

## 8.4. Asset Management Plans

**AUTHOR:** John Van Hesden, Manager Assets

**ENDORSED BY:** Duncan Mitchell, Director Engineering and Property Services

### ATTACHMENTS:

1. Attachment 1 - Bus Shelters AMP [8.4.1 - 21 pages]
2. Attachment 2 - Fences AMP [8.4.2 - 38 pages]
3. Attachment 3 - Footpaths AMP [8.4.3 - 37 pages]
4. Attachment 4 - Kerb and Gutter AMP [8.4.4 - 29 pages]
5. Attachment 5 - Marine Structures AMP [8.4.5 - 26 pages]
6. Attachment 6 - Open Space and Recreational Assets AMP [8.4.6 - 32 pages]
7. Attachment 7 - Public Lighting AMP [8.4.7 - 33 pages]
8. Attachment 8 - Retaining Walls AMP [8.4.8 - 30 pages]
9. Attachment 9 - Road Pavements AMP [8.4.9 - 35 pages]
10. Attachment 10 - Seawalls AMP [8.4.10 - 22 pages]
11. Attachment 11 - Specialised Buildings ( Amenities) AMP [8.4.11 - 21 pages]
12. Attachment 12 - Stormwater Drainage and Gross Pollutant Traps AMP [8.4.12 - 37 pages]
13. Attachment 13 - Street Furniture AMP [8.4.13 - 30 pages]
14. Attachment 14 - Traffic Facilities AMP [8.4.14 - 30 pages]

### PURPOSE:

The purpose of this report is to seek adoption of Council's Asset Management Plans suite in accordance with Integrated Planning & Reporting (IP&R) requirements.

### EXECUTIVE SUMMARY:

NSW councils must account for and plan for all existing assets under its control, and any new asset solutions proposed in its Community Strategic Plan and Delivery Program. This is done via the Asset Management Strategy inclusive of an Asset Management Policy (a component of the long-term Resourcing Strategy), and Asset Management Plans for each class of assets.

The requirement to 'adopt' Asset Management Plans is new under the revised Office of Local Government's *IP&R Guidelines*, issued September 2021; previously Asset Management Plans did not require reporting to Council.

Council's revised suite of Asset Management Plans includes:

- Bus Shelters (Attachment 1)
- Fences (Attachment 2)
- Footpaths (Attachment 3)
- Kerb and Gutter (Attachment 4)
- Marine Structures (Attachment 5)

- Open Space and Recreational Assets (Attachment 6)
- Public Lighting (Attachment 7)
- Retaining Walls (Attachment 8)
- Road Pavements (Attachment 9)
- Seawalls (Attachment 10)
- Specialised Buildings (Amenities) (Attachment 11)
- Stormwater Drainage and Gross Pollutant Traps (Attachment 12)
- Street Furniture (Attachment 13)
- Traffic Facilities (Attachment 14)

*It should be noted that the Property Asset Management Plan is currently being prepared and will be reported to Council in the near future.*

**FINANCIAL IMPLICATIONS:**

All financial estimates within the respective Asset Management Plans cross reference with the estimates within the Resourcing Strategy and the Delivery Program.

**RECOMMENDATION:**

**1. THAT** Council adopts the suite of Asset Management Plans 2022-2032, and these supersede the previous Asset Management Plans 2018-2028.

## **LINK TO COMMUNITY STRATEGIC PLAN**

The relationship with the Community Strategic Plan is as follows:

### **2. Our Built Infrastructure**

#### **2.1 Infrastructure and assets meet community needs**

## **BACKGROUND**

Council has a significant portfolio of community infrastructure assets under its care and control, on land and below the waterline. The accounting and planning for all of the existing assets under its ownership, and any new asset solutions proposed in the Community Strategic Plan and Delivery Program. This is done via the Asset Management Strategy inclusive of an Asset Management Policy (a component of the long-term Resourcing Strategy), and Asset Management Plans for each class of assets.

The requirement to 'adopt' Asset Management Plans is new under the revised Office of Local Government's *IP&R Guidelines*, issued September 2021; previously Asset Management Plans did not require reporting to Council. The Guidelines are prescribed in the *Local Government Act 1993*, outlining the mandatory 'Essential Elements' that councils must in each iteration of their suite of IP&R plans.

Previously, Asset Management Plans did not require reporting to Council. Council's suite of Asset Management Plans was last updated in June 2018, following finalisation of the 2018 IP&R plans, and have been publicly available from Council's website.

## **CONSULTATION REQUIREMENTS**

Community engagement is not required. The Office of Local Government has confirmed that each Asset Management Plan did not require public exhibition prior to adoption.

## **DETAIL**

All the sub-plans known as Asset Management Plans (per asset class) identify all built assets under Council ownership - and outline risk management strategies for them. Each Asset Management Plan must encompass all the assets under a council's control, identify asset service standards, and contain long-term projections of asset maintenance, rehabilitation and replacement, including forecast costs (for reflection in the Long-Term Financial Plan).

Council's revised suite of Asset Management Plans includes the following classes:

- Bus Shelters (Attachment 1)
- Fences (Attachment 2)
- Footpaths (Attachment 3)

- Kerb and Gutter (Attachment 4)
- Marine Structures (Attachment 5)
- Open Space and Recreational Assets (Attachment 6)
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- Traffic Facilities (Attachment 14)

*It should be noted that the Property Asset Management Plan is currently being prepared and will be reported to Council in the near future.*

Council's revised suite of Asset Management Plans was last updated in 2022, in line with newly prepared IP&R plans and have been cross-checked against the OLG self-assessment tool within the *IP&R Handbook* (2021) as part of continuous improvement. Each plan includes:

- Executive summary
- Summary of the assets
- Most recent asset valuation
- Summary of asset condition
- Levels of service
- Review of useful lives
- Risk management
- Funding strategy
- Renewal and replacement program
- Appendices (as relevant)


It is recommended that the suite of Asset Management Plans, covering the period 2022-2032, be adopted in accordance with legislative requirements, and this supersedes the previous suite of Asset Management Plans covering the period 2018-2028. Following adoption, the attached plans will be added to Council's website replacing the 2018 iterations.





NORTH SYDNEY COUNCIL  
**ASSET MANAGEMENT PLAN**  
**BUS SHELTERS 2022-2032**



<b>Document Control</b>		<b>Asset Management Plan</b>				
Document ID : NSC AMP Roads 2023 Bus Shelters						
<b>Rev No</b>	<b>Date</b>	<b>Revision Details</b>	<b>Author</b>	<b>Reviewer</b>	<b>Approver</b>	
1	29/10/2021	First Draft	IM	JVH/DM	DM	

## Table of Contents

Bus Shelters .....	4
Executive Summary .....	4
Bus Shelters – Future Demand .....	5
Bus Shelters – Levels of Customer Service .....	5
Bus Shelters – Levels of Technical Service .....	5
Bus shelter – Condition.....	6
Bus Shelters – Review of Useful Lives.....	8
Bus Shelters – Funding Strategy .....	9
Bus Shelters – Capital works.....	9
Bus Shelters – Managing the Risks .....	9
Bus Shelters – Maintenance .....	12
Bus Shelters – Prioritised Expenditure Forecast.....	13
Bus Shelters – Valuation Forecast .....	13
Bus Shelters – Key Assumptions – Financial Forecasts.....	13
Bus Shelters – Creation / Acquisition / Upgrade Program.....	14
Bus Shelters – Disposal Plan .....	14
Bus Shelters – Forecast reliability and confidence .....	14
Bus Shelters – Improvement Plan.....	14
Bus Shelters – Monitoring and Review Procedures.....	14
Bus Shelters – Renewal and Replacement Program .....	14
Bus Shelters – Funding Scenarios .....	14
Bus Shelters – Service and Risk Tradeoffs .....	15
Service trade-off .....	15
Risk trade-off .....	15
Bus Shelters – Renewal and Replacement Program – FY2023-FY2032 (10 Year Plan) .....	15
Priority Projects 2022/23 (Year 1) .....	16
Priority Projects 2023/24 (Year 2) .....	16
Priority Projects 2024/25 (Year 3) .....	16
Priority Projects 2025/32 (Year 4-10) .....	17
Works Identified – Years 2025 - 32 (Years 4 - 10).....	18
Bus Shelters – Performance Measures .....	20
Bus Shelters – References.....	20
APPENDICES.....	21
Appendix A: Maintenance Management System .....	21

## Bus Shelters

### Executive Summary

Located across the North Sydney Council LGA are 66 Bus Shelters. These are comprised of two styles of shelter. In 2014 North Sydney Council Adopted a new Public Domain Style Manual which recommended a modern style of Bus Shelter comprised of steel and glass materials. The new style of Bus Shelter will replace the old timber style of shelter which are now being phased out. The old timber style shelter is very maintenance intensive and does not meet modern user requirements or accessibility codes.

A valuation on Bus Shelters within North Sydney Council was undertaken in 2021. The 2021 valuation data was used as the basis for this Asset Management Plan.

There are 66 Bus Shelters in total. Of these:

- 55 are of the North Sydney Council Style Timber (NSC Style Timber) bus shelter.
- 11 JCDecaux Bus Shelters.

Overall some 84% of the portfolio is in good to average condition (1-3) with some 16% in poor to very poor condition (4-5).

A Risk rating was assigned to each bus shelter. Overall 84% of the portfolio has a low to medium risk rating and 16% has a high to very high risk rating.

The total Replacement Value of the portfolio is \$4,486,083 as at 30 June 2021. The values are shown in the Table below.

**Table 1: Bus Shelters – Summary table**

Asset Category	Number of Shelters	Replacement Value (2021)	Accumulated Depreciation (2021)	Fair Value (2021)	Depreciation Expense
Bus Shelters	66	\$4,486,083	\$1,783,214	\$2,702,869	\$88,814

The following table provides a summary of the quantities and replacement values for each bus shelter type. The portfolio is dominated by NSC Style Timber Bus Shelters.

**Table 2: Bus Shelters – Typology**

Bus Shelter Type	Count of Bus Shelters	Sum of Replacement Costs
JCDecaux	11	\$722,387
NSC Style Timber	55	\$3,763,696
<b>Grand Total</b>	<b>66</b>	<b>\$4,486,083</b>

**Note:** The NSC Timber Style Shelter is being phased out and will be replaced by the JC Decaux Style Shelters.

### Bus Shelters – Future Demand

Drivers affecting demand for Bus Shelters include things such as population change, regulation changes – new development, community expectations (Public Safety), technological changes, economic factors and environmental factors.

In March 2022, Council has entered into a contract with JC Decaux to supply at no cost to Council 26 new Bus Shelters to replace the old Timber Style Shelters.

### Bus Shelters – Levels of Customer Service

Service levels are defined service levels in two terms, customer levels of service and technical levels of service. These are supplemented by organisational measures.

**Customer Levels of Service** measure how the customer receives the service and whether value to the customer is provided.

Customer levels of service measures used in the asset management plan are:

**Quality** How good is the service ... *what is the condition or quality of the service?*

**Function** Is it suitable for its intended purpose .... *Is it the right service?*

**Capacity/Use** Is the service over or under used ... *do we need more or less of these assets?*

The current and expected customer service levels are detailed in Table 3.

**Table 3: Bus Shelters – Levels of Customer Service**

Service Attribute	Expectation	Performance Measure Used	Current Performance	Desired Position in 10 Years
<b>Quality</b>	Bus Shelters are well maintained.	Percentage of Bus Shelters in 'very good', 'good' (1, 2) condition and Percentage 'Fair', 'poor' or 'very poor' (3, 4, 5) Condition.	65.3% of Bus Shelters in 'very good' or 'good' (1, 2) condition.  34.7% of Bus Shelters in 'Fair', 'poor' or 'very poor' (3, 4, 5) Condition.	Maintain – Condition 1-2  Improve and replace Condition 3-4-5
<b>Function</b>	Standard Bus Shelters are constructed to meet Public Domain style.	Percentage of Bus Shelters meeting current Public Domain style.	16.7% of Bus Shelters meet current Public Domain style.	Improve
<b>Capacity and Use</b>	Number of Bus Shelters required is appropriate.	Number of additional Bus Shelters required.	Additional Bus Shelters locations to be identified.	Improve

### Bus Shelters – Levels of Technical Service

**Technical Levels of Service** - Supporting the customer service levels are operational or technical measures of performance. These technical measures relate to the allocation of resources to service activities to best achieve the desired customer outcomes and demonstrate effective performance.

Technical service measures are linked to the activities and annual budgets covering:

- 6 -

- Operations – the regular activities to provide services (e.g. cleaning, inspections, etc).
- Maintenance – the activities necessary to retain an asset as near as practicable to an appropriate service condition. Maintenance activities enable an asset to provide service for its planned life (e.g. Bus Shelter repair – painting, minor works).
- Renewal – the activities that return the service capability of an asset up to that which it had originally (e.g. Bus shelter replacement and or bus shelter component replacement).
- Upgrade/New – the activities to provide a higher level of service (e.g. replacing timber bus shelter with Public Domain style specification or additional new Bus Shelters).

Table 4 shows the technical levels of service expected to be provided for Bus Shelters. The 'Desired' position in the table documents the position being recommended in this AM Plan.

**Table 4: Bus shelter – Technical Levels of Service**

Service Attribute	Service Activity Objective	Activity Measure Process	Current Performance	Desired for Optimum Lifecycle Cost
<b>Operations</b>	Undertake network inspections to monitor condition	Network inspections to monitor condition	Network inspected in 2019	Network inspected every 5 years
<b>Maintenance</b>	Reactive service Requests completed in a timely manner or made safe.	Respond to complaints.	Minor repairs undertaken in accordance with Maintenance Management System	Minor repairs undertaken in accordance with Maintenance Management Delivery System.
<b>Renewal</b>	Maintain existing assets to a satisfactory condition	Percentage of Bus Shelters in 'fair', 'poor' or 'very poor' (3, 4, 5) Condition.	34.5% of Bus Shelters in 'fair', 'poor' or 'very poor' (3, 4, 5) Condition.	Improve or replace
<b>Upgrade</b>	Standard Bus Shelters are upgraded to public domain style shelters where practical.	Percentage of Bus Shelters upgraded to Public Domain style where practical.	16.7% of Bus Shelters meet current Public Domain style.	Maintain
<b>New</b>	Satisfactory provision of Bus Shelters.	New Bus Shelters provided as required.	No additional Bus Shelters identified as being required	No additional Bus Shelters identified as being required

#### **Bus shelter – Condition**

The condition of Council's Bus Shelters was surveyed in 2019 by Consultants, Rapid Map Services Pty Ltd in conjunction with Asset & Facilities Management Consulting Pty Ltd. The following condition criteria was used.



- 7 -

**Table 5: Bus Shelter Condition Criteria**

Grade	Condition	Description
1	Very Good	Sound shelter constructed to current standards, well maintained with no defects. <b>No work required</b>
2	Good	As grade 1 but not constructed to current standards or showing minor wear, tear and deterioration. E.g. weathering of timber, staining of fastenings but no decay of timber or corrosion of steel. Deterioration has no significant impact on, safety & appearance of the shelter. <b>Only minor work required</b>
3	Fair	Shelter functionally sound, but appearance affected by minor defects e.g. vandalism, slight decay of timber, and mild corrosion of fastenings. Deterioration beginning to affect the stability, functionality or appearance of the shelter. <b>Some work required</b>
4	Poor	Shelter functioning but with problems due to significant defects e.g. rotting/ splitting of timber, corrosion, loosening of fastenings, causing a marked deterioration in stability, functionality or appearance. <b>Some replacement or rehabilitation needed within 1 year</b>
5	Very Poor	Shelter has serious problems and has failed or are about to fail in the near future, causing unacceptable deterioration in stability, safety and appearance. <b>Urgent replacement/ rehabilitation required</b>

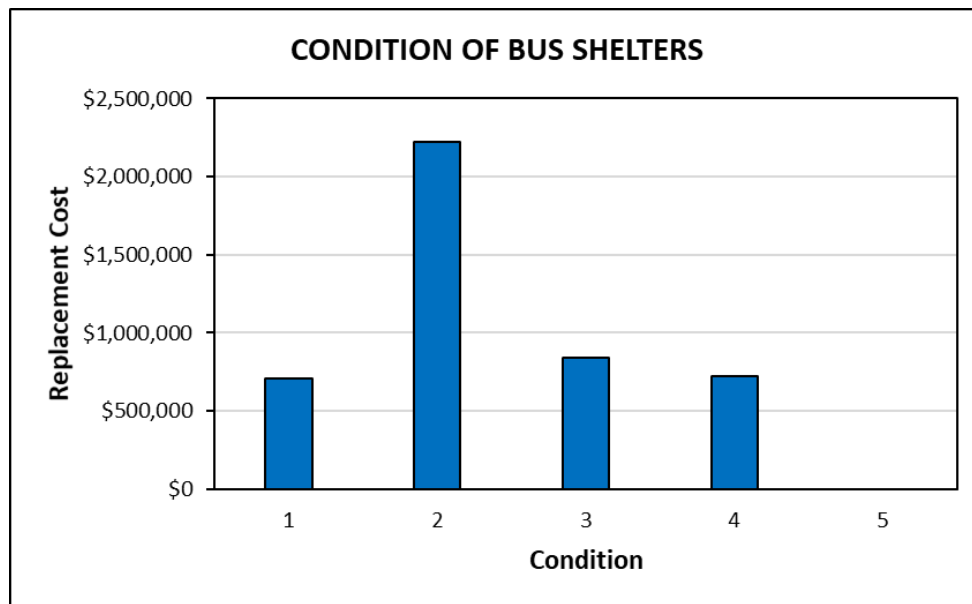
The Table below shows the Replacement Cost for each of the condition scores.

