



AGENDA

FOR ASSET MANAGEMENT SUB COMMITTEE MEETING TO BE HELD ON

9 MAY 2022 AT 6.30 PM

**IN WITTBER & DR RUBY DAVY ROOMS, SALISBURY COMMUNITY HUB,
34 CHURCH STREET, SALISBURY**

MEMBERS

Cr B Brug (Chairman)
Mayor G Aldridge (ex officio)
Cr L Braun
Deputy Mayor, Cr C Buchanan
Cr D Hood (Deputy Chairman)
Cr S Ouk
Cr S Reardon

REQUIRED STAFF

Chief Executive Officer, Mr J Harry
Acting General Manager City Infrastructure, Mr D Roy
Manager Governance, Mr R Deco

APOLOGIES

LEAVE OF ABSENCE

PRESENTATION OF MINUTES

Presentation of the Minutes of the Asset Management Sub Committee Meeting held on 11 April 2022.

REPORTS

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QUESTIONS ON NOTICE

There are no Questions On Notice

MOTION ON NOTICE

AMSC-MON1 Montague Farm, Pooraka – Parking Study

Cr Beau Brug has submitted the following Motion On Notice:

That Council:

1. Request that Administration prepare a report for the June 2022 Urban Services meeting outlining the costs associated with undertaking a comprehensive investigation into the current car parking issues within Montague Farm Estate, Pooraka that would address matters including:
 - a) opportunities to improve car parking in the estate
 - b) opportunities for construction of car parking including indented car parking bays
 - c) opportunities for education including pamphlets delivered to the homes and the installation of signage
 - d) costings associated with recommendations for parking improvements

Administrative Comment

Should Council support this Motion, staff will identify the costs associated with the investigations (likely to be in the vicinity of \$40k to \$50k) and ensure that this work builds on the results of the Traffic Management Study outcomes undertaken approximately 10 years ago.

OTHER BUSINESS

(Questions Without Notice, Motions Without Notice, CEO Update)

CLOSE



**MINUTES OF ASSET MANAGEMENT SUB COMMITTEE MEETING HELD IN
WITTBER & DR RUBY DAVY ROOMS, SALISBURY COMMUNITY HUB,
34 CHURCH STREET, SALISBURY ON**

11 APRIL 2022

MEMBERS PRESENT	Cr B Brug (Chairman) Mayor G Aldridge (ex officio) Cr L Braun Cr D Hood (Deputy Chairman) Cr S Ouk Cr S Reardon
OBSERVERS	Cr P Jensen Cr K Grenfell
STAFF	Chief Executive Officer, Mr J Harry General Manager City Infrastructure, Mr J Devine Manager Governance, Mr R Deco Team Leader Council Governance, Ms J O’Keefe-Craig PA General Manager City Infrastructure, Ms H Prasad PA General Manager Business Excellence, Ms H Berrisford

The meeting commenced at 6.32pm.

The Chairman welcomed the members, staff and the gallery to the meeting.

APOLOGIES

An apology was received from Deputy Mayor, Cr C Buchanan.

LEAVE OF ABSENCE

Nil

PRESENTATION OF MINUTES

Moved Cr L Braun
Seconded Cr D Hood

The Minutes of the Asset Management Sub Committee Meeting held on
15 March 2022, be taken as read and confirmed.

