



PREPARED FOR ROADS ACT
APRIL 2016
16-000722
DRAFT
WATER & ENVIRONMENT

**Lyneham Wetland Forebay and GPT Retrofit
Design Report**

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1 PROJECT DESCRIPTION

Roads ACT has engaged Calibre Consulting to prepare detailed design documentation to undertake a retrofit to incorporate a sediment forebay within the upper portion of the existing Lyneham Wetland, as well as modifying the existing gross pollutant trap (GPT).

The project site is located within the upper portion of the Lyneham Wetland between Goodwin Street and De Burgh Street, Lyneham, ACT.

The intent of the design is to ensure gross pollutants and sediment are captured at the upstream end of the Lyneham Wetland and improve access for inspection and clean out of the GPT, as well as desilting of the sediment forebay / Lyneham Wetland.

In order to assist Roads ACT with the proposed design, Calibre have highlight the following points relating to the design.

2 CIVIL DESIGN ELEMENTS

The design has been undertaken using the provided Work As Executed Drawings, which were completed as part of the Lyneham Wetlands project. Based on site inspections of the existing Lyneham Wetland discrepancies in grades have been identified. Calibre's design has attempted to blend the WAE files to include observed current site conditions.

2.1 SEDIMENT FOREBAY

The sediment forebay has been designed to assist maintenance activities in the desilting of the existing Lyneham Wetland by capturing the sediment within the upper portion of the wetland. This will minimise existing sediment loads depositing within the downstream portion of the wetland and reduce sediment loads affecting downstream pumping infrastructure.

The sediment forebay has been designed to contain a sediment zone of approximately 1,270 m³ which is measured from 1 meter below the existing normal operating level (NOL) of the wetland. Calibre estimate that the sediment zone will need to be cleaned out once every 10 years, based on a mostly developed catchment sediment load of 1.6 m³/Ha/yr.

An access ramp is proposed to be extended from the existing gravel access ramp and extent into the new base of the sediment forebay at a maximum grade of 1:5. The design proposes to reshape the existing rock on site to create a semi constant grade. Where deviations between rocks exceed 250mm, concrete infill is proposed to level the access suitable for the proposed earthwork machinery required to enter the sediment forebay during desilting.

To ensure the proposed synthetic layer is not impeded during desilting, a 200mm thick gravel layer is proposed on top of a synthetic liner to provide a visual protection from machinery.

A concrete level spreader is proposed along the top of the sediment forebay embankment to evenly distribute flow over the embankment. This will in turn reduce the velocities which will increase the setting rate of sediment. Additionally the concrete level spreader will reduce the risk of the clay core being exposed to the natural elements while maintaining an embankment to the NOL.

Excess rock that will not be re used within the sediment forebay or access ramp will be placed on the downstream side of the forebay embankment. The thickness and extent of the excess rock is still to be confirm with Roads ACT.

2.2 GPT

The existing GPT was designed to divert the low flows away from the concrete channel and pass through a filter sock to capture diverted gross pollutants. The proposed design aims to replace the filter sock and install a trash rack within the chamber. The proposed trash rack follows closely to the standard trash racks used in minor DUS GPT's, typically used within the ACT.

To improve inspections and maintenance of the existing chamber roof, currently consisting of concrete filled gatic's, will be replaced with pedestrian strength grating. The proposed grating will allow easier visual inspection and improve efficiencies in removing the frames during clean outs. As the proposed grating will be at the design level a special kerb and gutter will be required to restrict maintenance vehicles driving onto the GPT.

To assist maintenance personal to enter the chamber a davit arm base and step irons have been included. The davit arm base is suitable for a Miller Davit Arm, as requested by Roads ACT.

The existing GPT design made provisions for a drying area. Calibre proposed to retain this drying area.

2.3 PUBLIC SAFETY

The proposed works will have no impact on the hydraulics or flooding surrounding Lyneham Wetland as all retrofit works for the sediment forebay are located below the NOL and the GPT works are proposed outside the major overflow path of the concrete channel.

2.4 WATER QUALITY AND MAINTENANCE

With the implementation of the sediment forebay and GPT there will be an increase in the capture of gross pollutants and suspended solids upstream of the wetland and improve the capture and treatment of nutrients and finer particles within the Lyneham Wetland, above the previous design.

The proposed design will also improve maintenance activities around visual inspection of the GPT, removal of gross pollutants and desilting of sediment from the sediment forebay. Additionally with the implementation if the clay core within the sediment forebay, dewatering will only be required within the sediment forebay allowing the downstream wetland to operate as normal during desilting operations.

3 LANDSCAPE DESIGN

No landscape has been proposed as all works are generally below the Normal Operating Level (NOL). Any disturbed surfaces above the NOL will require to be reinstated to natural conditions.

4 DESIGN STANDARDS

The following standards and specifications have been adopted in the design of the sediment forebay and GPT retrofit:

- ACT Design Standards for Urban Infrastructure
- ACT Standard Specification for Urban Infrastructure Works
- AS 2124 - 1992 General Conditions of Contract
- Australian Standards - as relevant
- Environment Protection Act
- Erosion and Sediment Control during Land Development, Environment ACT, 1998
- Occupational Health and Safety Act

APPENDICES

APPENDIX A DETAILED DESIGN DRAWINGS

APPENDIX B SAFETY IN DESIGN REPORT



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APRIL 2016
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WATER & ENVIRONMENT

Lyneham Wetland Forebay and GPT Retrofit - Safety in Design Report

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APPENDICES

APPENDIX A	SAFETY IN DESIGN ASSESSMENT
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1 PROJECT BACKGROUND

1.1 PROJECT DESCRIPTION

Roads ACT has engaged Calibre Consulting to undertake the retrofit design of the Lyneham Wetland and existing GPT. The proposed retrofit is designed to capture additional sediment and gross pollutants at the upstream end of the Lyneham Wetland.

1.2 DESIGN SCOPE

The scope of Calibre's Consultancy includes:

- Prepare detailed design drawings and tender documentation

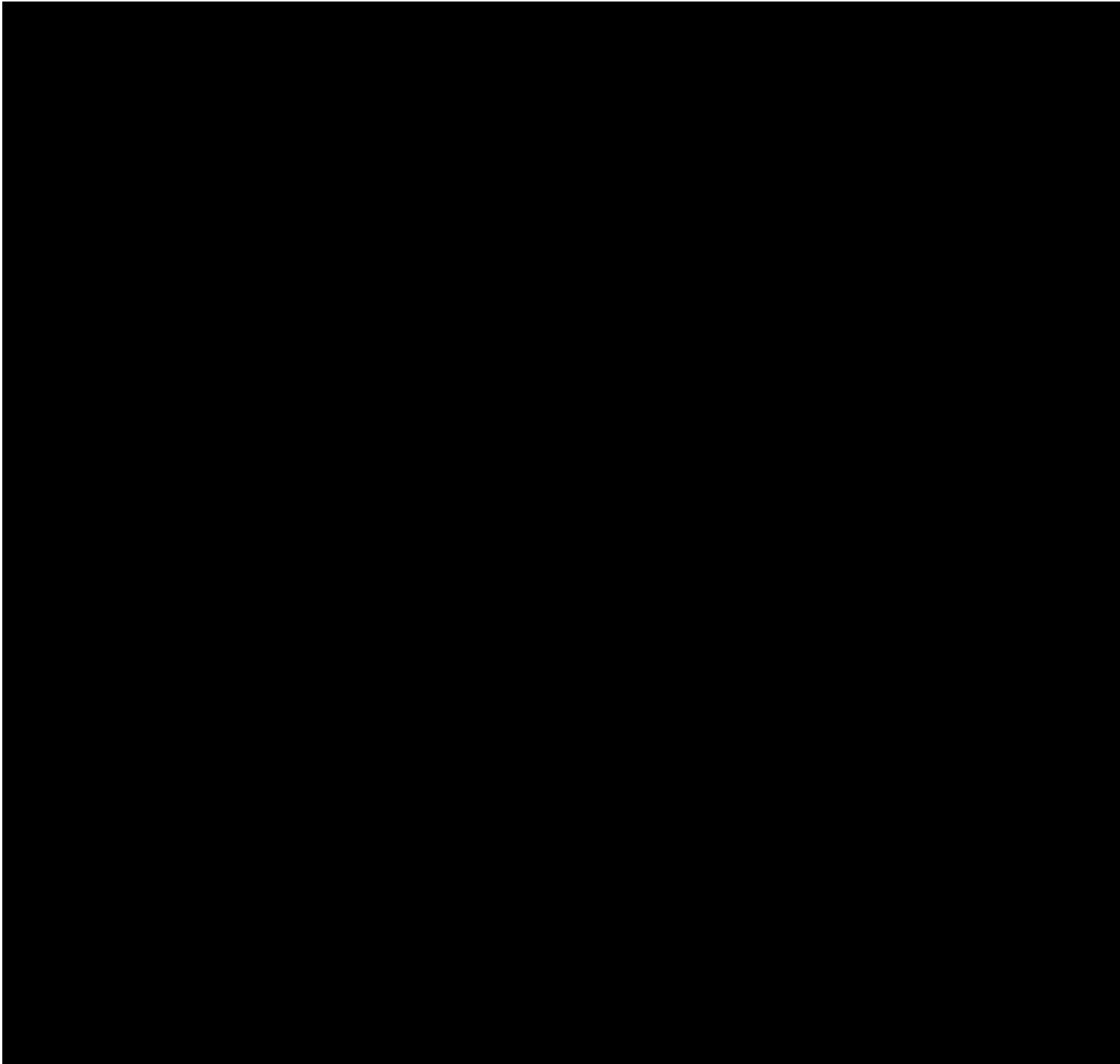
1.3 PURPOSE OF THE DESIGN

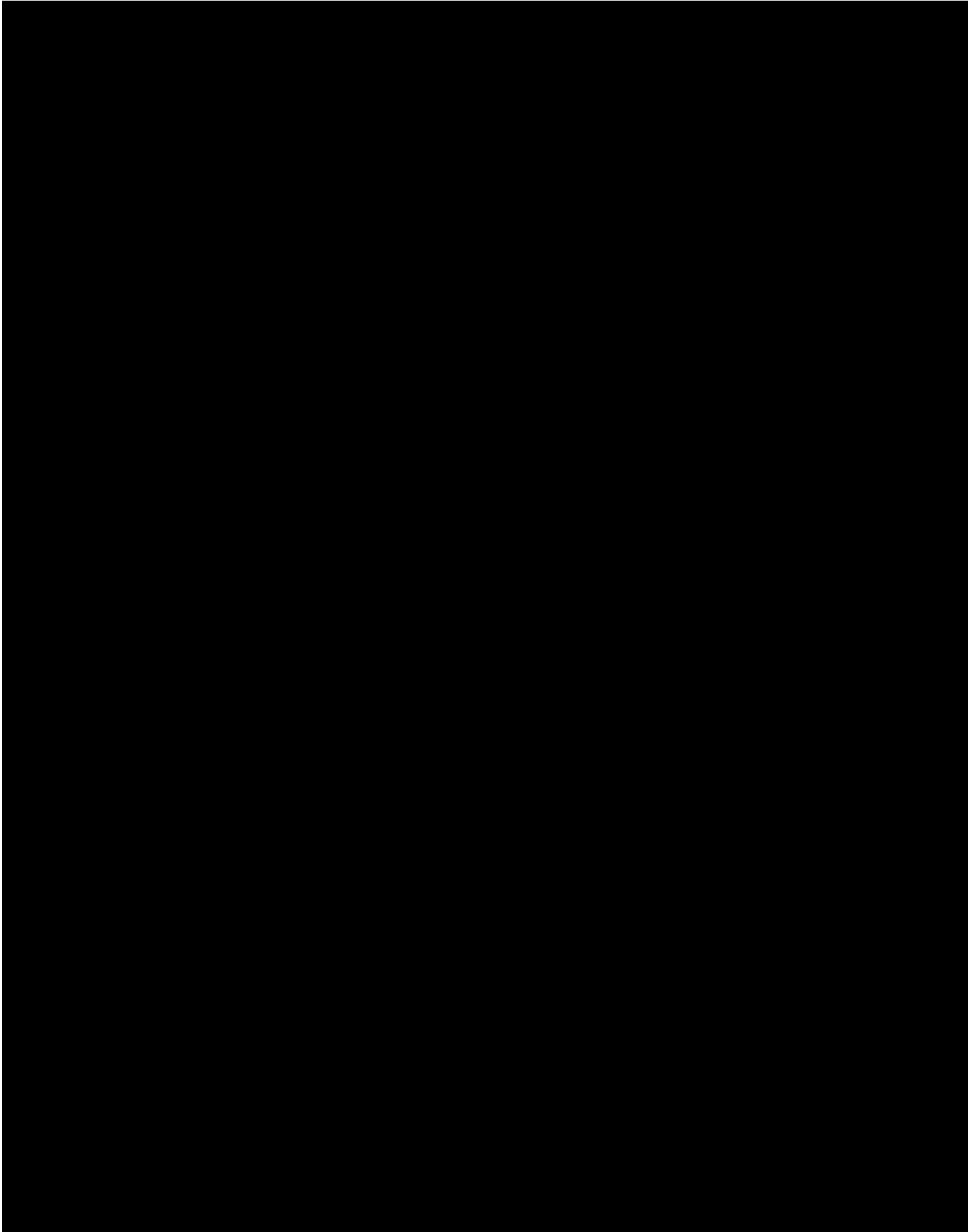
Second to providing additional sediment and gross pollutant removal. The design will take into the consideration improved methods to allow maintenance activities around the wetland to assist in easier desilting of captured sediment within the sediment forebay and removal of gross pollutants.

2 SAFE DESIGN

Safe design is the practice of integrating control measures early in the design process to eliminate or, if this is not reasonably practicable, minimise risks to health and safety throughout the life of the structure being designed.

2.1 METHODOLOGY



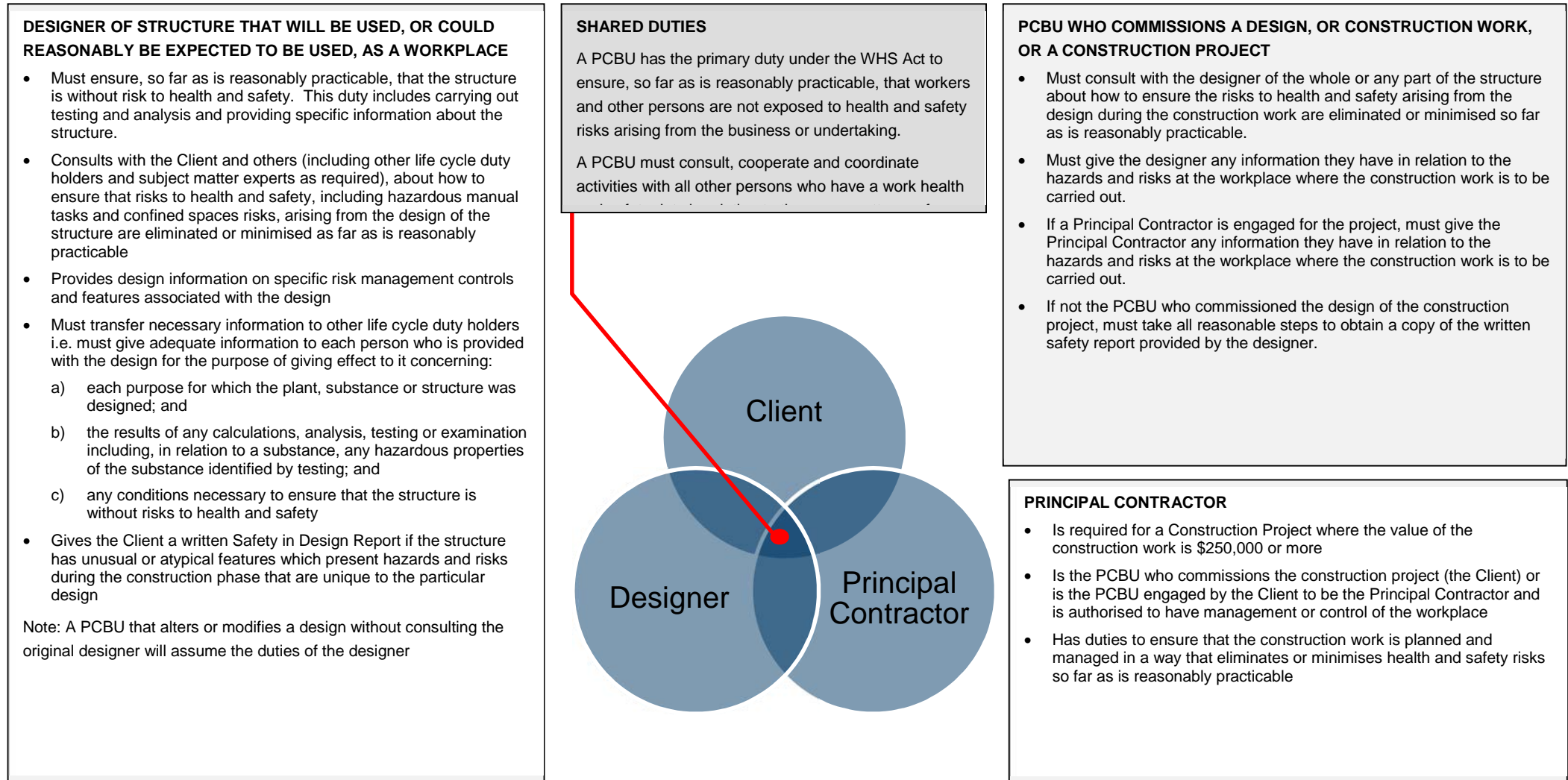


2.2 ROLES & RESPONSIBILITIES

As a Person Conducting a Business or Undertaking (PCBU), Calibre Consulting has a duty to manage risks to health and safety by identifying reasonably foreseeable hazards that could give rise to risks to health and safety. This includes identifying hazards and risks specific to design.