**Table 6: Bus Shelter Condition Results – Overall**

CONDITION OF BUS SHELTERS			
Condition	Number of Bus Shelters	Replacement Cost	% Condition (based on known data and cost)
1 (Very Good)	10	\$706,083	15.8%
2 (Good)	30	\$2,220,000	49.5%
3 (Fair)	14	\$840,000	18.7%
4 (poor)	12	\$720,000	16.0%
5 (Very Poor)	0	\$0	0.0%
<b>Total</b>	<b>66</b>	<b>\$4,486,083</b>	<b>100.0%</b>

The Graph below shows the condition of Bus Shelter assets over the entire network in terms of replacement cost.

- 8 -



#### Bus Shelters – Review of Useful Lives

There is no specific guidance in the IPWEA 2017 Practice Note – “Useful Life of Infrastructure” on Bus Shelters. The IPWEA Practice Note does, however, provide a guideline on minor building structures as follows:

Notes from IPWEA 2017 Practice Note – “Useful Life of Infrastructure”						
BUILDINGS - MINOR						
Component	Low rates' description	High rates' description	Unit ID	Useful Lives		
				Std	Low	High
Carport	Conc slab, timber frm, galv steel roof (kitset)	Higher quality including Colour steel	m2	50	40	60
Covered Ways	.4mm Endura corrugated	.9mm aluminium trough 300 profile	m2	55	45	70
Garage	6x3.5m Conc, timber frame, galv steel clad	Ditto, brick veneer, conc tile roof	m2	50	40	60

The useful lives of all types of Bus Shelters assets were reviewed by Australis Pty Ltd and are shown in the following Table.

Bus Shelter Type	Reviewed Useful Life (years)
NSC Style Timber	50
JCDecaux	50



- 9 -

Based on the reviewed useful lives, the Depreciation is as follows:

Capital funding to maintain a renewal ratio of 1	
	Annual Depreciation
Bus Shelters	\$88,814

A budget of \$88,814 is required on average over the long term to maintain the condition of Council's Bus Shelter network, noting that fluctuations in renewal requirements in the medium term.

### Bus Shelters – Funding Strategy

The Asset Renewal Funding Ratio is the most important indicator. It compares funding with depreciation. An Asset Renewal Funding Ratio of 1 or greater sustained over the long term indicates the optimal renewal and replacement of assets.

The forecast for the 2021 Depreciation (or Long Term Average Annual Asset Consumption) is \$88,814. Therefore, an annual average capital renewal funding of \$88,814 (2021 dollars) will achieve an Asset Renewal Funding Ratio of 1.

The cost to fully replace assets identified by Consultants, Rapid Map Services Pty Ltd in conjunction with Asset & Facilities Management Consulting Pty Ltd, in condition 4 and 5 as well as the cost to replace the condition 3 assets which will become condition 4 over the next 10 is \$672,000. This is an average annual cost of \$67,200 which is less than the \$88,814 Depreciation Expense and is less than the average annual forecast budget of \$125,000. With further investigation and detailed design it is hoped that alternate and lesser cost solutions may be possible to maintain Bus Shelter assets at an optimal level.

### Bus Shelters – Capital works

Replacement of a Bus Shelters is assumed to be a Capital works project.

The ranking criteria used to determine priority of identified renewal and replacement proposals is detailed in Table 7. A priority for action of 1 to 5 has been assigned to each bus shelter requiring capital works as described in the following table.

### Bus Shelters – Managing the Risks

There are risks associated with providing and maintaining Bus Shelters are primarily as follows:

- Sudden failure of Bus Shelters – damage due to vehicular impact – causing property damage – public safety hazards, injury or death.

The following risk response table was used to identify those Bus Shelters requiring action within the next 10 years.

- 10 -

**Table 7: Bus Shelters – Risk Response Table**

Level of Risk		Category	Action Required	Time frame for repairs, upgrade or replacement
VH	Very High Risk	5	Immediate corrective action	1-2 Years
H	High Risk	4	Prioritised action required	2-10 Years
M	Medium Risk	3	Planned action required	4-10 Years
L	Low Risk	2	Manage by routine procedures	Inspections 1-2 years
New	No Risk	1	None	None

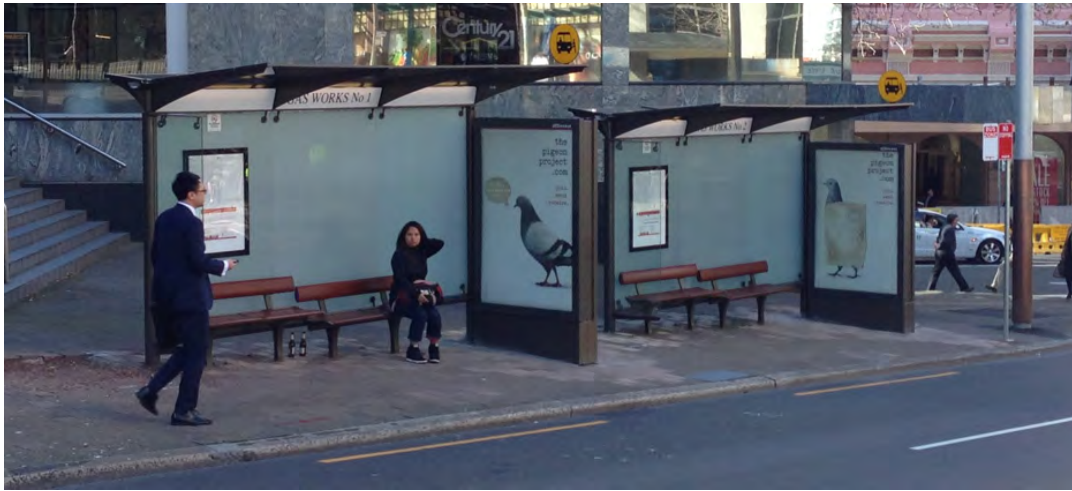
Consideration has been given to each Bus Shelter, whether to replace the Bus shelter or perform maintenance on it.

Bus Shelters that have a **Very High or High** risk rating were considered to need replacement within the 1-10 year forecast period.

Bus Shelters with a **Medium** risk rating were also considered needing replacement within the 4-10 year forecast period.



Examples of NSC style Bus Shelters in the North Sydney LGA



Examples of Public Domain Style Bus Shelters in the North Sydney LGA

**Table 8: Bus Shelters – Capital renewal Priorities based on Condition and Risk Rating**

Risk Matrix - Bus Shelters (Condition and Risk Rating)					
Likelihood of bus shelter failing (L) Refer to Table 5. Condition Criteria	Bus Shelters (No of Bus Shelters)				
	Road Hierarchy	Lane	Local Road	Collector	State/Regional Road
	Park Hierarchy	Local	District	Regional	
	Priority	d	c	b	a
Condition 1 – Very Good (15.8%)	5	N/A	N/A	5	6
Condition 2 - Good (49.5%)	4	N/A	2	5	6
Condition 3 – Fair (18.7%)	3	N/A	7	9	9
Condition 4 – Poor (16%)	2	N/A	6	4	7
Condition 5 – Very Poor (0%)	1	N/A	N/A	N/A	N/A

**(Note: Also Refer to Table 6)**

**Note:** This table has been based on the 2021 bus shelter valuation data.

**Note:** The priority in which works are done could vary depending on associated works such as streetscape projects.

**Note:** Factors which are used to determine the priority include 'Road Hierarchy' and 'Park Hierarchy'. The most critical factor is used to determine the priority.

#### Priority Bus Shelters

The 2021 bus shelter valuation data was used to determine the priority bus shelter projects.

It should be noted that this may vary based on other criteria, including:

- Damage
- Streetscape
- Function

#### Bus Shelters – Maintenance

Routine maintenance is the regular on-going work that is necessary to keep assets operating, including instances where portions of the asset fail and need immediate repair to make the asset operational again, e.g. Cleaning, minor repairs.

Maintenance includes all actions necessary for retaining an asset as near as practicable to an appropriate service condition including regular ongoing day-to-day work necessary to keep assets operating.

Current maintenance expenditure levels are considered to be inadequate to meet projected service levels.

Over the longer term future operations and maintenance expenditure is forecast to be steady as the asset stock is not forecast to increase. The following table summarises the prioritised capital and maintenance works.

#### Bus Shelters – Prioritised Expenditure Forecast

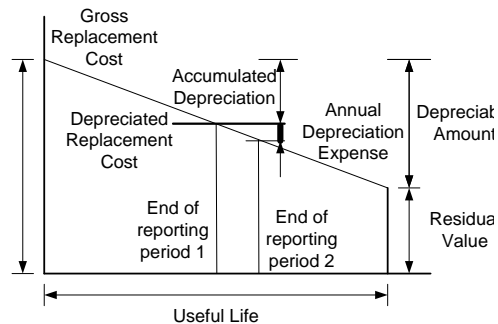
**Table 9: Bus Shelters – Prioritised Expenditure Forecast – 10 years FY2023-FY2032**

Year		Priority	Capital Costs	Maintenance Costs	Total Cost
1	2022/23	1b	\$125,000	\$59,391	\$184,391
2	2023/24	1c to 2a	\$125,000	\$60,822	\$185,822
3	2024/25	2a	\$125,000	\$62,293	\$187,293
4-10	2025/32	2a to 2c	\$875,000	\$510,977	\$1,385,977
Works Identified	2025/32	2c	\$135,203		\$135,203
<b>Grand Total</b>			<b>\$1,385,203</b>	<b>\$693,483</b>	<b>\$2,078,686</b>

In summary the value of bus shelter assets in the Table below is based on 2021 valuation data.

**Table 10: Bus Shelters – Valuation**

VALUATION – BUS SHELTERS				
Asset Category	Replacement Value (2021)	Accumulated Depreciation (2021)	Fair Value (2021)	Depreciation Expense (Annual)
Bus Shelters	\$4,486,083	\$1,783,214	\$2,702,869	\$88,814
<b>TOTAL</b>	<b>\$4,486,083</b>	<b>\$1,783,214</b>	<b>\$2,702,869</b>	<b>\$88,814</b>



#### Bus Shelters – Valuation Forecast

Asset values (Bus Shelters) are forecast to remain steady. It is forecast that no additional assets are expected to be added to the asset stock from new construction and acquisition by Council or from assets constructed by land developers or other assets donated to Council.

#### Bus Shelters – Key Assumptions – Financial Forecasts

Key assumptions made in this asset management plan for Bus Shelters are:

**Table 11: Key Assumptions made in AM Plan and Risks of Change**

Key Assumptions	Risks of Change to Assumptions
Useful Lives of Bus Shelters	Low risk
Rate of deterioration	Low risk

**Bus Shelters – Creation / Acquisition / Upgrade Program**

New works are those that create a new asset that did not previously exist, or works which will upgrade or improve an existing asset beyond its existing capacity. They may result from growth, social or environmental needs. Assets may also be acquired at no cost. No new assets are currently identified.

**Bus Shelters – Disposal Plan**

The shelter asset at BS021 - Nicholson Street, has been identified for disposal.

**Bus Shelters – Forecast reliability and confidence**

The estimated confidence level and reliability of data used in this AMP is considered to be reliable as the data is based on a detailed condition report on Bus Shelters.

**Bus Shelters – Improvement Plan**

The improvement plan is shown in the table below.

Task No	Task	Responsibility	Resources Required	Timeline
1	Research the Useful Life of Bus Shelters	EPS	Staff Time	2024

**Bus Shelters – Monitoring and Review Procedures**

This Asset Management Plan will be reviewed during annual budget planning processes and amended to show any material changes in service levels and/or resources available to provide those services as a result of budget decisions.

The Asset Management Plan has a life of 4 years and is due for complete revision and updating within 1 year of each Council election.

**Bus Shelters – Renewal and Replacement Program**

Renewal and replacement expenditure is major work which does not increase the asset's design capacity but restores, rehabilitates, replaces or renews an existing asset to its original service potential. Work over and above restoring an asset to original service potential is considered to be an upgrade/expansion or new work expenditure resulting in additional future operations and maintenance costs.

Bus shelter assets requiring renewal/replacement have been identified by ongoing routine inspection.

**Bus Shelters – Funding Scenarios**

The Long Term Financial Plan includes three scenarios, all of which maintain current services levels but propose differing levels of capital expenditure on the renewal of Council's ageing infrastructure assets.

In summary:

- Pessimistic Scenario - This Scenario results in a decline in operating results and deficits in the later years.

- 15 -

- Optimistic Scenario - This Scenario results in improvements in operating results for the life of the plan.
- Planned Scenario - This Scenario results modest surplus operating results for the life of the plan.

**Table 12: Funding Scenarios – Bus Shelters – North Sydney Councils 10 Year Plan**

Scenario	Capital Funding Level Required Per Annum	10 Year Plan \$ Total
Scenario 1.	\$125,000/year	<b>\$1,250,000</b>
Scenario 2.	\$125,000/year	<b>\$1,250,000</b>
Scenario 3.	\$125,000/year	<b>\$1,250,000</b>

**Note:** These Scenarios are based on the 10-year Long Term Financial Plan.

#### **Bus Shelters – Service and Risk Tradeoffs**

The decisions made in adopting this AM Plan are based on the objective to achieve the optimum benefits from the available resources.

#### **Service trade-off**

If this funding Scenario is adopted, then the Level of Service will be maintained.

#### **Risk trade-off**

If this funding Scenario is adopted, then there is less risk of a bus shelter failure.

#### **Bus Shelters – Renewal and Replacement Program – FY2023-FY2032 (10 Year Plan)**

Council's projected 10 year Capital Renewal Program is shown in the Tables 13 to 17 below. It is based on the funding required to replace bus shelter assets identified by the 2021 valuation.

It should be noted that Bus Shelters may also be replaced based on other criteria including:

- Damage
- Streetscape projects
- Function

Project priorities may also be subject to change due to accelerated deterioration, sudden failure or finalization of detailed designs and project costings.

**Table 13: Bus Shelter – Renewal and Replacement Program****Priority Projects 2022/23 (Year 1)**

Replace Year	Priority	Bus Shelter ID	Location	Risk Rating / Category	Condition	Capital Cost
2022/23	1b	BS026	EUROKA - Opp 2B Union Street, McMahons Point	Very High (5)	Very Poor	\$62,500
2022/23	1b	BS041	EATON - Opp 1 Rawson Street, Neutral Bay NSW	Very High (5)	Very Poor	\$62,500
<b>Total</b>						<b>\$125,000</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

**Table 14: Bus Shelter – Renewal and Replacement Program****Priority Projects 2023/24 (Year 2)**

Replace Year	Priority	Bus Shelter ID	Location	Risk Rating / Category	Condition	Capital Cost
2023/24	1c	BS025	BERRYS BAY - Opp 20 Woolcott Street, Waverton	Very High (5)	Very Poor	\$62,500
2023/24	2a	BS035	CROWIE - 365 Pacific Highway, Crows Nest	High (4)	Poor	\$62,500
<b>Total</b>						<b>\$125,000</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

**Table 15: Bus Shelter – Renewal and Replacement Program****Priority Projects 2024/25 (Year 3)**

Replace Year	Priority	Bus Shelter ID	Location	Risk Rating / Category	Condition	Capital Cost
2024/25	2a	BS055	JAMES MILSON - 54 High Street, North Sydney	High (4)	Poor	\$62,500
2024/25	2a	BS002	CAMBRIDGE - Int Miller Street & Cambridge Street, Cammeray	High (4)	Poor	\$62,500
<b>Total</b>						<b>\$125,000</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.



