AGENDA

FOR ASSET MANAGEMENT SUB COMMITTEE MEETING TO BE HELD ON

10 JUNE 2025 AT THE CONCLUSION OF THE FINANCE AND CORPORATE SERVICES COMMITTEE MEETING

IN LITTLE PARA CONFERENCE ROOMS, SALISBURY COMMUNITY HUB, 34 CHURCH STREET, SALISBURY

MEMBERS

Cr A Graham (Chairman)
Mayor G Aldridge (ex officio)
Deputy Mayor, Cr C Buchanan
Cr D Hood
Cr P Jensen
Cr S McKell (Deputy Chairman)

REQUIRED STAFF

Chief Executive Officer, Mr J Harry
General Manager City Infrastructure, Mr J Devine
Deputy Chief Executive Officer, Mr C Mansueto
A/General Manager Community Development, Ms C Giles
General Manager City Development, Ms M English
Manager Governance, Mr R Deco
Governance Support Officer, Ms M Prasad

APOLOGIES

LEAVE OF ABSENCE

PRESENTATION OF MINUTES

Presentation of the Minutes of the Asset Management Sub Committee Meeting held on 12 May 2025.

REPORTS

QUESTIONS ON NOTICE

There are no Questions on Notice.

MOTIONS ON NOTICE

There are no Motions on Notice.

OTHER BUSINESS

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

CLOSE

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

12 MAY 2025

MEMBERS PRESENT

Cr A Graham (Chairman)
Mayor G Aldridge (ex officio)
Deputy Mayor, Cr C Buchanan
Cr D Hood
Cr P Jensen
Cr S McKell (Deputy Chairman)

OBSERVERS

Cr B Brug

STAFF

Chief Executive Officer, Mr J Harry
General Manager City Infrastructure, Mr J Devine
Deputy Chief Executive Officer, Mr C Mansueto
General Manager City Development, Ms M English
A/General Manager Community Development, Ms C Giles
Manager Governance, Mr R Deco
Governance and Support Officer, Ms M Prasad

The meeting commenced at 6.33pm.

The Chairman welcomed the Elected Members, members of the public and staff to the meeting.

APOLOGIES

No apologies were received.

LEAVE OF ABSENCE

Nil.

PRESENTATION OF MINUTES

Moved Cr P Jensen
Seconded Cr S McKell

The Minutes of the Asset Management Sub Committee Meeting held on 11 March 2025, be taken as read and confirmed.

CARRIED

REPORTS

AMSC1 Future Reports for the Asset Management Sub Committee

Moved Cr C Buchanan
Seconded Cr D Hood

That Council:

1. Notes the report.

CARRIED

AMSC2 Fairbanks District Playspace - Car Parking

Moved Cr C Buchanan
Seconded Cr P Jensen

That Council:

1. Notes the report.
2. Requests Administration to prepare a Non-Discretionary 2025/26 First Quarter Budget Review on option 2 (Item AMSC2, Asset Management Sub Committee, 12 May 2025) with further design work and revised costings on providing an additional 25 carparks.

CARRIED

QUESTIONS ON NOTICE

There were no Questions on Notice.

MOTIONS ON NOTICE

There were no Motions on Notice.

OTHER BUSINESS

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

MWN1 Fountain, Playground, BBQ and Shade Facilities

Moved Cr P Jensen
Seconded Cr S McKell

That Council:

1. Requests the Administration to present a report to the Asset Management Sub Committee with options and cost estimates and indicative delivery timelines for barbecue and shade facilities at AGH Cox Reserve at Pine Lakes Parafield Gardens, a playground upgrade at Resthaven Reserve, Parafield Gardens, and installation of fountain at Gulfview Heights Lake by July 2025 in readiness for future consideration by Council including a potential budget review.

CARRIED
Unanimously

MWN2 Traffic Management Goodall Road Para Hills

Moved Cr P Jensen
Seconded Cr C Buchanan

That Council:

1. Requests the Administration to consult with local residents of Goodall Road, Para Hills in relation to speeding and traffic related incidents including consultation for the consideration of further yellow lines and traffic calming devices.

CARRIED

CLOSE

The meeting closed at 6.50pm.

CHAIRMAN……

DATE……

ITEM AMSC1

ASSET MANAGEMENT SUB COMMITTEE

HEADING Future Reports for the Asset Management Sub Committee

AUTHOR Corina Allen, City Infrastructure Administration Coordinator, 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.

RECOMMENDATION

That 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.

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
22/03/2021	**Sustainable Verge Development**	Craig Johansen
	This report will address the following resolutions: **22/03/2021 - 4.0.2-AMSC4 - 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.	

Meeting - Item	Heading and Resolution	Officer
	23/08/2021 - 4.0.3-AMSC3 - 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.	
Due:	September 2025	
22/08/2022	**Strategic Asset Management Plan – Building Assets - Stage 2 - Levels of Service and Financial Impacts** 4. Notes Administration are undertaking a review on the utilisation of Council buildings over the next two years which may result in changes to the building portfolio in the future, and that this work will be the subject of a further report to Council for consideration.	Jon Foong
Due:	July 2025	
Deferred:	September 2025	
Reason:	May 2025 reason: Administration are currently analysing the results from the audit and will present a report to Asset Management Sub Committee when completed in line with the updated SAMP timeline.	
24/7/23	**CCTV Policy and Procedures - Community Safety CCTV**	Mark Purdie Vesna Haracic
4.4.1	Council has previously resolved this resolution to be confidential.	
Due:	July 2025	
25/3/24	**Playspace Program**	Jon Foong
AMSC3	3. Requests Administration develop a separate policy framework for the ongoing renewal of regional playspaces within the City.	
Due:	August 2025	
26/08/24	**Fit Out of Council Owned Clubrooms**	Jon Foong

Meeting - Item	Heading and Resolution	Officer
MWON1	Requests the Administration to review the building levels of service for major club rooms with consideration to be given to meeting functional requirements of relevant sporting associations and report back to Council in December 2024.	
Due:	July 2025	
16/12/2024	**Footpath Installation Options – Lolands Road and Willochra Road, Salisbury Plain**	Craig Johansen
4.0.1 – AMSC2	2. Requests Administration provide a further report in December 2025 that gives consideration to complete a formal footpath along the remaining sections of Willochra Road.	
Due:	November 2025	
16/12/2024	**Presentation – Sports Lighting Asset Management and Service Standards**	Jon Foong
4.0.1-AMSC7	3. Request Administration bring back a further report on Options 2 and 3 outlined in the presentation to be considered as part of a draft Asset Management Plan for Sports Lighting. 4. Requests that the report provide further information on current licence/lease holders from relevant playing levels of sporting associations outlining their current night training and night match usage. 5. Requests that the report be provided to Asset Management Sub Committee by May 2025.	
Due:	July 2025	
Deferred:	August 2025	
Reason:	Administration are currently reviewing and evaluating the technical requirements to determine options for Council's consideration.	
16/12/2024	**Bridges and Boardwalks - Asset Management Plan Update**	Chris Haskas
4.0.1-	2. Notes that the following Levels of Service Criteria are being further	

Meeting - Item	Heading and Resolution	Officer
AMSC6	developed and will be reported back to Council as part of the Draft Asset Management Plan – Bridges and Boardwalks: a.Community Levels of Service Criteria for bridges and boardwalks: • Availability (open for use), noting some bridges and boardwalks may need to be temporarily closed due to flooding, maintenance, etc. • Restrictions on usage, for example, load limit, speed limit, cyclists to dismount, suitable footwear, accessibility. b.Technical Service Level Criteria for bridges and boardwalks: • Age • Construction Type • Clear Width • Approach Geometry • Barrier Compliance • Approach and Structure Lighting • Location / Environment • Inspection Frequency • Condition • Data Quality including as-constructed drawings	
Due:	July 2025	
26/5/25	**Fountain, Playground, BBQ and Shade Facilities**	Rob Hutchinson
4.0.1-MWN1	1. Requests the Administration to present a report to the Asset Management Sub Committee with options and cost estimates and indicative delivery timelines for barbecue and shade facilities at AGH Cox Reserve at Pine Lakes Parafield Gardens, a playground upgrade at Resthaven Reserve, Parafield Gardens, and installation of fountain at Gulfview Heights Lake by July 2025 in readiness for future consideration by Council including a potential budget review.	