Figure 2-3 Design related WHS Duties summarises the WHS duties specific to the design and construction of a structure.

Figure 2-3 Design related WHS Duties



2.3 SAFETY IN DESIGN REVIEWS

Safety in Design workshops and / or reviews play an important role in the practice of Safe Design in that they provide a forum through which designers can consult with relevant stakeholders, life cycle duty holders and subject matter experts on how 'in scope' hazards and corresponding risks can be eliminated or minimised through either implementing solutions from recognised standards or, as necessary, conducting a risk assessment process.

The review also helps the designer to determine what is 'reasonably practicable' by discussing the following with relevant personnel:

- The likelihood of the hazard or the risk occurring;
- The degree of harm that might result from the hazard or the risk;
- Knowledge about the hazard or risk, and ways of eliminating or minimising the risk;
- The availability and suitability of ways to eliminate or minimise the risk; and
- If necessary, after assessing the extent of the risk and the available ways of eliminating or minimising the risk, the cost associated with eliminating or minimising the risk.

A summary of the Safety in Design review process is included in Figure 2-4 Safety in Design Workshop Process.

Figure 2-4 Safety in Design Workshop Process



2.3.1 REVIEWS

No workshops are proposed with the Lyneham Wetland GPT and Forebay Retrofit design. Currently no reviews have been undertaken.

3 CONCLUSION

The safety in design findings for this structure are documented in the Safety in Design Assessment Lyneham Wetland GPT and Forebay Retrofit - Safety in Design Checklist are included in Appendix A.

3.1 FUTURE CONSIDERATIONS

This report summarises the safe design outcomes specific to this design that were identified during the design process. It is important that the controls identified in this report are reviewed by other life cycle duty holders including the PCBU's who construct, maintain and demolish the structure prior to undertaking work in relation to the structure.

Any future queries regarding the intent of the structure or specific health and safety design considerations and / or controls are to be directed to the relevant Calibre Consulting design manager.

APPENDIX A SAFETY IN DESIGN ASSESSMENT

SAFETY IN DESIGN ASSESSMENT – GENERIC

Degree Of Harm (DOH)	
1 - INSIGNIFICANT	No Injuries
2 - MINOR	First Aid Injury
3 - MODERATE	Medical Treatment Injury
4 - MAJOR	Multiple Injuries or Health Effects / Lost Time Injury
5 - CATASTROPHIC	Fatality

Hierarchy of Controls	
1	Elimination
2	Substitution / Isolation
3	Engineering
4	Administration
5	Training
6	Personal Protective Equipment (PPE)



Consideration	App? <input checked="" type="checkbox"/> <input type="checkbox"/>	Likely Hazard	DOH	HOC	Controlling Action & Method of Transfer	Action By	Action Status
Existing site conditions:							
Contaminated materials including biological hazards	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"> » Coming into contact with potentially contaminated sediment located in wetland during excavation 	5	1	Further assessment needs to take place during the construction stage to indicate whether or not sediment in wetland is in fact contaminated (soil testing required). Further controlling actions to be identified at this stage.	Principle Contractor	
Existing services including relocations	<input checked="" type="checkbox"/>	Safety issues caused by damage to existing services which include: <ul style="list-style-type: none"> » Sewer » Water » Street Lighting » Stormwater » Shared trench (Electricity Gas Communication) 	5	3	Existing services to be located prior to commencement of construction works.	Principle Contractor	
				4	Existing services to be detailed in the design drawings	Calibre Consulting	
Existing site uses and users	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"> » Brownfield site located within Lyneham Wetland, which is part of a local residential and recreational area. » Potential for accidents to occur from site users being unaware of works taking place 	5	4	Relevant stakeholders to be consulted throughout the design process including council and adjacent property owners.	Roads ACT	
Adjacent land uses and users	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"> » Accidents involving local residents that use the footpaths around Lyneham Wetland and walk along the footpath connecting Goodwin St and De Burgh St 	5	4	Relevant stakeholders to be consulted throughout the design process.	Roads ACT	
			5	4	Signage to be erected. Access to be restricted where machinery is in use. Access around the wetland and from Goodwin St to De Burgh Street to remain. CEMP to be prepared	Principle Contractor	
			5	1	Work site to be suitably secured and adjacent land users consulted regarding construction activities.	Principle Contractor	

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Consideration	App? <input checked="" type="checkbox"/> <input type="checkbox"/>	Likely Hazard	DOH	HOC	Controlling Action & Method of Transfer	Action By	Action Status
Geotechnical conditions and likely method of excavation	<input checked="" type="checkbox"/>	» Issues removing rock located in the new sediment basin			The principal contractor to submit an EPA approved Erosion Sediment Control Plan (ESCP) identifying upstream clean water diversions around the construction works.	Principle Contractor	
		» After heavy rain the ground will become easily water logged making excavation difficult. » Construction during winter months could make it difficult to dry out ground conditions after a rainfall event.			Construction to be scheduled outside of winter months and tenders to be called accordingly.	Roads ACT	
Ground water	<input checked="" type="checkbox"/>	» Potential for excavation to cut through ground water table	3	3	Construction works that are likely to encounter groundwater to be carried out during historically high evaporation months.	Principle Contractor	
			3	3	Construction works to be scheduled outside of historically wet and cold months and tenders to be called accordingly.	Roads ACT	
			3	3	Likely delays in construction will exist if above average rainfall is anticipated. Appropriate contract allowances to be provided.	Roads ACT	
Susceptibility to flooding including overland flow paths and floodways	<input checked="" type="checkbox"/>	» The work site is within Lyneham Wetland and a major catchment area which poses both an environmental and potential drowning risk. » Potential for site to become flooded after rain events where runoff makes its way down the floodway	5	4	100 year flood level to be provided on design drawings.	Calibre Consulting	
			5	3	Spoil and select material to be located outside the 100 year flood line and away from drainage easements to minimise sediment loss into Lyneham Wetland	Principle Contractor	
			5	3	Staging of works to minimise sediment loss into Lyneham Wetland	Principle Contractor	
			5	3	Implement measures to remove runoff from the floodway away from site	Principle Contractor	

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Consideration	App?	Likely Hazard	DOH	HOC	Controlling Action & Method of Transfer	Action By	Action Status
	<input checked="" type="checkbox"/>						
			5	4	Possession of site preferred outside of winter to increase evaporation potential during early construction works.	Roads ACT	
			4	3	Upstream Dickson Wetland to be lowered then sealed to be used as a temporary detention dam.	Roads ACT	
			5	4	EDD to provide appropriate contractor allowance in regards to completing works during above average rainfall events.	Roads ACT	
Existing provision for access including traffic, residential, pedestrian, equestrian, etc.	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"> » Local residents » Local pedestrian traffic 			Access will be off the currently constructed footpath between Goodwin St and De Burgh St to access the site	Principle Contractor	
					Existing provision for access to be maintained during construction works in consultation with access owners and users.	Principle Contractor	
Existing bus routes and bus stops	<input type="checkbox"/>	N/A					
Existing features of cultural, archaeological, heritage and / or environmental significance	<input type="checkbox"/>	N/A					
Design:							
Unusual or atypical design features	<input checked="" type="checkbox"/>	Working within a wetland: <ul style="list-style-type: none"> » Working in or near the wetland during or after a storm and / or high rainfall event » Bank erosion » Manual handling of rocks / boulders 	4	4	100 year flood level to be provided on the design drawings	Calibre Consulting	
			4	3	Review of alternative batter protection within the pond such as rock gabions to be considered.	Calibre Consulting	
			4	3	Spoil and select material to be located outside the 100 year flood line and away from drainage easements to minimise sediment loss	Principle Contractor	

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Consideration	App? <input checked="" type="checkbox"/> <input type="checkbox"/>	Likely Hazard	DOH	HOC	Controlling Action & Method of Transfer	Action By	Action Status
			4	3	Floodway levels to be monitored during construction works and necessary controls implemented as required.	Principle Contractor	
			4	3	Existing wetland to be drained and used as a temporary detention dam / low flow diversion around works to be implemented.	Principle Contractor	
			4	3	Weather to be monitored and works suitably planned during construction works to minimise the risk of working in or near the creek during a high rainfall event and / or high flow.	Principle Contractor	
Construction:							
Method of construction	<input checked="" type="checkbox"/>	<ul style="list-style-type: none"> » Earthworks » Spoil Haulage around site » Haulage of Pipework and select material to site » Haulage along finished HPDE Stage 1 » Steep batters (approx. 1:3) » Delay in relevant approvals 	4	4	Haulage routes to be included in the Principal Contractor's relevant TTM and approved prior to commencement of construction works.	Principle Contractor	
			4	3	Spoil and select material to be located outside the 100 year flood line and away from drainage easements to minimise sediment loss	Principle Contractor	
			4	4	Safety in design hazards and controls are to be reviewed with all relevant PCBU's prior to commencement of construction works to help identify opportunities to make the construction methodology safer through design.	Principle Contractor	
			4	4	100 year flood level to be provided on the design drawings.	Calibre Consulting	
			4	4	Roads ACT to undertake the process to receive the waterway works license and environmental authorisation and or other necessary EPA / Authority approvals.	Roads ACT	

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Consideration	App? <input checked="" type="checkbox"/> <input type="checkbox"/>	Likely Hazard	DOH	HOC	Controlling Action & Method of Transfer	Action By	Action Status
Access	<input checked="" type="checkbox"/>	» Goodwin Street use is likely to increase by commencement of construction works.	4	4	The proposed compound location and proposed access points are to be included in the design drawings.	Calibre Consulting	
		» The current site compound and stockpile area is nominated at the northern end of the project and would be accessed off Goodwin Street. Site congestions could potentially be an issue for the compound as shown	4	4	The compound location is to be included in the Principal Contractor's TTM which must be approved prior to commencement of construction works.	Principal Contractor	
Crane / Plant requirements	<input checked="" type="checkbox"/>	» Foundation instability and / or unsuitability.	5	3	Ground and foundations stability and capacity to be sufficient to meet crane and plant requirements.	Principal Contractor	
Maintenance:							
Method of maintenance	<input checked="" type="checkbox"/>	Access to:	4	3	Proposed services designed in accordance with Authority guidelines and in consultation with the relevant Authorities.	Calibre Consulting	
		» Sediment Basin Embankment	4	4			
		» Sediment Basin					
» GPT structures	4	4			Provision for maintenance vehicle access to be included in the design drawings.	Calibre Consulting	
» Vegetation maintenance			Proposed services are included in the design drawings.	Calibre Consulting			
Demolition:							
Method of demolition	<input type="checkbox"/>						
High Risk Construction Activities:							
A person could fall more than 2m	<input checked="" type="checkbox"/>	» Construction activities near embankments and inlet structures.	4	3	Safety in design to be reviewed prior to commencement of construction works to determine whether fall prevention mechanisms can be incorporated into the detailed design.	Principal Contractor	

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Consideration	App?	Likely Hazard	DOH	HOC	Controlling Action & Method of Transfer	Action By	Action Status
	<input checked="" type="checkbox"/>						
Work is on a telecommunication tower	<input type="checkbox"/>						
Involves demolition of an element of a structure that is load-bearing or otherwise related to the physical integrity of the structure	<input type="checkbox"/>						
Involves, or is likely to involve, the disturbance of asbestos	<input type="checkbox"/>						
Involves structural alterations or repairs that require temporary support to prevent collapse	<input type="checkbox"/>						
In or near a confined space	<input type="checkbox"/>						
In or near a shaft or trench with an excavated depth greater than 1.5m or is carried out in or near a tunnel	<input type="checkbox"/>						
Involves the use of explosives	<input type="checkbox"/>						
Is carried out in or near	<input type="checkbox"/>						
– Pressurised gas distribution mains or piping	<input type="checkbox"/>						
– Chemical, fuel or refrigerant lines	<input type="checkbox"/>						
– Energised electrical installations or services	<input type="checkbox"/>						
Involves tilt-up or precast concrete	<input type="checkbox"/>						
On, in or adjacent to a road, railway, shipping lane or other traffic corridor that is in use by traffic other than pedestrians	<input type="checkbox"/>						

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Consideration	App? <input checked="" type="checkbox"/> <input type="checkbox"/>	Likely Hazard	DOH	HOC	Controlling Action & Method of Transfer	Action By	Action Status
In an area at a workplace in which there is any movement of powered mobile plant	<input checked="" type="checkbox"/>	» Movement of powered mobile plant within the construction site.	5	3	The proposed site compound location is nominated outside of the construction work footprint where possible.	Calibre Consulting	
			5	3	Construction works are to be safely managed by the Principal Contractor in accordance with statutory requirements, relevant Codes of Practice and appropriate guidelines.	Principal Contractor	
In an area in which there are artificial extremes of temperature	<input type="checkbox"/>						
In or near water or other liquid that involves a risk of drowning	<input checked="" type="checkbox"/>	» Works are within Lyneham wetland therefore there is a risk of drowning	5	4	Stormwater and 100 year flood details to be included in the design drawings.	Calibre Consulting	
			5	3	Creek levels to be monitored during construction works and necessary controls implemented as required.	Principal Contractor	
			5	4	PC to sign up to BOM emergency access email register.	Principal Contractor	
			5	3	Upstream Dickson Wetland to be lowered then sealed to be used as a temporary detention dam.	Roads ACT	
Involves diving work	<input type="checkbox"/>						
Communication in a high-noise environment	<input checked="" type="checkbox"/>	» Communication over plant noise may be difficult	2	6	PPE and UHF radios to be provided	Principal Contractor	
Emergency Management							
Fire / Bushfire	<input type="checkbox"/>						
Emergency Services Access	<input checked="" type="checkbox"/>	» Emergency access during construction works.	5	3	Emergency access to be all work areas to be safely maintained at all times.	Principal Contractor	
Hazardous Manual Tasks:							
A task that requires a person to lift, lower, push, pull, carry or otherwise	<input checked="" type="checkbox"/>		3	5	Safety in Design controls to be reviewed with all relevant PCBU's prior to	Principal Contractor	

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Consideration	App? <input checked="" type="checkbox"/> <input type="checkbox"/>	Likely Hazard	DOH	HOC	Controlling Action & Method of Transfer	Action By	Action Status
move, hold or restrain any person, animal or thing involving one or more of the following: – repetitive or sustained force	<input type="checkbox"/>	» Exposure to hazardous manual tasks during construction and maintenance works.			commencement of construction works to help identify opportunities to eliminate and / or reduce worker exposure to hazardous manual tasks through design.		
– high or sudden force	<input checked="" type="checkbox"/>		3	3	Alternative construction equipment and methodologies aimed at reducing worker exposure to hazardous manual tasks to be adopted where reasonably practicable to do so.	Principal Contractor	
– repetitive movement	<input checked="" type="checkbox"/>						
– sustained or awkward posture	<input checked="" type="checkbox"/>						
– exposure to vibration	<input checked="" type="checkbox"/>						
Earthworks:							
Staging	<input checked="" type="checkbox"/>	» Excavating, processing and haulage of excavated and stockpiled materials.	5	4	Principal Contractor to safely manage works in accordance with the Contract, relevant legislation and Codes of Practice.	Principal Contractor	
				4	Concept Construction Environmental Management Plan to include provision for site access and haulage.	Principal Contractor	
Method of excavation & plant requirements	<input checked="" type="checkbox"/>	» Speed of earthworks equipment on site	5	3	Principal Contractor to safely manage works in accordance with the Contract, relevant legislation and Codes of Practice.	Principal Contractor	
Earthworks balances and location of stockpile material	<input checked="" type="checkbox"/>	» Haulage and stockpiling of excavated and imported material. » Import material may be structurally sub-standard or contaminated	5	4	Principal Contractor to safely manage works in accordance with the Contract, relevant legislation and Codes of Practice.	Principal Contractor	
				1	Material to be tested in order to conform to EPA requirements.	Principal Contractor	

SAFETY IN DESIGN ASSESSMENT – GENERIC

Degree Of Harm (DOH)	
1 - INSIGNIFICANT	No Injuries
2 - MINOR	First Aid Injury
3 - MODERATE	Medical Treatment Injury
4 - MAJOR	Multiple Injuries or Health Effects / Lost Time Injury
5 - CATASTROPHIC	Fatality

Hierarchy of Controls	
1	Elimination
2	Substitution / Isolation
3	Engineering
4	Administration
5	Training
6	Personal Protective Equipment (PPE)