CARRIED

REPORTS

AMSC1 Future Reports for the Asset Management Sub Committee

Moved Cr S Reardon
Seconded Cr L Braun

That Council:

1. Notes the report.

**CARRIED
UNANIMOUSLY**

AMSC2 Strategic Asset Management Plan - Building Assets - Building Types

Moved Mayor G Aldridge
Seconded Cr S Reardon

That Council:

1. Notes the list of building assets and what building types category they are in.

CARRIED

AMSC3 Strategic Asset Management Plan - Road Assets - Road Classifications and Hierarchies

Moved Cr D Hood
Seconded Cr S Ouk

That Council:

1. Notes the report and attachment.

CARRIED

AMSC4 Interim Strategic Asset Management Plan

Moved Cr L Braun
Seconded Mayor G Aldridge

That Council:

1. Approves the **Interim** Strategic Asset Management Plan included in Attachment 2 (Asset Management Sub Committee – 11 April 2022 – Item AMSC4 – Interim Strategic Asset Management Plan) for the purpose of public consultation, as part of Council's Strategic Management Plans.
2. Notes that a **Revised** Strategic Asset Management Plan is being developed and will be submitted to Council for review as part of the 2023/24 Strategic Papers.

**CARRIED
UNANIMOUSLY**

QUESTIONS ON NOTICE

There were no Questions On Notice.

QUESTIONS WITHOUT NOTICE

There were no Questions Without Notice.

MOTIONS ON NOTICE

There were no Motions On Notice.

MOTIONS WITHOUT NOTICE

There were no Motions Without Notice.

OTHER BUSINESS

Nil.

CLOSE

The meeting closed at 6.43pm.

CHAIRMAN.....

DATE.....

ITEM	AMSC1
	ASSET MANAGEMENT SUB COMMITTEE
DATE	09 May 2022
HEADING	Future Reports for the Asset Management Sub Committee
AUTHOR	Heather Prasad, PA to GM City Infrastructure, City Infrastructure
CITY PLAN LINKS	4.2 We deliver quality outcomes that meet the needs of our community
SUMMARY	This item details reports to be presented to the Asset Management Sub Committee as a result of a previous Council resolution.

RECOMMENDATIONThat Council:

1. Notes the report.

ATTACHMENTS

There are no attachments to this report.

1. BACKGROUND

- 1.1 A list of resolutions requiring a future report to Council is presented to each Sub Committee and standing committee for noting.
- 1.2 If reports have been deferred to a subsequent month, this will be indicated, along with a reason for the deferral.

2. CONSULTATION / COMMUNICATION

- 2.1 Internal
 - 2.1.1 Report authors and General Managers.

3. REPORT

- 3.1 The following table outlines reports to be presented to the Asset Management Sub Committee as a result of a previous Council resolution:

Meeting Item	- Heading and Resolution	Officer
21/12/2020 4.0.2-AMSC2	Buildings Asset Management 3. The next steps highlighted in section 3.13.1 to 3.13.6 of this report (Asset Management Sub Committee AMSC3 30/11/2020) be implemented and a further report be brought back to the Asset Management Sub Committee upon completion of the next steps 3.13.1 to 3.13.6.	Peter Rexeis
Due:	June 2022	

Meeting Item	- Heading and Resolution	Officer
22/03/2021 4.0.2-AMSC3 Due: Deferred: Reason:	Level of Service - Tree Litter in Private Residences 4. That a report be provided to the Asset Management Sub Committee in 12 months' time summarising the lessons learned from the first year of implementation of the program. May 2022 August 2022 Staff are currently working with a resident in relation to this maintenance program trial and will provide a report once this has been closed out.	Craig Johansen
22/03/2021 4.0.2-AMSC4 Due:	Verge Maintenance Trial and Streetscape Improvement Program 8. A report on the outcomes of the Streetscape Improvement Program be submitted to Council in late 2023 after completion of the two year trial. October 2023	Mark Purdie
23/08/2021 4.0.3-AMSC3 Due:	2021/22 Street Tree Renewal Program, Streetscape Renewal Program, Verge Development Program and Verge Maintenance Trial 2. Approves that staff present a draft Resident Verge Incentive Scheme policy to the Asset Management Subcommittee in October 2021. June 2022	Jamie Hosking
25/10/2021 4.0.3-AMSC2 Due:	Street Tree Renewal Program 2020/21 & 2021/22 3. Approves the species selection for the 2021/22 Street Tree Program (Appendix D) and that the program proceeds to consultation, including with the Ward Councillors with a further report to be presented by April 2022 on the outcomes of the consultation. June 2022	Jamie Hosking
25/10/2021 4.0.3-AMSC3 Due:	Options and Cost Implications for Potential Amendments to the Play Space Policy 2. Staff report back on appropriate wording and costings to amend existing policy for the inclusion of infant/toddler (Under 3) play element. June 2022	Jamie Hosking
25/10/2021 4.0.3-AMSC-MON1 Due:	Motion on Notice: Playspaces Survey 3. Approves that a further report be presented to Council on the selected engagement via the Asset Management Sub Committee within nine months, detailing the outcomes of the engagement, including any recommendations on how the feedback can be incorporated in future play spaces. June 2022	Jamie Hosking

