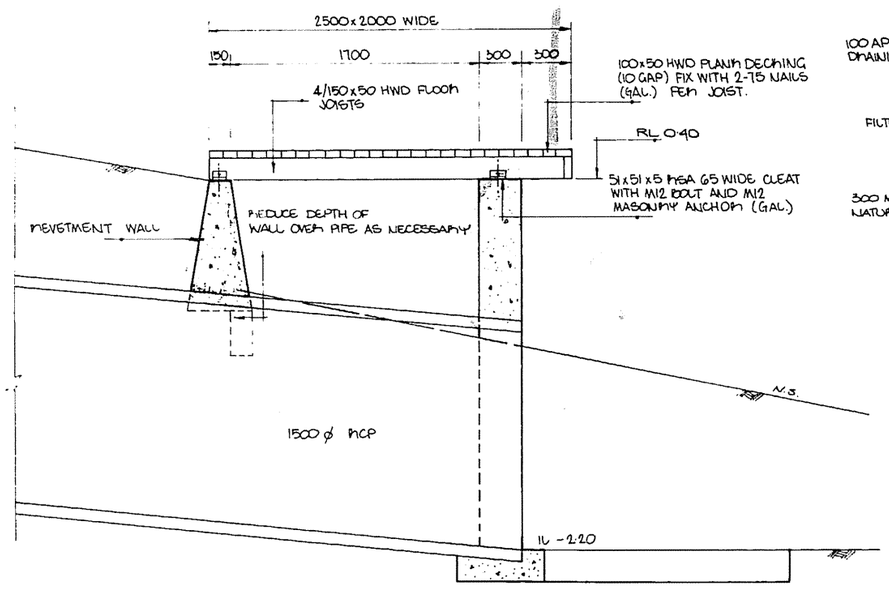
DETAIL STRUCTURE Nº 9/10



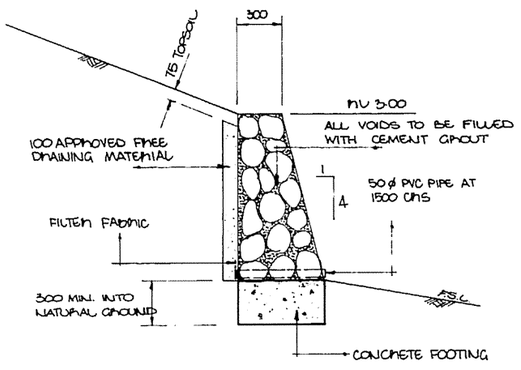
NOTE - TOP TO BE 225 THICK CONCRETE REINFORCED WITH Y12 BARS AT 100 CRS BOTH WAYS. HOOKED BOTH ENDS.

1500ø MANHOLE WITH 600 EXPANSION

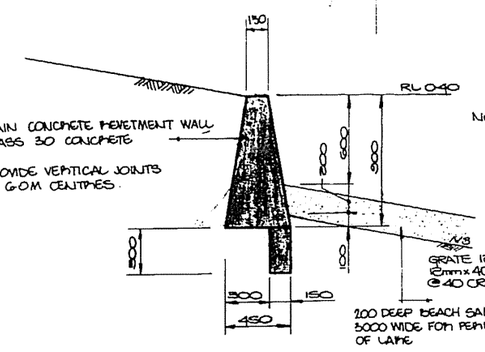
DETAIL STRUCTURE Nº 11/1E



DETAIL STRUCTURE Nº 12/1E

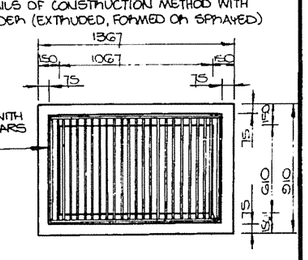


DETAILS STONE PITCHED RETAINING WALL



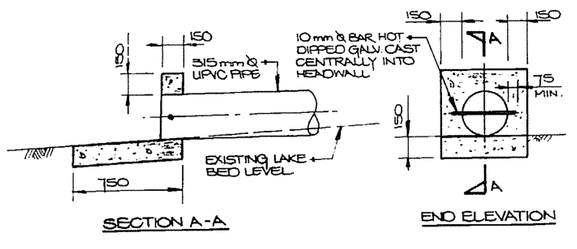
NOTE - CONTRACTOR TO MAKE SUBMISSION ON PROFILE OF REVETMENT WALL AND SUBMIT DETAILS OF CONSTRUCTION METHOD WITH TENDER (EXTRUDED, FORMED OR SPRAYED)

DETAIL REVETMENT WALL



TYPICAL FIELD INLET

CATCHPIT TABLES



OUTLET DETAIL No. 5/11

ROD TATE & PARTNERS PTY. LTD.
CONSULTING CIVIL & STRUCTURAL ENGINEERS
21 GEORGE STREET MAROOCHYDORE PO BOX 204 PHONE (071) 432300

DESIGN	RJP	AUG. 86	CHECKED	D. Hart	20-2-86
DRAWN	RJP	AUG 86	APPROVED	R. Tate	22/2/86
SCALE	1:20		DATUM	AHD	

Tender Purpose Only Not For Construction Use

Nº	DATE	AMENDMENT	DATE	ISSUED
A	25-1-87	FIELD INLET ø 5/11 ADDED REVETMENT WALL AMENDED	20/10/86 6-4-87	M.B.C. JOHN PAGE

PROPOSED ROADWORKS AND DRAINAGE
STAGE 5, MOUNTAIN CREEK ESTATE, MOOLOOLABA
FOR SALTBUSH PTY. LTD.