Consideration	App? <input checked="" type="checkbox"/> <input type="checkbox"/>	Likely Hazard	DOH	HOC	Controlling Action & Method of Transfer	Action By	Action Status
				1	Clay material to be stockpiled separately and to be left in-situ where possible.	Principal Contractor	
Depth of excavations	<input checked="" type="checkbox"/>	» Geotechnical instability » Groundwater contamination	5	4	Principal Contractor to safely manage works in accordance with the Contract, relevant legislation and Codes of Practice.	Principal Contractor	
				3	Depth of excavation minimised where possible.	Calibre Consulting	
Adjacent properties affected by earthworks / excavations	<input checked="" type="checkbox"/>	» Excavating, processing and haulage of excavated and stockpiled materials » Dust, vibration and noise hazards	5	4	Principal Contractor to safely manage works in accordance with the Contract, relevant legislation and Codes of Practice.	Principal Contractor	
				2	Pollution controls measures such as on working hours and dust suppression to be complied with		
Road / Pavement / Carpark Design:							
Road alignment and cross section	<input type="checkbox"/>						
Pavement materials	<input type="checkbox"/>						
Provision for pedestrians, cyclists, public transport, heavy vehicles, emergency vehicles, maintenance operations	<input type="checkbox"/>						
Noise generation	<input type="checkbox"/>						
Lighting	<input type="checkbox"/>						
Crime prevention	<input type="checkbox"/>						
Edge protections / guardrails / barriers	<input type="checkbox"/>						
Drainage	<input type="checkbox"/>						

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Consideration	App? <input checked="" type="checkbox"/> <input type="checkbox"/>	Likely Hazard	DOH	HOC	Controlling Action & Method of Transfer	Action By	Action Status
Stormwater, Water and Sewer Design:							
Flow capacity of pipes and structures	<input type="checkbox"/>						
Structural capacity of pipes and structures	<input type="checkbox"/>						
Cast in-situ structures	<input type="checkbox"/>						
Pre-cast structures	<input type="checkbox"/>						
Access to pipes and structures – i.e. ladder and fall protection requirements	<input type="checkbox"/>						
Stormwater Pond Design:							
Access to stormwater ponds including restricted access and access for maintenance	<input checked="" type="checkbox"/>	Inadvertent and / or unauthorised access to stormwater ponds.	3	2	Stormwater ponds to be designed to gradual slope and / or adequately fenced, signed and secured in accordance with relevant design standards and guidelines.	Calibre Consulting	
			3	2	Existing footpaths are located above the Q100 flood level	Calibre Consulting	
Stormwater pond water quality	<input checked="" type="checkbox"/>	Contaminated and / or stagnant water Mosquito breeding habitat	3	2	Consider necessary stormwater treatment to maintain safe water quality levels in accordance with relevant design standards. Note the existing and proposed wetland section will remain at 2.0m. Sediment Forebay depth will increase from 2.0 to 3.5 m below NOL.	Calibre Consulting	
Permanent pond design	<input checked="" type="checkbox"/>	» Environmental damage » Risk of drowning	4	1	Include a note specifying that the permanent pond should not be filled until	Calibre Consulting	

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Consideration	App? <input checked="" type="checkbox"/> <input type="checkbox"/>	Likely Hazard	DOH	HOC	Controlling Action & Method of Transfer	Action By	Action Status
					adjacent bank works have been completed in the design drawings.		
Temporary pond design	<input type="checkbox"/>						
Wall Design:							
Handrails / edge protection	<input type="checkbox"/>						
Product selection. Consider sustainability, constructability, maintainability and manual handling	<input type="checkbox"/>						
Fall protection requirements such as provision of anchorage points	<input type="checkbox"/>						
Workplace space and layout for constructing wall	<input type="checkbox"/>						
Depth of footings	<input type="checkbox"/>						
Possible future works around footings	<input type="checkbox"/>						
Load bearing restrictions	<input type="checkbox"/>						
Bridge Design:							
Structural capacity	<input type="checkbox"/>						
Cast in-situ versus precast	<input type="checkbox"/>						
User separation including handrails and guardrails – consider misuse	<input type="checkbox"/>						
Edge protection including safety / noise screens – consider misuse	<input type="checkbox"/>						
Load bearing restrictions	<input type="checkbox"/>						
Product selection. Consider sustainability, constructability,	<input type="checkbox"/>						

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Consideration	App?	Likely Hazard	DOH	HOC	Controlling Action & Method of Transfer	Action By	Action Status
	<input checked="" type="checkbox"/> <input type="checkbox"/>						
maintainability and manual handling	<input type="checkbox"/>						
Provision for lifting points and anchorage points	<input type="checkbox"/>						
Provision and location of proposed services	<input type="checkbox"/>						
Underpass Design:							
Users and access requirements	<input type="checkbox"/>						
Susceptibility to flooding	<input type="checkbox"/>						
Crime prevention	<input type="checkbox"/>						
Product selection. Consider sustainability, constructability, maintainability and manual handling	<input type="checkbox"/>						
Building Design:							
Structural capacity	<input type="checkbox"/>						
Product selection. Consider sustainability, constructability, maintainability and manual handling	<input type="checkbox"/>						
Cast in-situ versus precast	<input type="checkbox"/>						
Load bearing restrictions	<input type="checkbox"/>						
Provision for lifting points and anchorage points	<input type="checkbox"/>						
Provision and location of proposed services	<input type="checkbox"/>						
Basement design	<input type="checkbox"/>						

SAFETY IN DESIGN ASSESSMENT – GENERIC

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Consideration	App?	Likely Hazard	DOH	HOC	Controlling Action & Method of Transfer	Action By	Action Status
	<input checked="" type="checkbox"/>						
Geotechnical constraints	<input type="checkbox"/>						
Ground water	<input type="checkbox"/>						
Re-design	<input type="checkbox"/>						
Demolition	<input type="checkbox"/>						
Landscape Design:							
Crime prevention	<input type="checkbox"/>						
Visibility	<input type="checkbox"/>						
Interaction with services	<input type="checkbox"/>						
Product selection. Consider sustainability, constructability, maintainability and manual handling	<input type="checkbox"/>						
Proposed Services:							
Location and design of proposed services including Interaction with existing services as well as those from adjacent developments	<input type="checkbox"/>						
Depth of proposed services	<input type="checkbox"/>						
Geotechnical impact on trench excavations	<input type="checkbox"/>						
Protection of existing services	<input type="checkbox"/>						
Accessibility to services including pits / manholes / sumps for future maintenance. Consider location, access in, within and out.	<input type="checkbox"/>						

SAFETY IN DESIGN ASSESSMENT – GENERIC

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Consideration	App? <input type="checkbox"/>	Likely Hazard	DOH	HOC	Controlling Action & Method of Transfer	Action By	Action Status
Location of substations	<input type="checkbox"/>						

LYNEHAM FOREBAY & GPT RETROFIT



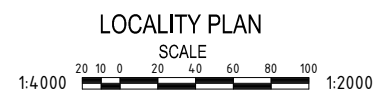
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16-000722-000+	COVER SHEET
16-000722-001+	LAYOUT PLAN
16-000722-002+	FOREBAY SECTIONS
16-000722-003+	GROSS POLLUTANT TRAP NOTES
16-000722-004+	GROSS POLLUTANT TRAP SECTIONS AND DETAILS SHEET 1 OF 2
16-000722-005+	GROSS POLLUTANT TRAP SECTIONS AND DETAILS SHEET 2
16-000722-007+	POLLUTION CONTROL PLAN - NOTES AND LEGEND
16-000722-008+	POLLUTION CONTROL PLAN

DETAIL DESIGN



APRIL 2016



Digital data for setting out the works will be provided upon request, however not all provided information will be guaranteed. The guaranteed and non-guaranteed digital data is described in QAF0502. A copy of this document is available from Calibre Consulting (ACT) upon request.

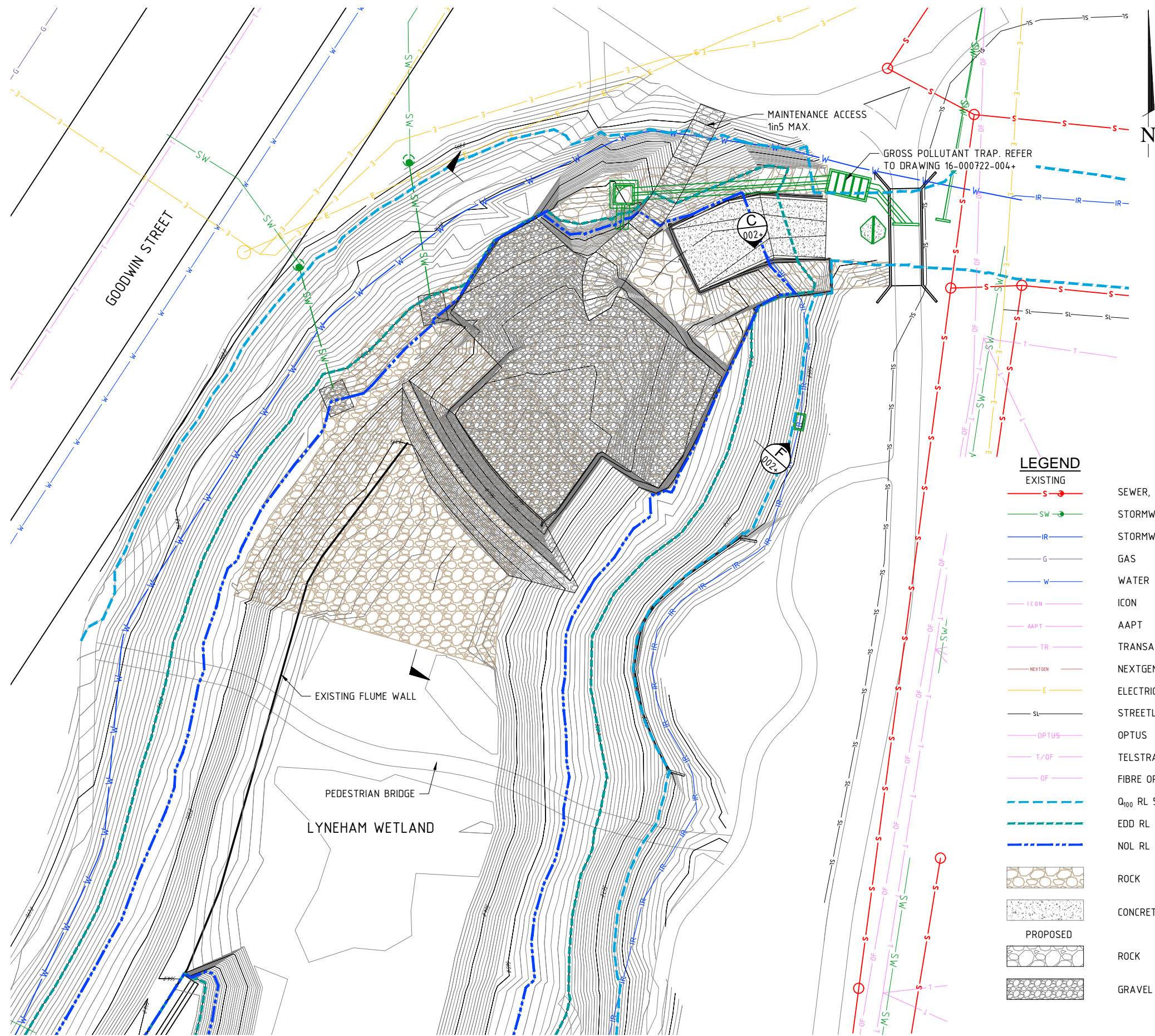
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DATE:.....	



JOB No: 16-000722

DRAWING: 16-000722-000+ REVISION: -





LEGEND

EXISTING	
	SEWER, MANHOLE
	STORMWATER
	STORMWATER RISING MAIN
	GAS
	WATER
	ICON
	AAPT
	TRANSACT
	NEXTGEN
	ELECTRICAL
	STREETLIGHTING
	OPTUS
	TELSTRA FIBRE OPTIC
	FIBRE OPTIC
	Q ₁₀₀ RL 567.700
	EDD RL 566.000
	NOL RL 656.400
	ROCK
	CONCRETE DRAIN
PROPOSED	
	ROCK
	GRAVEL

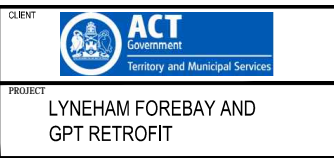
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AMENDMENT DETAILS	

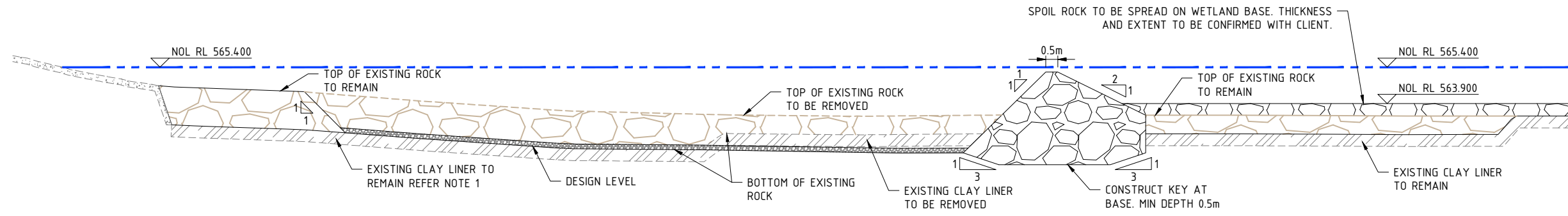
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PROJECT No.	CONSULT AUSTRALIA		

CLIENT	ACT Government Territory and Municipal Services
PROJECT	LYNEHAM FOREBAY AND GPT RETROFIT

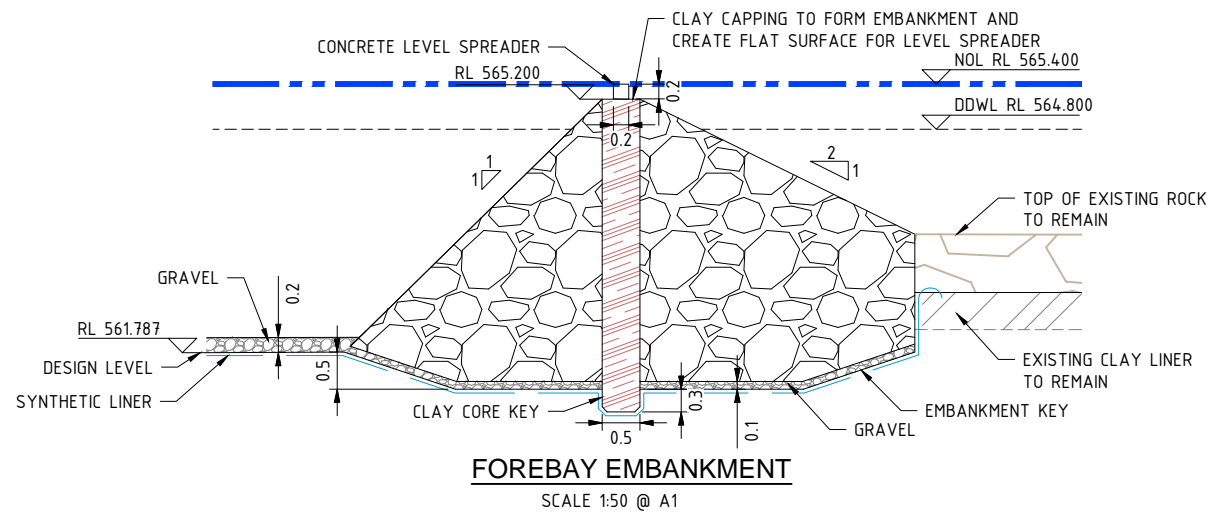


DRAWING TITLE	LAYOUT PLAN
DRAWING NUMBER	16-000722#001+
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SECTION C
SCALE 1:100@A1 001+

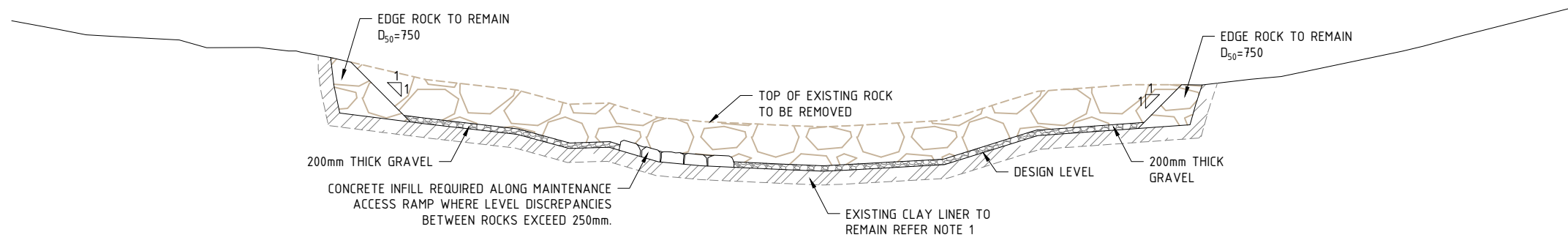


FOREBAY EMBANKMENT
SCALE 1:50 @ A1

NOTES

- EXISTING CLAY LINER TO BE TESTED FOR SUITABILITY. IF UNSUITABLE, INSTALL SYNTHETIC LINER.
- CLAY FILLING FOR PONDING AREA TO SATISFY GRADED SIZE

GRADED SIZE	75mm MAXIMUM	
	84-100	< 19mm
	70-100%	< 2.36mm
	60-100%	< 0.6mm
	50-100%	< 0.075mm
LIQUID LIMIT	40-60%	
PLASTIC LIMIT	>10%	
- THE EMBANKMENT SHOULD COMPRISE ROCK FILL OF ASSORTED 0.05-0.6M SIZE IN LEAST DIMENSION, WITH SOME OCCASIONAL LARGER ROCK PARTICLES PERMITTED.
- THE ROCK PARTICLES MUST BE REPEATEDLY TRACK ROLLED USING HEAVY MACHINERY TO SETTLE AND INTERLOCK THE PARTICLES.
- LOCAL FLATTER VARIATIONS IN THE EMBANKMENT BATTER SLOPES MAY BE REQUIRED DUE TO UNDERLYING TOPOGRAPHY OR INDIVIDUAL PARTICLE SIZES.
- A GEOTECHNICAL ENGINEER MUST INSPECT THE FOUNDATION AND KEY SURFACES AND THE ROCK SOURCE PRIOR TO FILL PLACEMENT/COMPACTION CONTRACTOR TO ORGANISE.
- LEVEL SPREADER TO EXTENT TO EXISTING EMBANKMENT 36m APPROXIMATE.