Meeting Item	- Heading and Resolution	Officer
28/02/2022 MON1	Motion on Notice: Artificial Turf 1. That administration bring back a report to the Asset Management Sub Committee by April 2022 exploring how we can better educate our community about the suitability of verge development options including synthetic turf.	Jamie Hosking
Due:	June 2022	

4. CONCLUSION / PROPOSAL

- 4.1 Future reports for the Asset Management Sub Committee have been reviewed and are presented to Council for noting.

ITEM	AMSC2
	ASSET MANAGEMENT SUB COMMITTEE
DATE	09 May 2022
HEADING	Footpath on Hemming Street, Parafield Gardens
AUTHOR	Jamie Hosking, Team Leader Urban Built Assets, City Infrastructure
CITY PLAN LINKS	1.1 Our City is attractive and well maintained 2.3 Our community, environment and infrastructure are adaptive to a changing climate 4.2 We deliver quality outcomes that meet the needs of our community
SUMMARY	To provide an update on the below motion related to the condition of the footpath.

RECOMMENDATION

That Council:

1. Notes that urgent maintenance works to rectify major hazards has been completed along Hemming Street, Parafield Gardens.
2. Notes that renewal works to lift and relay a section of the footpath has been scheduled for the end of 2022.

ATTACHMENTS

There are no attachments to this report.

1. BACKGROUND

- 1.1 At its meeting held on Tuesday, 26 April 2022 Council resolved:

“That a report be brought back to Asset Management Sub Committee in May 2022 regarding repairing the footpath on Hemming Street, Parafield Gardens, addressing the root cause of the irregular paving.”

Resolution Number 0001/2022

2. CONSULTATION / COMMUNICATION

- 2.1 External
 - 2.1.1 Nil

3. REPORT

- 3.1 Subsequent to the Council resolution Hemming Street was inspected by maintenance staff and a number of hazards were identified for urgent repair work. This work has now been completed.
- 3.2 The footpath has also been assessed by asset management staff to identify broader, underlying issues. While the footpath was generally found to meet current service levels a total of approximately 120 linear metres was identified for lift and relay of the paving, and one section of concrete grinding.
- 3.3 The footpath is also comprised of multiple different surface types, is only 1.3m wide, some section are lower than the adjacent verge material and there is evidence of undulation caused by tree roots.
- 3.4 Given the age and condition of the footpath and the location alongside a school it is proposed that full renewal in line with the Footpath Policy be undertaken.
- 3.5 To address the underlying issues, it is recommended that the street be considered for streetscape renewal to remove existing trees, level and replace the verge material and renew the footpath.
- 3.6 It is proposed that the streetscape renewal be presented for consideration within the 2023/24 financial year.
- 3.7 The renewal of the footpath will support the new koala crossing that is currently being installed on that was initiated through the School Transport Framework. The crossing is anticipated to be completed in May.







4. CONCLUSION / PROPOSAL

- 4.1 While the footpath meets service level it has reached a point where maintenance will not be able to address the current issues, full renewal is proposed in alignment with the streetscape upgrade.