4251

DETAILS OF DRAINAGE STRUCTURES, WALLS & CATCHPIT TABLES

DRAWING Nº C20|86|R.22A
SHEET 22 OF 30

LURNEA CRESCENT

MOUNTAIN CREEK ROAD

COOMOO CRES

MUNBILLA

PARK

CLOSE

L A K E

61 60 59 58 57 56 55 54 53 52 51 50

300 301 302 303 304 305

344 345 346 347 348 349 350 351 352 353 354 355 356

354 355 356 357 358 359

TOP OF HEADWALL RL 174 -SL 246

TOP OF HEADWALL RL 214

TOP OF HEADWALL RL 218

TOP OF HEADWALL RL 046

REFER INSET

JOINS SHEET C21/90/AC2

INSET

ROD TATE & PARTNERS PTY. LTD.
CONSULTING CIVIL & STRUCTURAL ENGINEERS.

Incorporated In Queensland.
Nº 1 The Esplanade, Maroochydore.
P.O. Box 204, Maroochydore .... 4558.
Phone (074) 432300 Fax (074) 437126

Design : C.A.
Drawn : M.A.C./A.W.S.
Date : AUGUST 1990
Checked :
Approved :
Scale : 1:500
Datum : AHD

Nº Date Amendment

For tender purpose only not for construction use

PROJECT :
AS CONSTRUCTED STORMWATER DRAINAGE
STAGE 3, MOUNTAIN CREEK PARK ESTATE
FOR MOOLOOLAH INVESTMENT NOMINEE CO. PTY LTD

DRAWING TITLE :

DRAWING Nº : C21/90/AC1

Sheet of

3477

JOINS SHEET C21/90/AC1

JOINS SHEET C21/90/AC3

PARK

LAKE

PARK

PARK

ROAD

CREEK

LOANG COURT

MOUNTAIN

EKALA

STREET

COOMOO CRESENT

CLOSE

MUNBILLA

PSM 100824
RL 5690

TOP OF HEADWALL
RL 177

TOP OF HEADWALL
RL 0.66

301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 328 329 330 1 2 3 4 338 339 340 341 342 343 344 345 346 347 348 357 358 359 360 361 362 363

ROD TATE & PARTNERS PTY. LTD.
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Nº 1 The Esplanade . Maroochydore.
P.O. Box 204 . Maroochydore ..... 4558.
Phone (074) 432300 Fax (074) 437126

Design : P.A.
Drawn : M.A.C./A.W.S.
Date : AUG '90
Checked :
Approved :
Scale : 1:500

Datum : A.H.D.

Nº	Date	Amendment

For tender purpose only not for construction use

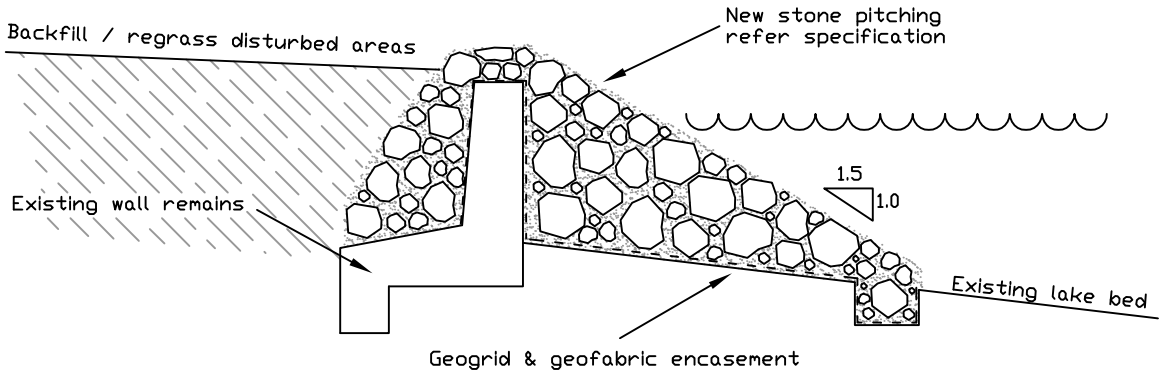
PROJECT :
AS CONSTRUCTED STORMWATER DRAINAGE,
STAGE 3, MOUNTAIN CREEK PARK ESTATE,
FOR MOOLOOLAH INVESTMENT NOMINEE CO. PTY. LTD.

DRAWING TITLE :

DRAWING Nº : C21/90/AC 2
Sheet 2 of 3

3477

Appendix B: Typical revetment wall section



Typical cross section
Proposed stone pitched retaining wall

Method of Work

Excavate behind existing wall
Layout geogrid & geofabric
Place first layer of armour rock
Stone pitch to spec
Backfill & regrass disturbed area

LANDMARK CIVIL & MARINE

Proposed Retaining Wall (Option 1) Lake Magellan	Scale 0 0.5m 1.0m	DATE 9/3/12

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Locked Bag 72 Sunshine Coast Mail Centre Qld 4560