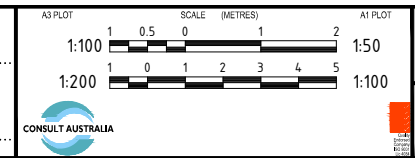
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FIRST ISSUE	DESIGN	DRAWN	CHECK	APPROVED	DATE

WAE No:
PROJECT No:



CLIENT: ACT Government Territory and Municipal Services
PROJECT: LYNEHAM FOREBAY AND GPT RETROFIT

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DRAWING TITLE: FOREBAY SECTIONS
DRAWING NUMBER: 16-000722#002+
AMEND:

GENERAL NOTES

GENERAL

- G1. ALL DIMENSIONS ARE IN MILLIMETRES
- G2. DIMENSIONS SHALL NOT BE SCALED FROM THE DRAWING
- G3. EXISTING CHAMBER DIMENSIONS HAVE BEEN OBTAINED FROM 'WORK AS EXECUTED' DRAWINGS. EXISTING DIMENSIONS SHOWN AS GREY
- G4. ALL SETTING OUT DIMENSIONS AND LEVELS OF THE EXISTING STRUCTURES SHALL BE CHECKED BY THE CONTRACTOR BEFORE CONSTRUCTION COMMENCES. ANY DISCREPANCIES SHALL BE REFERRED TO THE SUPERINTENDENT FOR CLARIFICATION.

CONCRETE

- C1 ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH AS 3600 AND OTHER RELEVANT CODES.
- C2 TYPE 'A' CEMENT TO BE USED IN ALL CONCRETE UNLESS OTHERWISE APPROVED IN WRITING BY THE SUPERINTENDENT.
- C3 CONCRETE QUALITY REQUIREMENTS:

CONCRETE STRENGTH AND COVER			
MEMBER	EXPOSURE	STRENGTH MPa	COVER mm
IN SITU CONCRETE	CAST AGAINST GROUND	32	65
	CAST AGAINST FORMWORK	32	40
BLINDING LAYER		15	N/A
- C4 ALL EXPOSED EDGES AND CORNERS ARE TO BE FINISHED WITH A 25*25 CHAMFER OR FILLET UNLESS NOTED OTHERWISE OR WHERE METAL PLATES FITTED.
- C5 NO HOLES OR CHASES OTHER THAN THOSE ON THE STRUCTURAL DRAWINGS SHALL BE MADE IN CONCRETE STRUCTURES WITHOUT THE APPROVAL OF THE SUPERINTENDENT.
- C6 ALL CONCRETE EXCEPT CONCRETE IN BLINDING LAYERS SHALL BE COMPACTED USING HIGH FREQUENCY VIBRATORS.
- C7 CONCRETE SURFACES SHALL BE PROTECTED AS SOON AS THE CONCRETE HAS GAINED ITS INITIAL SET AND THEREAFTER PROTECTED FROM DAMAGE UNTIL FULLY CURED. THE PREFERRED METHOD OF CURING FOR SLABS IS TO PLACE A CONTINUOUS LAYER OF PVC SHEETING TAPE-SEALED AT EDGES AND JOINTS. ALTERNATIVELY AN APPROVED CURING COMPOUND SUCH AS 'CALCURE-B' MAY BE USED.
- C8 LOCATION OF CONSTRUCTION JOINTS, WHERE NOT SHOWN, SHALL BE APPROVED BY THE SUPERINTENDENT.
- C9 FORMWORK SHALL BE IN ACCORDANCE WITH AS 3160 AND AS FOLLOWS : PERMANENTLY CONCEALED SURFACES - FINISH CLASS 4 ALL OTHER SURFACES - FINISH CLASS 3.
- C10 UNFORMED SURFACE FINISH CLASSES SHALL BE AS FOLLOWS:
INTERNAL FLOOR SLABS - SCORED FINISH
ALL OTHER SURFACES - WOOD FLOAT FINISH

REINFORCEMENT

- R1 REINFORCEMENT IS REPRESENTED DIAGRAMMATICALLY AND IS NOT NECESSARILY SHOWN IN THE PROJECTION.
- R2 SPLICES IN REINFORCEMENT SHALL BE MADE IN THE POSITION SHOWN. THE WRITTEN APPROVAL OF THE SUPERINTENDENT SHALL BE REQUIRED FOR ANY OTHER SPLICE.
- R3 WELDING OF REINFORCEMENT MAY BE PERMITTED WITH PRIOR WRITTEN APPROVAL OF THE SUPERINTENDENT. ALL WELDS SHALL BE COLD GALVANISED TO THE SATISFACTION OF THE SUPERINTENDENT.
- R4 REINFORCEMENT SYMBOLS USED ON THESE DRAWINGS:
 - R STRUCTURAL GRADE ROUND IN ACCORDANCE WITH AS 1304
 - EF EACH FACE
 - NF NEAR FACE
 - FF FAR FACE
 - EW EACH WAY
 - T TOP
 - B BOTTOM
- R5 ALL REINFORCEMENT SHALL BE SUPPORTED IN ITS CORRECT POSITION BY APPROVED BAR CHAIRS, SPACERS OR SUPPORT BARS PRIOR TO THE PLACING OF CONCRETE.
- R6 REINFORCEMENT SYMBOLS IN ACCORDANCE WITH AS/NZS 4671
 - SHAPE PREFIX
 - R PLAIN BAR
 - D DEFORMED BAR
 - GRADE
 - CHARACTERISTIC YIELD STRESS (MPa)
 - MESH CONFIGURATION PREFIX
 - S SQUARE CONFIGURATION
 - R RECTANGULAR CONFIGURATION
 - DUCTILITY PREFIX
 - L LOW DUCTILITY
 - N NORMAL DUCTILITY

THE NUMBER FOLLOWING THE DUCTILITY PREFIX IS THE NOMINAL BAR DIAMETER IN MILLIMETRES. FOR MESH THE NUMBERS INDICATE THE NOMINAL BAR DIAMETER(S) AND THE TRANSVERSE SPACING EXPRESSED IN MILLIMETRES DIVIDED BY 100

EXAMPLE: D500N12 CORRESPONDS TO A DEFORMED BAR, GRADE 500 MPa NORMAL DUCTILITY OF ϕ 12mm
- R7 UNLESS NOTED OTHERWISE, ALL REINFORCING BARS (INCLUDING MESH) ARE TO BE D500 (ie. DEFORMED BAR OF GRADE 500 MPa)
 - EXAMPLE: N12 CORRESPONDS TO A DEFORMED BAR, GRADE 500 MPa NORMAL DUCTILITY OF ϕ 12mm

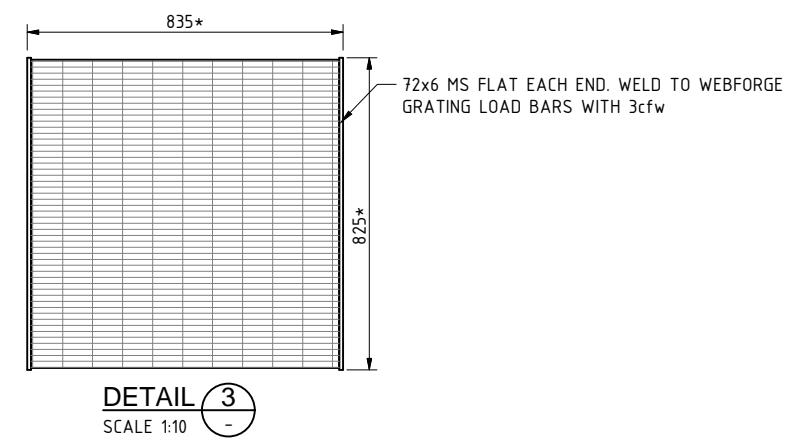
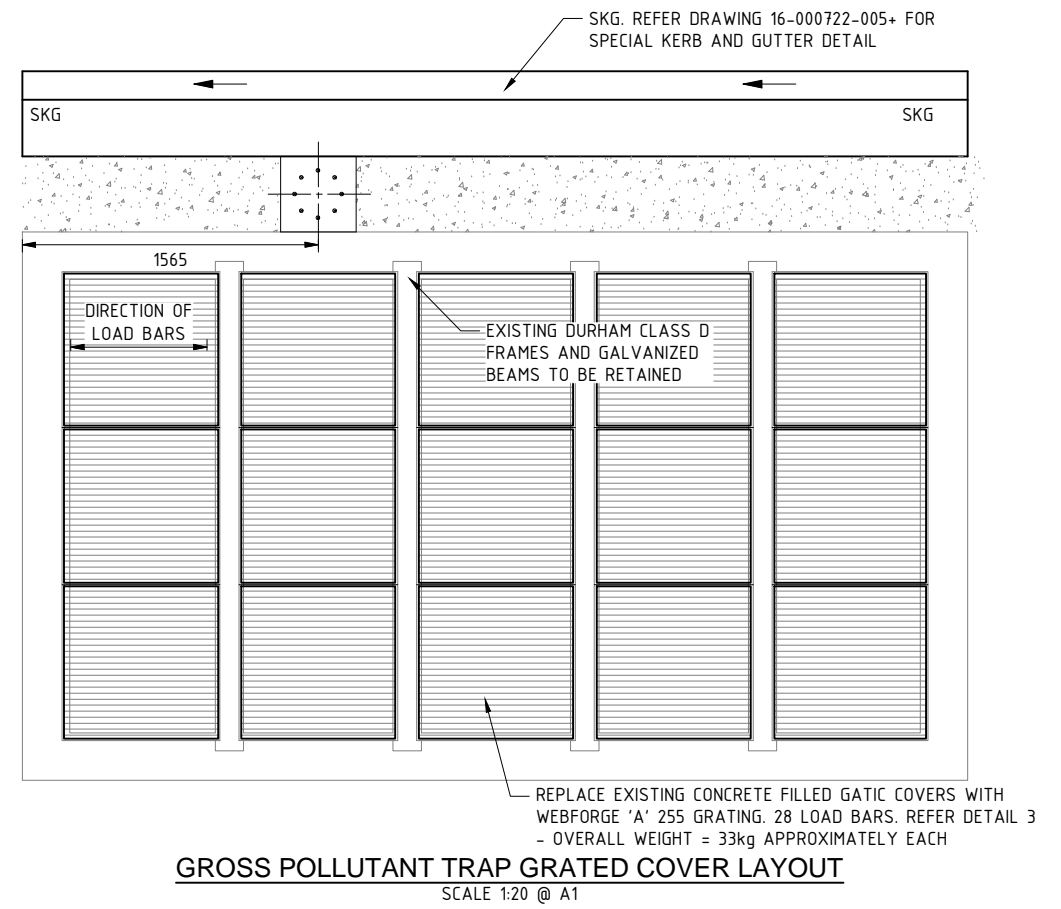
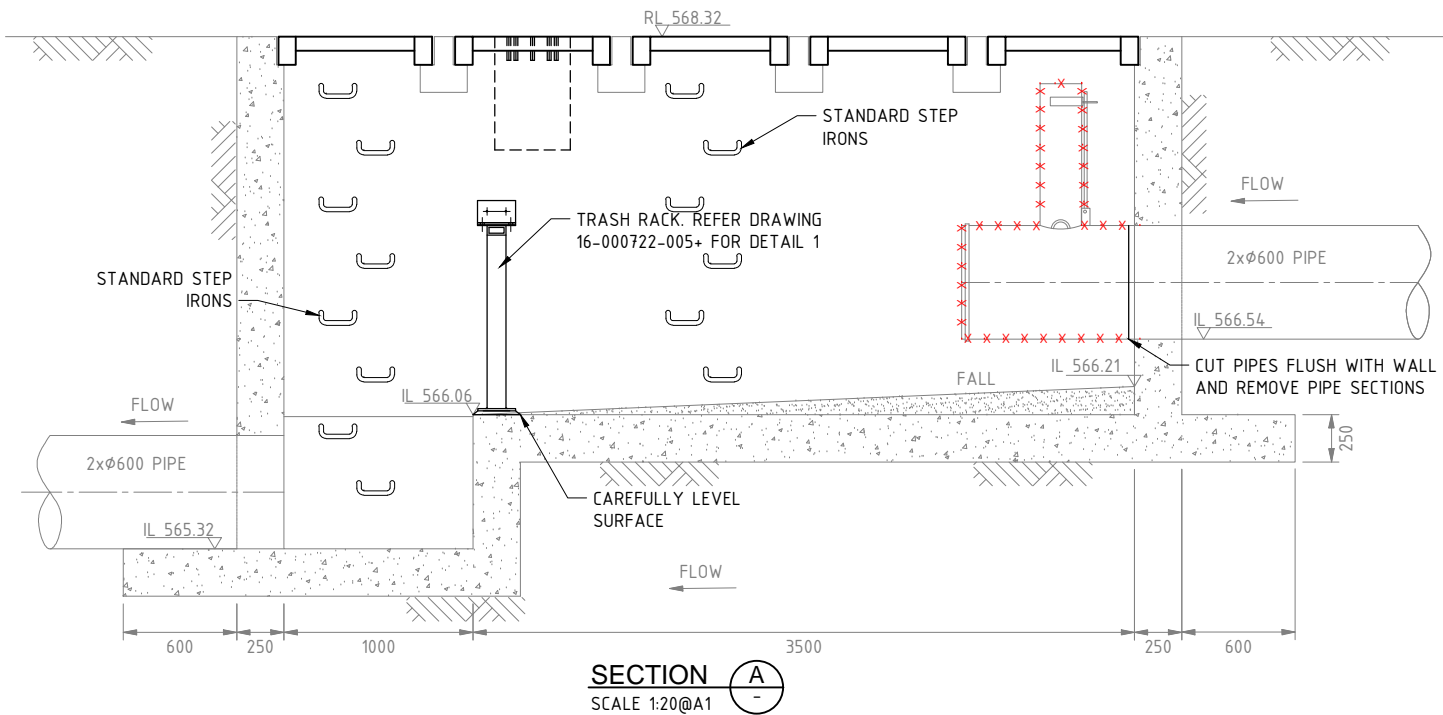
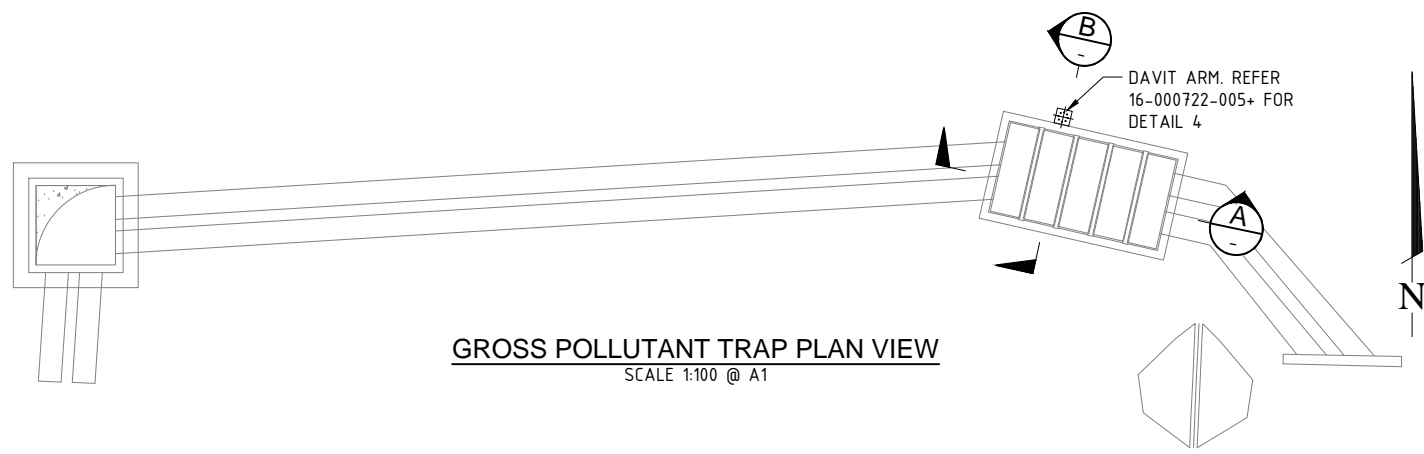
STEELWORK

- S1 ALL WORKMANSHIP AND MATERIALS SHALL COMPLY WITH AS 4100 STEEL STRUCTURES CODE.
- S2 ALL STEELWORK TO BE HOT DIPPED GALVANISED AFTER FABRICATION.
- S3 ALL MILD STEEL NUTS, BOLTS, WASHERS AND ANCHORS TO BE HOT DIP GALVANISED, UNLESS NOTED OTHERWISE.
- S4 ALL WELDS UNLESS NOTED OTHERWISE 6 CONTINUOUS FILLET WELD CATEGORY SP, E48XXW50X ALL ROUND.
- S5 CONTRACTOR TO SUBMIT SHOP DRAWINGS OF STEELWORK TO THE SUPERINTENDENT FOR APPROVAL PRIOR TO FABRICATION.