Meeting Item	-	Heading and Resolution	Officer
Due:		July 2025	

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 10 June 2025

HEADING Sir Douglas Mawson Lake - Lake Infrastructure

AUTHOR Dulan Gamage, City Infrastructure Engineer, City Infrastructure

CITY PLAN LINKS
1.2 The health and wellbeing of our community is a priority
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 This report provides an update on the structural condition, ongoing monitoring, remediation, and maintenance of the lake edge revetment walls supporting the perimeter pathways at Sir Douglas Mawson Lake (SDML). Constructed approximately 25 years ago, these walls have experienced erosion of the lake bed at the toe of the wall, structural cracking and wall movements affecting paving requiring ongoing pavement repairs and preventative maintenance.

This report outlines:
- Description of the design and construction of the walls
- Current monitoring and condition assessments of the lake edge walls.
- Remediation works completed to date and future requirements.
- Recommendations for future monitoring and maintenance, including proposed funding through the Ornamental Lakes Asset Management Plan (AMP) 2025/26 budget .

RECOMMENDATION

That Council:

1. Notes the update on the structural condition, ongoing monitoring, remediation and maintenance of the lake edge revetment walls at Sir Douglas Mawson Lake, as provided in this report (item AMSC2, Asset Management Sub Committee, 10 June 2025).
2. Notes the $350K in the 2025/26 renewal program budget bid allocated to the Sir Douglas Mawson Lake.
3. Supports the continued development of the Ornamental Lakes Asset Management Plan to guide future renewal and maintenance works.

ATTACHMENTS

This document should be read in conjunction with the following attachments:

1. Appendix A - Sir Douglas Mawson Lakes Infrastructure - Historical Context

1. BACKGROUND

1.1 At its meeting held on Monday, 26 August 2024 it was resolved that Council:

"Request a future report to be presented by December 2024 outlining the overall structural integrity and potential maintenance works required at Sir Douglas Mawson Lakes, as part of the Asset Management Plan for ornamental lakes within City of Salisbury."

This report is the response to the above resolution.

1.2 Over the past 14 years, Council has received numerous reports relating to the condition, performance, and long-term management of the ornamental lakes within Mawson Lakes, particularly Sir Douglas Mawson Lake (SDML) and its revetment wall structures. These reports have highlighted recurring concerns around structural movement, erosion, wall instability, and the need for dedicated maintenance funding. The following items provide a chronological summary of key decisions, technical investigations, and committee reports that have contributed to the current understanding of lake infrastructure risks and management priorities.

1.3 Item 1.5.4 Policy and Planning Committee 20 June 2011 Mawson Lakes Exit Strategy.

1.3.1 This report sought amendments to the Project Completion Deed for the Mawson Lakes Development, focusing on Council's liability for remediation works related to the lake revetment walls.

1.3.2 A survey confirmed that rectification works were needed for sections of the Main Lake (Stage 2) and Shearwater Lake.

1.3.3 Amendments to the deed ensured that the Delfin Lend Lease was responsible for initial remediation, the Council would assume responsibility for maintenance following a defects liability period, and geotechnical assessments and independent certification were required to ensure structural integrity.

1.3.4 Overall, this meeting established the framework for future disputes and cost allocation.

1.4 Item 4.2.2 Urban Services Committee 20 February 2023 Lakes in Mawson Lakes – Infrastructure Condition of Sir Douglas Mawson Lake and Shearwater Lake.

1.4.1 Council approved the submission of a non-discretionary 2022/23 third quarter budget review of $240,000 for the consideration of Council, to enable remediation works on the lake walls in Mawson Lakes including Shearwater and Sir Douglas Mawson Lakes.

1.4.2 This report provided early assessments of the lake revetment wall condition and the need for ongoing maintenance.

1.5 Item 4.1.6 Urban Services Committee 21 August 2023 Parkrun Course Condition Audit.

1.5.1 The condition of the paved pathways around SDML was audited every 4 months.

1.5.2 With an annual budget of $50,000 for paver lifting and relaying due to wall movements, 400 m^2 of paving was scheduled for repairs in July 2023. The cost of this was approximately $30,000.

1.5.3 Monthly inspections were introduced due to the high foot traffic from Parkrun and Corporate Cup events.

1.5.4 It was noted that lake wall movements were contributing to the observed paving issues.

1.6 Item 4.1.1 Urban Services Committee 20 November 2023 Capital Works - October 2023

1.6.1 Regarding the inclusion of a 2023/24 Non-discretionary Second Quarter Budget Review Bid of $50,000 capital funding for PR27050 Mawson Lakes Wall Remediation Works to cover adjacent surface protection and / or remediation due to construction.

1.6.2 This document reinforced the need for long-term planning for ornamental lake maintenance.

1.7 Item 4.1.1 Urban Services Committee 19 August 2024 Capital Works - July 2024

1.7.1 Council approved a 2024/25 Non-discretionary First Quarter Budget Review Bid to the value of $60,000 for repairs to address previously observed wall movement.

1.7.2 Future report requested to be presented by December 2024 outlining the overall structural integrity and potential maintenance works required at Sir Douglas Mawson Lake, as part of the Asset Management Plan for ornamental lakes within the City of Salisbury.

1.7.3 The budget allocation focused on stabilising failed sections of the lake wall and recognised the importance of ongoing monitoring and preventative maintenance.

1.8 Item AMSC2 Asset Management Sub Committee 14 October 2024 Asset Management Updates – Sport Lighting, Bridges and Ornamental Lakes.

1.8.1 This report contributed to the Strategic Asset Management Plan (SAMP).

1.8.2 It recognised ornamental lakes as a separate asset category due to their high aesthetic, recreational, and ecological value.

1.8.3 It also noted ongoing structural issues with lake revetment walls and recommended the establishment of dedicated planning and funding streams.

1.9 Item AMSC5 Asset Management Sub Committee 2 December 2024 Ornamental Lakes - Asset Management Plan Update.

1.9.1 This document updated classification and service levels for the ornamental lakes.

1.9.2 SDML was classified as Class A due to its unique size, prominence and functions.

1.9.3 The document emphasized that no dedicated renewal budget existed for these ornamental lakes, resulting in ad-hoc funding approvals.

1.9.4 Over the past 12 months, Council has progressed development of a dedicated Ornamental Lakes Asset Management Plan and has since established a structured budget program to support ongoing renewal, operation and maintenance needs.

1.9.5 It was recommended that annual funding of approximately $50,000 be allocated for monitoring and maintenance.

2. EXTERNAL CONSULTATION / COMMUNICATION

2.1 Residents and Community:

2.1.1 The ornamental lakes (particularly SDML) attract strong community interest and are heavily used public assets within Mawson Lakes. As a result, there is regular resident feedback relating to the condition of lake edge walls, stability concerns, and maintenance of adjacent pathways and landscaping. Community members have raised particular concerns in areas where visible wall movement has occurred, prompting requests for timely repair and clearer communication of Council's long-term strategy.