**Table 16: Bus Shelters – Renewal and Replacement Program****Priority Projects 2025/32 (Year 4-10)**

Replace Year	Priority	Bus Shelter ID	Location	Risk Rating / Category	Condition	Capital Cost
2025/32	2a	BS006	MONTE - 196 Miller Street, North Sydney	High (4)	Poor	\$62,500
2025/32	2a	BS012	CRICKETERS - 30 Murdoch Street, Cremorne Point	High (4)	Poor	\$62,500
2025/32	2a	BS032	- Phillips Street, Adj 56 Ben Boyd Road, Neutral Bay	High (4)	Poor	\$62,500
2025/32	2a	BS052	ALL SAINTS - Opp 13 Carter Street, Cammeray	High (4)	Poor	\$62,500
2025/32	2a	BS044	BRADFIELD - High Street Reserve, 47 High Street, North Sydney	High (4)	Poor	\$62,500
2025/32	2a	BS049	BARDSLEY - Falcon Street, 7 Bardsley Gardens, North Sydney	High (4)	Poor	\$62,500
2025/32	2a	BS067	BENELONG - 81 Gerard Street, Cremorne	High (4)	Poor	\$62,500
2025/32	2a	BS003	ANZAC - 331 Miller Street, Cammeray	High (4)	Poor	\$62,500
2025/32	2a	BS005	McLAREN - 225 Miller Street, North Sydney	High (4)	Poor	\$62,500
2025/32	2b	BS017	THE FALLS - Opp 14 Grafton Street, Cremorne	High (4)	Poor	\$62,500
2025/32	2b	BS030	LINDSAY - 131 Ben Boyd Road, Neutral Bay	High (4)	Poor	\$62,500
2025/32	2b	BS046	SERVICES CLUB - Bradfield Park, Fitzroy Street, Kirribilli	High (4)	Poor	\$62,500
2025/32	2b	BS064	CREMORNE POINT - Cremorne Point Wharf, Milson Road, Cremorne Point	High (4)	Poor	\$62,500
2025/32	2c	BS018	CHURCHILL - Carter St, Adj 64 Cammeray Road	High (4)	Poor	\$62,500
<b>Total</b>						<b>\$875,000</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

**Table 17: Bus Shelters – Renewal and Replacement Program****Works Identified – Years 2025 - 32 (Years 4 - 10)**

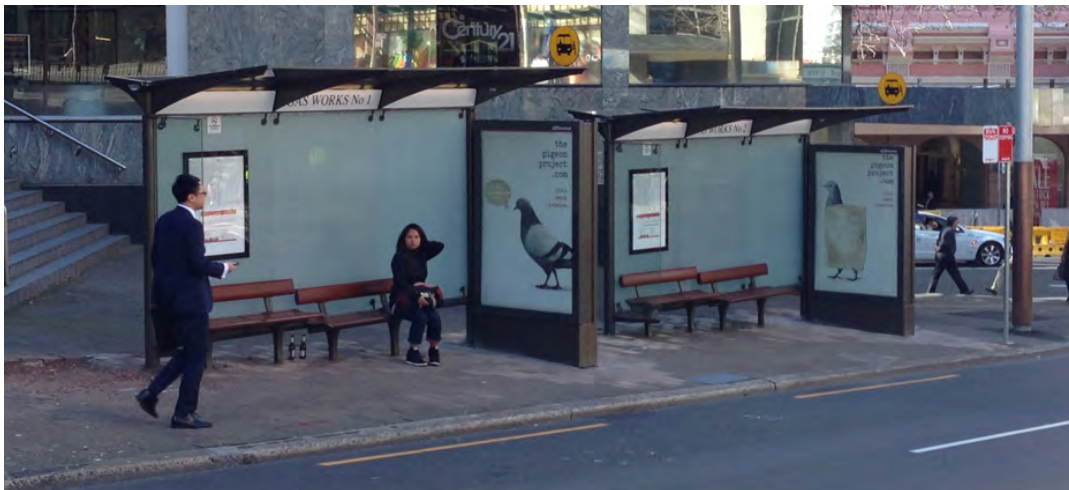
Replace Year	Priority	Bus Shelter ID	Location	Risk Rating / Category	Condition	Capital Cost
2025/32	2c	BS021	- Nicholson Street, Adj 124 Shirley Road, Wollstonecraft	High (4)	Poor	\$67,601
2025/32	2c	BS027	- Int Wycombe Road & Harriette Street, Kurraba Point	High (4)	Poor	\$67,602
<b>Total</b>						<b>\$135,203</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

**Bus Shelter Renewal Program**



Before



After

BS036 & BS037 – Cnr Pacific Hwy & Walker St

### **Bus Shelters – Performance Measures**

The effectiveness of the asset management plan can be measured in the following ways:

- The degree to which the required projected expenditures identified in this asset management plan are incorporated into the long term financial plan,
- The degree to which 1-5 year detailed works programs, budgets, business plans and corporate structures take into account the 'global' works program trends provided by the asset management plan,
- The degree to which the existing and projected service levels and service consequences (what we cannot do), risks and residual risks are incorporated into the Strategic Plan and associated plans,
- The Asset Renewal Funding Ratio achieving the target of 1.0.

### **Bus Shelters – References**

- IPWEA, 2006, 'International Infrastructure Management Manual', Institute of Public Works Engineering Australasia, Sydney, [www.ipwea.org/IIMM](http://www.ipwea.org/IIMM)
- IPWEA, 2008, 'NAMS.PLUS Asset Management', Institute of Public Works Engineering Australasia, Sydney, [www.ipwea.org/namsplus](http://www.ipwea.org/namsplus).
- IPWEA, 2015, 2nd edn., 'Australian Infrastructure Financial Management Manual', Institute of Public Works Engineering Australasia, Sydney, [www.ipwea.org/AIFMM](http://www.ipwea.org/AIFMM).
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- IPWEA, 2012 LTFP Practice Note 6 PN Long Term Financial Plan, Institute of Public Works Engineering Australasia, Sydney
- IPWEA, 2014 LTFP Practice Note 10.1 PN Parks Asset Management, Institute of Public Works Engineering Australasia, Sydney

## APPENDICES

## Appendix A: Maintenance Management System

**Defect Management Inspection – Bus Shelters**

Inspection areas have been defined in accordance with their usage – high (**red**), medium (**blue**) or low (**white**)

Inspection frequencies are based on these areas as defined by the reference maps and the resources currently available to undertake the inspections. The results of inspections are downloaded into the MMDS database.

**Red** – 2 times per year

**Blue** – Once each year  
years

**White** – Once every 2

There are 5 categories in which a defect may be placed.

<b>Cat 5</b>		Will be completed or <b>made safe</b> no later than 2 working days after allocation of defect to work crew. If made safe defect will then be re-categorised as Cat 4 or Cat 3.
<b>Cat 4</b>		Will be repaired no later than 10 working days after allocation of defect to work crew.
<b>Cat 3</b>		Will be repaired no later than 40 working days after allocation of defect to work crew.
<b>Cat 2</b>		Will be repaired no later than 160 working days after allocation of defect to work crew.
<b>Cat 1</b>		As new. Surface displaying no defects. May have aesthetic issues such as gum, stains, services mark-up, etc.

**Intervention Matrix – Bus Shelters**

DEFECT	SEVERITY	RISK ADJUSTED FOR PEDESTRIAN VOLUME AND AGE		
		WHITE	BLUE	RED
MINOR DEFECTS ONLY WITH FADED PAINT or GRAFFITI		LOW	LOW	LOW
REQUIRES MAINTENANCE TO RETURN TO ACCEPTABLE LEVEL OF SERVICE; TYPICALLY MINOR EVIDENCE OF WOOD ROT, CRACKED ROOF TILES, etc.	Slight	MEDIUM	HIGH	HIGH
SECTIONS REQUIRE REPLACEMENT OR SIGNIFICANT RENEWAL; EVIDENCE OF WOOD ROT; POSTS MOVING WITH EASE	Moderate	HIGH	HIGH	VERY HIGH
BROKEN BEYOND REPAIR; OVER 50% REQUIRES REPLACEMENT; HAS MISSING SECTIONS; VERY UNSTABLE POSTS or BEAMS	Extreme	HIGH	VERY HIGH	VERY HIGH

**NOTES:**

1. Appearance defects (gum, stains, surface marks etc) are not safety issues. Response time TBA. Record in "Category" as "A".
2. **Red** areas have high pedestrian traffic and high usage by older pedestrians.
3. **Blue** areas have medium pedestrian traffic.
4. **White** areas have low pedestrian traffic.

**Scheduled Maintenance**


Bus shelter cleaning undertaken as per Bus Shelter Cleaning Program.





NORTH SYDNEY COUNCIL  
**ASSET MANAGEMENT PLAN**  
FENCES 2022-2032



<b>Document Control</b>		<b>Asset Management Plan</b>				
Document ID : NSC AMP Other Infrastructure 2023 Fences						
Rev No	Date	Revision Details	Author	Reviewer	Approver	
1	12/01/2022	First Draft	IM	JVH/DM	DM	

## Table of Contents

Fences and Bollards (Roads and Parks).....	4
Executive Summary.....	4
Fences and Bollards – Future Demand .....	6
Fences and Bollards – Levels of Customer Service.....	6
Fences and Bollards – Levels of Technical Service.....	7
Fences and Bollards – Condition .....	8
Fences and Bollards – Review of Useful Lives.....	9
Fences and Bollards – Funding Strategy .....	11
Fences and Bollards – Capital works.....	11
Fences and Bollards – Managing the Risks .....	11
Fences and Bollards – Maintenance .....	16
Fences and Bollards – Prioritised Expenditure Forecast.....	16
Fences and Bollards – Valuation Forecast.....	17
Fences and Bollards – Key Assumptions – Financial Forecasts .....	17
Fences and Bollards – Creation / Acquisition / Upgrade Program.....	18
Fences and Bollards – Disposal Plan .....	18
Fences and Bollards – Forecast reliability and confidence .....	18
Fences and Bollards – Improvement Plan.....	18
Fences and Bollards – Monitoring and Review Procedures.....	18
Fences and Bollards – Renewal and Replacement Program .....	18
Fences and Bollards – Funding Scenarios .....	18
Fences and Bollards – Service and Risk Tradeoffs.....	19
Service trade-off .....	19
Risk trade-off.....	19
Fences and Bollards – Renewal and Replacement Program – FY2023-FY2032 (10 Year Plan) .....	19
Capital Renewal – Fences and Bollards Within Road Reserves.....	20
Priority Projects 2022/23 (Year 1).....	20
Priority Projects 2023/24 (Year 2).....	20
Priority Projects 2024/25 (Year 3).....	21
Priority Projects 2025/32 (Year 4-10) .....	21
Works Identified – Years 2025 – 32 (Years 4 – 10).....	23
Capital Renewal – Fences and Bollards Within Parks .....	24
Priority Projects 2022/23 (Year 1).....	24
Priority Projects 2023/24 (Year 2).....	25
Priority Projects 2024/25 (Year 3).....	26
Priority Projects 2025/32 (Year 4-10) .....	26
Works Identified – Years 2025 - 32 (Years 4 - 10) .....	29
Fences and Bollards – Performance Measures .....	34
Fences and Bollards – References.....	34
APPENDICES .....	35
Appendix A: Maintenance Management System .....	35
Appendix B: Safety Barrier Upgrade .....	37



- 4 -

## Fences and Bollards (Roads and Parks)

### Executive Summary

Across the North Sydney Council LGA there is a total 22.3km of fence assets and 1,178 Bollards in parks and 21.7km of fence assets and 1,322 bollards in road reserves. These fences comprise of a range of styles including Ordinance Timber, Metal Fences, Structural (Safety) Fences and bollards.

In 2019 Rapid Map Services consultants conducted a Fences and Bollards condition audit for North Sydney Council. The objectives were to conduct a detailed inventory data collection, accurately map each type of fence and assess all fences in detail for condition and defects. The relative risk of each fence was also assessed.

Both fences and bollard sections were visited in the field. Of these:

- 2,845 fence sections with a total length of 43,979m were inspected.
- A total of 2,500 individual bollards were inspected.

Each fence was attributed with a type. The majority of fences, 46% or 20,267m, are Ordinance style fences. There are also 5,074m of “structural” type fences.

Overall some 94.9% of the portfolio is in very good to fair condition (1 to 3) with some 5.1% in poor to very poor condition (4 to 5).

A Risk rating was assigned to each fence. Overall 94.9 % of the portfolio has a low to medium risk rating and 5.1% has a high to very high risk rating.

The total Replacement Value of the portfolio is \$21,841,052 as at 30 June 2021. The values are shown in the Table below.

**Table 1: Fences and Bollards (Roads and Parks) – Summary Table**

Asset Category	Replacement Value (2021)	Accumulated Depreciation (2021)	Fair Value (2021)	Depreciation Expense
Fences in Parks	\$5,111,317	\$2,027,659	\$3,083,657	\$130,119
Fences in Road Reserves	\$16,729,736	\$6,084,917	\$10,644,818	\$546,173
<b>TOTAL</b>	<b>\$21,841,052</b>	<b>\$8,112,577</b>	<b>\$13,728,475</b>	<b>\$676,292</b>

The following table provides a summary of the quantities and replacement values for each fence and bollard type. The portfolio is dominated by timber ordinance fences.

- 5 -

**Table 2: Fences (Roads and Parks) – Typology**

Fence and Bollard Type	No. of Fences Section	Length (m)	Total No. of Bollards	Sum of Replace Costs
Bollard - Concrete			314	\$101,978
Bollard - Concrete Filled PVC			1	\$325
Bollard - Concrete Filled Steel			150	\$321,302
Bollard - Decorative			661	\$1,221,695
Bollard - Metal			563	\$1,040,566
Bollard - Plastic			17	\$1,651
Bollard - PVC			2	\$194
Bollard - Rock			3	\$0
Bollard - Stainless Steel			220	\$406,616
Bollard - Timber			569	\$55,253
Armco Guardrail	98	2,684		\$2,356,006
Barrier	2	2		\$256
Bicentennial Fence	6	453		\$1,440,275
Bicycle Barrier	6	8		\$1,231
Concrete Post and Chain Wire Fence	36	1,570		\$509,731
Concrete Post and Rail Fence	63	1,072		\$347,980
Concrete Road Barrier	3	128		\$85,653
Galvanised Post and Chain Wire Fence	120	2,964		\$473,031
Galvanised Post and Rail Fence	101	1,636		\$261,119
Gate - Cast Iron	2	3		\$636
Gate - Cast Iron, Stone	3	9		\$2,130
Gate - Galvanised Steel	19	40		\$9,768
Gate - Metal	12	34		\$8,250
Gate - Metal Powder Coated	54	124		\$30,453
Gate - Metal, Timber	9	27		\$6,659
Gate - Timber	29	56		\$4,537
Gate Post	1	0		\$97
Handrail Stainless Steel	72	453		\$72,314
Handrail Steel	441	3,538		\$564,578
Holding Rail	129	258		\$41,264
Log Fence	22	280		\$44,624
Low Pillar	3	2		\$490
Ordinance Fence	1,204	20,267		\$3,106,631
Other	2	9		\$1,391
Picket Fence - Metal	110	3,355		\$617,169
Picket Fence - Timber	38	757		\$139,228
Pillar	5	3		\$6,520
RTA Pedestrian Fence	179	1,615		\$1,817,299
Safety Fence - Galvanised Post & Rail on Concrete	23	938		\$4,876,422

- 6 -

Fence and Bollard Type	No. of Fences Section	Length (m)	Total No. of Bollards	Sum of Replace Costs
Safety Fence - Steel Post & Cable	29	1,452		\$1,470,484
Special - Post and Rail Fence with Glass Panels	12	117		\$253,409
Steel Post and Chain Fence	6	66		\$121,800
Timber Post and Chain Fence	2	30		\$9,613
Timber Post and Rope	1	31		\$10,133
Unknown Post	3	0		\$291
<b>Grand Total</b>	<b>2,845</b>	<b>43,979</b>	<b>2,500</b>	<b>\$21,841,052</b>

### Fences and Bollards – Future Demand

Drivers affecting demand for fences and bollards include things such as population change, regulation changes – new development, community expectations (Public Safety), technological changes, economic factors and environmental factors.

### Fences and Bollards – Levels of Customer Service

Service levels are defined service levels in two terms, customer levels of service and technical levels of service. These are supplemented by organisational measures.