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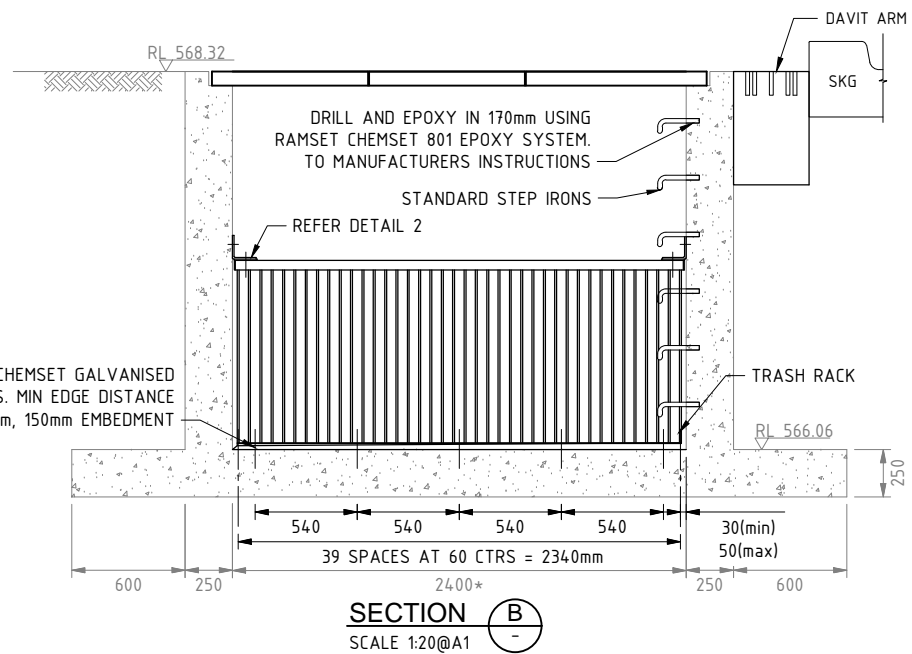
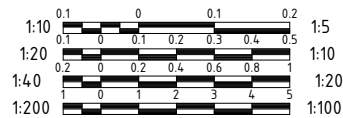
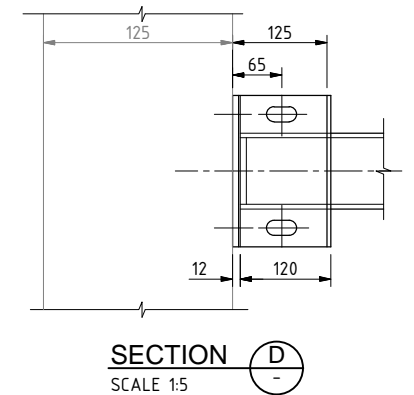
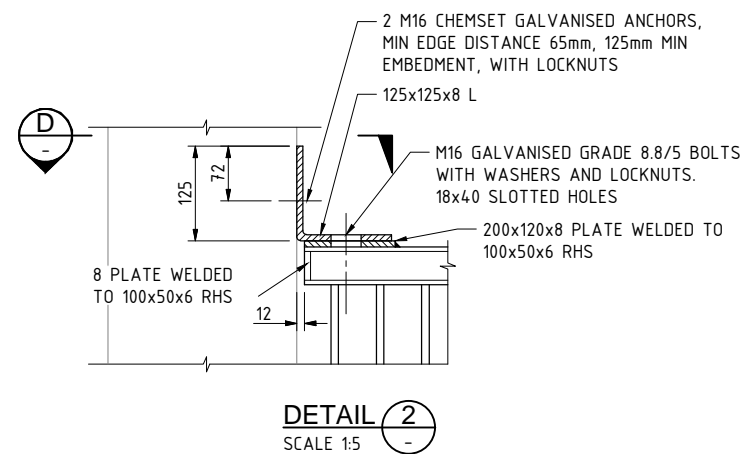
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FIRST ISSUE	DESIGN	DRAWN	CHECK	APPROVED	DATE																		
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NOTES

- FOR GENERAL NOTES REFER DRAWING 16-000722-003+
- * INDICATES SITE MEASURE PRIOR TO FABRICATION.



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DESIGN	DRAWN	CHECK	APPROVED	DATE

AMENDMENT DETAILS

WAE No.:

PROJECT No.:

AS PLOT

SCALE (METRES)

A1 PLOT

CLIENT

PROJECT



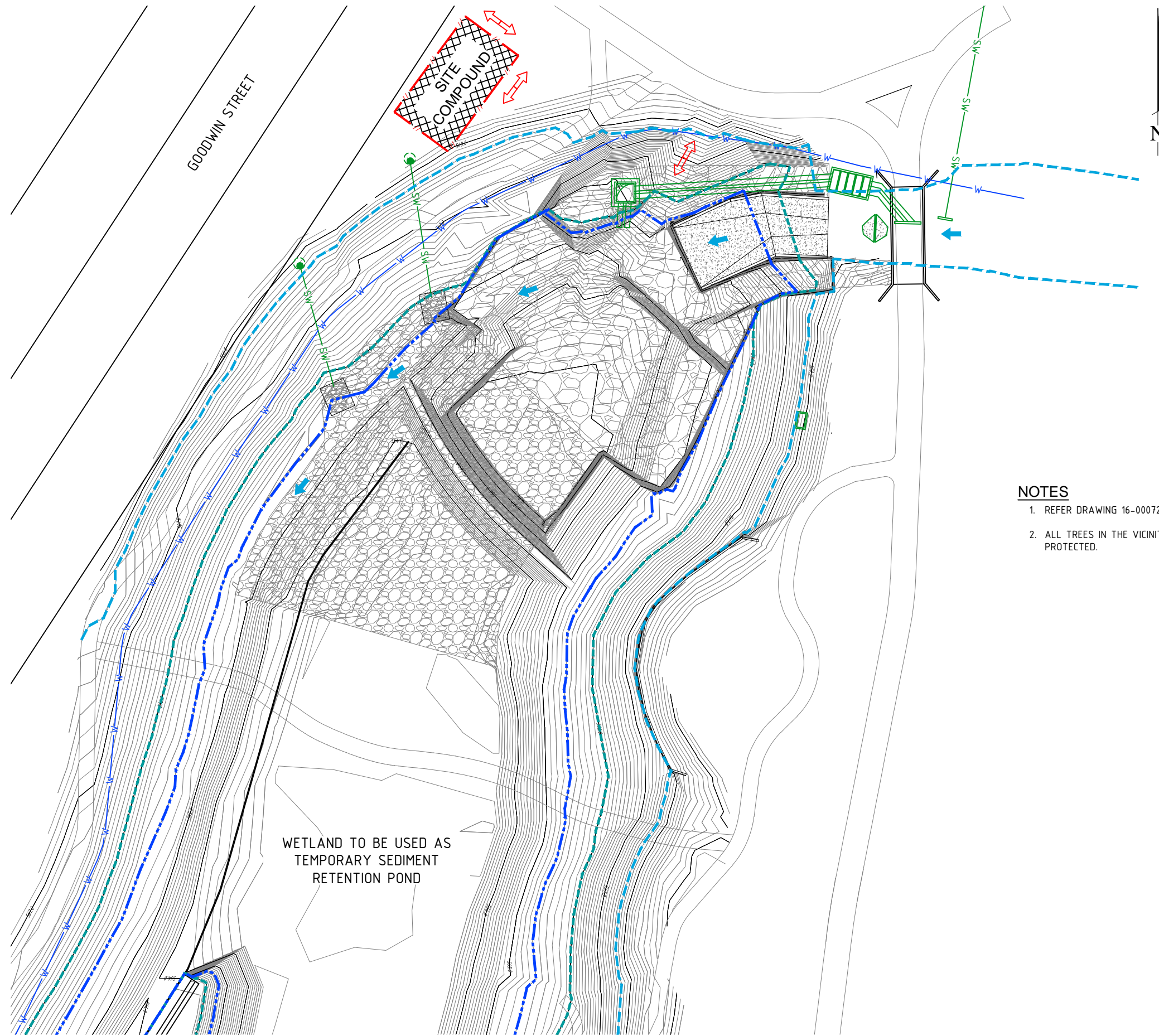
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GROSS POLLUTANT TRAP SECTIONS AND DETAILS SHEET 1 OF 2

DRAWING NUMBER

16-000722#004+

AMEND.



NOTES

1. REFER DRAWING 16-000722-007+ FOR NOTES AND LEGEND
2. ALL TREES IN THE VICINITY OF THE PROPOSED WORKS TO BE PROTECTED.

<table border="1"> <tr> <th>FIRST ISSUE</th> <th>DESIGN</th> <th>DRAWN</th> <th>CHECK</th> <th>APPROVED</th> <th>DATE</th> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>	FIRST ISSUE	DESIGN	DRAWN	CHECK	APPROVED	DATE							<p>AMENDMENT DETAILS</p> <table border="1"> <tr><td> </td></tr> <tr><td> </td></tr> <tr><td> </td></tr> <tr><td> </td></tr> </table>					<p>WAE No.</p> <p>PROJECT No.</p>	<p>A3 PLOT</p> <p>1:500</p> <p>SCALE (METRES)</p> <p>0 5 10</p> <p>A1 PLOT</p> <p>1:250</p>	<p>CLIENT</p> <p>ACT Government Territory and Municipal Services</p>	<p>PROJECT</p> <p>LYNEHAM FOREBAY AND GPT RETROFIT</p>	<p>©2015 www.calibreconsulting.co</p>	<p>DRAWING TITLE</p> <p>POLLUTION CONTROL PLAN</p> <p>DRAWING NUMBER</p> <p>16-000722#008+</p> <p>AMEND.</p>
	FIRST ISSUE	DESIGN	DRAWN	CHECK	APPROVED	DATE																	
<p>DRAFT</p>																							

From: [REDACTED]
To: [Makela, Joanne](#); [Crocker, Leigh](#); [Li, Xunyong](#); [Gilles, Jennie](#); [Schofield, Ross](#); [Yates, Brooke](#); [Zeta, Darwin](#)
Cc: [Cloos, Karl](#); [Paynter, Patrick](#); [Andrew Lee](#)
Subject: Dickson Flood Study - Lyneham Wetland GPT Options Summary
Date: Friday, 15 January 2016 5:02:53 PM
Attachments: [image002.jpg](#)
[Option 1.pdf](#)
[Option 2.pdf](#)
[Option 3.pdf](#)
[Option 4.pdf](#)
[Option 5.pdf](#)
[Option 6.pdf](#)
[Option 7.pdf](#)

All,

For those of you that could not make our meeting yesterday, below is a summary of the GPT options investigated. The options are in no particular order.

Could you please go through the options and advise when would be a suitable time to meet to discuss the GPT options and to agree on an option to develop to FSP.

Hand sketches of the GPT options are attached. The total construction costs below exclude landscaping and drying pads. A drying pad will be incorporated into the FSP design in accordance with TAMS design standards.

OPTION 1:

Option 1 is to have two twin minor GPTs at the same location as the existing Lyneham GPT.

The total construction cost would be in the order of \$345,000.00, with a maintenance frequency of 6 months.

This option would be maintained the same way as all minor GPTs within the ACT.

Side note: This option shows that the existing Lyneham GPT with the two ECOSOL Net Litterbags is significantly undersized.

OPTION 2:

Option 2 is to have a SPEL Bafflebox SBB-8-14-600x2 at the same location of the existing Lyneham GPT.

The total construction cost would be in the order of \$155,500.00, with a maintenance frequency of 2 months.

A sucker truck will be required to maintain this GPT.

OPTION 3:

Option 3 is to have a Rocla CDS 2028 Unit at the same location of the Existing Lyneham GPT.

The total construction cost would be in the order of \$135,000.00, with a maintenance frequency of 4 months.

A sucker truck will be required to maintain this GPT.

OPTION 4:

Option 4 is to upgrade the existing Lyneham GPT (as shown on the WAE drawing) to capture gross pollutants only, and to leave the wetland to capture the sediment as per URS's design. The GPT upgrade would include: replacing the heavy concrete filled covers with grated covers (minor GPT covers), removing the two ECOSOL Net Litterbags, and constructing a screen at an angle as shown on the WAE drawing.

The total construction cost would be in the order of \$25,000.00. The upgraded GPT will have a maintenance frequency of 6 months, and the entire wetland will have to be de-silted every 50 years. In this option, the GPT would be maintained the same way as all minor GPTs within the ACT.

OPTION 5:

Option 5 is to upgrade the existing Lyneham GPT as per Option 4, and to construct a proper forebay to

capture the sediment within the Lyneham Wetland as shown on the aerial photo. In this option, the forebay is earth lined with a geofabric layer 300mm above the clay line to warn the maintenance contractor when to stop de-silting. The geofabric layer in the forebay would have to be reinstated after each cleaning.

The total construction cost would be in the order of \$55,800. The upgraded GPT will have a maintenance frequency of 6 months, and the forebay will have to be de-silted every 10 years. The rest of the wetland do not have to be touched. In this option, the GPT would be maintained the same way as all minor GPTs within the ACT.

OPTION 6:

Option 6 is to upgrade the existing Lyneham GPT as per Option 4, and to construct a proper forebay to capture the sediment within the Lyneham Wetland as shown on the aerial photo. In this option, the forebay is concrete lined to be more robust.

The total construction cost would be in the order of \$179,000. The upgraded GPT will have a maintenance frequency of 6 months, and the forebay will have to be de-silted every 10 years. The rest of the wetland do not have to be touched. In this option, the GPT would be maintained the same way as all minor GPTs within the ACT.

OPTION 7:

Option 7 is to construct a Major GPT adjacent to De Burgh Street as shown on the aerial photo.

The total construction cost would be in the order of \$258,761.00, with a maintenance frequency of 6 months.

This option is however not preferred due to LDA planning to develop the block adjacent to the proposed GPT between De Burgh Street and Northbourne Avenue. This options also clashes with an existing wastewater line.

Calibre's preferred option:

Calibre's preferred option would be Option 5. It is good practice for a wetland or wet pond to have a proper forebay, and the existing Lyneham GPT can be easily upgraded to effectively capture the gross pollutants.

Kind regards



Anthonie Lambert

Senior Project Manager (Team Leader) - Water and Environment

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Lyneham GPT

OPTION 1

TWIN MINOR
GPT 12 CELL
TOTAL.