2.1.2 Footpath subsidence and trip hazards have been reported along sections where revetment wall movement has impacted paved surfaces. These observations have primarily come from community members who regularly use the lake and surrounding pathways for recreation and leisure.

2.1.3 Community members have raised concerns about the stability of the lake edge walls, particularly in areas showing visible structural movement.

2.1.4 Exposed wall structures due to erosion and structural failures detract from the visual appeal of the lake.

2.1.5 Residents have expressed interest in integrating semi-aquatic planting in remediated sections to improve biodiversity and aesthetics.

2.1.6 There is ongoing uncertainty regarding the timeline for repairs and the long-term management strategy for the lake walls.

2.1.7 Residents and local business owners request updates on planned maintenance activities.

2.2 Stakeholder Engagement and Communication Plan:

2.2.1 Updates on completed and upcoming works have been provided through Council's website, social media channels and community newsletters.

2.2.2 Public notices should continue to be issued for any planned remediation works, so that residents are informed of construction schedules and potential disruptions.

2.2.3 Business and event organisers, particularly those operating the near the lake should be engaged to discuss any potential impacts of remediation works.

2.2.4 There should be regular coordination with Parkrun organisers and other even stakeholders in order to schedule works in a manner that minimises disruptions.

3. DISCUSSION

3.1 The lake edge walls at Sir Douglas Mawson Lake (SDML) were constructed between 1998 and 2000 as part of the original Mawson Lakes development. Over time, these walls have experienced gradual movement and structural wear due to the soft ground conditions and the natural effects of water and weather.

(Refer to Appendix A for historical construction details and causes of movement.)

3.2 Regular inspections have found that some sections of the wall have shifted or tilted, leading to issues such as paving displacement and trip hazards along the pathways. These changes are most noticeable in high-use areas, especially where walls are exposed to strong water movement.

3.3 The condition of the wall varies depending on its shape and location. Curved (concave) sections tend to remain more stable, while outward-facing corners and straight segments are more vulnerable to erosion and pressure-related damage.

(Appendix A includes visual illustrations of these wall shapes and performance differences.)

3.4 Localised repair works have been carried out over the years, including reinforcement using rock materials and realignment of paving. These measures have been effective in slowing down deterioration in certain locations.

3.5 Council has undertaken structural assessments and monitoring to understand the extent of the movement and plan for early intervention. This includes physical inspections, wall movement surveys, and underwater lakebed mapping to identify erosion near the base of the walls.

Detailed engineering observations, including before-and-after images of repairs, are provided in Appendix A.

3.6 In late 2024, priority repairs were completed along a section of wall near Lakeside Close, where a noticeable outward movement had occurred. Similar preemptive works are now being planned for nearby sections showing early signs of movement.

3.7 The lake water balances are such that seasonal rainfall runoff is insufficient to maintain lake operating levels. Therefore, makeup water from a nearby bore in Mobara Park from the T2 aquifer tops up the lake to compensate for natural losses (evaporation and seepage). Recent observations during lake top-up operations suggest that additional losses are occurring. This means more water is required to top-up the lake to the normal level. These findings indicate a leak may exist within the lake bed liner. Investigations and treatment options into this are currently underway.

3.8 Community members have raised concerns about visible damage, uneven pathways, and long-term maintenance planning. There is also interest in incorporating more natural features such as semi-aquatic plants to improve the look and function of the lake edge.

3.9 A structured, long-term maintenance strategy is being developed through the Ornamental Lakes Asset Management Plan (AMP). This includes monitoring, preventative works, and funding proposals to ensure the lake infrastructure is preserved over time.

3.10 The full technical discussion, including design specifications, monitoring results, and repair strategies, is provided in Appendix A for reference.

3.11 Proposed remediation and monitoring strategies:

Immediate remediation actions (2025/2026)

3.11.1 Lake edge wall movements have been noted along Section 1 and 3, opposite and alongside Mawson Lakes Boulevard. These sections show signs of structural stress and have been identified as priorities for early intervention in the coming months. Erosion voids should be filled with a layer of ballast sized rock aggregate along the wall toe and tamped into the void below the toe. A budget cost for these works would be approximately $60,000 excluding GST.

3.11.2 Preemptive intervention for remediation works of Section 5 of the lake edge wall will also be undertaken within the coming months.

- A pre-design budget for this section of the wall is approximately $60,000 - $80,000 excluding GST (subject to detailed design), provided the works are scheduled ahead of any further noticeable movement.
- The repair would involve paver removal, clay excavation and placement of a rectangular reinforced concrete slab with anchor rods grouted into the upper edge wall on both sides of the corner and paver replacement.
- Wall joints would be filled as was detailed for previous repairs in PR27052 at Section 12 in Shearwater Lake and a ballast sized rock layer placed and tamped along the toe of the wall to complete the repair.

Ongoing monitoring and maintenance

3.11.3 To determine the further extent and depth of erosion along the wall toe, where rockfill has not yet been placed, several in-lake investigation methods can be undertaken with the ultimate goal of mapping erosion voids, assessing sediment deposition / displacement, and quantifying the volume of material lost.

- **Preliminary Assessments:** Within shallow areas along the edge of the lake, surveys will be undertaken to record the extent of erosion. A graduated probe with 50mm x 50mm base plate with marked depth increments will be placed on the lake bed at regular intervals (every ~ 1 m) along the wall toe. At each interval the depth will be measured relative to the top of the edge wall and recorded. It should be noted however that this survey method will not able to detect erosion voids or subsurface weaknesses in the deeper parts of the lake. This preliminary assessment will however identify locations to scope tasks and budgets where toe ballast should be placed.
- **Sonar Bathymetric Survey:** Subsurface profiling will enable us to generate a contour map of the lakebed and compare it against original design levels to identify areas of undercutting and significant erosion. A multi-beam sonar unit, mounted on a small vessel, will be used.

  This method will provide us with a high-resolution 3D topographic model of the lakebed. The outputs will assist in prioritising future wall remediation efforts and guiding more targeted placement of rock fill in areas most at risk of ongoing erosion.

  Currently, HydroSurveys from Flinders Ports are undertaking bathymetric survey of the lake. The cost of the survey is $10,000 (excl. GST). The effectiveness will be evaluated upon completion to inform the next stage of targeted investigation and works planning.

3.11.4 Previously, Administration have undertaken extensive lake edge wall monitoring and joint movement surveys. Quarterly joint movement surveys will recommence from April 2025. This includes the re-establishment of historical control marks and periodic surveys over a 12-month period. The higher frequency is intended to improve detection of structural movement trends and allow for early intervention where required. AllSurv had quoted $3,300 (excl. GST) to re-establish control and monitoring markings in addition to $6,500 (excl. GST) for periodic 3 monthly surveys (including initial survey).

3.11.5 Monthly visual inspection will be undertaken to detect early signs of movement in other sections of the lake, often indicated by upward bulging of the paving adjacent to the edge wall.

Long-term structural renewal considerations (future years)

3.11.6 A tiered approach to structural remediation of the lake will be developed to ensure that works are cost-effective and that progressive intervention methods exist before full failure occurs. At this stage, potential engineering works for three different levels of intervention have been optioned below:

- **Early-Stage Prevention Measures:** Required to reduce stress on the lake edge wall and slow erosion process. Potential prevention measures are summarised in the table below.