ITEM	AMSC3
	ASSET MANAGEMENT SUB COMMITTEE
DATE	09 May 2022
HEADING	Strategic Asset Management Plan - Drainage Assets
AUTHOR	David Boothway, Team Leader Civil & Transport Assets, City Infrastructure
CITY PLAN LINKS	1.1 Our City is attractive and well maintained 3.3 Our infrastructure supports investment and business activity 4.2 We deliver quality outcomes that meet the needs of our community
SUMMARY	This is the first report in the two-stage service continuity review process for Drainage assets, outlining the issues and current levels of service for the asset class. It provides commentary on Drainage Hierarchy, current community expectations and on-going improvement of the drainage asset networks and systems.

RECOMMENDATION

That Council:

1. Approves the following asset Hierarchy for Drainage assets into:
 - 1.1 Major Drainage Assets
2. Approves the following Criteria for Drainage systems:
 - 2.1 Major Drainage Assets:
 - 2.1.1 Number of houses at risk of flooding in a 1 in 100 year event
 - 2.1.2 Quality of stormwater entering the ocean (tonnes of sediment/year)
 - 2.2 Minor Drainage Assets:
 - 2.2.1 Nuisance Flooding in streets (depth and duration of ponding in streets)
 - 2.2.2 Quality of stormwater

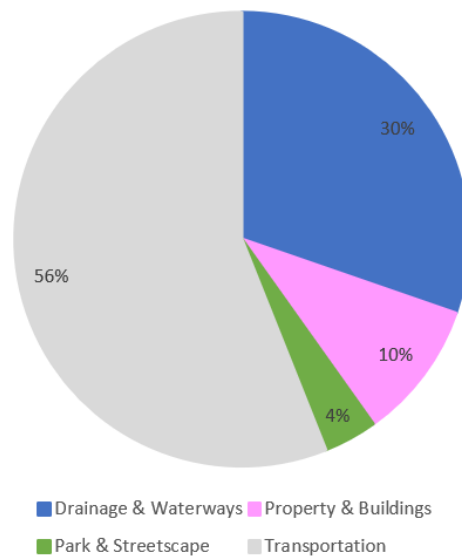
ATTACHMENTS

There are no attachments to this report.

1. BACKGROUND

- 1.1 Drainage infrastructure forms a key part of Council's asset portfolio, with a value of \$465M representing some 30% of all assets, with a Capital expenditure in the order of \$1M/year and an Operation expenditure in the order of \$2M/year.

Replace Value % by Asset Category (\$1.6bn)



- 1.2 Capital expenditure covers items including Levee bank renewal, Dam structure renewal, replacement of failed pipe networks and pump station renewals.
- 1.3 Other assets like roads are closely tied in with drainage as roads are designed to play a part in the primary stormwater system by feeding road runoff down the kerb and gutter and into side entry pits (SEPs) then the pipe network, to overland flow paths that feed into the rivers.
- 1.4 This is part of the risk analysis undertaken for assets that also form overland flow paths such as reserve areas, sporting ovals and play space, irrigated reserves, that often double up as flood mitigation areas.
- 1.5 Operation expenditure covers items like cleaning out pits and pipes (to help prevent some of the above outcomes), emptying gross pollutant traps that are full of rubbish, and repairing gabions, to ensure the stormwater system operates efficiently and effectively in managing floods.
- 1.6 This report presents the first stage of a two-stage approach methodology, for the review of Drainage Assets in alignment with Item AMSC3 – Strategic Asset Management Plan – Reporting Schedule that was considered at the March Asset Management Sub Committee and adopted by Council on 28 March 2022.
- 1.7 The first report seeks approval for the recommended Hierarchy and Criteria for drainage assets to enable a second report to detail a range of Level of Service options for the drainage asset portfolio and a range of community service levels with associated costs and associated risks and mitigation strategies.