DUS MINOR
GPT



1: 200 A3

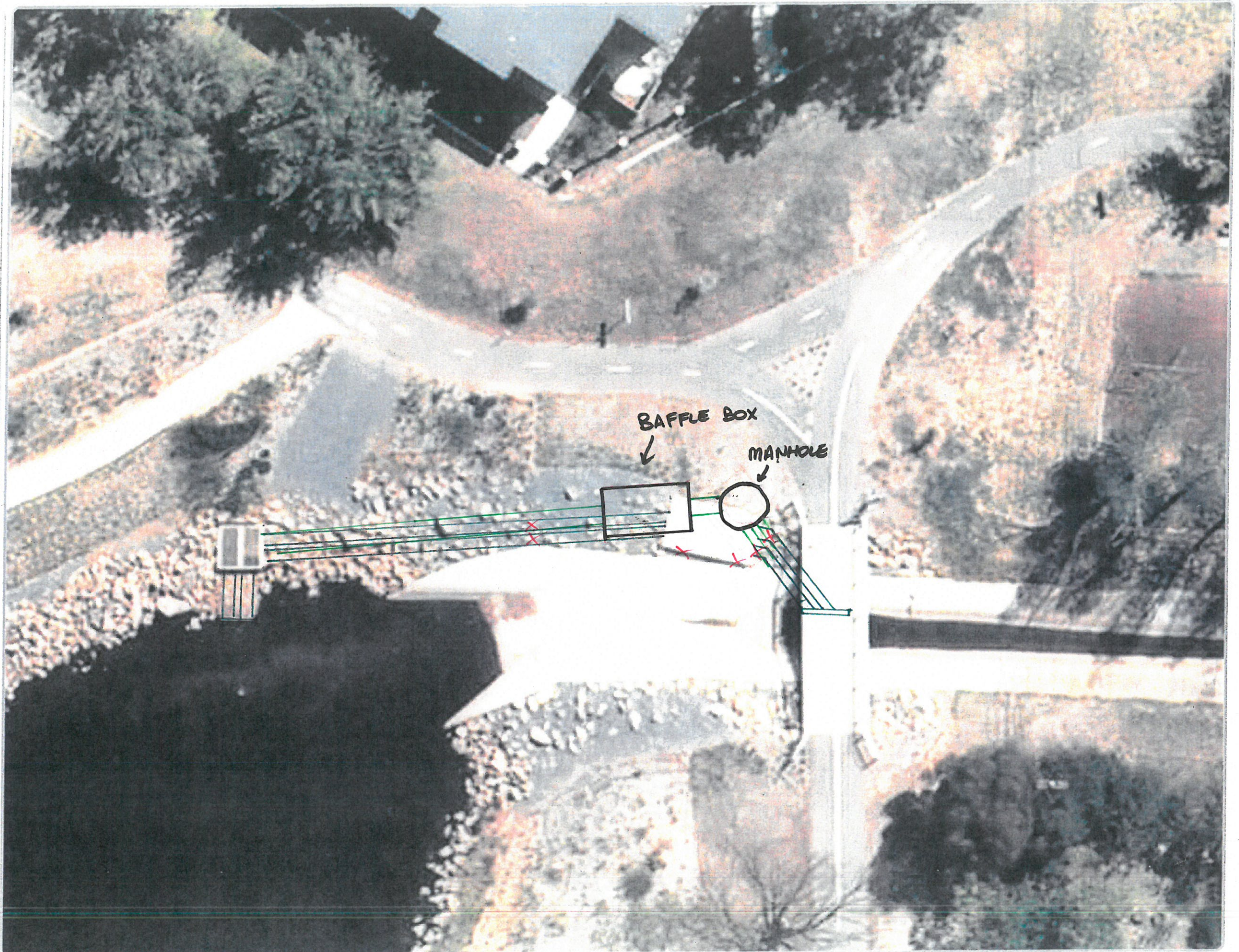


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15-Dec-2015

Page 1 of 2

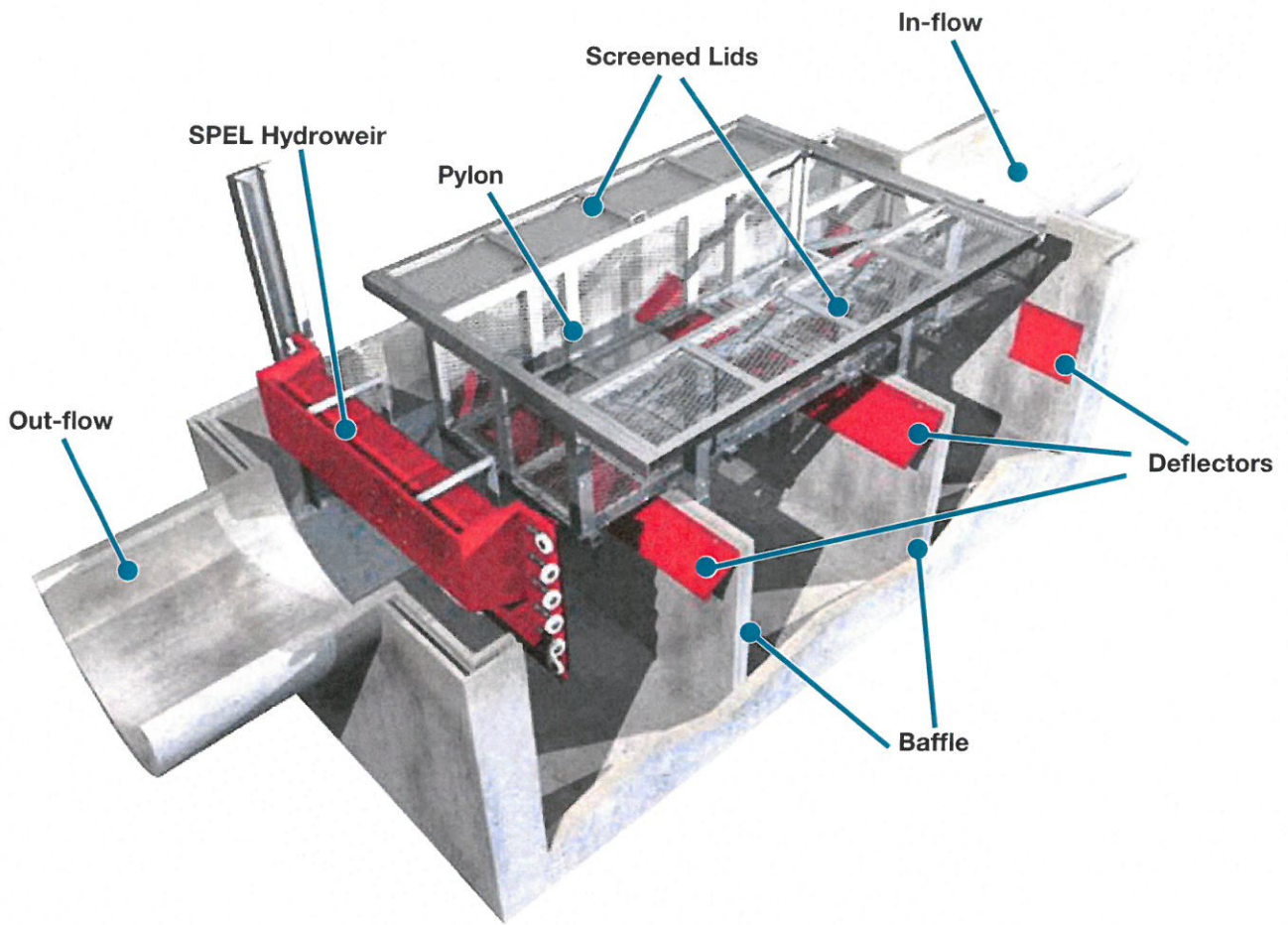


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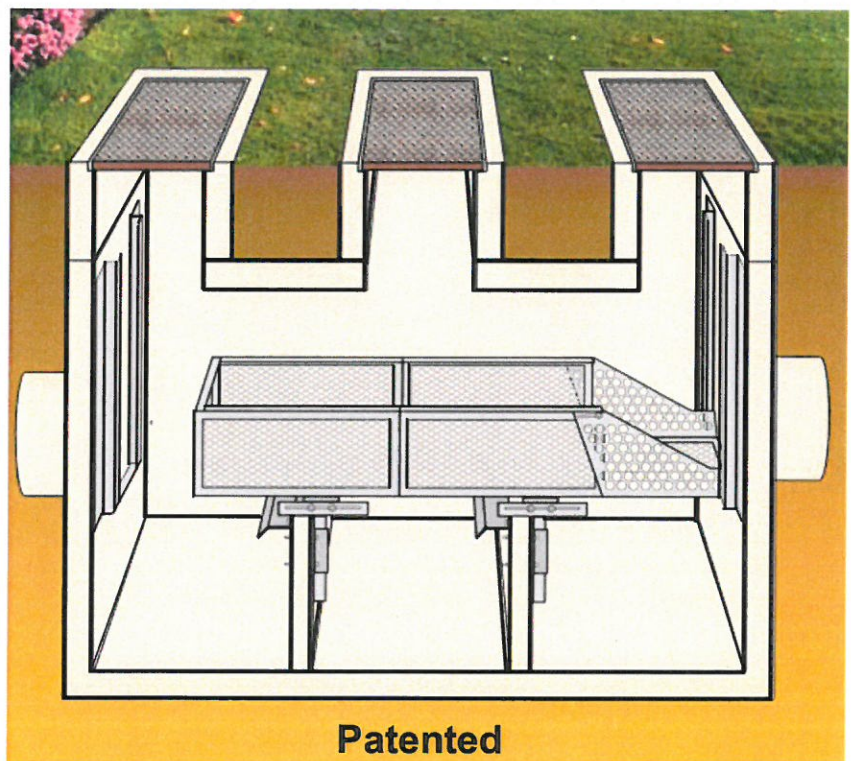
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Features

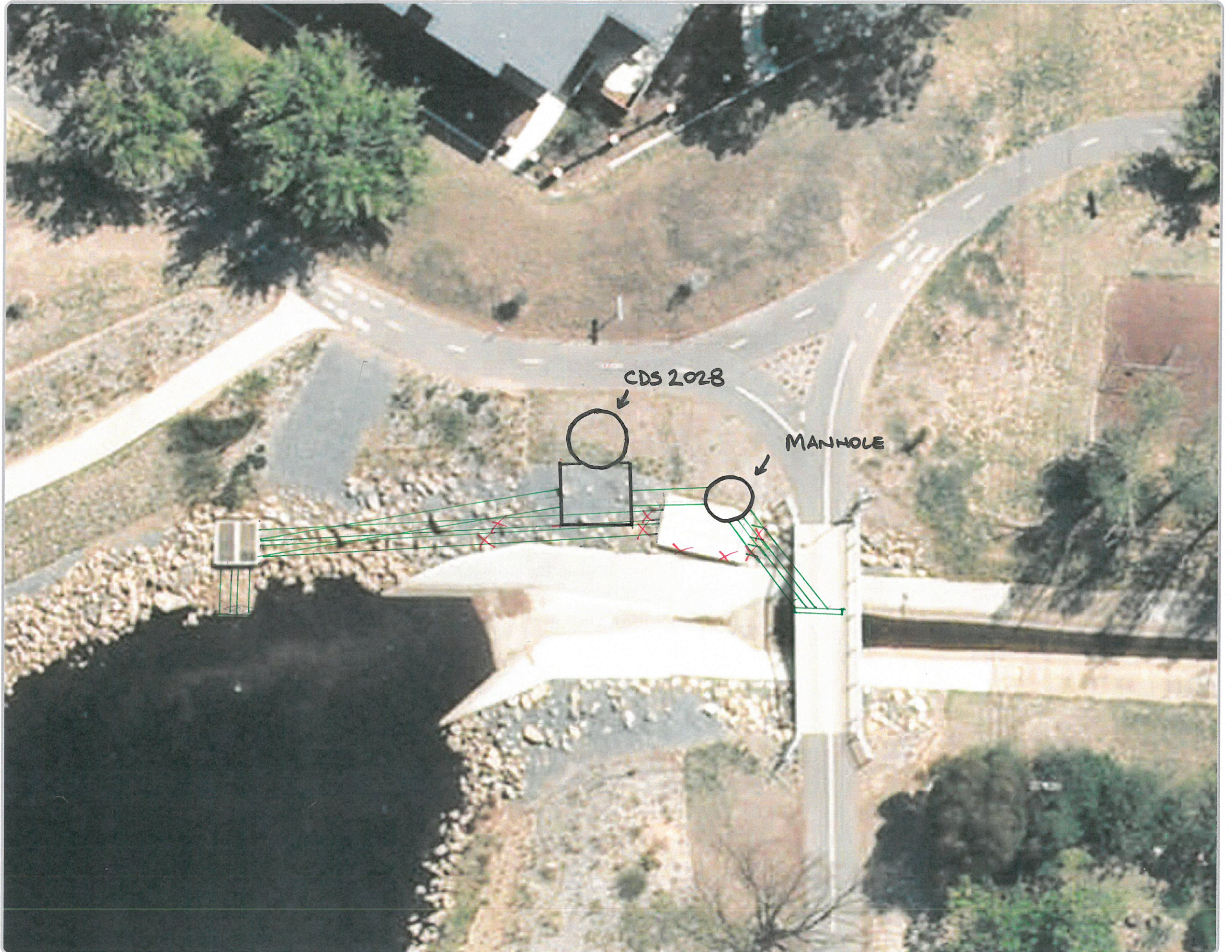
- Pollutant separating baffle box
- Treat entire flow
- Minimal head loss with floating weir
- Separates foliage to dry storage
- Resistance to bacterial build up
- Ideal retrofit capability
- Quick & easy to install
- Fits within existing easements
- Multiple inflows





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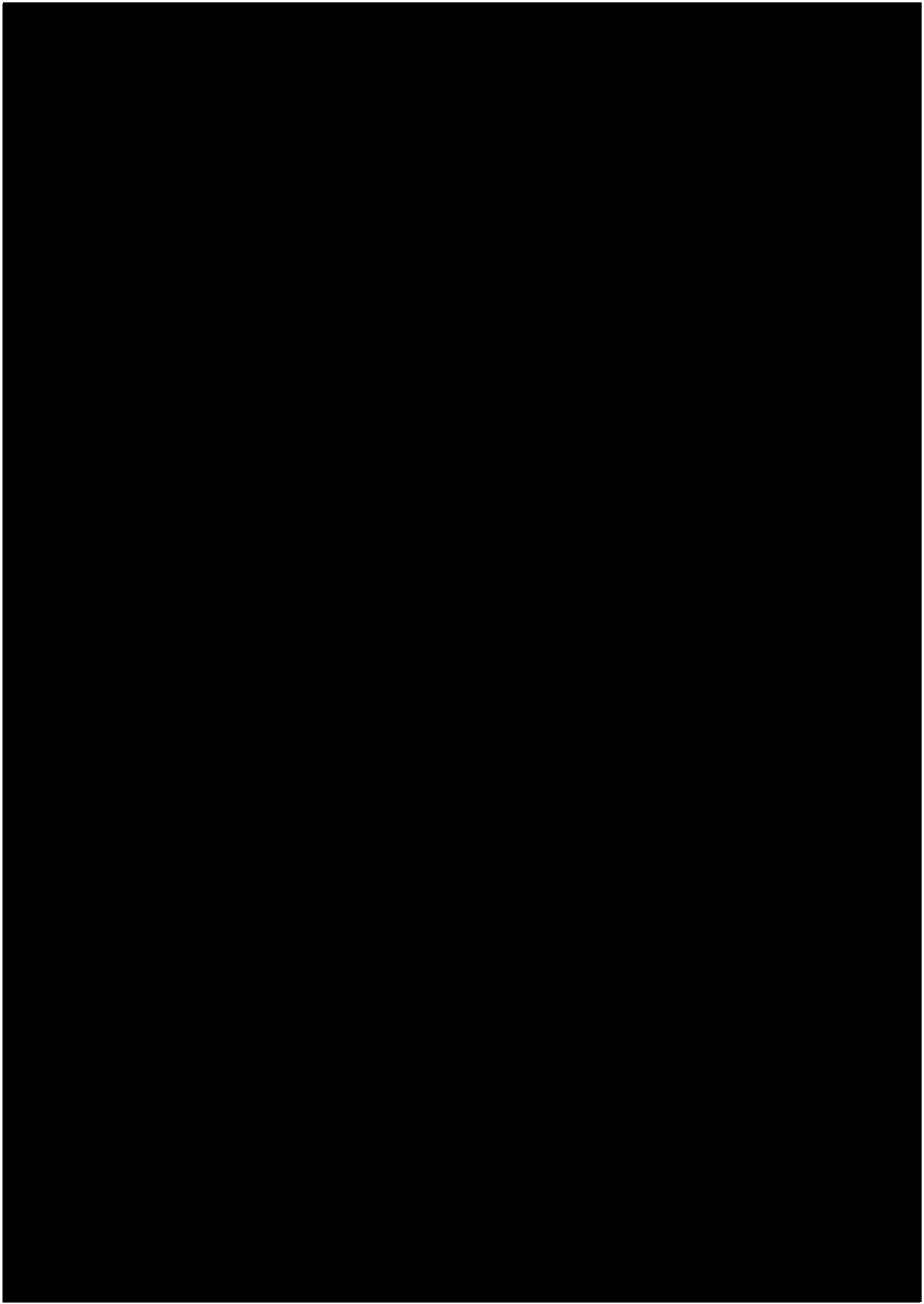


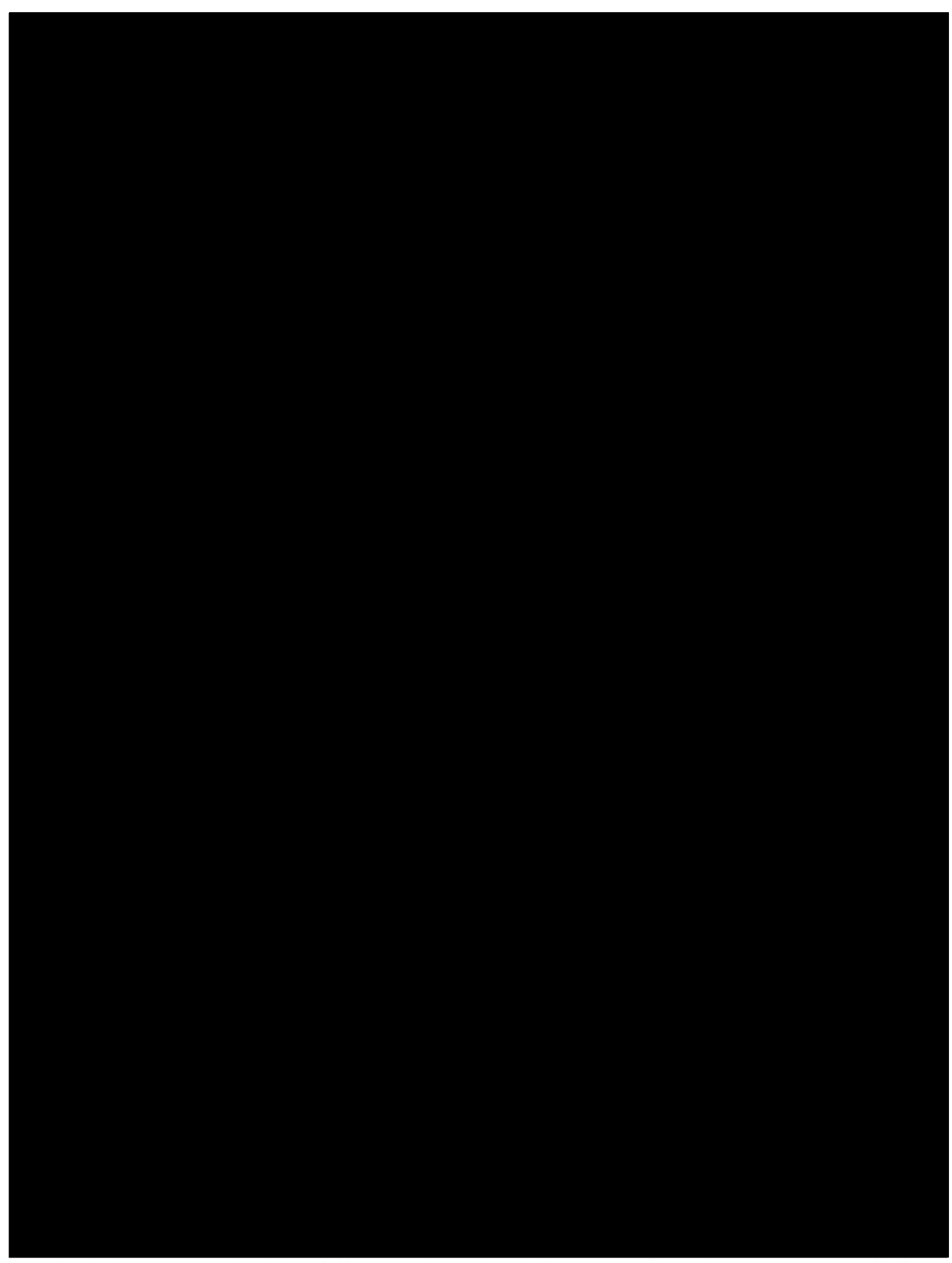
The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that every entry, no matter how small, should be recorded to ensure the integrity of the financial statements. This includes not only sales and purchases but also expenses, income, and transfers between accounts.