Method	Description	Advantages
Toe protection using ballast sized rockfill	A thin layer (~200 to 300 mm thick) of ballast rock placed along the wall toe and tamped into voids beneath the toe.	Should prevent further erosion voids at the base and is much cheaper than a full-scale repair provided it is done before material toppling occurs.
Liquid-applied clay/polymer sealants (e.g., Bentonite Clay, Polymer Sealers, or ESS-13	A sealant (e.g., sodium bentonite, polymer-based sealer, or emulsified polymer hybrid) is broadcast, sprayed, or poured over the lake surface, forming a watertight barrier as it settles into cracks and eroded areas. No dewatering is required. Damit Sealer by Shalex Industries has been explored as a potential option. DamIt™ Dam Sealer is an advanced, non-toxic, polymer powder which is applied to leaking water bodies by scattering the powder across the surface of the water.	Fast and cost-effective. Can be applied without draining the lake. Ideal for sealing leaks or erosion zones in hard-to-access areas. Non-toxic options available, safe for aquatic life.

- **Mid-Stage Intervention Measures:** Where material movement or tilting has been detected. The following measures may be explored:

Method	Description	Advantages
Rock fill to water level (as in Section 12)	Extension of ballast-sized rock fill from the toe up to the normal water level, stabilising the wall and visually masking wall tilt.	Simpler and cheaper than structural reinforcement. Proven effective in Section 12. Improves aesthetics while limiting further movement.

- **Major Failure:** If the wall has failed, full structural remediation will be required. However, more intensive reconstruction is not anticipated, assuming planned treatments are implemented effectively.

4. FINANCIAL OVERVIEW AND BUDGET CONSIDERATIONS

Immediate and SHORT-TERM budget considerations

4.1 Emergency wall remediation (Section 4 – Lakeside Close):

4.1.1 $60,000 was allocated in the 2024/25 First Quarter Budget Review for toe reinforcement and erosion mitigation works.

4.1.2 These were delivered between December 2024 and February 2025.

4.1.3 Indicative cost rate of $3,800 per metre.

4.2 Multibeam Bathymetric Survey (MBES):

4.2.1 A high-resolution multibeam bathymetric survey is being undertaken, at an estimated cost of $10,000 excl. GST.

4.2.2 This survey will map the lakebed and inform erosion and scour along the lake wall toe to inform more targeted, cost-effective interventions.

4.2.3 Results will be compared to original design levels to identify priority locations for future works.

4.3 Wall movement surveys:

4.3.1 Quarterly wall movement surveys are now scheduled over a 12-month period (April 2025 to March 2026), based on AllSurv's proposal ($7,150 excluding GST for survey program + $3,630 excluding GST for reinstating monitoring marks).

4.3.2 These surveys will form the backbone of the wall stability monitoring program and support decisions on future intervention priorities.

4.4 Section 5 – Preemptive Reinforcement (proposed for 2025/26):

4.4.1 Section 5 has shown early signs of movement at the corner.

4.4.2 A provisional budget of $60,000 – $80,000 is proposed for reinforcement and targeted rock layer placement along the toe of unprotected lake wall segments to address early signs of change and maintain structural integrity.

4.5 Extension of rock layer at Sections 1 and 3:

4.5.1 Pending MBES results, extension of rock layer along unprotected wall segments at Section 1 and 3.

4.5.2 A placeholder budget of approximately $65,000 (270m @ $200/m including contingency) is suggested for future funding consideration.

4.6 To support long-term asset preservation, an annual maintenance budget of $50,000 is recommended for ongoing annual monitoring and maintenance. This will cover:

4.6.1 Joint movement and condition surveys.

4.6.2 Reactive remediation where minor wall movement is identified.

4.6.3 Strategic placement of ballast rock along wall toes to prevent erosion void formation.

4.7 A budget bid for the Ornamental Lakes Renewal Program exists for the 25/26 FY. This new program is to facilitate the ongoing monitoring, remediation and renewal of the Ornamental Lakes within the city. A total annual capital expenditure of $350,000 is required to undertake necessary remediation works for the Ornamental Lake assets.

4.8 The forthcoming Ornamental Lakes Asset Management Plan should provide detailed guidance on service levels, condition-based renewal planning, and intervention strategies for SDML and similar Ornamental Lake assets.

5. CONCLUSION

5.1 The structural condition of the revetment walls at Sir Douglas Mawson Lake (SDML) continues to require active management due to ongoing erosion, wall movement, and signs of structural degradation. While previous remediation efforts have provided localised stabilisation, recent inspections and investigations have identified further erosion along unprotected wall toes, highlighting the need for a proactive, evidence-based maintenance strategy.

5.2 A budget of $350,000 has been included in Council's draft 2025/26 budget as part of the Ornamental Lakes Renewal Program. This new program supports ongoing monitoring, remediation and renewal of ornamental lake infrastructure across the city, with the priority for 2025/26 being the lake wall at Sir Douglas Mawson Lake. Proposed works include rock ballast placement along and beneath unprotected wall toes to prevent further edge rotation and support long-term structural stability.

5.3 Investigation works such as wall monitoring surveys and lakebed mapping are currently being undertaken to better inform current risks and help prioritise future remediation efforts.

5.4 The continued development and implementation of the Ornamental Lakes Asset Management Plan (AMP) will play an important role in guiding maintenance priorities and investment decisions. Integration of the AMP into the Long-Term Financial Plan (LTFP) will ensure consistent funding allocation.

APPENDIX A

BACKGROUND AND HISTORICAL CONTEXT

1.1 The lake edge revetment walls at SDML were constructed between 1998 and 2000 as part of the early stages of the Mawson Lakes development by Delfin Lend Lease. The original Dry Creek watercourse was diverted to the west to facilitate lake construction. An aerial image of SDML is depicted in *Figure 1*.

1.2 The revetment walls in SDML consist of slipformed mass concrete placed atop a 200 mm thick cement stabilized rubble bed on a 400 mm thick engineered clay liner, which was designed to act as an impermeable barrier to minimize seepage losses into the underlying soil. However, the inherent plasticity and softness of the clay foundation have contributed to gradual subsidence and consolidation over time under the loading imposed by the edge walls. The walls were slip formed in durable unreinforced 50 MPa concrete in nominally 4 m long segments. Construction joints between segments were backed with 300 mm wide strips of Terrafix 270R geotextile fabric to retain the backfill at joints.

1.3 The clay bed is inherently "soft" and plastic, thus, over the past 25 years, this has led to:

- Porewater redistribution and ongoing consolidation of the lakebed beneath the walls.
- Erosion and undermining at the toe of the walls.
- Structural movement, including slow lateral sliding and tilting of the walls toward the lake.

Coloured concrete pavers 300 mm square were laid on sand bedding on backfill behind the edge wall to form a perimeter pathway nominally 2.7 m wide around the lake.

1.4 Previous assessments and remediation efforts have been undertaken by Delfin Lend Lease, with the developer implementing reinforcement measures prior to handover to the City of Salisbury.

- Wall movement issues were previously investigated by Kinhill Engineers (Kellog Brown & Root), Coffey Engineering and Wallbridge Gilbert Aztec (WGA) on behalf of Delfin.
- KBR proposed a tieback solution (see Figure *3*) around the time of handover of Mawson Lakes to Council for ongoing care and maintenance.
- WGA investigated sections of failing revetment walls within Stage 2 of SDML. They recommended using 600mm wide x 2000mm long grout-filled plastic bags to fill voids and reinforce walls stability. There were four wall rectification strategies (Type A to D), tailored to different segments of the wall (See Figure *4* and Figure *5 – WGA Rectification Areas and Treatment Details*).
- It appears that a full-scale rectification project was never implemented. Instead, localised rock fill treatments were applied to stabilize select sections of the lake edge walls at Sections 12 and 13 identified on Figure 2.