2. CITY PLAN CRITICAL ACTION

- 2.1 **A welcoming and liveable City**, providing safe environment to our residents.
- 2.2 **A sustainable City**, that manages the stormwater runoff and it's receiving water bodies in an environmentally sustainable manner.

2.3 **A growing City that creates new opportunities**, supported by stormwater system that accommodate increase runoff without lowering the level of service.

2.4 **Our City is attractive and well maintained.**

3. CONSULTATION / COMMUNICATION

3.1 External

3.1.1 Department for Environment and Water

4. REPORT

Introduction

4.1 The Drainage Asset Category currently covers the following assets:

Asset Type	Total Quantity	Unit
Stormwater Pipe	503464	Length (m)
Side Entry Pit (SEP)	10746	Number
Grated Inlet (GIP)	861	Number
Junction Box (JB)	3947	Number
Erosion Prevention Device	25000	m ²
Box Culvert	13495	Length (m)
Headwall (HW)	1031	Number
Open Channel	154	Number
Gross Pollutant Trap (GPT)	38	Number
Sluice/Penstock Gate	19	Number
Sluice/Penstock Handle	17	Number
Flood Valve	64	Number
Trash Rack	121	Number
Wetland	241132	Area (m2)
Basins	30937	Area (m2)
Lake	3599	Area (m2)
Dams	18	Number
Weir	8	Number
Spillway	1	Number
Levee Banks	30	km
Siphon	4	Number
Silt Trap	25	Number
Sea Wall	5	Number
Water Monitoring Station	12	Number
Pump Station	7	Number

4.2 This report is focused on the Drainage Assets which makes up 30% of Council's total asset value (approx. \$500m).

- 4.3 Council has adopted the following design life for its drainage infrastructure:

Asset Type	Useful Life	Residual
Open Systems	25 - 100 years	0%
Pipes & Pits	10 – 100 years	0%
Retention Dams and levees	80 – 200 years	0%

Historic Context and Existing Levels of Service

- 4.4 The drainage system is a complex system with both major and minor assets and factors influencing its ability to meet the current 1 in 100-year flood level of service and protect the community during storm events.
- 4.5 Criteria for each Level of Service are discussed later in the report
- 4.6 Council in the 2011, Works and Services Report 2.1.3, “Update of Council’s Flood Management Strategy”, has set the standard for flood mitigation that no homes (built form) or business premises would have flood waters entering them in less than a 1 in 100 year storm event + 300mm in finished floor elevation from existing ground level”. This is Level of Service is commonly adopted by Local Governments in South Australia.
- 4.7 The above standard for flood management applies to new homes, with a Major and Minor Flood Management Program being delivered over the last 10 years to reduce the number of existing homes flooded. This has reduced from 460 (based on 2018 Flood Maps) to 280 (based on 2022 Flood Maps, yet to be reported to Council) existing homes that are still subject to flooding in a 1 in 100 year events.
- 4.8 Given the topography of the City, the difference in flood levels between a 1 in 50 year event and 1 in 100 year event is minimal and therefore the recommendation is to continue to use a Service Level based on the “Number of homes estimated to be at risk of flooding in a 1 in 100 year event”, for Major Drainage Assets.
- 4.9 Currently there are approximately 280 existing houses that will experience some flooding in a 1:100 event. Report 2 will summarise analysis over coming months to assist understanding of the costs to modify this number.
- 4.10 Climate Change scenarios are predicting heavier and more intense storms. This together with sea level rise and storm surge have required Council to reevaluate the capacity of many of its drainage systems. These systems are also coming under increased capacity pressure as the primary systems (pipe and pit) are required to manage more stormwater as private green space is reduced with the increase in housing densities in the City.
- 4.11 Generally, the underground pipe infrastructure is designed to manage the minor events, while surface drainage infrastructure (such as roads) and overland flow paths, and rivers are used to manage the major flow events. Minor events are those that occur on average once every 2 to 5 years (with a 20 to 50% likelihood of occurring in any given year).
- 4.12 This leads to a Community Level of Service which in reality is “In a very large storm event, my yard may have stormwater through it but my house will not” or “I don’t mind driving through ponding in my street after a storm burst”.