Next, the document outlines the process of reconciling bank statements with the company's records. This involves comparing the bank's record of transactions with the company's ledger to identify any discrepancies. Common reasons for discrepancies include timing differences, such as deposits in transit or outstanding checks, and errors in recording or transcription.

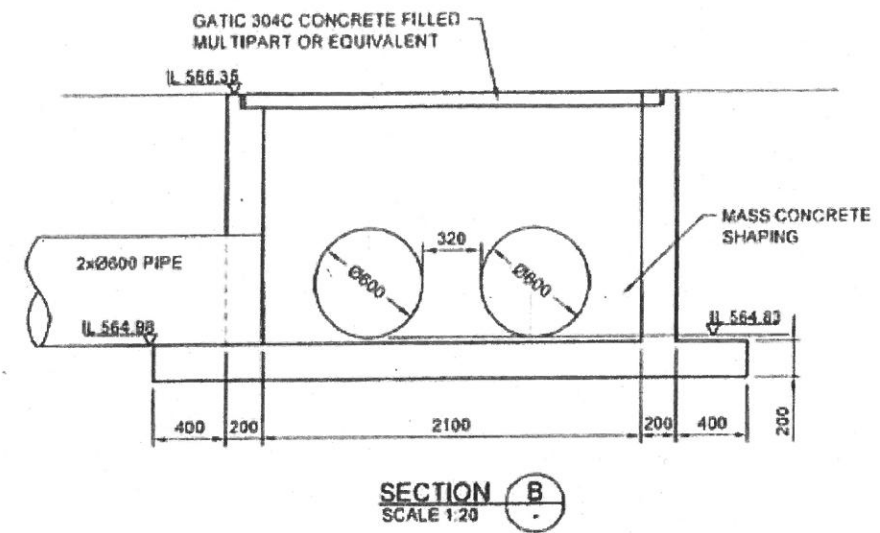
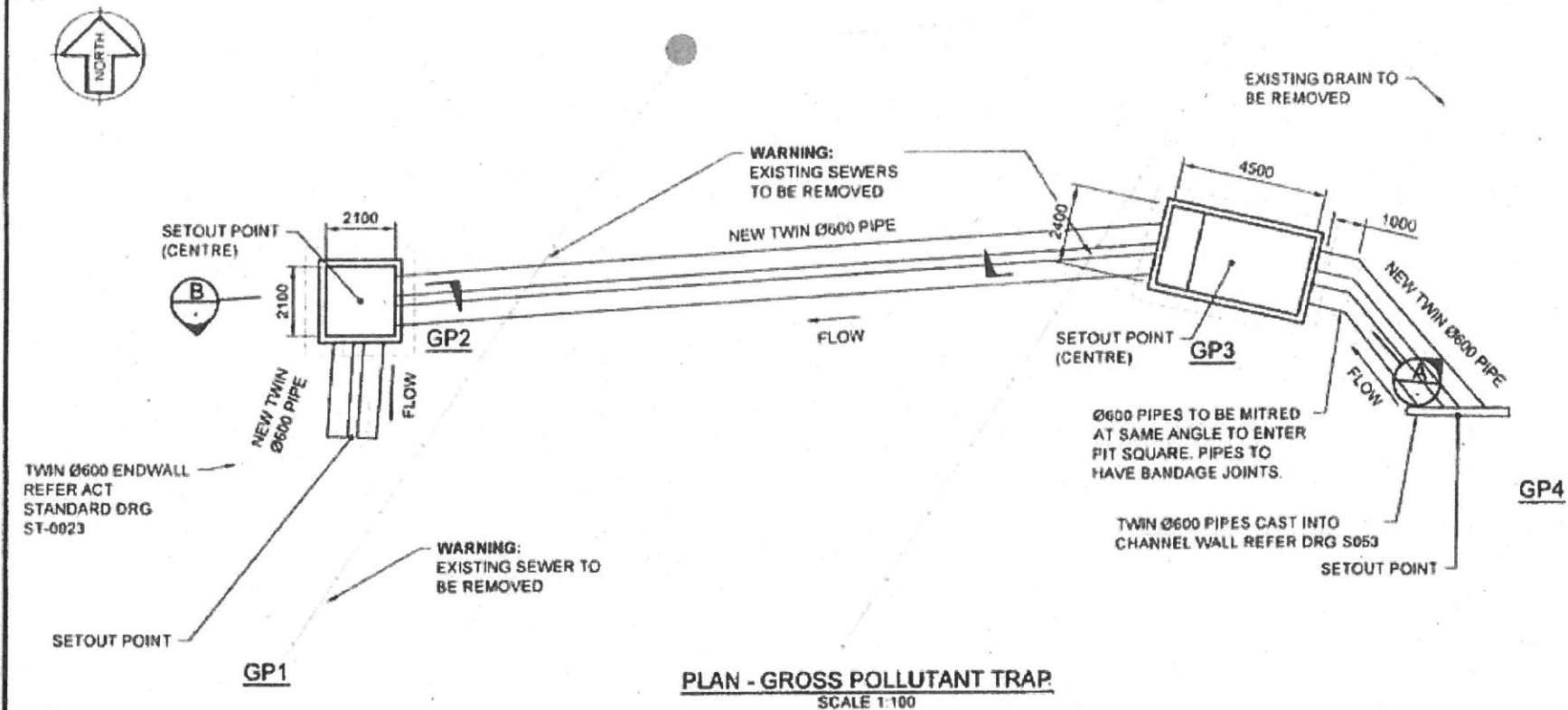
The document then provides a detailed explanation of the accounting cycle, which consists of eight steps: 1) identifying and recording transactions, 2) journalizing, 3) posting to the ledger, 4) determining debits and credits, 5) preparing a trial balance, 6) adjusting entries, 7) preparing financial statements, and 8) closing the books. Each step is described in detail, including the necessary journal entries and ledger postings.

Finally, the document discusses the preparation of financial statements, including the balance sheet, income statement, and statement of cash flows. It explains how these statements are derived from the accounting records and how they provide a comprehensive view of the company's financial performance and position.



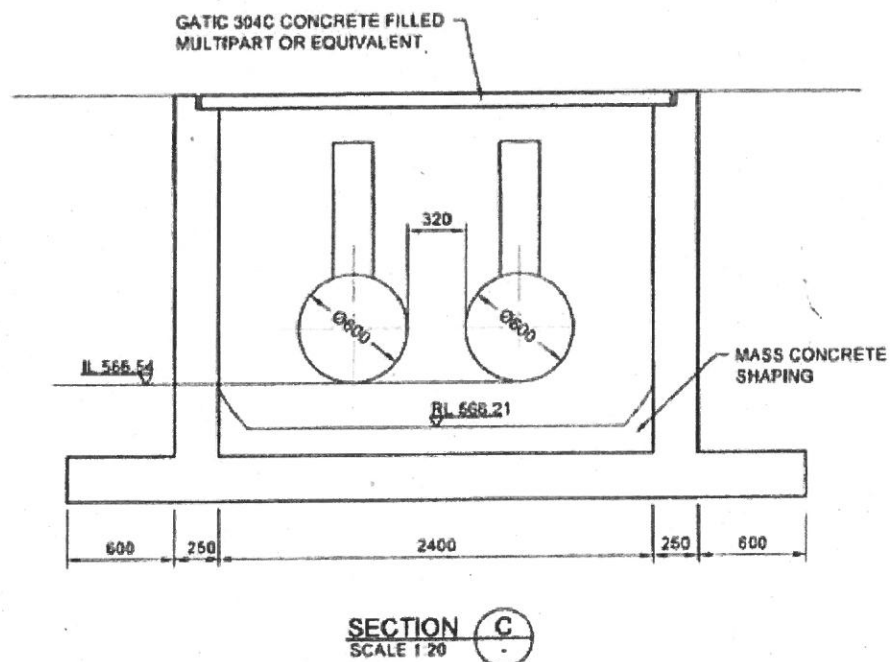
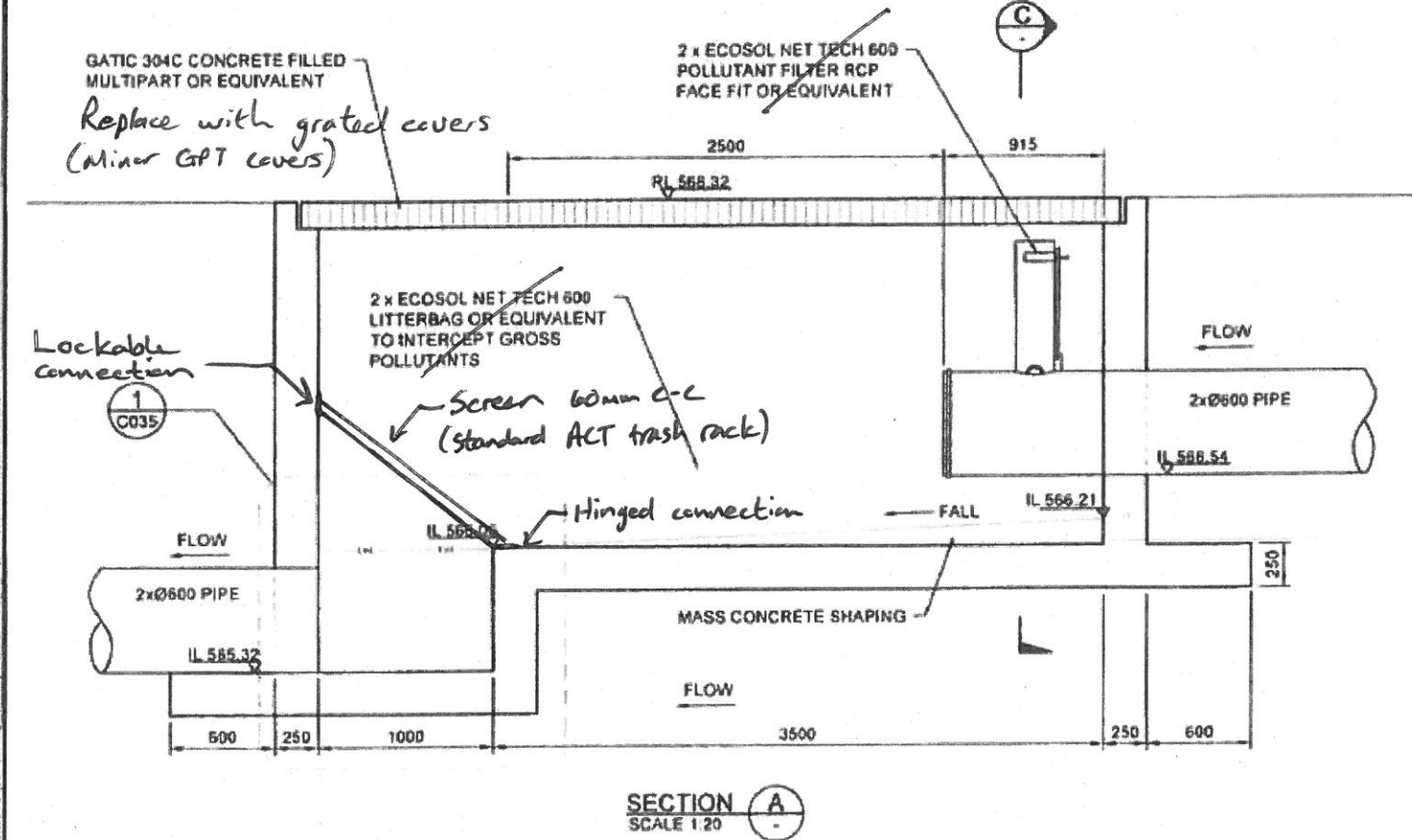


A1

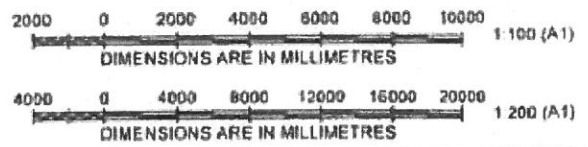


ISSUED FOR WORKS AS EXECUTED

WORK AS EXECUTED	
PREPARED BY SURVEY - KERRY SURVEYS	27/4/12
CONFIRMATION BY CONSULTANT - KERRI SCOPE CONSULT	07/5/12



- NOTES:**
- FOR GENERAL NOTES REFER DRG. G003.
 - ALL PIT COVERS TO BE IN ACCORDANCE TO AS3996.
 - ALL PITS TO BE BUILT IN ACCORDANCE WITH URBAN SERVICES "DESIGN STANDARDS FOR URBAN INFRASTRUCTURE".
 - FOR SPECIAL CHAMBER MANHOLE REFER TO STD. DRG. ST-0015
 - REINFORCEMENT DETAILS REFER DRG C035

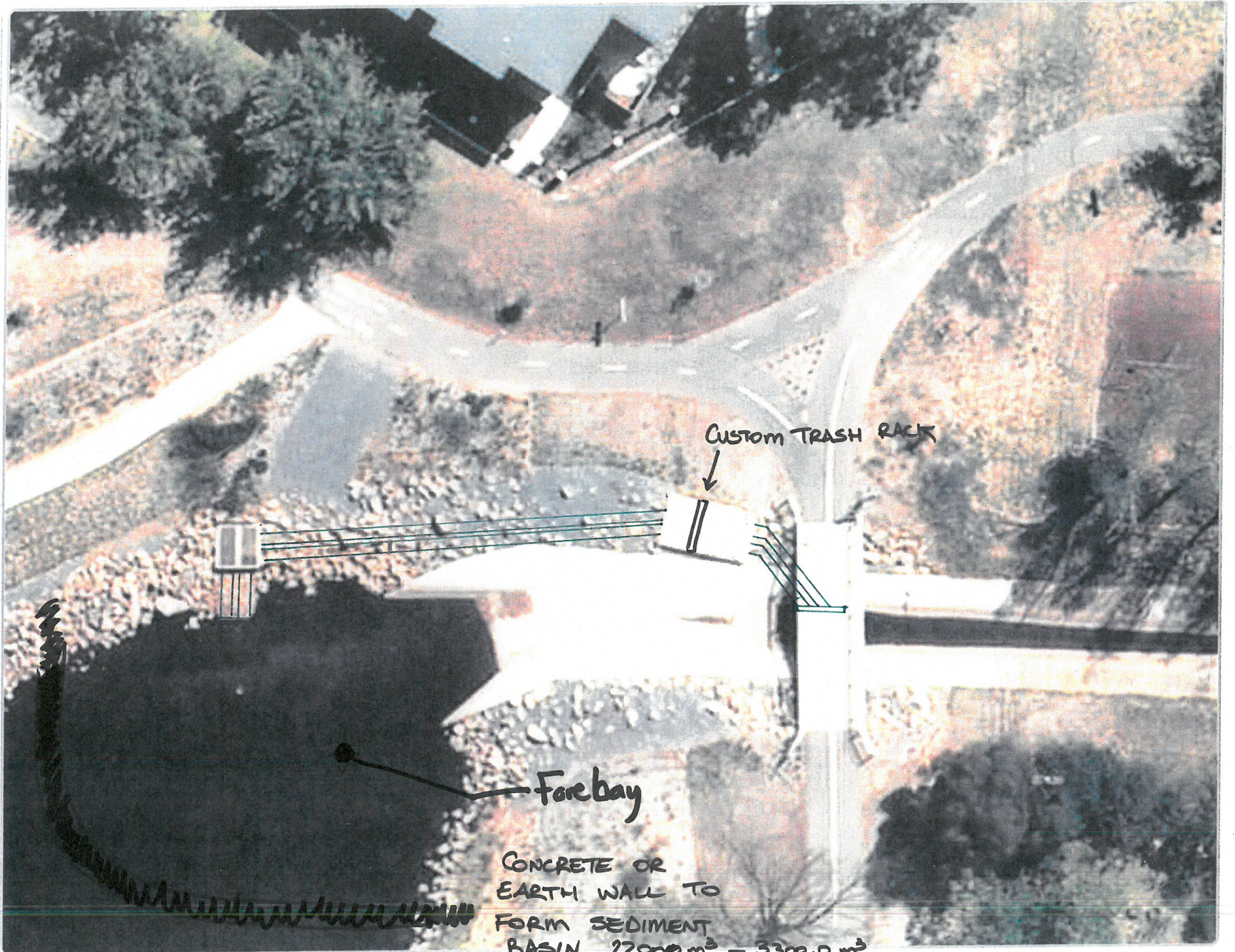


* Maintenance as per minor GPT

GUIDELINE CIVIL ENGINEERING CONTRACTORS A.C.N. 808 412 548 A.B.N. 61 808 412 548 This drawing is subject to COPYRIGHT	Designed: _____ Drawn: _____ Checked: _____ Approved: _____ Scale: AS SHOWN	Client: ACT Planning & Land Authority 	Project Title: DICKSON WETLAND SECTION 73 BLOCKS 31 - 34	Drawing Title: LYNEHAM WETLAND DRAINAGE PIT DETAIL GROSS POLLUTANT TRAP Date: 02/2012 Drawing Number: C034 Job Number: 43271227	Status: WORKS AS EXECUTED Date: 02/2012 Drawing Number: C034 Job Number: WAE											
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NO	REV	DATE	DESCRIPTION													
1	01	28/06/12	ISSUED FOR WORKS AS EXECUTED													
2	02	28/06/12	ISSUED FOR CONSTRUCTION													