Figure 1 - NearMap Aerial Image of SDML

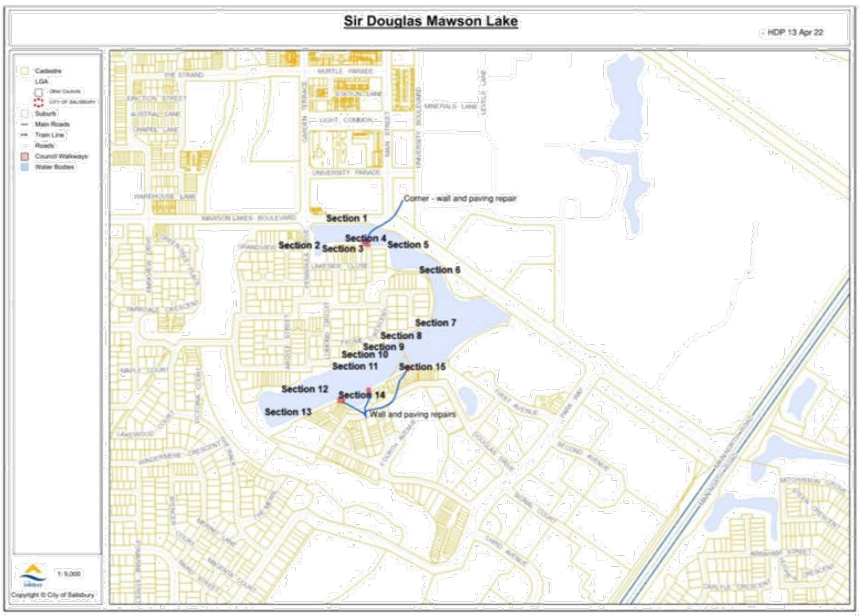


Figure 2- SDML Allsurv Survey Monitoring Sections

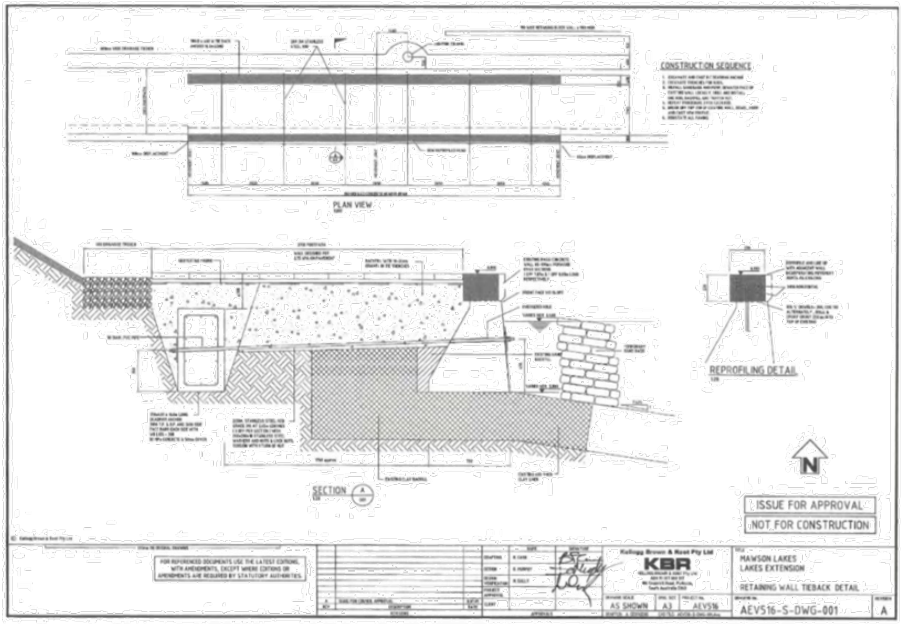


Figure 3- KBR Retaining Wall Tieback Detail (KBR, 2005) – not implemented

Figure 4- WGA Lake Edge Wall Rectification Areas (WGA, 2005)

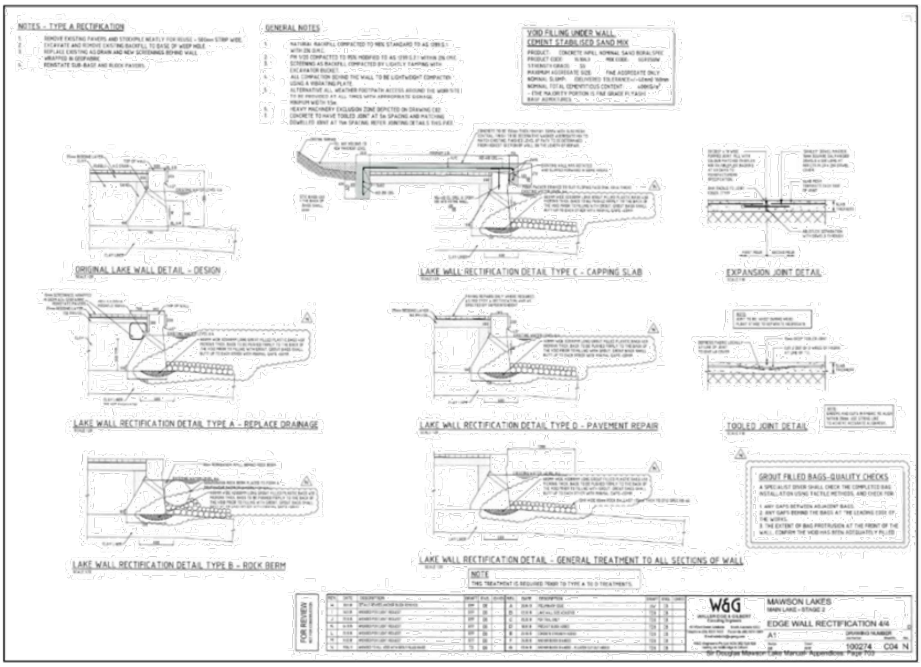


Figure 5- WGA Lake Edge Wall Rectification Treatment Details (W&G, 2005)

1.5 Historically, Council has undertaken approximately 800 m^2 of lake edge wall repaving on an annual basis.

- The cost of these works was in the order of $15,000 per annum.
- Pavement patch repairs do not address the underlying issue of ongoing sliding and tilting.
- Ongoing monitoring has identified new structural concerns, necessitating further intervention.
- Wall joints have been impacted by wave action resulting in erosion of paver bedding sand, thereby loosening pavers and creating trip hazards for pedestrians and runners.

CURRENT STRUCTURAL CONDITION AND OBSERVATIONS

1.6 Generally, the height of the edge walls varies in height between Stage 1 (initially constructed section of lake north of the footbridge) and Stage 2 (latter section of lake south of the footbridge) as determined by wave heights in the lake during design by KBR.

- Stage 1 – Walls are approximately 1.0 m high.
- Stage 2 – Walls are approximately 1.3 m high.

Recent structural inspections and survey monitoring have identified erosion up to 400 mm below the original bed level at the toe of the edge walls, resulting in sliding and tilting of wall segments to varying extent in many sections.

1.7 By design the revetment walls were constructed with the following features:

- The sectional shape of the walls is inherently stable against toppling by the weight of backfill bearing on the sloping heel of the wall. The cap of the wall tends to reflect waves back into the lake minimizing splashing.
- Water depth at the edge wall is 600 mm grading lakeward over 3 m to 1 m deep then further over 3 m to 2 m deep generally in the middle of the lake.
- The clay membrane liner is 400 mm thick in engineered native material at the edge wall, thinning to 200 mm beyond 3m from the wall.
- A 200 mm soil protective cover layer was provided over the clay liner during construction to limit moisture loss until the lakes was filled with 200 mm cement stabilized quarry rubble as part of this layer under the edge walls.