**Customer Levels of Service** measure how the customer receives the service and whether value to the customer is provided.

Customer levels of service measures used in the asset management plan are:

**Quality**                      How good is the service ... *what is the condition or quality of the service?*

**Function**                     Is it suitable for its intended purpose .... *Is it the right service?*

**Capacity/Use**                Is the service over or under used ... *do we need more or less of these assets?*

The current and expected customer service levels are detailed in the table below.

**Table 3: Fences and Bollards – Levels of Customer Service**

Service Attribute	Expectation	Performance Measure Used	Current Performance	Desired Position in 10 Years
<b>Quality</b>	Fences are well maintained.	Percentage of Fences in 'very good', 'good' or 'Fair' (1, 2, 3) condition and Percentage 'poor' or 'very poor' (4, 5) Condition.	94.9% of Fences in 'very good', 'good' or 'fair' (1, 2, 3) condition.  5.1% of Fences in 'poor' or 'very poor' (4, 5) Condition.	Maintain – Condition 1-2-3  Improve and replace Condition 4-5

- 7 -

Service Attribute	Expectation	Performance Measure Used	Current Performance	Desired Position in 10 Years
<b>Function</b>	Fences providing adequate separation or protection.	Attributes of fence and the surrounding environment.	17 Fences requiring Structural Upgrade Program	Upgrade
<b>Capacity and Use</b>	Number of fences required is appropriate.	Number of additional fences required.	No fences identified as being required.	Maintain

#### Fences and Bollards – Levels of Technical Service

**Technical Levels of Service** - Supporting the customer service levels are operational or technical measures of performance. These technical measures relate to the allocation of resources to service activities to best achieve the desired customer outcomes and demonstrate effective performance.

Technical service measures are linked to the activities and annual budgets covering:

- Operations – the regular activities to provide services (e.g. cleansing and inspections, etc.)
- Maintenance – the activities necessary to retain an asset as near as practicable to an appropriate service condition. Maintenance activities enable an asset to provide service for its planned life (e.g. Fence repair, fence painting, building and structure repairs),
- Renewal – the activities that return the service capability of an asset up to that which it had originally (e.g. Fence replacement or fence component replacement),
- Upgrade/New – the activities to provide a higher level of service (e.g. extending a fence or upgrading it to a superior material for another function – i.e. “structural” treatment applied to an existing fence adjacent to a steep drop off.

Table 4 shows the technical levels of service expected to be provided for Fences and Bollards. The ‘Desired’ position in the table documents the position being recommended in this AM Plan.

**Table 4: Fences and Bollards – Technical Levels of Service**

Service Attribute	Service Activity Objective	Activity Measure Process	Current Performance	Desired for Optimum Lifecycle Cost
<b>Operations</b>	Undertake network inspections to monitor condition	Network inspections to monitor condition	Network inspected in 2018	Network inspected every 5 years
<b>Maintenance</b>	Reactive service Requests completed in a timely manner or made safe.	Respond to complaints.	Minor repairs undertaken in accordance with Maintenance Management System	Minor repairs undertaken in accordance with Maintenance Management Delivery System.
<b>Renewal</b>	Maintain existing assets to a satisfactory	Percentage of Fences in ‘very good’, ‘good’ or	94.9% of Fence assets in ‘very good’, ‘good’ or ‘Fair’ (1, 2, 3)	Improve or replace

Service Attribute	Service Activity Objective	Activity Measure Process	Current Performance	Desired for Optimum Lifecycle Cost
	condition	'Fair' (1, 2, 3) condition and Percentage 'poor' or 'very poor' (4, 5) Condition.	condition. 5.1% of Fence assets in poor/very poor (4, 5) Condition.	
<b>Upgrade</b>	Standard of fences and bollards are constructed from Timber where practical.	Fences upgraded with "Structural" treatment as required.	17 fences identified for upgrade.	"Structural" treatment upgrade for identified fences.
<b>New</b>	Satisfactory provision of fences and bollards.	New fences and bollards provided as required.	No additional fences and bollards identified as being required	No additional fences and bollards identified as being required

#### Fences and Bollards – Condition

The condition of Council's Fence network was surveyed in 2019 by Consultants, Rapid Map Services Pty Ltd in conjunction with Asset & Facilities Management Consulting Pty Ltd. The following condition criteria was used.

**Table 5: Fences and Bollards Condition Survey Criteria**

Grade	Condition	Description
1	Very Good	Sound fence or bollard designed to current standards and well maintained with no defects. <b>No work required</b>
2	Good	As grade 1 but not designed to current standards or showing minor wear, tear and deterioration of surfaces e.g. rust – corrosion and weathering, but no undermining of fence / bollard structure. Needs to be reinspected in 2- 3 years. Deterioration has no significant impact on stability and appearance of the fence / bollard. <b>Only minor work required</b>
3	Fair	Fence / bollard functionally sound, but appearance affected by minor defects e.g. loose straps, surface weathering, warping and or minor loss of stability, isolated undermining of fence / bollard foundations, but no overall loss of stability. Some deterioration beginning to be reflected in stability and appearance of fence / bollard. <b>Some work required</b>
4	Poor	Fence / bollard functioning but with problems due to significant defects e.g. damaged/ missing railings, loss of stability, undermining of foundations, severe corrosion and deformation and loss of support, likely to cause marked deterioration of stability and appearance likely within 1 year. <b>Some replacement or rehabilitation needed within 1 year</b>
5	Very Poor	Fence / bollard has serious problems and has failed or are about to fail in the near future, causing unacceptable stability, appearance and public safety hazard. <b>Urgent replacement/ rehabilitation required</b>

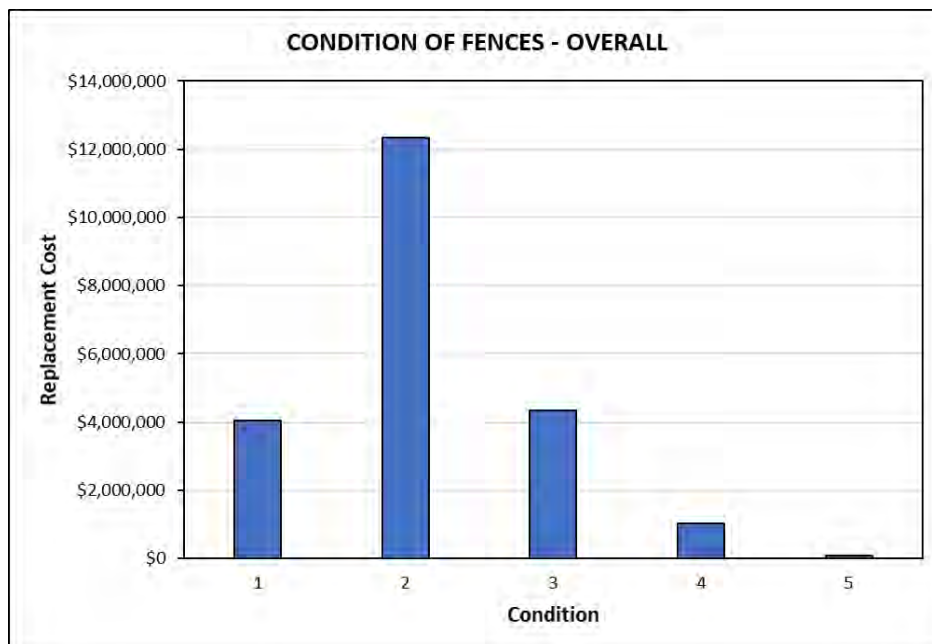
- 9 -

The Table below shows the Replacement Cost for each of the condition scores. It should be noted that the replacement cost is based on the condition of fences as cost per metre and conditions of bollards as cost per bollard. In practice and where funds permit, fences or bollard sections in condition 3 are generally replaced at the same time as fence or bollard sections in condition 4 or 5 if they are adjacent, due to the potential risks present and cost-effectiveness.

**Table 6: Fence and Bollards Condition Survey Results - Overall**

CONDITION OF FENCES & BOLLARDS – ENTIRE NETWORK		
Condition	Replacement Cost	% Condition (based on cost)
1 (Very Good)	\$4,044,054	18.5%
2 (Good)	\$12,347,224	56.5%
3 (Fair)	\$4,338,983	19.9%
4 (poor)	\$1,034,034	4.7%
5 (Very Poor)	\$76,758	0.4%
<b>Total</b>	<b>\$21,841,052</b>	<b>100.0%</b>

The Graph below shows the condition of fences and bollards over the entire network in terms of replacement cost.



#### Fences and Bollards – Review of Useful Lives

Determining the useful lives of fences and bollards in North Sydney is a challenging process as there appears to be limited information on a numbers of fences and bollards. Research into the historical construction date is currently being undertaken and once the construction date is estimated, the current

- 10 -

age of each fence or bollard section can be determined. Adding the estimated Remaining Life (based on current condition) to the age will provide an estimate of the total Useful Life.

Until this further research has been carried out a conservative approach has been undertaken and a modest range of useful lives have been assumed for all fences and bollards section. Due to the dissimilarity of structuring, materials and applications of all fences and bollards, useful lives varies with fence and bollard type. The useful lives and the corresponding calculated depreciation cost per annum are as follows:

Fence Type	Useful Life (Years)
Armco Guardrail	20
Bicentennial Fence	80
Concrete Post and Chain Wire Fence	30
Concrete Post and Rail Fence	30
Concrete Road Barrier	40
Galvanised Post and Chain Wire Fence	30
Galvanised Post and Rail Fence	30
Handrail Stainless Steel	30
Handrail Steel	30
Log Fence	30
Ordinance Fence	30
Picket Fence - Metal	30
Picket Fence - Timber	30
RTA Pedestrian Fence	30
Safety Fence - Galvanised Post & Rail on Concrete	40
Safety Fence - Steel Post & Cable	40
Sandstone Wall	50
Special - Post and Rail Fence with Glass Panels	30

Bollard Type	Useful Life (Years)
Bollard - Concrete	20
Bollard - Decorative	20
Bollard - Metal	20
Bollard - Stainless Steel	20
Bollard - Timber	20
Safety Fence - Bollard Structural	40

The Annual Depreciation values for Fences are as follows:

Capital funding to maintain a renewal ratio of 1	
	Annual Depreciation
Fences in Parks	\$130,119
Fences in Road Reserves	\$546,173
<b>TOTAL</b>	<b>\$676,292</b>

A budget of \$676,292 is required on average over the long term to maintain the condition of Council's Fences and Bollards network, noting that fluctuations in renewal requirements in the medium term.

#### **Fences and Bollards – Funding Strategy**

The Asset Renewal Funding Ratio is the most important indicator. It compares funding with depreciation. An Asset Renewal Funding Ratio of 1 or greater sustained over the long term indicates the optimal renewal and replacement of assets.

The forecast for the Depreciation (or Long Term Average Annual Asset Consumption) is \$676,292. Therefore, an annual average capital renewal funding of \$676,292 (2021 dollars) will achieve an Asset Renewal Funding Ratio of 1.

The cost to fully replace assets identified by Consultants, Rapid Map Services Pty Ltd in condition 4 and 5 as well as the cost to replace the condition 3 assets which will become condition 4 over the next 10 is \$5,449,775. This is an average annual cost of \$544,978 which is less than the \$676,292 Depreciation Expense and is greater than the average annual forecast budget of \$220,000. With further investigation and detailed design it is hoped that alternate and lesser cost solutions may be possible to maintain fences and bollard assets at an optimal level.

#### **Fences and Bollards – Capital works**

Replacement of fences and bollard sections are assumed to be a Capital works project.

The ranking criteria used to determine priority of identified renewal and replacement proposals is detailed in Table 7. A priority for action of 1 to 5 has been assigned to each fence or bollard requiring capital works as described in the following table.

#### **Fences and Bollards – Managing the Risks**

There are risks associated with providing and maintaining fences and bollards. They are primarily as follows:

- Sudden failure of **Fences and Bollards** providing separation from steep drop offs, waterbodies or hazardous areas – causing property damage – public safety hazards, injury or death.

The following risk response table was used to identify those fence and bollard segments requiring action within the next 10 years.

**Table 7: Fences and Bollards – Risk Response Table**

Level of Risk		Category	Action Required	Time frame for repairs, upgrade or replacement
VH	Very High Risk	5	Immediate corrective action	1-12 months
H	High Risk	4	Prioritised action required	2-10 Years
M	Medium Risk	3	Planned action required	4-10 Years
L	Low Risk	2	Manage by routine procedures	Inspections 1-2 years
None	No Risk	1	None	None

Consideration has been given to each fence and bollard, whether to replace the asset or perform maintenance on it.



Fence segments and bollards that have a **Very High or High** risk rating were considered to need replacement within the 1-10 year forecast period.

Fence segments and bollards with a **Medium** risk rating were also considered needing replacement within the 4-10 year forecast period.













Council will endeavour to manage these risks within available funding by prioritising fence and bollard renewal works based on the Fences Condition Audit prepared by Consultants, Rapid Map Services Pty Ltd.

**Table 8: Fences and bollards – Capital renewal Priorities based on Condition and Risk Rating**

Risk Matrix – Fences (Condition and Risk Rating)					
Likelihood (L) Refer to Table 5 Condition Criteria	Fences (No. of Sections/ Bollards)				
	Drop Height	0 to 1m	>1m to 2m	>2m to 3m	>3m
	Road Hierarchy	Lane	Local Road	Collector	State/ Regional Road
	Park Hierarchy	Local	District	Regional	
	Slope below fence	Shallow	Medium	Steep	Vertical
	Priority	d	c	b	a
Condition 1 – Very Good (18.5%)	5	4	11	17	12
Condition 2 - Good (56.5%)	4	47	122	99	77
Condition 3 – Fair (19.9%)	3	268	483	439	455
Condition 4 – Poor (4.7%)	2	362	755	709	710
Condition 5 – Very Poor (0.4%)	1	148	192	209	218

**(Note: Also Refer to Table 6)**

**Note:** This table is based on data in the current register.

**Note:** Capital works are proposed for those Fences and Bollards identified in “Very Poor”, “Poor” and “Fair” condition.

**Note:** Factors which are used to determine the priority include ‘Drop Height’, ‘Road Hierarchy’ and ‘Slope below fence’. The most critical factor is used to determine the priority.



It should be noted that fences and bollards may also be replaced based on other criteria including:

- Damage
- Restorations
- Fences replaced in association with other projects such as kerb & gutter or retaining wall works
- Streetscape projects
- Structural Upgrade Program

#### Fences and Bollards – Maintenance

Routine maintenance is the regular on-going work that is necessary to keep assets operating, including instances where portions of the asset fail and need immediate repair to make the asset operational again, e.g. replacing deteriorated or weathered sections, painting.

Maintenance includes all actions necessary for retaining an asset as near as practicable to an appropriate service condition including regular ongoing day-to-day work necessary to keep assets operating.

Current maintenance expenditure levels are considered to be inadequate to meet projected service levels.

Over the longer term future operations and maintenance expenditure is forecast to be steady as the asset stock is not forecast to increase. The following table summarises the prioritised capital works.

#### Fences and Bollards – Prioritised Expenditure Forecast

**Table 9a: Fences and bollards – In Road Reserves – Prioritised Expenditure Forecast – 10 years FY2023-FY2032**

Year		Priority	Capital Costs	Maintenance Costs	Total Cost
1	2022/23	1a to 2a	\$240,000	\$61,914	\$301,914
2	2023/24	2a	\$240,000	\$61,914	\$301,914
3	2024/25	2a to 2b	\$90,000	\$61,914	\$151,914
4-10	2025/32	2b to 3a	\$630,000	\$433,398	\$1,063,398
Works Identified	2025/32	3a	\$2,362,184		\$2,362,184
<b>Grand Total</b>			<b>\$3,562,184</b>	<b>\$619,140</b>	<b>\$4,181,324</b>

**Table 9b: Fences and bollards – In Parks – Prioritised Expenditure Forecast – 10 years FY2023-FY2032**

Year		Priority	Capital Costs	Maintenance Costs	Total Cost
1	2022/23	1a to 2a	\$100,000	\$0	\$100,000
2	2023/24	2a	\$100,000	\$0	\$100,000
3	2024/25	2a to 2b	\$100,000	\$0	\$100,000
4-10	2025/32	2b to 3a	\$700,000	\$0	\$700,000
Works Identified	2025/32	3a	\$887,591		\$887,591
<b>Grand Total</b>			<b>\$1,887,591</b>	<b>\$0</b>	<b>\$1,887,591</b>

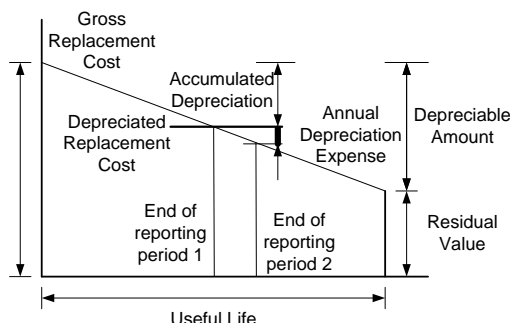
**Table 9c: Fences and bollards – Safety Barriers – Prioritised Expenditure Forecast – 10 years FY2023-FY2032**

Year		Capital Costs	Maintenance Costs	Total Cost
1	2022/23	\$600,000	\$0	\$600,000
2	2023/24	\$600,000	\$0	\$600,000
3	2024/25	\$100,000	\$0	\$100,000
4-10	2025/32	\$700,000	\$0	\$700,000
Works Identified	2025/32	\$5,023,000		\$5,023,000
<b>Grand Total</b>		<b>\$7,023,000</b>	<b>\$0</b>	<b>\$7,023,000</b>

In summary the current value of Fences and Bollards assets is detailed in the Table below.