- 4.13 For nuisance flooding, Council aims to minimize the ponding in an area / street after an event, obviously if there is ongoing rain, this can be very subjective. Report 2 will discuss the cost implications of changing the time frame of nuisance flooding.
- 4.14 The Operational maintenance supporting the drainage assets is a critical component of asset management. This includes CCTV of pipes, pit cleaning, clearance of GTP's and other pollutant traps, and street sweeping.
- 4.15 Although some assets may be classed as Minor assets they still carry an important function, such as Gross Pollutant Traps which together with the wetland systems enhance the water quality.
- 4.16 In addition, the Natural Assets of our living rivers act as biofilters to create healthy clean water for fauna and flora and people to enjoy with the Development Act enabling Council to set standards for discharge with respect to major developments.
- 4.17 Council has the pristine Barker Inlet, Dolphin Sanctuary and Mangrove estuarine as the receiving environment. Our River Gauging Stations are used to monitor river flows, peak flood events, sediment loads and pollutants present in the stormwater.

Drainage Hierarchy of Assets

- 4.18 It is recommended Council have a two level Hierarchy of Drainage Infrastructure being Major and Minor drainage assets. Major Drainage Assets are primarily focused on the reduction of the risk of Flooding.
- 4.19 The Major Drainage assets include:
 - 4.19.1 Dams
 - 4.19.2 Wetlands
 - 4.19.3 Detention basins
 - 4.19.4 Levees
 - 4.19.5 Open channels and rivers
 - 4.19.6 River gauging stations
 - 4.19.7 Pump stations
 - 4.19.8 Overland flow paths
 - 4.19.9 Seawalls
- 4.20 The Minor Drainage assets includes, whilst contributing to reducing the risk of flooding, the minor systems are primarily focused on the management of nuisance flooding and/or water quality management.
 - 4.20.1 Pipes and Pits
 - 4.20.2 Culverts
 - 4.20.3 Gross pollutant traps
 - 4.20.4 Headwall structures
 - 4.20.5 Lakes
- 4.21 These Drainage assets work together to provide different functions in order to enable an acceptable level of service.

Major Drainage Assets - Hierarchy and Criteria overview

- 4.22 Each one of the Major Drainage Assets has the primary Criteria of Flood Risk, but performs in slightly different ways and are discussed in detail below:
- 4.23 **The 28 Escarpment Dams** are built across the Escarpment to control runoff from upstream catchments and protect the community located downstream.
- 4.24 The Criteria for accessing the Level of Service for Dams is proposed to be Flood Risk, or the size flood they would help manage for the catchment. In technical terms this is called the Annual Return Interval (ARI), and is commonly described with words like a “1 in 100 year flood”.
- 4.25 **Wetlands.** Council has a number of wetlands that help with both flood mitigation and water quality.
- 4.26 Wetlands are designed to have a dirty end that requires maintenance including silt and debris removal on a periodic basis and then a series of shallow and deep connected pools to promote the growth of different plant species which filter the water differently, for nutrients or sediment.
- 4.27 The detention Criteria would be the Flood Risk, and the Water Quality. (The longer the stormwater resides in the wetland the cleaner it is when it exits).
- 4.28 In many cases the stormwater from Salisbury wetlands is used by Salisbury Water for aquifer recharge and subsequently reuse back to greening the City.
- 4.29 **Flood detention basins.** Detention basins across the Council are strategically located to help mitigate storm event flows.
- 4.30 **Levee banks & Weirs** are critical structural features in keeping river levels within the “confines” of the river channel, noting that Council has 25km of Levees.
- 4.31 The Criteria for accessing the Level of Service for Levees would also be the Flood Risk.
- 4.32 **Open Channels and Rivers.** Open Channels and Rivers serve multiple roles in Council. For stormwater they provide a conduit for conveying the stormwater as it makes its way to the sea. In other roles, they provide eco-corridors and shared pathways along the linear parks, which are discussed in the Natural Assets and Transport Asset Management Plans.
- 4.33 The Criteria for assessing the Level of Service for Open Channels and Rivers would also be the Flood Risk, in terms of flood waters breaking out of the river channel.
- 4.34 **River flow gauging stations.** A network of 12 monitoring stations (Helps Station is shown below) provide information necessary for calibrating our flood maps, managing our flood flows and checking water quality.
- 4.35 The Criteria for accessing the Level of Service for River Gauging Stations would be the Flood Risk and Water Quality.