1.8 The geometric characteristics in plan of the lake edge walls—such as size, shape, and construction method—may explain why some sections experience signs of failure at an accelerated rate compared to others.

- The lake features edge walls with straight, concave (bay-shaped), and convex (headland-shaped) segments, each of which experiences different stability challenges due to variations in wave energy distribution, hydrodynamic forces, and structural load transfer.
- Concave (bay-shaped) revetment walls benefit from an interlocking arch effect, where lateral soil and water pressures are distributed across the curved segment. This improves the wall's structural stability, reducing the likelihood of localised failures. In addition, concave segments are less exposed to direct wave action as wave energy is partially dissipated due to diffraction and interference.

Figure 6- Concave (bay-shaped) Edge Wall

- Convex (headland-shaped) edge walls, by contrast, lack the supportive arching action and thus behave more like independent retaining wall segments. This makes them more vulnerable to outward lateral forces and structural stress concentrations, particularly at the apex. Also, convex segments tend to be more exposed to wave and swell energy, as they protrude into the water and experience concentrated hydrodynamic forces. This increases the risk of scour and structural instability over time. External corners a where wall segments are jointed are similarly unstable and tend to pull apart.

Figure 7- Convex (headland-shaped) Edge Wall

- The straight wall segments, which transition between concave and convex sections, don't benefit from the arching effect of concave segments nor suffer from outward force dispersion seen in convex sections. Their stability will generally depend on construction quality, foundation conditions, and the structural integrity of the adjacent sections. These areas are also prone to wave reflection, which can cause localised scour at the base.

1.9 Significant underlying wall edge movements were observed along a southwestern section of wall within Stage 2 of SDML (near Section 13). This prompted Delfin Lend Lease to undertake remediation works prior to lake handover to Council through the

placement of rock fill against the edge walls. The repair also included an upright concrete kerb as shown in Figure *8*. Observations of this section of lake indicate that further structural remediation in this location is not required, although in future years, the aesthetic surrounding this section could be improved through additional rock placement to cover the lake edge where still exposed. Some semi-aquatic planting amongst the rocks could also be considered to enhance appearance and biodiversity. However, these works are a low priority and it is currently unfunded.

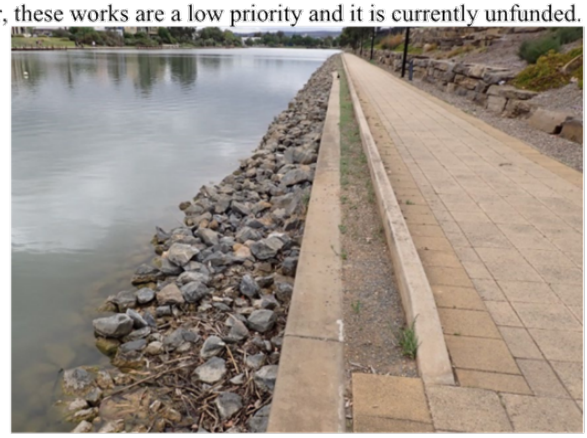


Figure 8- Delfin Lendlease Repair Works with Upright Kerbing

1.10 Delfin Lendlease had also undertaken repair works for a small section of wall located on the opposite (southeastern) end of the lake. A significant wall failure had occurred at this location at the convex bend. The repair method can be seen in Figure *9*. At this stage, no immediate or further remediation works is required for this location.

Figure 9- Delfin Lendlease Repair Works

1.11 Repairs for Section 14 and 15 of the revetment walls were undertaken by Council in 2023 and involved the placement of rock riprap (typically between 100-250 mm diameter) along the edge wall. Figure *10* and Figure *11* illustrates the condition of the lake edge wall prior to and following remediation works:

Before Remediation

After Remediation

Figure 10- Section 14 Edge Wall Remediation Works (Before & After)

Before Remediation

After Remediation

Figure 11- Section 15 Edge Wall Remediation Works (Before & After)

1.12 In August 2024, it was reported to Council that a significant and relatively rapid, wall movement of a section of lake wall in the corner of at Section 4, near Lakeside Close of the Peninsula Village opposite Mawson Lakes Boulevard (The Prominade Café Strip) near the Main Street Y-junction.

- This section exhibited significant erosion at the toe as discovered during wall reinstatement, explaining the large (~100mm) outward rotation (toppling) of about 12 m length of wall at this location.
- Figure *12* shows progression of wall and paving failure with time.
- $60k of funding was provided via the 2024/2025 First Quarter Budget Review in November 2024.
- Remediation works commenced in early December 2024 and were completed on 19 Dec.

1.13 Section 5 (further east of Section 4) is currently showing early signs of movement, warranting preemptive action.

Figure 12- Progression of Section 4 Wall Toppling Failure

1.14 Where rocks have been placed in front of walls in the past at sections 12, 13, 14 and 15, observed movements have been minimal, indicating that so far, the rock treatments have been successful.

1.15 Lake water balances are such that seasonal rainfall runoff is insufficient to maintain lake operating level. Makeup water from a nearby bore in Mobara Park from the T2 aquifer tops up the lake to compensate for evaporation losses and seepage through the lakebed liner. By design, lake operating level is taken to be between 600 mm and 400 mm at the face of the edge wall.

Tonkin Consulting 2008 produced a *Water Loss Monitoring, Modelling and Assessment* report to provide details of the actual water balance following construction of the lake. It was determined that during the period from 16 October 2006 to 5 April 2007, SDML was losing approximately 21 ML/year or 0.67 l/s through evaporation and infiltration into the lakebed.

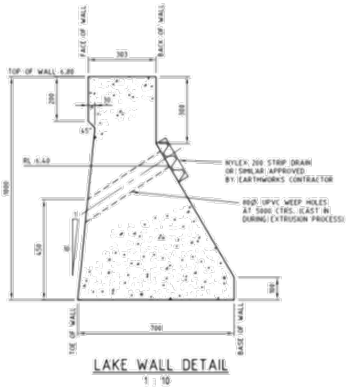
A comprehensive follow-up investigation, similar in scope to the Tonkin study, has not yet been conducted to assess spatial variations in water loss across the lake. However, recent observations during lake fill-up operations indicate that although the pump operates at a constant rate of 15.7 L/s, the rate of water level rise reduces as the water level increases.

It was initially suspected that leakage may be occurring around the upper perimeter of the lake, potentially through cracks and other structural defects in the edge wall, such as the one shown in Figure *13* below.

Figure 13- Cracks observed along upper perimeter of lake edge wall

However, a review of the lake wall construction drawings (refer to detail below) indicates that the edge wall includes a Nylex 200 strip drain with 80 mm diameter UPVC weep holes spaced at 5 m intervals. This design allows any water seeping through the wall to be redirected back into the lake, minimising the risk of water loss through the wall structure itself.

In addition, if significant seepage were occurring through the wall, surface heaving or pavement level changes would typically be expected as a visible symptom. In the absence of such signs, it is more likely that any substantial water losses are due to compromise or degradation of the bottom liner, rather than through the wall.



LAKE WALL DETAIL
1 : 10

ITEM AMSC3

ASSET MANAGEMENT SUB COMMITTEE

DATE 09 June 2025

HEADING St Kilda Recreational Vehicle (RV) Dump Point

AUTHOR Jonathan Foong, Manager Urban, Recreation and Natural Assets, City Infrastructure

CITY PLAN LINKS 4.1 Our council's services are delivered in an effective and efficient manner

SUMMARY Administration have been investigating options to reinstate the RV dump point at St Kilda which has been out of service since October 2024. Three options were presented to Council at the CEO Briefing on 2 June 2025. This report provides an update to Council of subsequent actions based on the feedback from Council.