**Table 10: Fences and Bollards – Valuation**

Asset Category	Replacement Value (2021)	Accumulated Depreciation (2021)	Fair Value (2021)	Depreciation Expense
Fences in Parks	\$5,111,317	\$2,027,659	\$3,083,657	\$130,119
Fences in Road Reserves	\$16,729,736	\$6,084,917	\$10,644,818	\$546,173
<b>TOTAL</b>	<b>\$21,841,052</b>	<b>\$8,112,577</b>	<b>\$13,728,475</b>	<b>\$676,292</b>



**Fences and Bollards – Valuation Forecast**

Asset values (Fences and Bollards) are forecast to remain steady. It is forecast that no additional assets are expected to be added to the asset stock from new construction and acquisition by Council or from assets constructed by land developers or other assets donated to Council.

**Fences and Bollards – Key Assumptions – Financial Forecasts**

Key assumptions made in this asset management plan for fences and bollards are:

**Table 11: Key Assumptions made in AM Plan and Risks of Change**

Key Assumptions	Risks of Change to Assumptions
Useful Lives of Fences and Bollards	Low risk
Rate of deterioration	Low risk

**Fences and Bollards – Creation / Acquisition / Upgrade Program**

New works are those that create a new asset that did not previously exist, or works which will upgrade or improve an existing asset beyond its existing capacity. They may result from growth, social or environmental needs. Assets may also be acquired at no cost. No new assets are currently identified.

**Fences and Bollards – Disposal Plan**

No fence and bollard Assets have been identified for disposal.

**Fences and Bollards – Forecast reliability and confidence**

The estimated confidence level and reliability of data used in this AMP is considered to be reliable as the data is based on a detailed condition report on fences and bollards.

**Fences and Bollards – Improvement Plan**

The improvement plan is shown in the table below.

Task No	Task	Responsibility	Resources Required	Timeline
1	Research the Useful Life of Fences and bollards	EPS	Staff Time	2024

**Fences and Bollards – Monitoring and Review Procedures**

This Asset Management Plan will be reviewed during annual budget planning processes and amended to show any material changes in service levels and/or resources available to provide those services as a result of budget decisions.

The Asset Management Plan has a life of 4 years and is due for complete revision and updating within 1 year of each Council election.

**Fences and Bollards – Renewal and Replacement Program**

Renewal and replacement expenditure is major work which does not increase the asset's design capacity but restores, rehabilitates, replaces or renews an existing asset to its original service potential. Work over and above restoring an asset to original service potential is considered to be an upgrade/expansion or new work expenditure resulting in additional future operations and maintenance costs.

Fence and bollard assets requiring renewal/replacement have been identified by the Fences and Bollards Condition Audit completed by Consultants, Rapid Map Services Pty Ltd in conjunction with Asset & Facilities Management Consulting Pty Ltd, in 2019.

**Fences and Bollards – Funding Scenarios**

The Long Term Financial Plan includes three scenarios, all of which maintain current services levels but propose differing levels of capital expenditure on the renewal of Council's ageing infrastructure assets.

In summary:

- Pessimistic Scenario - This Scenario results in a decline in operating results and deficits in the later years.



- Optimistic Scenario - This Scenario results in improvements in operating results for the life of the plan.
- Planned Scenario - This Scenario results modest surplus operating results for the life of the plan.

**Table 12: Funding Scenarios – Fences and Bollards (Overall) – North Sydney Councils 10 Year Plan**

Scenario	Capital Funding Level Required Per Annum	10 Year Plan \$ Total
Scenario 1.	\$420,000/year	<b>\$4,200,000</b>
Scenario 2.	\$420,000/year	<b>\$4,200,000</b>
Scenario 3.	\$420,000/year	<b>\$4,200,000</b>

**Note:** These Scenarios are based on the 10-year Long Term Financial Plan.

#### **Fences and Bollards – Service and Risk Tradeoffs**

The decisions made in adopting this AM Plan are based on the objective to achieve the optimum benefits from the available resources.

#### **Service trade-off**

If this funding Scenario is adopted, then the Level of Service will be maintained.

#### **Risk trade-off**

If this funding Scenario is adopted, then it there is less risk of a sudden collapse or failure of fences and bollards.

#### **Fences and Bollards – Renewal and Replacement Program – FY2023-FY2032 (10 Year Plan)**

Council's projected 10 year Capital Renewal Program is shown in the Tables 13-22 below. It is based on the funding required to replace fences and bollards identified by the Fences and Bollards Condition Audit completed by Consultants, Rapid Map Services Pty Ltd in conjunction with Asset & Facilities Management Consulting Pty Ltd, in 2019.

It should be noted that fences and bollards may also be replaced based on other criteria. Including:

- Damage
- Restorations
- Fence or Bollard replaced in association with other projects such as Parks and Streetscape projects
- Streetscape projects

Project priorities may also be subject to change due to accelerated deterioration, sudden failure or finalization of detailed designs and project costings.

**Capital Renewal – Fences and Bollards Within Road Reserves****Table 13: Fences and Bollards – Renewal and Replacement Program (Within Roads)****Priority Projects 2022/23 (Year 1)**

Year	Priority	Fence ID	Location	Risk Rating / Category	Condition	Capital Cost
2022/23	1a	FN10033	Bent St, Neutral Bay	Very High (5)	Very Poor	\$10,000
2022/23	1a	FN10389	Young St, Cremorne	Very High (5)	Very Poor	\$7,000
2022/23	1a	FN10429	Alfred St North, Neutral Bay	Very High (5)	Very Poor	\$11,000
2022/23	1a	FN10442	Miller To Edwin Footway, Cammeray	Very High (5)	Very Poor	\$7,000
2022/23	1c	FN10280	Shellcove Rd, Kurraba Point	Very High (5)	Very Poor	\$1,000
2022/23	1c	FN22685	Ross St, Waverton	Very High (5)	Very Poor	\$1,000
2022/23	2a	FN10035	Bent St, Neutral Bay	High (4)	Poor	\$159,000
2022/23	2a	FN10070	Carlyle St, Wollstonecraft	High (4)	Poor	\$1,000
2022/23	2a	FN10098	Cremorne Rd, Cremorne Point	High (4)	Poor	\$3,000
2022/23	2a	FN10150	Henry Lawson Ave, McMahons Point	High (4)	Poor	\$5,000
2022/23	2a	FN10227	Milson Rd, Cremorne Point	High (4)	Poor	\$2,000
2022/23	2a	FN10243	Park Ave, Cremorne	High (4)	Poor	\$2,000
2022/23	2a	FN10246	Parkes St, Kirribilli	High (4)	Poor	\$2,000
2022/23	1a to 1d		Bollards In Various Locations	Very High (5)	Very Poor	\$29,000
<b>TOTAL</b>						<b>\$240,000</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

**Table 14: Fences and Bollards – Renewal and Replacement Program (Within Roads)****Priority Projects 2023/24 (Year 2)**

Year	Priority	Fence ID	Location	Risk Rating / Category	Condition	Capital Cost
2023/24	2a	FN10119	Ellalong Rd, Cremorne	High (4)	Poor	\$46,000
2023/24	2a	FN10229	Montpelier St, Neutral Bay	High (4)	Poor	\$12,000
2023/24	2a	FN10304	Walker St, North Sydney	High (4)	Poor	\$7,000
2023/24	2a	FN10340	Ennis Rd, Kirribilli	High (4)	Poor	\$7,000
2023/24	2a	FN10351	Hampden St, North Sydney	High (4)	Poor	\$6,000
2023/24	2a	FN10425	Falcon St, Neutral Bay	High (4)	Poor	\$19,000
2023/24	2a	FN10433	Premier To Spruson Footway, Neutral Bay	High (4)	Poor	\$5,000
2023/24	2a	FN10450	Pile To High Footway, North Sydney	High (4)	Poor	\$8,000
2023/24	2a	FN10484	Henry Lawson Ave, McMahons Point	High (4)	Poor	\$4,000

Year	Priority	Fence ID	Location	Risk Rating / Category	Condition	Capital Cost
2023/24	2a	FN10528	Miller St, Cammeray	High (4)	Poor	\$88,000
2023/24	2a	FN10548	Tiley La, Cammeray	High (4)	Poor	\$7,000
2023/24	2a	FN10579	Dumbarton St, McMahons Point	High (4)	Poor	\$2,000
2023/24	2a	FN10622	Premier St, Neutral Bay	High (4)	Poor	\$9,000
2023/24	2a	FN10683	Premier St, Neutral Bay	High (4)	Poor	\$3,000
2023/24	2a	FN10701	Blues Point Rd, McMahons Point	High (4)	Poor	\$2,000
2023/24	2a	FN10785	Kirribilli Ave, Kirribilli	High (4)	Poor	\$2,000
2023/24	2a	FN10786	Kirribilli Ave, Kirribilli	High (4)	Poor	\$2,000
2023/24	2a		Bollards In Various Locations	High (4)	Poor	\$11,000
<b>TOTAL</b>						<b>\$240,000</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

**Table 15: Fences and Bollards – Renewal and Replacement Program (Within Roads)**

**Priority Projects 2024/25 (Year 3)**

Year	Priority	Fence ID	Location	Risk Rating / Category	Condition	Capital Cost
2024/25	2a	FN10516	Carter St, Cammeray	High (4)	Poor	\$40,000
2024/25	2a	FN10787	Waruda St, Kirribilli	High (4)	Poor	\$6,000
2024/25	2a	FN10893	Milson Rd, Cremorne Point	High (4)	Poor	\$12,000
2024/25	2a	FN10932	Milson Rd, Cremorne Point	High (4)	Poor	\$10,000
2024/25	2a	FN10965	Milson Rd, Cremorne Point	High (4)	Poor	\$2,000
2024/25	2b		Bollards In Various Locations	High (4)	Poor	\$20,000
<b>TOTAL</b>						<b>\$90,000</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

**Table 16: Fences and Bollards – Renewal and Replacement Program (Within Roads)**

**Priority Projects 2025/32 (Year 4-10)**

Year	Priority	Fence ID	Location	Risk Rating / Category	Condition	Capital Cost
2025/32	2a	FN11023	Ellalong Rd, Cremorne	High (4)	Poor	\$21,000
2025/32	2a	FN11234	Bridgeview Ave, Cammeray	High (4)	Poor	\$3,000
2025/32	2a	FN11508	East Ave, Cammeray	High (4)	Poor	\$5,000
2025/32	2b	FN10014	Bay Rd, Waverton	High (4)	Poor	\$1,000
2025/32	2b	FN10030	Bent St, Neutral Bay	High (4)	Poor	\$56,000
2025/32	2b	FN10049	Blues Point Rd, McMahons Point	High (4)	Poor	\$7,000
2025/32	2b	FN10188	Lumsden St, Cammeray	High (4)	Poor	\$1,000
2025/32	2b	FN10256	Premier St, Neutral Bay	High (4)	Poor	\$4,000
2025/32	2b	FN10257	Premier St, Neutral Bay	High (4)	Poor	\$2,000

- 22 -

Year	Priority	Fence ID	Location	Risk Rating / Category	Condition	Capital Cost
2025/32	2b	FN10260	Rangers Rd, Neutral Bay	High (4)	Poor	\$17,000
2025/32	2b	FN10295	Union St, McMahons Point	High (4)	Poor	\$2,000
2025/32	2b	FN10366	Mirradong Pl, Kirribilli	High (4)	Poor	\$5,000
2025/32	2b	FN10582	Edward St, North Sydney	High (4)	Poor	\$3,000
2025/32	2b	FN10837	Commodore To John Footway, McMahons Point	High (4)	Poor	\$2,000
2025/32	2b	FN22583	Rawson St, Neutral Bay	High (4)	Poor	\$1,000
2025/32	2b	FN22601	Alfred St South, Milsons Point	High (4)	Poor	\$1,000
2025/32	2c	FN10067	Carabella St, Kirribilli	High (4)	Poor	\$35,000
2025/32	2c	FN10133	French St, McMahons Point	High (4)	Poor	\$2,000
2025/32	2c	FN10144	Grosvenor La, Neutral Bay	High (4)	Poor	\$1,000
2025/32	2c	FN10182	Kurraba Rd, Kurraba Point	High (4)	Poor	\$2,000
2025/32	2c	FN10196	Mckye St, Waverton	High (4)	Poor	\$6,000
2025/32	2c	FN10297	Upper Pitt St, Kirribilli	High (4)	Poor	\$3,000
2025/32	2c	FN10343	Ennis Rd, Milsons Point	High (4)	Poor	\$59,000
2025/32	2c	FN10344	Green St, Cremorne Point	High (4)	Poor	\$7,000
2025/32	2c	FN10432	Kurraba To Aubin Footway, Neutral Bay	High (4)	Poor	\$1,000
2025/32	2c	FN10460	Chandos St (Westbound), St Leonards	High (4)	Poor	\$28,000
2025/32	2c	FN22611	West St, Cammeray	High (4)	Poor	\$1,000
2025/32	2d	FN10348	Hampden St, North Sydney	High (4)	Poor	\$19,000
2025/32	2d	FN10355	Jenkins La, Crows Nest	High (4)	Poor	\$4,000
2025/32	2d	FN10356	Jenkins La, Crows Nest	High (4)	Poor	\$5,000
2025/32	2d	FN10377	Wellington La, McMahons Point	High (4)	Poor	\$49,000
2025/32	2d	FN10441	Edwin To Metcalfe Footway, Cammeray	High (4)	Poor	\$2,000
2025/32	3a	FN10019	Belgrave St, Cremorne	Medium (3)	Fair	\$37,000
2025/32	3a	FN10027	Ben Boyd Rd, Neutral Bay	Medium (3)	Fair	\$2,000
2025/32	3a	FN10031	Bent St, Neutral Bay	Medium (3)	Fair	\$6,000
2025/32	3a	FN10034	Bent St, Neutral Bay	Medium (3)	Fair	\$58,000
2025/32	3a	FN10042	Alfred St North (Southbound), Neutral Bay	Medium (3)	Fair	\$3,000
2025/32	3a	FN10056	Brook St, Crows Nest	Medium (3)	Fair	\$29,000
2025/32	2b		Bollards In Various Locations	High (4)	Poor	\$140,000
<b>TOTAL</b>						<b>\$630,000</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

**Table 17: Fences and Bollards – Renewal and Replacement Program (Within Roads)****Works Identified – Years 2025 – 32 (Years 4 – 10)**