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RETRO FIT
TRASH RACK
CONSTRUCT
SEDIMENT
BASIN WITHIN
WETLAND



1: 200



DISCLAIMER

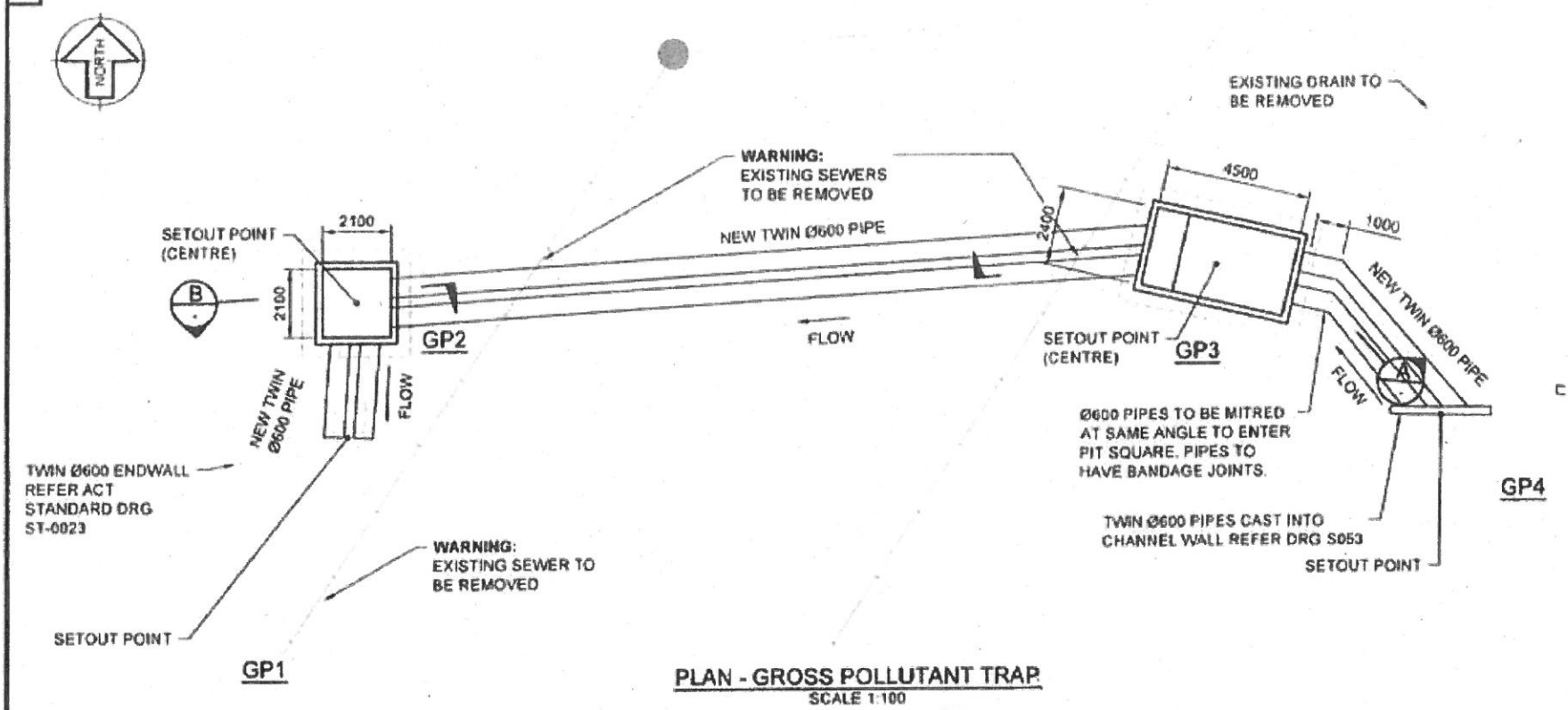
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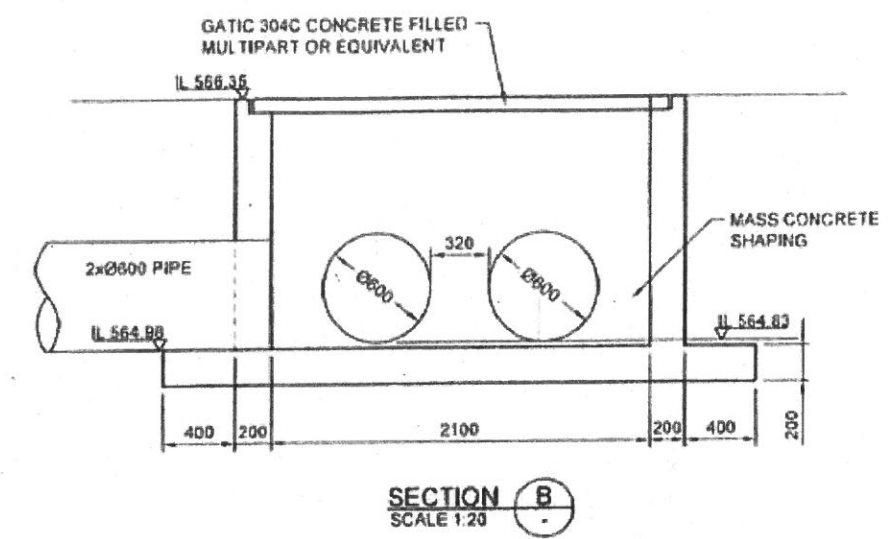
Page 1 of 2

CONCRETE OR
EARTH WALL TO
FORM SEDIMENT
BASIN 22000 m³ - 3300.0 m³
REQUIRED VOLUME.

A1



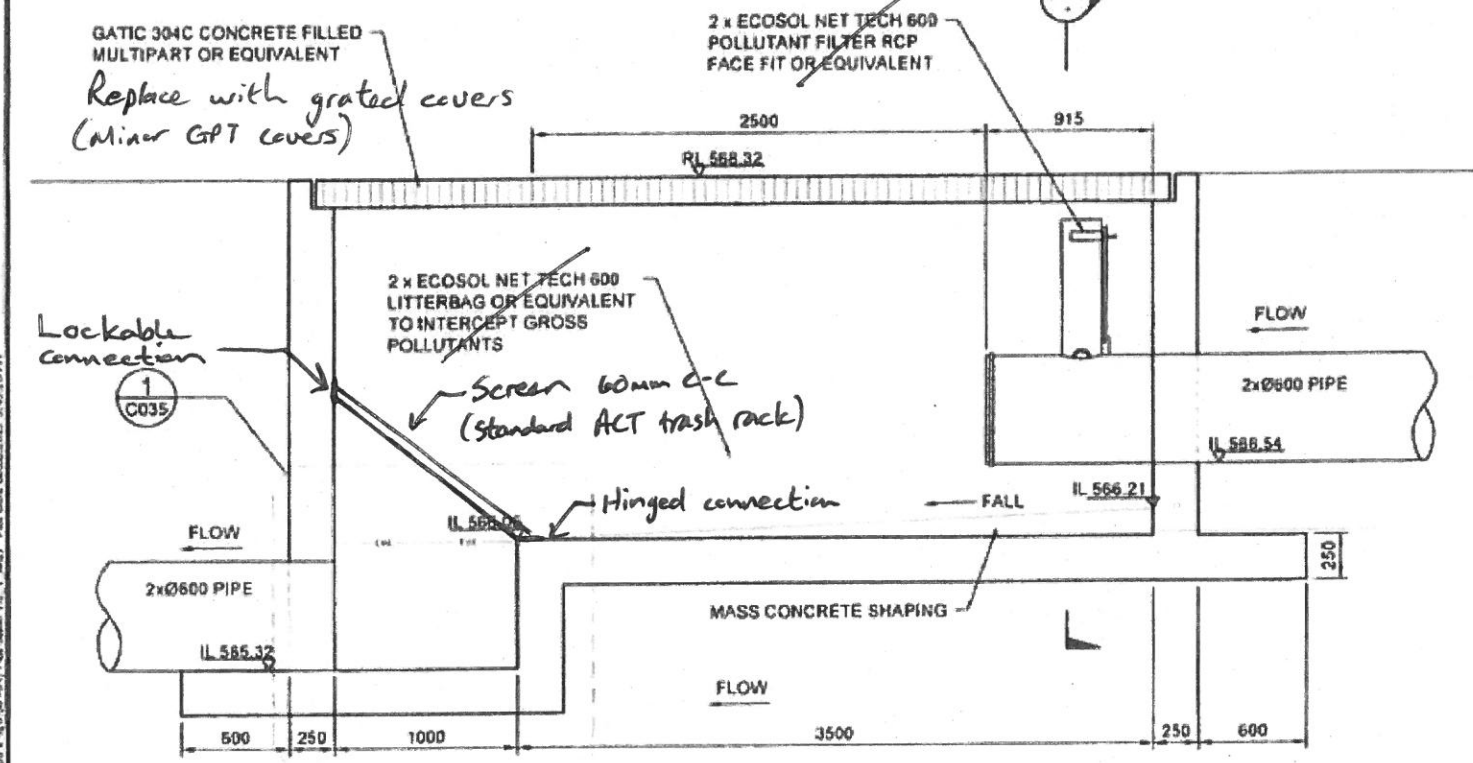
PLAN - GROSS POLLUTANT TRAP
SCALE 1:100



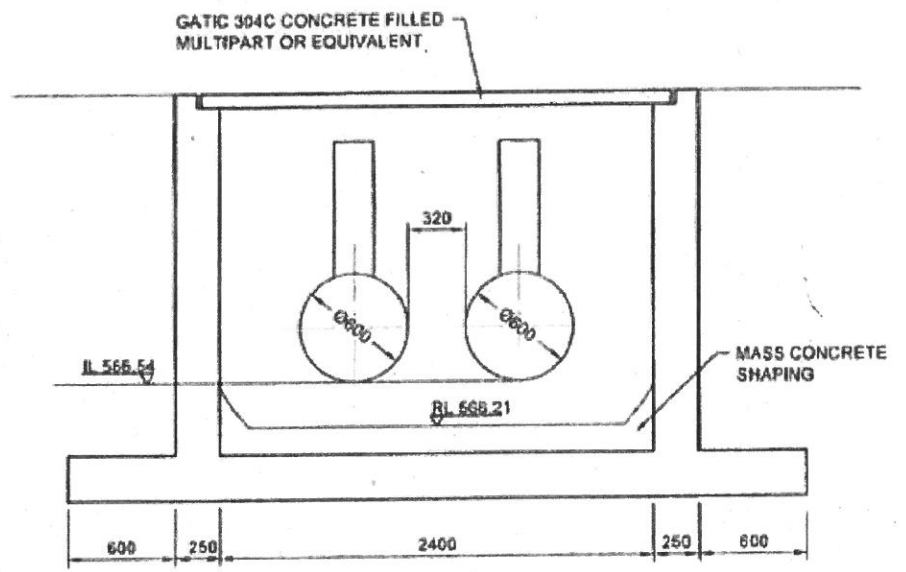
SECTION B
SCALE 1:20

ISSUED FOR WORKS AS EXECUTED

WORK AS EXECUTED	
CERTIFICATION BY SURVEY - KERRY SURVEYS	27/4/12
CERTIFICATION BY CONSULTANT - CIVIL SCOPE CONSULT	07/5/12

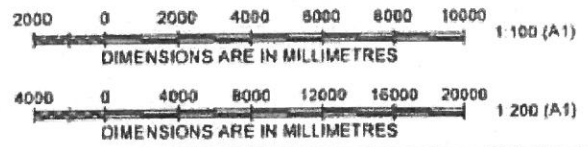


SECTION A
SCALE 1:20



SECTION C
SCALE 1:20

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* Maintenance as per minor GPT

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Rev	By	Appd	Date	REVISION RECORD
01	AKM	AKM	26/06/10	ISSUED FOR CONSTRUCTION
02	AKM	AKM	02/05/12	ISSUED FOR WORKS AS EXECUTED

Designed: _____
Drawn: _____
Checked: _____
Approved: _____
Scale: AS SHOWN

Client: **ACT Planning & Land Authority**

Project Title: **DICKSON WETLAND SECTION 73 BLOCKS 31 - 34**

Drawing Title: **LYNEHAM WETLAND DRAINAGE PIT DETAIL GROSS POLLUTANT TRAP**

CAD File Number: 43271227-C032
Job Number: 43271227

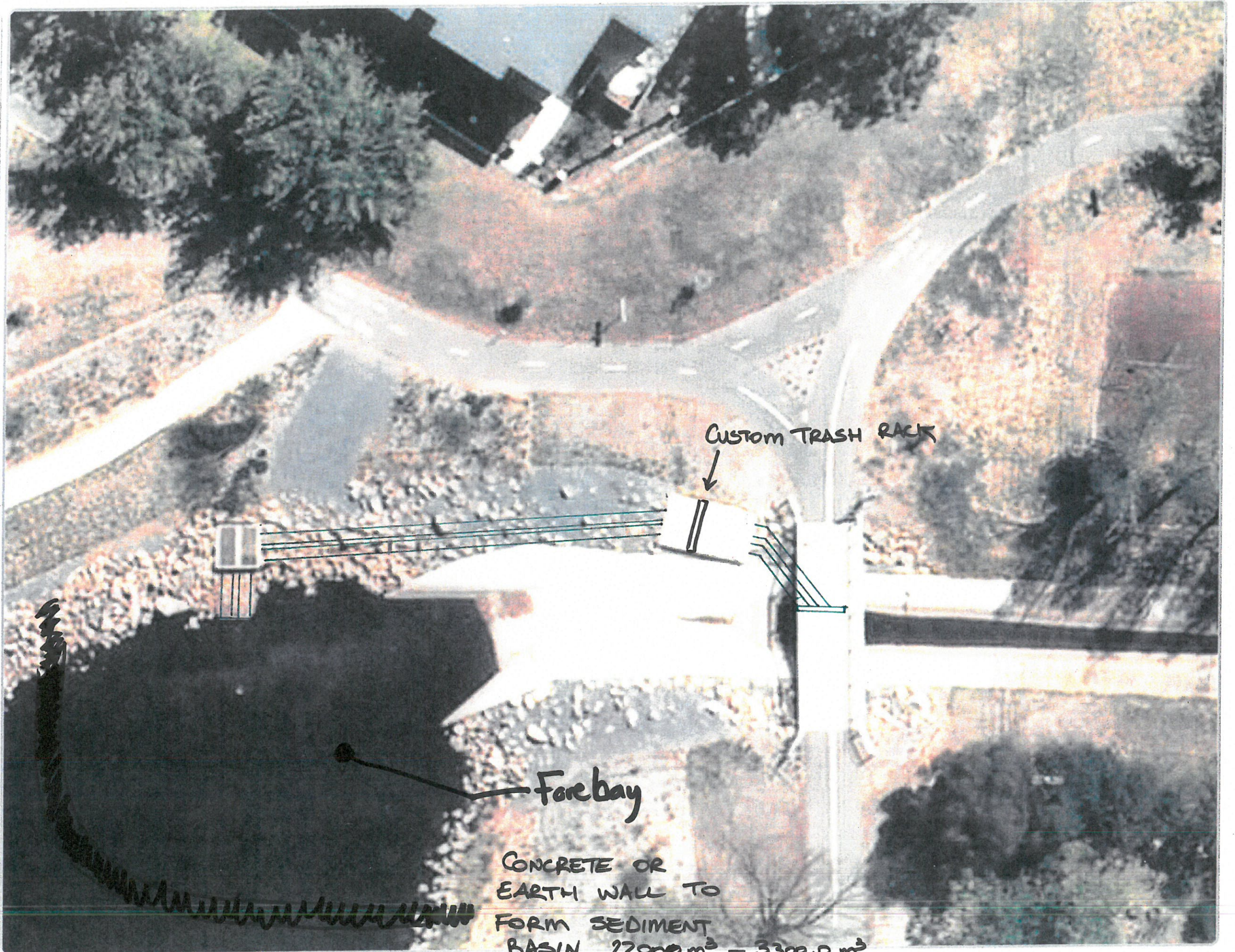
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Drawn: AKM
Date: 02/2012

Drawing Number: **C034**
Title: **WAE**

~~XXXXXXXXXX~~

RETRO FIT
TRASH RACK
CONSTRUCT
SEDIMENT
BASIN WITHIN
WETLAND



1:200



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CONCRETE OR
EARTH WALL TO
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