RECOMMENDATION

That Council:

1. Approves option 3 (Item AMSC3, Asset Management Sub Committee, 10 June 2025), which is to redirect recreational vehicles (rv)s to alternative rv dump points as the preferred option pending further investigation to assess the impact of not renewing the dump point service on visitation numbers of rvs to St Kilda.
2. Request administration to prepare a report for the october 2025 urban services committee meeting to report on the findings of the investigation.

ATTACHMENTS

This document should be read in conjunction with the following attachments:

1. CEO Forum 2 June 2025 - St Kilda RV Dump Point

1. BACKGROUND

1.1 The Township of St Kilda is currently not serviced by common sewer. The nearest sewer point is located approximately 4.5km away. The businesses and residential properties at St Kilda are serviced by septic tanks (combination of aerated systems and soakage trenches).

1.2 Septic tanks provide some level of treatment before the wastewater is discharged into the local environment. Therefore, there are strict compliance requirements that govern the use of septic tanks, in particular for environmentally sensitive areas such as St Kilda.

1.3 As such, the recreation vehicle (RV) dump point located in St Kilda that was installed in 2012 is connected to the septic system that services the public toilet near the boat ramp.

1.4 The RV dump point has been out of service since October 2024 due to multiple breaks in the pipe connecting the dump point to the septic tank. The site was historically a landfill site and experiences ongoing subsidence issues which had contributed to the failure in the infrastructure.

1.5 To reinstate the RV dump point, Administration will have to reconstruct the dump point and relay the pipework to reconnect the dump point to the existing public toilet septic system.

1.6 As the work is regarded as a significant change to the septic system, approval is required from the relevant authority (SA Health). SA Health had advised Council that the discharge of RV wastewater into septic tanks is prohibited because of the chemicals that are used to treat RV wastewater. Therefore, Administration are unable to replace the asset like for like.

1.7. Administration have updated external websites to redirect RVs to alternative dump points. The closest free dump points are located at the following locations:

1.7.1 Two Wells - Soldiers Memorial Park, 45 Old Port Wakefield Road. This location is 16 km from St Kilda.

1.7.2 Bolivar – OTR 859 Port Wakefield Road. This location is 9 km from St Kilda.

1.7.3 RV dump points can also be located in Malala, Parham, Dublin which are approximately 50km from St Kilda.

1.8 The above information was presented to Council at the CEO Brieifing held 2 June 2025.

1.9 The purpose of this report is to update the Council on actions that Administration will undertake in response to the feedback from Council at this CEO forum.

2. EXTERNAL CONSULTATION / COMMUNICATION

2.1. Stakeholders from the St Kilda township.

3. DISCUSSION

3.1. Council was presented with 3 options for consideration at the CEO briefing forum 2 June 2025, which are as follows:

3.1.1. Option 1 – Extension of sewer infrastructure to St Kilda. The nearest sewer connection point is approximately 4.5km away and the estimated capital cost is estimated to be $10million. However, SA Water is the asset owner of the sewage infrastructure and Council would have to advocate for the extension of the sewer main to include the township of St Kilda.

Option 1 was not regarded as a good solution for the following reasons:

a. The significant cost of sewage system augmentation,

b. The long time frame required to implement the solution; and

c. The low likelihood that this would be considered by SA Water.

3.1.2. Option 2 – Construct a wastewater holding tank for a dump point in a different location in St Kilda. The estimated capital cost to install the holding tank is $250,000 and the ongoing operating cost to remove the wastewater from the tank is estimated to be $63,000 to $80,000 per year (based on cost estimates from the market which range from $1,200 to $1,500 per visit. It is anticipated that the wastewater will be removed on a weekly basis). Administration anticipate the asset life of the holding tank to be significantly reduced due to the corrosive nature of the wastewater.

Option 2 was not regarded as a good solution because of the high ongoing operating cost and capital cost to install the dump point.

3.1.3. Option 3 – Redirect RVs to alternative RV dump points. This will be done through a combination of Council's' website, street signage and in partnership with organisations/user groups that support RV users.

3.2. Council discussed the above options at length. Option 3 iss the preferred option, which warranted further investigation into the impact of not renewing the dump point service on visitation numbers of RVs to St Kilda.

3.3. Administration will commence further investigation, which will include a combination of CCTV and traffic counts to assist Council in making an informed decision on this matter. Administration will monitor the site for 3 months and prepare a subsequent report to the Urban Services Committee Report in October 2025.

3.4. While the investigation is taking place, Administration will maintain appropriate signage at the dump point and temporarily remove signage that would direct people to the RV dump point at St Kilda.

4. FINANCIAL OVERVIEW

4.1 The cost of CCTV monitoring will be done within current budgets.

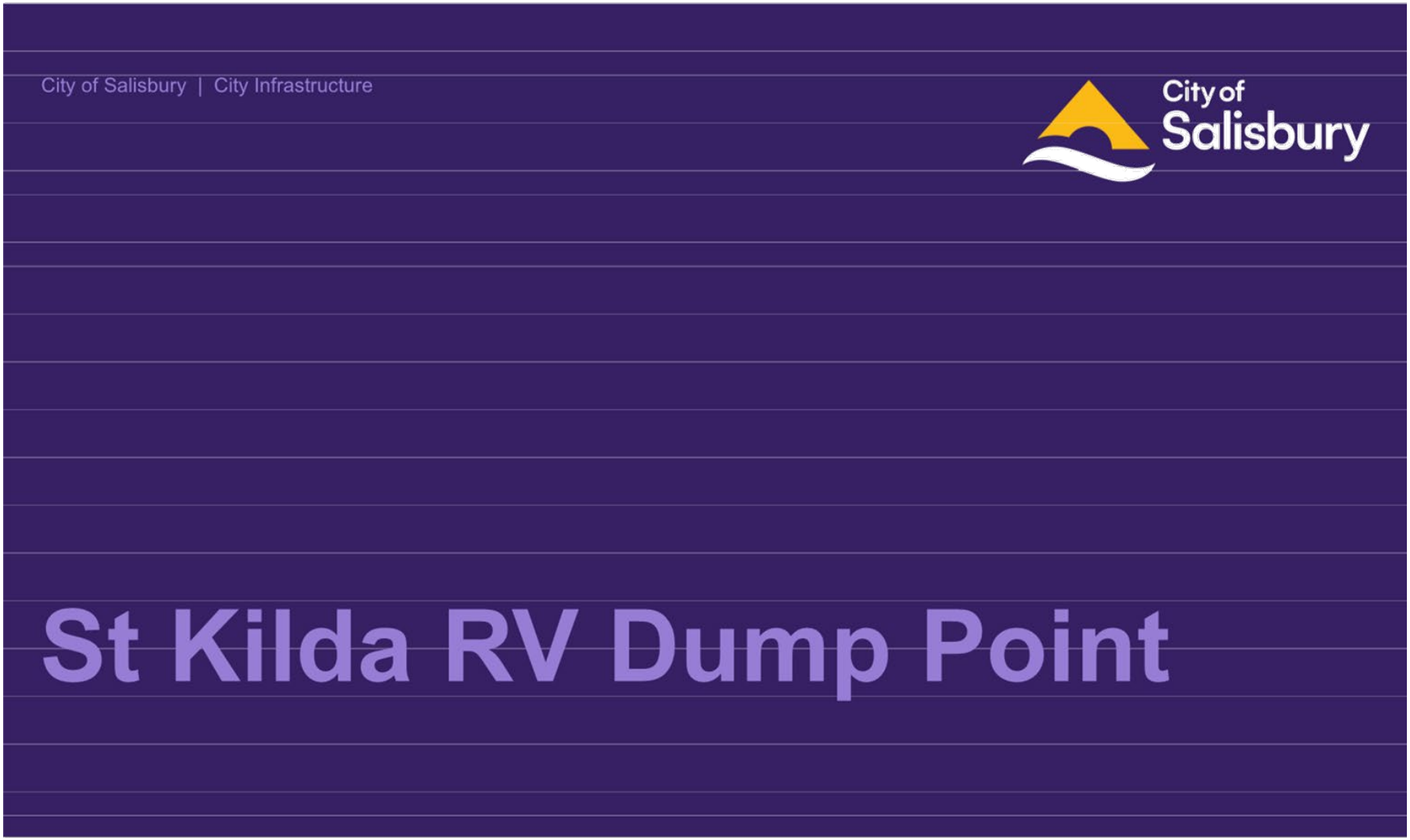
5. CONCLUSION

5.1 Administration have been investigating options to reinstate the RV dump point at St Kilda which has been out of service since October 2024.