Year	Priority	Fence ID	Location	Risk Rating / Category	Condition	Capital Cost
2025/32	3a	FN10059	Broughton St, Kirribilli	Medium (3)	Fair	\$27,000
2025/32	3a	FN10071	Carr St, Waverton	Medium (3)	Fair	\$27,000
2025/32	3a	FN10079	Chandos St (Westbound), St Leonards	Medium (3)	Fair	\$23,000
2025/32	3a	FN10083	Clark Rd, North Sydney	Medium (3)	Fair	\$16,000
2025/32	3a	FN10088	Cowdroy Ave, Cammeray	Medium (3)	Fair	\$14,000
2025/32	3a	FN10090	Cowdroy Ave, Cammeray	Medium (3)	Fair	\$7,000
2025/32	3a	FN10092	Cremorne Rd, Cremorne Point	Medium (3)	Fair	\$13,000
2025/32	3a	FN10093	Cremorne Rd, Cremorne Point	Medium (3)	Fair	\$2,000
2025/32	3a	FN10102	Cremorne Rd, Cremorne Point	Medium (3)	Fair	\$3,000
2025/32	3a	FN10106	Dumbarton St, McMahan's Point	Medium (3)	Fair	\$15,000
2025/32	3a	FN10126	Falcon St, Crows Nest	Medium (3)	Fair	\$3,000
2025/32	3a	FN10127	Falcon St, Crows Nest	Medium (3)	Fair	\$2,000
2025/32	3a	FN10136	Gillies St, Wollstonecraft	Medium (3)	Fair	\$4,000
2025/32	3a	FN10137	Glen St, Milsons Point	Medium (3)	Fair	\$7,000
2025/32	3a	FN10148	Harriette St, Kurraba Point	Medium (3)	Fair	\$68,000
2025/32	3a	FN10149	Harriette St, Neutral Bay	Medium (3)	Fair	\$17,000
2025/32	3a	FN10163	Iredale Ave, Cremorne Point	Medium (3)	Fair	\$9,000
2025/32	3a	FN10166	Jeffreys St, Kirribilli	Medium (3)	Fair	\$12,000
2025/32	3a	FN10169	Kareela Rd, Cremorne Point	Medium (3)	Fair	\$2,000
2025/32	3a	FN10174	King St, Wollstonecraft	Medium (3)	Fair	\$18,000
2025/32	3a	FN10175	King St, Waverton	Medium (3)	Fair	\$22,000
2025/32	3a	FN10176	Kirribilli Ave, Kirribilli	Medium (3)	Fair	\$23,000
2025/32	3a	FN10177	Kirribilli Ave, Kirribilli	Medium (3)	Fair	\$1,000
2025/32	3a	FN10183	Kurraba Rd, Neutral Bay	Medium (3)	Fair	\$2,000
2025/32	3a	FN10205	Miller St, North Sydney	Medium (3)	Fair	\$6,000
2025/32	3a	FN10210	Miller St, Cammeray	Medium (3)	Fair	\$12,000
2025/32	3a	FN10211	Miller St, Cammeray	Medium (3)	Fair	\$4,000
2025/32	3a	FN10217	Milray Ave, Wollstonecraft	Medium (3)	Fair	\$35,000
2025/32	3a	FN10218	Milray Ave, Wollstonecraft	Medium (3)	Fair	\$6,000
2025/32	3a	FN10219	Milson Rd, Cremorne Point	Medium (3)	Fair	\$3,000
2025/32	3a	FN10224	Milson Rd, Cremorne Point	Medium (3)	Fair	\$5,000
2025/32	3a	FN10225	Milson Rd, Cremorne Point	Medium (3)	Fair	\$18,000
2025/32	3a	FN10234	Murdoch St, Cremorne	Medium (3)	Fair	\$9,000
2025/32	3a	FN10247	Parkes St, Kirribilli	Medium (3)	Fair	\$1,000
2025/32	3a	FN10248	Parkes St, Kirribilli	Medium (3)	Fair	\$2,000
2025/32	3a	FN10253	Premier St, Neutral Bay	Medium (3)	Fair	\$3,000
2025/32	3a	FN10254	Premier St, Neutral Bay	Medium (3)	Fair	\$6,000

Year	Priority	Fence ID	Location	Risk Rating / Category	Condition	Capital Cost
2025/32	3a	FN10263	Reynolds St, Cremorne	Medium (3)	Fair	\$29,000
2025/32	3a	FN10264	Reynolds St, Cremorne	Medium (3)	Fair	\$51,000
2025/32	3a	FN10271	Rosalind St, Cammeray	Medium (3)	Fair	\$35,000
2025/32	3a	FN10274	Rowlison Pde, Cammeray	Medium (3)	Fair	\$12,000
2025/32	3a	FN10281	Shirley Rd, Wollstonecraft	Medium (3)	Fair	\$14,000
2025/32	3a	FN10282	Shirley Rd, Wollstonecraft	Medium (3)	Fair	\$2,000
2025/32	3a	FN10283	Shirley Rd, Wollstonecraft	Medium (3)	Fair	\$4,000
2025/32	3a	FN10284	Sinclair St, Wollstonecraft	Medium (3)	Fair	\$1,000
2025/32	3a	FN10299	Upper Pitt St, Kirribilli	Medium (3)	Fair	\$173,000
2025/32	3a	FN10302	Vale St, Cammeray	Medium (3)	Fair	\$40,000
2025/32	3a	FN10303	Waiwera St, Mcmahons Point	Medium (3)	Fair	\$9,000
2025/32	3a	FN10308	Weringa Ave, Cammeray	Medium (3)	Fair	\$3,000
2025/32	3a	FN10310	Weringa Ave, Cammeray	Medium (3)	Fair	\$2,000
2025/32	3a	FN10333	Alfred St North, Neutral Bay	Medium (3)	Fair	\$20,000
2025/32	3a	FN10339	Ennis Rd, Kirribilli	Medium (3)	Fair	\$6,000
2025/32	3a	FN10342	Ennis Rd, Kirribilli	Medium (3)	Fair	\$108,000
2025/32	3a	FN10349	Hampden St, North Sydney	Medium (3)	Fair	\$35,000
2025/32	3a	FN10354	Highview Ave, Neutral Bay	Medium (3)	Fair	\$1,000
2025/32	3a	FN10358	Lavender Cres, Lavender Bay	Medium (3)	Fair	\$12,000
2025/32	3a	FN10359	Lower Spofforth Walk, Cremorne Point	Medium (3)	Fair	\$45,000
2025/32	3a	FN10368	Munro St, Mcmahons Point	Medium (3)	Fair	\$1,229,000
2025/32			Contingency			\$84,184
<b>TOTAL</b>						<b>\$2,278,000</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

#### Capital Renewal – Fences and Bollards Within Parks

**Table 18: Fences and Bollards – Renewal and Replacement Program (Within Parks)**

##### Priority Projects 2022/23 (Year 1)

Year	Priority	Fence ID	Location	Risk Rating / Category	Condition	Capital Cost
2022/23	1a	FN11089	Balls Head Dr, Waverton	Very High (5)	Very Poor	\$12,000
2022/23	1a	FN11220	Fred Hutley Reserve, Cammeray	Very High (5)	Very Poor	\$7,000
2022/23	1a	FN11919	Beulah Street Reserve, Kirribilli	Very High (5)	Very Poor	\$3,000
2022/23	1b	FN11369	St Leonards Park, North Sydney	Very High (5)	Very Poor	\$2,000
2022/23	1b	FN11507	Tunks Park, Cammeray	Very High (5)	Very Poor	\$3,000
2022/23	1b	FN11741	Forsyth Park, Neutral Bay	Very High (5)	Very Poor	\$20,000

Year	Priority	Fence ID	Location	Risk Rating / Category	Condition	Capital Cost
2022/23	1c	FN11383	St Thomas' Rest Park, Crows Nest	Very High (5)	Very Poor	\$5,000
2022/23	1c	FN11865	St Thomas' Rest Park, Crows Nest	Very High (5)	Very Poor	\$4,000
2022/23	1c	FN11878	St Thomas' Rest Park, Crows Nest	Very High (5)	Very Poor	\$6,000
2022/23	1d	FN22527	Wakelin Reserve, Waverton	Very High (5)	Very Poor	\$1,000
2022/23	2a	FN11099	Ben Boyd Road Park, Neutral Bay	High (4)	Poor	\$7,000
2022/23	2a	FN11108	Berry Island Reserve, Wollstonecraft	High (4)	Poor	\$2,000
2022/23	2a	FN11109	Blues Point Reserve, Mcmahons Point	High (4)	Poor	\$11,000
2022/23	2a	FN11111	Blues Point Reserve, Mcmahons Point	High (4)	Poor	\$1,000
2022/23	2a	FN11251	John Street Open Space, Mcmahons Point	High (4)	Poor	\$1,000
2022/23	2a	FN11260	Kurraba Reserve, Kurraba Point	High (4)	Poor	\$3,000
2022/23	1b to 2a		Bollards In Various Locations	Very High (5)	Very Poor	\$12,000
<b>TOTAL</b>						<b>\$100,000</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year. Funded by Open Space and Environment Division. Priorities may change.

**Table 19: Fences and Bollards – Renewal and Replacement Program (Within Parks)**

**Priority Projects 2023/24 (Year 2)**

Year	Priority	Fence ID	Location	Risk Rating / Category	Condition	Capital Cost
2023/24	2a	FN11157	Clifton St, Waverton	High (4)	Poor	\$13,000
2023/24	2a	FN11232	Hamilton Reserve, Cammeray	High (4)	Poor	\$11,000
2023/24	2a	FN11233	West St, Cammeray	High (4)	Poor	\$2,000
2023/24	2a	FN11277	Lambert Street Gardens, Cammeray	High (4)	Poor	\$11,000
2023/24	2a	FN11291	Lord St, North Sydney	High (4)	Poor	\$10,000
2023/24	2a	FN11314	O'briens Gardens, Mcmahons Point	High (4)	Poor	\$10,000
2023/24	2a	FN11318	Phillips Street Playground, Neutral Bay	High (4)	Poor	\$6,000
2023/24	2a	FN11354	Sawmillers Reserve, Mcmahons Point	High (4)	Poor	\$5,000
2023/24	2a	FN11395	Toongarah Rd, North Sydney	High (4)	Poor	\$8,000
2023/24	2a	FN11403	Lavender To Wharf Footway, Lavender Bay	High (4)	Poor	\$9,000
2023/24	2a	FN11420	Whatmore La, Waverton	High (4)	Poor	\$3,000



Year	Priority	Fence ID	Location	Risk Rating / Category	Condition	Capital Cost
2023/24	2a	FN11481	Watt Park, Lavender Bay	High (4)	Poor	\$8,000
2023/24	2a	FN11763	Ben Boyd Road Park, Neutral Bay	High (4)	Poor	\$4,000
<b>TOTAL</b>						<b>\$100,000</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year. Funded by Open Space and Environment Division. Priorities may change.

**Table 20: Fences and Bollards – Renewal and Replacement Program (Within Parks)**

**Priority Projects 2024/25 (Year 3)**

Year	Priority	Fence ID	Location	Risk Rating / Category	Condition	Capital Cost
2024/25	2a	FN11509	East Ave, Cammeray	High (4)	Poor	\$2,000
2024/25	2a	FN11785	Bradfield Park, Milsons Point	High (4)	Poor	\$19,000
2024/25	2a	FN12016	Waverton Park (Includes Merrett Playground), WAVERTON	High (4)	Poor	\$7,000
2024/25	2a	FN12024	Sugar Works Reserve, Waverton	High (4)	Poor	\$4,000
2024/25	2a	FN12046	Balls Head Reserve, Waverton	High (4)	Poor	\$21,000
2024/25	2a	FN12180	Cremorne Reserve, Cremorne Point	High (4)	Poor	\$7,000
2024/25	2a	FN12181	Cremorne Reserve, Cremorne Point	High (4)	Poor	\$4,000
2024/25	2a	FN12295	Smoothey Park, Wollstonecraft	High (4)	Poor	\$4,000
2024/25	2b	FN11195	East Ave, Cammeray	High (4)	Poor	\$3,000
2024/25	2b		Bollards In Various Locations	Very High (5)	Very Poor	\$29,000
<b>TOTAL</b>						<b>\$100,000</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year. Funded by Open Space and Environment Division. Priorities may change.

**Table 21: Fences and Bollards – Renewal and Replacement Program (Within Parks)**

**Priority Projects 2025/32 (Year 4-10)**

Year	Priority	Fence ID	Location	Risk Rating / Category	Condition	Capital Cost
2025/32	2b	FN11076	Anderson Park, Neutral Bay	High (4)	Poor	\$11,000
2025/32	2b	FN11086	Balls Head Dr, Waverton	High (4)	Poor	\$5,000
2025/32	2b	FN11117	Alfred St South, Milsons Point	High (4)	Poor	\$15,000
2025/32	2b	FN11175	Cremorne Reserve, Cremorne Point	High (4)	Poor	\$1,000

- 27 -

Year	Priority	Fence ID	Location	Risk Rating / Category	Condition	Capital Cost
2025/32	2b	FN11192	Dowling St, Mcmahons Point	High (4)	Poor	\$2,000
2025/32	2b	FN11204	Bent St, Neutral Bay	High (4)	Poor	\$72,000
2025/32	2b	FN11219	Fred Hutley Reserve, Cammeray	High (4)	Poor	\$20,000
2025/32	2b	FN11226	Green Park, Cammeray	High (4)	Poor	\$5,000
2025/32	2b	FN11227	Green Park, Cammeray	High (4)	Poor	\$2,000
2025/32	2b	FN11368	St Leonards Park, North Sydney	High (4)	Poor	\$3,000
2025/32	2b	FN11535	Hamilton Reserve, Cammeray	High (4)	Poor	\$4,000
2025/32	2b	FN11615	Euroka Street Playground, Waverton	High (4)	Poor	\$5,000
2025/32	2b	FN11710	Willow Tree Park, Neutral Bay	High (4)	Poor	\$6,000
2025/32	2b	FN11742	Forsyth Park, Neutral Bay	High (4)	Poor	\$31,000
2025/32	2b	FN11743	Forsyth Park, Neutral Bay	High (4)	Poor	\$2,000
2025/32	2b	FN11782	Bradfield Park, Milsons Point	High (4)	Poor	\$32,000
2025/32	2b	FN11981	Balls Head Dr, Waverton	High (4)	Poor	\$2,000
2025/32	2b	FN12025	Horace St, Waverton	High (4)	Poor	\$5,000
2025/32	2b	FN12043	Balls Head Dr, Waverton	High (4)	Poor	\$15,000
2025/32	2b	FN12108	Kurraba Reserve, Kurraba Point	High (4)	Poor	\$10,000
2025/32	2b	FN22691	Coal Loader Parklands, Waverton	High (4)	Poor	\$3,000
2025/32	2c	FN11278	Lavender Bay Foreshore, Lavender Bay	High (4)	Poor	\$19,000
2025/32	2c	FN11381	St Thomas' Rest Park, Crows Nest	High (4)	Poor	\$27,000
2025/32	2c	FN11519	Cairo St, Cammeray	High (4)	Poor	\$3,000
2025/32	2c	FN11527	West St, Cammeray	High (4)	Poor	\$3,000
2025/32	2c	FN11530	Cairo St, Cammeray	High (4)	Poor	\$3,000
2025/32	2c	FN11534	Vale St, Cammeray	High (4)	Poor	\$1,000
2025/32	2c	FN11541	Tunks Park Carpark, Cammeray	High (4)	Poor	\$4,000
2025/32	2c	FN11558	Primrose Park, Cremorne	High (4)	Poor	\$1,000
2025/32	2c	FN11789	Watt Park, Lavender Bay	High (4)	Poor	\$12,000
2025/32	2c	FN11790	Watt Park, Lavender Bay	High (4)	Poor	\$29,000
2025/32	2c	FN11863	St Thomas' Rest Park, Crows Nest	High (4)	Poor	\$7,000
2025/32	2c	FN11864	St Thomas' Rest Park, Crows Nest	High (4)	Poor	\$5,000
2025/32	2c	FN11937	Winslow St, Kirribilli	High (4)	Poor	\$7,000
2025/32	2c	FN12020	Whatmore Lane Reserve, Waverton	High (4)	Poor	\$1,000

Year	Priority	Fence ID	Location	Risk Rating / Category	Condition	Capital Cost
2025/32	2c	FN22518	Primrose Park, Cremorne	High (4)	Poor	\$1,000
2025/32	2c	FN22519	Primrose Park, Cremorne	High (4)	Poor	\$1,000
2025/32	2c	FN22667	Waverton Park (Includes Merrett Playground), WAVERTON	High (4)	Poor	\$1,000
2025/32	2c	FN22784	Waverton Park (Includes Merrett Playground), WAVERTON	High (4)	Poor	\$1,000
2025/32	2c	FN22785	Waverton Park (Includes Merrett Playground), WAVERTON	High (4)	Poor	\$1,000
2025/32	2c	FN22786	Waverton Park (Includes Merrett Playground), WAVERTON	High (4)	Poor	\$1,000
2025/32	2d	FN11397	Parkes To Robertson Footway, Kirribilli	High (4)	Poor	\$3,000
2025/32	2d	FN11417	Westleigh St, Neutral Bay	High (4)	Poor	\$1,000
2025/32	2d	FN11531	Cairo St, Cammeray	High (4)	Poor	\$1,000
2025/32	2d	FN22528	Victoria Street Playground, McMahons Point	High (4)	Poor	\$1,000
2025/32	2d	FN22765	Anzac Park, Cammeray	High (4)	Poor	\$1,000
2025/32	3a	FN11084	Balls Head Reserve, Waverton	Medium (3)	Fair	\$26,000
2025/32	3a	FN11085	Balls Head Reserve, Waverton	Medium (3)	Fair	\$2,000
2025/32	3a	FN11087	Balls Head Reserve, Waverton	Medium (3)	Fair	\$17,000
2025/32	3a	FN11088	Balls Head Reserve, Waverton	Medium (3)	Fair	\$31,000
2025/32	3a	FN11097	Bellevue St, Cammeray	Medium (3)	Fair	\$3,000
2025/32	3a	FN11104	Berry Island Reserve, Wollstonecraft	Medium (3)	Fair	\$26,000
2025/32	3a	FN11105	Berry Island Reserve, Wollstonecraft	Medium (3)	Fair	\$54,000
2025/32	3a	FN11110	Blues Point Reserve, McMahons Point	Medium (3)	Fair	\$6,000
2025/32	3a	FN11123	Brennan Park, Wollstonecraft	Medium (3)	Fair	\$9,000
2025/32	3a	FN11124	Brennan Park, Wollstonecraft	Medium (3)	Fair	\$19,000
2025/32	3a	FN11126	Brennan Park, Wollstonecraft	Medium (3)	Fair	\$5,000
2025/32	3a	FN11146	Falcon St, Neutral Bay	Medium (3)	Fair	\$11,000
2025/32	3a	FN11148	Clark Park, Lavender Bay	Medium (3)	Fair	\$38,000
2025/32	3a	FN11151	Clark Park, Lavender Bay	Medium (3)	Fair	\$4,000
2025/32	3a	FN11188	Doris To Bray Footway, North Sydney	Medium (3)	Fair	\$4,000

Year	Priority	Fence ID	Location	Risk Rating / Category	Condition	Capital Cost
2025/32	2c to 3a		Bollards In Various Locations	High (4)	Poor	\$59,000
<b>TOTAL</b>						<b>\$700,000</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year. Funded by Open Space and Environment Division. Priorities may change.