- 4.36 **Stormwater Pump Stations** play a critical role in managing stormwater drainage in low lying areas, such as Globe Derby.
- 4.37 The stormwater pumps stations provide a critical level of service as failed activation leads to significant flooding.
- 4.38 The Criteria for accessing the Level of Service for Stormwater Pump Stations would be the Flood Risk.
- 4.39 **Stormwater Overland Flow Paths.** Council has a significant number of hectares of land designated for overland flow paths either in stormwater easements or through private properties across the City. Think of the overland flow paths as dry river beds, which are activated in large storm events.
- 4.40 The Criteria for accessing the Level of Service for Overland Flow Paths would be the Flood Risk.
- 4.41 **Seawalls.** Council has a number of sea walls along its Coastline. These structures provide a line of defense against sea storm events, such as those protecting St Kilda community. The St Kilda Seawall has been designed to 2050, 1 in 100 year storm surge levels with the capacity to further increase, subject to Climate modelling. This is similar to the Seawall along Dry Creek, from Salisbury Highway through to the Northern Connector which is designed to 1 in 100 year 2050 storm surge levels with the capacity to be raised further.
- 4.42 The Criteria for accessing the Level of Service for Seawalls would be still be Flood Risk. This is because Sea – Storm Surge often occurs in conjunction with a High Intensity Rainfall Flooding event, due to slow moving Low Pressure systems. That being said a Sea Storm surge comes before and after the moving of the Low Pressure, whereas the majority of rainfall occurs in the Centre of the Low Pressure, which means that it is incredibly rare that the peak of the sea storm surge occurs at the same time as the peak rainfall event.

Minor Drainage Assets - Hierarchy and Criteria overview

- 4.43 **Pipes and pits, culverts, gross pollutant traps, and headwall structures** form the part of the overall stormwater network. They, as individual assets, can fail in their own right, but have redundancy often so that risk is minimised when only one component fails.

- 4.44 The Criteria for accessing the Level of Service each type of device is listed below
- For Pipe and Pits, and culverts, and headwall structures it would be the Flood Risk & Nuisance Flooding.
 - For Gross Pollutant Traps (GPT's) the criteria would be their effectiveness of helping achieve a good Water Quality. The quality of the stormwater is measured in the River Gauging Stations as mentioned above.
- 4.45 In a very real way the risk mitigation around the function and capacity of these components relies on effective maintenance programming. Such as the five yearly condition assessment and clean out of all side entry pits and pre-storm cleanouts of the hotspot sites. (Frequent flooding sites)
- 4.46 **GPT's and Trash racks** provide dual functions in providing both a capture of sediment and rubbish, which is able to be disposed of rather than entering the Barker Inlet, but also some inline GPT's prevent downstream systems from blocking, ensuring the stormwater systems continue to function at the right operational levels.
- 4.47 **Lakes** – There are a number lakes at Mawson Lakes and elsewhere including Pine Lakes, Gulf View Heights Lake, Lake Windemere, that were built in the 1980/90's. These Lakes can serve dual purposes for Aesthetic, Biodiversity and Stormwater Detention. These require continuous maintenance and as seen in the last 5 years require major remediation works to ensure they maintain their wall and base integrity. It is expected that there will be additional remedial maintenance works required in these lakes over the next 5 years. The Criteria for assessing the Level of Service for these lakes is Water Quality and aesthetics.
- 4.48 **Culverts** – Also serve in some cases as a Transport Corridor and whilst Flood Risk is considered Access and Safety particularly during Flooding is also considered as part of this asset, with Culverts requiring additional maintenance and cleaning after large events, prior to reopening for public use.