5.2 Three options were presented to Council at the CEO briefing held 2 June 2025, where Option 3, which is to redirect RVs to alternative RV dump points was the preferred option.

5.3 Further investigation to assess the impact of not renewing the dump point service on visitation numbers of RVs to St Kilda is required. Administration will bring a report back to the October 2025 Urban Services Committee meeting with the findings of the investigation for Council's consideration.

5.4 Administration will temporarily remove signs associated with the St Kilda RV dump point and work with RV user groups to update their websites to reflect the temporary loss of service.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St Kilda RV Dump Point

City Infrastructure

2

City of Salisbury

- St Kilda is currently unsewered with the closest sewer point being 4.5km away.
- Council installed a RV dump point at this location 2012.
- The RV dump point is connected to a septic tank that services the public toilets
- The RV dump point has been out of service since October 2024 due to multiple breaks in the pipe connecting the dump point to the septic tank.
- Because the asset was constructed in a landfill, land subsidence is expected issue that will potentially damage built infrastructure.

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- The work required to reinstate the dump point includes:
  - Reconstructing the dump point.
  - Relaying the pipework from the dump point to the septic tank.
- As the work constitutes modification to the septic tank, approval from the relevant authority is required (SA Health).
- SA Health has informed Administration under the current legislation and code of practice, the discharge of RV wastewater into septic tanks is prohibited.
- As such, Administration are unable to reinstate like for like.

City Infrastructure 4

Alternative RV Dump Points

City of Salisbury

- While the dump point has been out of service, Administration have redirected RVs to other alternative RV dump sites.
- The nearest free RV Dump Point from St Kilda is approximately 9 km away – OTR Bolivar Dump Point.
- There are five other free RV dump points located at Two Wells, Malala, Dublin, Parham and Semaphore (approximately 12-50km away).
- In addition, there is are caravan and tourist parks which have RV dump points located in Virginia and Salisbury Downs.

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Options for consideration

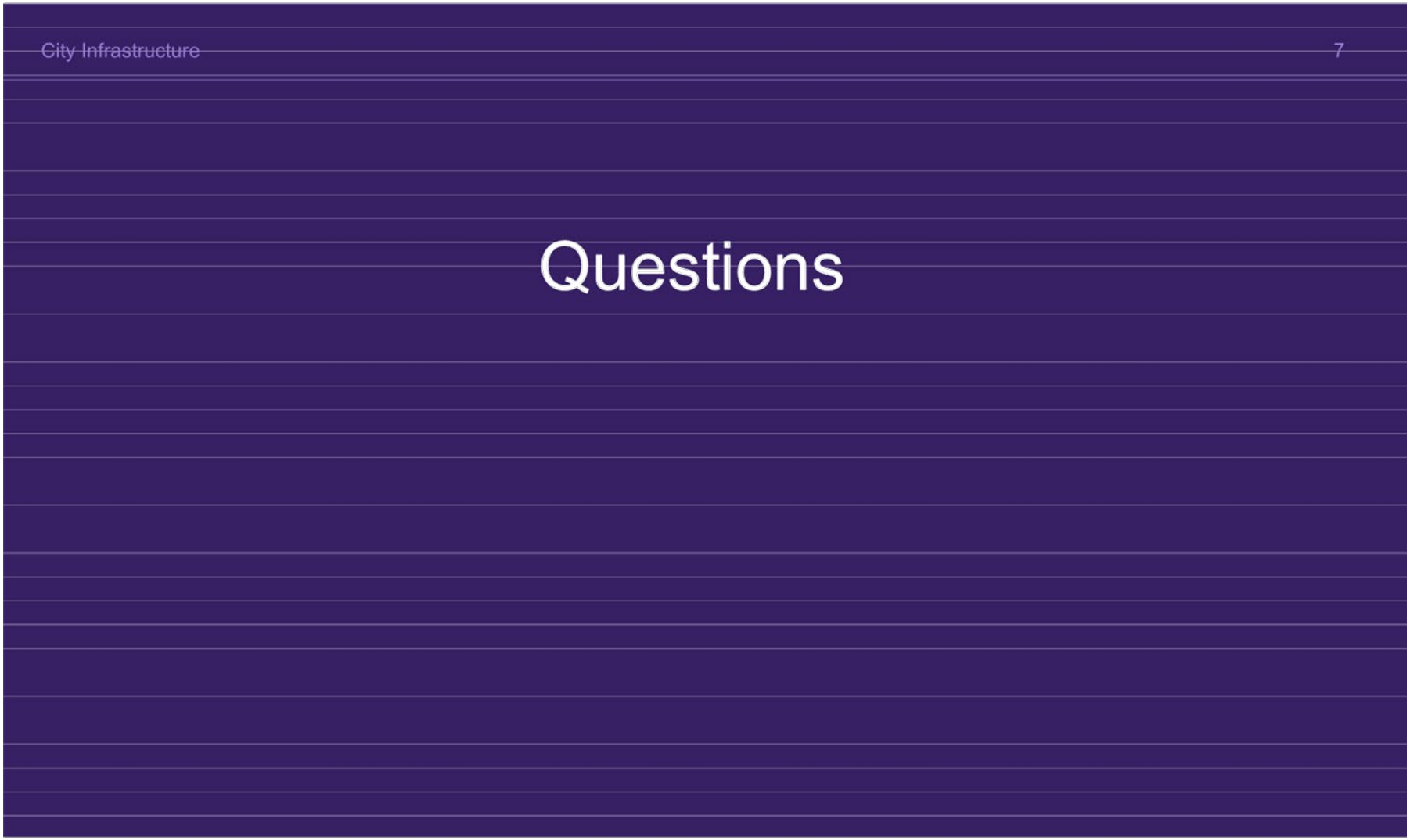
- In light of the advice from SA Health, Administration have investigated a number of alternative options.
  1. Option 1 – Extension of sewer infrastructure to St Kilda. The nearest sewer connection point is approximately 4.5km away and the estimated capital cost is estimated to be $10million.
     - Asset belongs to SA Water
     - Advocacy with SA Water to extend sewer main to connect St Kilda
  2. Option 2 – Construct a wastewater holding tank for a dump point in a different location in St Kilda.
     - Weekly wastewater removal at a cost of approximately $1,200 to $1,500 each visit (approximately $63k - $78k per year).
     - Capital cost estimate is $250k. Due to the corrosive nature of the wastewater, the asset life is likely to be significantly reduced, in particular the top of the tanks.
  3. Option 3 – Redirect RVs to alternative RV dump points.

City Infrastructure 6

OTR RV Dump Point Bolivar

City of Salisbury

- Strategically located on main thoroughfare.
- Easily accessible to the location with adequate parking to accommodate RVs.
- Free service.


City Infrastructure
7
Questions