**Table 22: Fences and Bollards – Renewal and Replacement Program (Within Parks)**

**Works Identified – Years 2025 - 32 (Years 4 - 10)**

Year	Priority	Fence ID	Location	Risk Rating / Category	Condition	Capital Cost
2025/32	3a	FN11154	Lavender St, Lavender Bay	Medium (3)	Fair	\$14,000
2025/32	3a	FN11166	Copes Lookout, Kirribilli	Medium (3)	Fair	\$16,000
2025/32	3a	FN11169	Cremorne Reserve, Cremorne Point	Medium (3)	Fair	\$29,000
2025/32	3a	FN11172	Cremorne Reserve, Cremorne Point	Medium (3)	Fair	\$5,000
2025/32	3a	FN11184	David Earle Reserve, McMahons Point	Medium (3)	Fair	\$8,000
2025/32	3a	FN11193	Dr Mary Booth Lookout, Kirribilli	Medium (3)	Fair	\$3,000
2025/32	3a	FN11194	East Ave, Cammeray	Medium (3)	Fair	\$1,000
2025/32	3a	FN11197	Echo St, Cammeray	Medium (3)	Fair	\$17,000
2025/32	3a	FN11207	Montpelier St, Neutral Bay	Medium (3)	Fair	\$24,000
2025/32	3a	FN11211	Yeo St, Neutral Bay	Medium (3)	Fair	\$5,000
2025/32	3a	FN11235	Harry Howard Reserve, Wollstonecraft	Medium (3)	Fair	\$25,000
2025/32	3a	FN11236	Rocklands To Newlands Footway, Wollstonecraft	Medium (3)	Fair	\$17,000
2025/32	3a	FN11249	Ilbery Park, Neutral Bay	Medium (3)	Fair	\$5,000
2025/32	3a	FN11257	Kurraba Reserve, Kurraba Point	Medium (3)	Fair	\$32,000
2025/32	3a	FN11258	Kurraba Reserve, Kurraba Point	Medium (3)	Fair	\$39,000
2025/32	3a	FN11261	Kurraba Reserve, Kurraba Point	Medium (3)	Fair	\$2,000
2025/32	3a	FN11263	Kurraba Wharf Reserve, Kurraba Point	Medium (3)	Fair	\$3,000
2025/32	3a	FN11264	Kurraba Wharf Reserve, Kurraba Point	Medium (3)	Fair	\$1,000
2025/32	3a	FN11271	Kirribilli Ave, Kirribilli	Medium (3)	Fair	\$7,000
2025/32	3a	FN11272	Kirribilli Ave, Kirribilli	Medium (3)	Fair	\$13,000
2025/32	3a	FN11273	Kirribilli Ave, Kirribilli	Medium (3)	Fair	\$10,000
2025/32	3a	FN11276	Kirribilli Ave, Kirribilli	Medium (3)	Fair	\$3,000
2025/32	3a	FN11280	Lavender Bay Foreshore,	Medium (3)	Fair	\$4,000

- 30 -

Year	Priority	Fence ID	Location	Risk Rating / Category	Condition	Capital Cost
			Lavender Bay			
2025/32	3a	FN11283	Middle St, McMahons Point	Medium (3)	Fair	\$6,000
2025/32	3a	FN11285	Middle St, McMahons Point	Medium (3)	Fair	\$1,000
2025/32	3a	FN11296	Kurraba Rd, Neutral Bay	Medium (3)	Fair	\$7,000
2025/32	3a	FN11301	Milson Park, Kirribilli	Medium (3)	Fair	\$153,000
2025/32	3a	FN11308	Miller St, Cammeray	Medium (3)	Fair	\$7,000
2025/32	3a	FN11321	Pine Street/Arkland Street Reserve, Cammeray	Medium (3)	Fair	\$4,000
2025/32	3a	FN11323	Primrose Park, Cremorne	Medium (3)	Fair	\$7,000
2025/32	3a	FN11325	Primrose Park, Cremorne	Medium (3)	Fair	\$29,000
2025/32	3a	FN11334	Prior Avenue Reserve, Cremorne Point	Medium (3)	Fair	\$6,000
2025/32	3a	FN11346	River Road Pedestrian Link, Wollstonecraft	Medium (3)	Fair	\$7,000
2025/32	3a	FN11347	River Road Pedestrian Link, Wollstonecraft	Medium (3)	Fair	\$3,000
2025/32	3a	FN11348	Balfour La, Wollstonecraft	Medium (3)	Fair	\$23,000
2025/32	3a	FN11352	Ellalong Rd, Cremorne	Medium (3)	Fair	\$4,000
2025/32	3a	FN11353	Samora Ave, Cremorne	Medium (3)	Fair	\$2,000
2025/32	3a	FN11360	Sinclair St, Wollstonecraft	Medium (3)	Fair	\$7,000
2025/32	3a	FN11362	Rocklands La, Wollstonecraft	Medium (3)	Fair	\$2,000
2025/32	3a	FN11363	Smoothey Park, Wollstonecraft	Medium (3)	Fair	\$5,000
2025/32	3a	FN11374	Blues Point Rd, North Sydney	Medium (3)	Fair	\$13,000
2025/32	3a	FN11379	St Thomas' Rest Park, Crows Nest	Medium (3)	Fair	\$68,000
2025/32	3a	FN11396	Vernon St, Cammeray	Medium (3)	Fair	\$25,000
2025/32	3a	FN11399	Lavender To Wharf Footway, Lavender Bay	Medium (3)	Fair	\$19,000
2025/32	3a	FN11400	Walker Street Road Reserve, Lavender Bay	Medium (3)	Fair	\$2,000
2025/32	3a	FN11402	Walker Street Road Reserve, Lavender Bay	Medium (3)	Fair	\$11,000
2025/32	3a	FN11404	Walker Street Road Reserve, Lavender Bay	Medium (3)	Fair	\$6,000
2025/32	3a	FN11407	Watt Park, Lavender Bay	Medium (3)	Fair	\$22,000
2025/32	3a	FN11408	Watt Park, Lavender Bay	Medium (3)	Fair	\$3,000
2025/32	3a	FN11411	Waverton Park (Includes Merrett Playground), WAVERTON	Medium (3)	Fair	\$2,000
2025/32	3a	FN11415	West Crescent Street Road Reserve, McMahons Point	Medium (3)	Fair	\$3,000
2025/32	3a	FN11424	Willow Tree Park, Neutral Bay	Medium (3)	Fair	\$9,000

- 31 -

Year	Priority	Fence ID	Location	Risk Rating / Category	Condition	Capital Cost
2025/32	3a	FN11427	Wilson St, Cammeray	Medium (3)	Fair	\$18,000
2025/32	3a	FN11433	Wrixton Park, Kirribilli	Medium (3)	Fair	\$1,000
2025/32	3a	FN11434	Bent St, Neutral Bay	Medium (3)	Fair	\$9,000
2025/32	3a	FN11435	Merlin St, Neutral Bay	Medium (3)	Fair	\$3,000
2025/32	3a	FN11453	Cremorne Reserve, Cremorne Point	Medium (3)	Fair	\$7,000
2025/32	3a	FN11474	Bank St, North Sydney	Medium (3)	Fair	\$8,000
2025/32	3a	FN11475	Toongarah Rd, North Sydney	Medium (3)	Fair	\$7,000
2025/32	3a	FN11480	Watt Park, Lavender Bay	Medium (3)	Fair	\$7,000
2025/32	3a	FN11482	Anderson Park, Neutral Bay	Medium (3)	Fair	\$4,591
2025/32			Contingency			\$84,000
<b>TOTAL</b>						<b>\$887,591</b>




**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year. Funded by Open Space and Environment Division. Priorities may change.



**Fence and Bollard – Renewal Program**

	
<p>North Sydney Oval Picket Fence replacement 2015</p>	<p>Berry Street – New Stainless Steel Bollards 2016</p>
	
<p>Berry Street new – stainless steel traffic bollards 2017</p>	<p>Young Street – Neutral Bay Road Closure – Bollards 2016</p>
	
<p>Military Road Neutral Bay (Before) –Decorative Safety Fence</p>	<p>Military Road Neutral Bay (After) –Decorative Safety Fence</p>



	
<p>McDougall Street Kirribilli – Timber Fence replacement 2016</p>	<p>Willoughby Street – Pocket Park Fence – refurbishment 2014</p>
	
<p>Doris Street – Neutral Bay – Fence Repairs 2015</p>	

**Fences and Bollards – Performance Measures**

The effectiveness of the asset management plan can be measured in the following ways:

- The degree to which the required projected expenditures identified in this asset management plan are incorporated into the long term financial plan,
- The degree to which 1-5 year detailed works programs, budgets, business plans and corporate structures take into account the 'global' works program trends provided by the asset management plan,
- The degree to which the existing and projected service levels and service consequences (what we cannot do), risks and residual risks are incorporated into the Strategic Plan and associated plans,
- The Asset Renewal Funding Ratio achieving the target of 1.0.

**Fences and Bollards – References**

- Fences and Bollards Data Collection & Condition Survey Audit by North Sydney Council.
- IPWEA, 2006, 'International Infrastructure Management Manual', Institute of Public Works Engineering Australasia, Sydney, [www.ipwea.org/IIMM](http://www.ipwea.org/IIMM)
- IPWEA, 2008, 'NAMS.PLUS Asset Management', Institute of Public Works Engineering Australasia, Sydney, [www.ipwea.org/namsplus](http://www.ipwea.org/namsplus).
- IPWEA, 2015, 2nd edn., 'Australian Infrastructure Financial Management Manual', Institute of Public Works Engineering Australasia, Sydney, [www.ipwea.org/AIFMM](http://www.ipwea.org/AIFMM).
- IPWEA, 2015, 3rd edn., 'International Infrastructure Management Manual', Institute of Public Works Engineering Australasia, Sydney, [www.ipwea.org/IIMM](http://www.ipwea.org/IIMM)
- IPWEA, 2012 LTFP Practice Note 6 PN Long Term Financial Plan, Institute of Public Works Engineering Australasia, Sydney

## APPENDICES

## Appendix A: Maintenance Management System

## Defect Management Inspection - Fences

Inspection areas have been defined in accordance with their usage – high (**red**), medium (**blue**) or low (**white**)

Inspection frequencies are based on these areas as defined by the reference maps and the resources currently available to undertake the inspections. The results of inspections are downloaded into the MMDS database.

**Red** – 2 times per year

**Blue** – Once each year

**White** – Once every 2 years

There are 5 categories in which a defect may be placed.

<b>Cat 5</b>		Will be completed or <b>made safe</b> no later than 2 working days after allocation of defect to work crew. If made safe defect will then be re-categorised as Cat 4 or Cat 3.
<b>Cat 4</b>		Will be repaired no later than 10 working days after allocation of defect to work crew.
<b>Cat 3</b>		Will be repaired no later than 40 working days after allocation of defect to work crew.
<b>Cat 2</b>		Will be repaired no later than 160 working days after allocation of defect to work crew.
<b>Cat 1</b>		As new. Surface displaying no defects. May have aesthetic issues such as gum, stains, services mark-up, etc.

## Intervention Matrix – Fences

DEFECT	SEVERITY	RISK ADJUSTED FOR PEDESTRIAN VOLUME AND AGE		
		WHITE	BLUE	RED
MINOR DEFECTS ONLY WITH FADED PAINT or GRAFFITI		LOW	LOW	LOW
REQUIRES MAINTENANCE TO RETURN TO ACCEPTABLE LEVEL OF SERVICE; TYPICALLY, MINOR EVIDENCE OF WOOD ROT, UNSTABLE MOVEMENT OF POSTS; DAMAGED CHAIN WIRE MESH; PRESENCE OF RUST; LOOSENED STRAPS ON TIMBER FENCE	Slight	MEDIUM	HIGH	HIGH
SECTIONS REQUIRE REPLACEMENT OR SIGNIFICANT RENEWAL; EVIDENCE OF WOOD ROT; POSTS MOVING WITH EASE	Moderate	HIGH	HIGH	VERY HIGH
BROKEN BEYOND REPAIR; OVER 50% REQUIRES REPLACEMENT; HAS MISSING SECTIONS; VERY UNSTABLE POSTS	Extreme	HIGH	VERY HIGH	VERY HIGH

## NOTES:

1. Appearance defects (gum, stains, surface marks etc) are not safety issues. Response time TBA. Record in "Category" as "A".
2. **Red** areas are where failure is most disruptive and expensive to the community/users and/or high traffic (both pedestrian and vehicular) flows, eg. retail/commercial areas; schools; hospitals; plazas.
3. **Blue** areas have medium traffic flows, eg. streets leading to retail/commercial areas; schools; hospitals; plazas.
4. **White** areas have low traffic flows, eg. residential street.