Maintenance and Operations

- 4.49 The drainage assets require routine maintenance and operational support to keep the assets in functional order. Examples of operation works includes:
- 4.49.1 Maintenance of dam structures including keeping access roads and outlet structures free of debris.
 - 4.49.2 Desilting wetlands, river reaches and side entry pits.
 - 4.49.3 Maintaining pump stations
 - 4.49.4 Keeping Gross Pollutant Traps clean of solid waste.
 - 4.49.5 Root cutting of pipelines blocked by tree roots.
 - 4.49.6 Street sweeping to prevent blockages of pipes in storm events.
- 4.50 The higher the frequency of delivering these operation services increases the Level of Service experienced by the residents, based on Risk management relative to the criteria that will be discussed in Report 2.
- 4.51 Similarly, the level of Street sweeping for example has a direct effect on nuisance flooding on the plains and will also be reviewed for the second report.

Proposed Levels of Service Criteria Summary

4.52 The Recommended Criteria for accessing the Level of Service for the Drainage Systems is summarized in the table below:

Criteria	Assets Types	Levels of Service
Flooding Risk	Dams, Wetlands, Detention Basins, Levees, Open channels and rivers, Pump stations; River gauging stations, Overland flow paths, seawalls	No. of Properties at risk of flooding in a (1 in 100 year event)
Water Quality	River Gauging Stations, Wetlands River systems, Lakes, Estuarine environment,	Pollution discharged to the Ocean (tonnes per annum)
Nuisance Flooding	Pipes, Side Entry Pipes and Road drainage	Ponding after a storm event (level/days)

4.53 In Report 2 the Council will be provided with Level of Service options based on the above criteria.

5. CONCLUSION / PROPOSAL

- 5.1 Drainage infrastructure is a major sector of Council's asset portfolio and fulfills a vital role in protecting the community and its properties from flood hazards.
- 5.2 On-going attention to drainage level of service is an important activity as the drainage systems become overloaded due to increasing impervious areas as the City grows and climate change impacts.
- 5.3 The Council also invests in water quality management to ensure the on-going health the City's high-profile waterways and receiving marine environment.
- 5.4 There are various types of major and minor drainage infrastructure across the City, with many of them working together to achieve an accept level of service. It is essential that Council maintains its investment in drainage infrastructure, particularly in maintenance, in order to provide a reasonable level of service at a sustainable cost.
- 5.5 The proposed Drainage Hierarchies for Council approval is split into two categories of Major and Minor which includes:

Major Drainage Assets	Minor Drainage Assets
Dams	Pipes and Pits
Wetlands	Culverts
Detention basins	Gross pollutant traps
Levees	Headwall structures
Open channels and rivers	Lakes
River gauging stations	

Major Drainage Assets	Minor Drainage Assets
Pump stations Overland flow paths Seawalls	

- 5.6 In support of determining the drainage Level of Service, which will be reviewed in Report 2, the following Criteria are nominated:
- 5.6.1 Number of houses at risk of flooding in 1 in 100 year event
 - 5.6.2 Stormwater quality entering the ocean
 - 5.6.3 Nuisance flooding in streets
- 5.7 Report 2 will be submitted to Council in **July** in line with the recommended program and will include the analysis of the Assets based on the Hierarchies and Criteria list in this report, including modelling various Levels of Service and associated costs, with recommendations for Council into the future.