- 37 -

**Appendix B: Safety Barrier Upgrade****Priority Projects**

<b>Fence ID</b>	<b>Location</b>	<b>Road Hierarchy</b>	<b>Length (m)</b>	<b>Upgrade Estimate</b>
FN10035	Bent St, Neutral Bay	Collector	199	\$598,000
FN10038	Bent St, Neutral Bay	Collector	59	\$176,000
FN10071	Carr St, Waverton	Collector	70	\$211,000
FN10379	Milson Rd, Cremorne Point	Collector	1	\$4,000
FN10933	Milson Rd, Cremorne Point	Collector	19	\$59,000
FN10934	Milson Rd, Cremorne Point	Collector	8	\$23,000
FN10516	Carter St, Cammeray	Local	51	\$152,000
FN10087	Cowdroy Ave, Cammeray	Local	30	\$90,000
FN10088	Cowdroy Ave, Cammeray	Local	37	\$111,000
FN10532	Cowdroy Ave, Cammeray	Local	39	\$117,000
FN10101	Cremorne Rd, Cremorne Point	Local	5	\$15,000
FN10110	East Crescent St, McMahons Point	Local	82	\$247,000
FN10119	Ellalong Rd, Cremorne	Local	58	\$174,000
FN11023	Ellalong Rd, Cremorne	Local	54	\$162,000
FN11026	Ellalong Rd, Cremorne	Local	80	\$240,000
FN10870	Grasmere Rd, Cremorne	Local	83	\$249,000
FN10913	Kareela Rd, Cremorne Point	Local	29	\$88,000
FN10215	Milray Ave, Wollstonecraft	Local	139	\$416,000
FN10216	Milray Ave, Wollstonecraft	Local	104	\$312,000
FN10217	Milray Ave, Wollstonecraft	Local	85	\$256,000
FN10218	Milray Ave, Wollstonecraft	Local	2	\$5,000
FN11044	Milray Ave, Wollstonecraft	Local	7	\$22,000
FN11047	Milray Ave, Wollstonecraft	Local	17	\$51,000
FN11058	Milray Ave, Wollstonecraft	Local	6	\$18,000
FN10513	Pine St, Cammeray	Local	108	\$324,000
FN10517	Pine St, Cammeray	Local	130	\$392,000
FN10263	Reynolds St, Cremorne	Local	76	\$228,000
FN10264	Reynolds St, Cremorne	Local	135	\$405,000
FN11032	Richmond Ave, Cremorne	Local	18	\$54,000
FN11033	Richmond Ave, Cremorne	Local	12	\$36,000
FN12234	Richmond Ave, Cremorne	Local	28	\$85,000
FN10274	Rowlison Pde, Cammeray	Local	32	\$96,000
FN10289	Telopea St, Wollstonecraft	Local	10	\$30,000
FN10523	The Boulevard, Cammeray	Local	35	\$105,000
FN10560	The Boulevard, Cammeray	Local	9	\$28,000
FN10302	Vale St, Cammeray	Local	50	\$149,000
FN10559	Vernon St, Cammeray	Local	12	\$36,000
FN10411	West St, Cammeray	Local	33	\$98,000

- 38 -

Fence ID	Location	Road Hierarchy	Length (m)	Upgrade Estimate
FN10324	Willoughby St, Kirribilli	Local	4	\$12,000
FN10326	Wonga Rd, Cremorne	Local	15	\$46,000
FN12285	Balfour St, Wollstonecraft	Local	2	\$7,000
FN10012	Barry St, Neutral Bay	Lane	54	\$163,000
FN11234	Bridgeview Ave, Cammeray	Lane	138	\$416,000
FN11196	East Ave, Cammeray	Lane	8	\$23,000
FN10134	Gerard La, Cremorne	Lane	7	\$23,000
FN11128	Little Wonga Rd, Cremorne	Local	14	\$44,000
FN10464	Lodge Rd Loop Access, Cremorne	Lane	44	\$131,000
FN10238	North Ave, Cammeray	Lane	38	\$114,000
FN11550	Rowlison Pde, Cammeray	Local	10	\$31,000
FN10458	Walumetta Dr, Wollstonecraft	Lane	16	\$50,000
FN10471	Whatmore St, Waverton	Lane	28	\$84,000
FN10818	Whatmore St, Waverton	Lane	6	\$17,000
<b>TOTAL</b>			<b>2,333</b>	<b>\$7,023,000</b>


**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year. Priorities may change subject to detailed inspection and design.



# NORTH SYDNEY COUNCIL ASSET MANAGEMENT PLAN FOOTPATHS 2022-2032





<b>Document Control</b>		<b>Asset Management Plan</b>				
Document ID : NSC AMP Footpaths 2023						
<b>Rev No</b>	<b>Date</b>	<b>Revision Details</b>	<b>Author</b>	<b>Reviewer</b>	<b>Approver</b>	
1	22/11/2021	First Draft	IM	JVH/DM	DM	

**Table of Contents**

Footpaths (Within Roads, Parks & Walking Tracks).....	4
Executive Summary .....	4
Footpaths – Future Demand.....	6
Footpaths – Levels of Customer Service.....	6
Footpaths – Condition .....	8
Footpaths – Review of Useful Lives .....	9
Footpaths – Funding Strategy.....	11
Footpaths – Capital works .....	11
Footpaths – Managing the Risks.....	11
Footpaths – Maintenance.....	16
Footpaths – Prioritised Expenditure Forecast .....	16
Footpaths – Valuation Forecast.....	17
Footpaths – Key Assumptions – Financial Forecasts .....	17
Footpaths – Creation / Acquisition / Upgrade Program .....	17
Footpaths – Disposal Plan.....	17
Footpaths – Forecast reliability and confidence.....	17
Footpaths – Improvement Plan .....	17
Footpaths – Monitoring and Review Procedures .....	18
Footpaths – Renewal and Replacement Program .....	18
Footpaths – Funding Scenarios.....	18
Footpaths – Service and Risk Tradeoffs .....	18
Service trade-off .....	19
Risk trade-off .....	19
Footpaths – Renewal and Replacement Program – FY2023-FY2032 (10 Year Plan) .....	19
Capital Renewal – Footpaths within Road Reserves.....	19
Priority Projects 2022/23 (Year 1) .....	19
Priority Projects 2023/24 (Year 2) .....	20
Priority Projects 2024/25 (Year 3) .....	21
Priority Projects 2025/32 (Years 4-10).....	21
Works Identified – Years 2025 - 32 (Years 4 - 10).....	24
Capital Renewal – Footpaths Within Parks.....	28
Priority Projects 2022/23 (Year 1) .....	28
Priority Projects 2023/24 (Year 2) .....	29
Priority Projects 2024/25 (Year 3) .....	29
Priority Projects 2025/32 (Year 4-10) .....	30
Footpaths – Performance Measures .....	35
Footpaths – References .....	36
APPENDICES.....	37
APPENDIX A: Maintenance Management System .....	37

## Footpaths (Within Roads, Parks & Walking Tracks)

### Executive Summary

In the North Sydney Council Local Government Area (LGA) there is approximately a total of 263km of footpath assets located within road reserves and parks (including walking tracks).

This Asset Management Plan details information about the infrastructure assets of Footpaths (Roads, Parks and Walking Tracks). It outlines the required actions to maintain the current level of service in the most cost effective manner while outlining associated risks within each of the asset classes.

Footpath assets in North Sydney provide a vital service to the local community providing access to all parts of the council area in all weather conditions.

Different surface treatments are specified for the North Sydney Centre, Village Centres/Activity Strips, Special Areas (St Leonards, Education Precinct and Bradfield Park) and Local/Residential Areas in the Public Domain Style Manual (PDSM).

The footpath surface treatment, in general, is as follows:

- North Sydney Centre and Education Precinct is granite on a reinforced concrete slab base.
- Village Centres/Activity Strips and the Special Area of St Leonards is precast concrete unit paver on a reinforced concrete slab base.
- Local/Residential Areas is concrete with a wood float finish.
- Parks and reserves is a mixture of Asphalt and Concrete.

In 2019 Rapid Map Services consultants conducted a Footpath condition audit for North Sydney Council. The objective was to conduct a detailed inventory data collection snapshot to determine condition and defects.

Council has approximately 263.6km of footpath assets on roads, parks and walking tracks in total.

Overall, some 93.5% of the portfolio is in very good to fair condition (1-3) and 6.5% in poor to very poor condition (4-5).

A Risk rating was assigned to each component. Overall, 93.5% of the portfolio has a low to medium risk rating and 6.5% has a high to very high risk rating.

The total Replacement Value of the portfolio is \$123,242,686 as at 30 June 2021. The values are shown in the Table below.

**Table 1: Footpaths - Summary Table**

Asset Category	Length (m)	Replacement Value (2021)	Accumulated Depreciation (2021)	Fair Value (2021)	Depreciation Expense
Footpaths - Roads	263,637	\$123,242,686	\$41,397,229	\$81,845,457	\$3,190,669
<b>TOTAL</b>	<b>263,637</b>	<b>\$123,242,686</b>	<b>\$41,397,229</b>	<b>\$81,845,457</b>	<b>\$3,190,669</b>

The following table provides a summary of the quantities and replacement values for each footpath type. The portfolio is dominated by concrete and paved footpaths.

- 5 -

**Table 2: Footpaths – Typology**

<b>Footpath Type</b>	<b>Material</b>	<b>Length (m)</b>	<b>Sum of Replace Costs</b>
<b>Foot Bridge</b>	Concrete	41	\$147,356
	Fibreglass	7	\$31,237
	Steel	67	\$250,605
	Timber	159	\$349,123
<b>Pedestrian Footpath</b>	Asphaltic Concrete	11,750	\$1,903,268
	Brick Paver	788	\$495,307
	CNS Brick paver (Chamfered)	13,330	\$11,988,072
	CNS Brick Paver (Not Chamfered)	8,187	\$6,545,832
	Concrete	199,516	\$42,437,980
	Concrete Paver	216	\$150,643
	Ernest Place Style Honed Concrete Paver	620	\$1,057,980
	Granite Paver	5,741	\$16,276,391
	Gravel	1,195	\$93,214
	Interlocking Concrete Paver - Charcoal	65	\$46,723
	Interlocking Concrete Paver - Terracotta	601	\$840,014
	Mitchell St Plaza Style Pavers	1,609	\$2,187,829
	Precast Concrete Paver- Honed	5,126	\$5,624,538
	Sandstone Paver	42	\$105,158
	Soft Fall Material	59	\$23,740
	Stone	234	\$260,773
	Stone Pitchers	241	\$408,516
	Synthetic Turf	15	\$8,459
	Unsealed	648	\$0
<b>Stairs</b>	Asphaltic Concrete	151	\$673,292
	Brick Paver	29	\$90,320
	CNS Brick paver (Chamfered)	117	\$882,703
	CNS Brick Paver (Not Chamfered)	55	\$286,952
	Concrete	5,336	\$19,350,662
	Concrete Paver	7	\$13,965
	Granite Paver	39	\$238,745
	Sandstone Paver	133	\$760,199
	Steel	123	\$745,984
	Stone	1,367	\$6,320,492
	Stone Pitchers	49	\$238,045
	Timber	829	\$1,780,132
	Unsealed	100	\$169,378
<b>Viewing Platform</b>	Concrete	4	\$1,967
	Metal	68	\$324,195
	Timber	23	\$43,605
	Timber, Concrete	5	\$16,588

- 6 -

Footpath Type	Material	Length (m)	Sum of Replace Costs
Walking Track	Gravel	36	\$11,068
	Soft Fall Material	10	\$5,630
	Stone	51	\$56,005
	Unsealed	4,850	\$0
<b>Grand Total</b>		<b>263,637</b>	<b>\$123,242,686</b>

### Footpaths – Future Demand

Drivers affecting demand for footpaths include things such as population change, regulation changes – new development, community expectations (Public Safety), technological changes, economic factors and environmental factors. As North Sydney is a “brown field” site most footpath capital projects are either renewal or upgrade to meet Public Domain Style Manual. Generally no new paths are built. The provision of new footpaths is assessed as required.

### Footpaths – Levels of Customer Service

Service levels are defined service levels in two terms, customer levels of service and technical levels of service. These are supplemented by organisational measures.

**Customer Levels of Service** measure how the customer receives the service and whether value to the customer is provided.

Customer levels of service measures used in the asset management plan are:

**Quality**                      How good is the service ... *what is the condition or quality of the service?*

**Function**                      Is it suitable for its intended purpose .... *Is it the right service?*

**Capacity/Use**                      Is the service over or under used ... *do we need more or less of these assets?*

The current and expected customer service levels are detailed in Table 3 below.

**Table 3: Footpaths – Levels of Customer Service**

Service Attribute	Expectation	Performance Measure Used	Current Performance	Desired Position in 10 Years.
<b>Quality</b>	Footpaths are well maintained.	Percentage of Footpaths in 'very good', 'good' or 'Fair' (1, 2, 3) condition and percentage 'poor' or 'very poor' (4, 5) Condition.	93.5% of Footpaths in in 'very good', 'good' or 'Fair' (1, 2, 3) condition.  6.5% of Footpaths in 'poor' or 'very poor' (4, 5) Condition.	Maintain – Condition 1-2-3  Improve and replace Condition 4-5
<b>Function</b>	Footpaths meet the standard of the Public Domain Style Manual and Infrastructure Specification.	Area of Footpaths meet the standard of the Public Domain Style Manual and Infrastructure Specification.	Footpaths constructed meet the standard of the Public Domain Style Manual and Infrastructure Specification.	All Footpaths meet the standard of the Public Domain Style Manual and Infrastructure Specification.
<b>Capacity and Use</b>	Appropriate provision of formed footpaths.	New Footpaths provided subject to needs, physical constraints, demand, and cost.	Footpath provision assessed as required.	Footpath provision assessed as required.

### Footpaths – Levels of Technical Service

**Technical Levels of Service** - Supporting the customer service levels are operational or technical measures of performance. These technical measures relate to the allocation of resources to service activities to best achieve the desired customer outcomes and demonstrate effective performance.

Technical service measures are linked to the activities and annual budgets covering:

- Operations – the regular activities to provide services (e.g. cleansing, inspections, etc).
- Maintenance – the activities necessary to retain an asset as near as practicable to an appropriate service condition. Maintenance activities enable an asset to provide service for its planned life (e.g. footpath repair – patching, minor works),
- Renewal – the activities that return the service capability of an asset up to that which it had originally (e.g. footpath replacement and or footpath reconstruction),
- Upgrade/New – the activities to provide a higher level of service (e.g. widening a footpath, constructing a footpath where none previously existed, replacing an existing footpath with a different type as per Public Domain Style Manual).

Table 4 shows the technical levels of service expected to be provided for Footpaths. The 'Desired' position in the table documents the position being recommended in this Asset Management Plan

**Table 4: Footpaths – Technical Levels of Service**

Service Attribute	Service Activity Objective	Activity Measure Process	Current Performance	Desired for Optimum Lifecycle Cost
<b>Operations</b>	Proactive inspections to monitor condition	Inspect as per MMS schedule	Inspect as per MMS schedule	Inspect as per MMS schedule
<b>Maintenance</b>	Service requests completed within adopted timeframes	Respond to inspection outcomes and complaints	Minor repairs undertaken in accordance with MMS intervention matrix and taking into account available resources	Minor repairs undertaken in accordance with MMS intervention matrix with no resource issues
<b>Renewal</b>	Maintain existing assets to a satisfactory condition	Percentage of Footpaths in 'very good', 'good' or 'Fair' (1, 2, 3) condition and percentage 'poor' or 'very poor' (4, 5) Condition.	93.5% of Footpaths in 'very good', 'good' or 'Fair' (1, 2, 3) condition.  6.5% of Footpaths in 'poor' or 'very poor' (4, 5) Condition.	Maintain – Condition 1-2-3  Improve and replace Condition 4-5
<b>Upgrade</b>	Footpaths meet the standard of the Public Domain Style Manual.	Area of Footpaths meet the standard of the Public Domain Style Manual.	Footpaths constructed meet the standard of the Public Domain Style Manual.	All Footpaths meet the standard of the Public Domain Style Manual.

- 8 -

Service Attribute	Service Activity Objective	Activity Measure Process	Current Performance	Desired for Optimum Lifecycle Cost
New	Satisfactory provision of formed footpaths.	New Footpaths provided subject to needs, physical constraints, demand, and cost.	Footpath provision assessed as required.	Footpath provision assessed as required.

### Footpaths – Condition

The condition of Council's kerb and gutter network was surveyed in 2019 by Consultants, Rapid Map Services Pty Ltd in conjunction with Asset & Facilities Management Consulting Pty Ltd. The following condition criteria was used.

**Table 5: Footpaths Condition Survey Criteria**

Grade	Condition	Description
0	Not inspected	Not inspected as no footpath structure exists at segment or due to access issues.
1	Very Good	Almost new construction, with perfect alignment and excellent surface condition. Displays no defects, substantial surface blemishes, post construction patching or reinstatements. <b>No work required</b>
2	Good	Sound construction with good surface condition and no obvious distortion. May show limited surface ageing by revealing the tops of sporadic stone aggregates. Still exhibits a smooth surface profile. May include joint stepping < 10mm, successful reinstatements, isolated slight surface grinding or minor distress not exceeding 10% of inspection area. <b>Only minor work required</b>
3	Fair	Reasonable construction with serviceable surface. May show moderate surface ageing revealing substantial portions of stone aggregates. May display minor surface defects, moderate to heavy surface grinding, areas of substantial surface deterioration or distortions that consist of stepping between 10mm and 25mm vertically or reasonably obvious undulations up to 75mm, non-reinstated areas, minor defects affecting < 25% of inspection area, major defects affecting < 10% of inspection area. <b>Some work required</b>
4	Poor	Construction displays substantial surface deterioration. May show surface ageing where the majority is rough from highly exposed or missing aggregates. May display distortions that consist of stepping between 25mm and 50mm vertically or obvious undulations between 75mm and 150mm affecting pedestrian traffic, minor defects affecting between 25% and 50% of inspection area, major defects affecting < 25% of inspection area. <b>Some replacement or rehabilitation needed</b>
5	Very Poor	Construction displays extensive surface deterioration. May show extreme ageing of surface. May display distortions that consist of stepping > 50mm or undulation > 150mm within the predominant pedestrian traffic area, minor defects affecting >50% of inspection area, major defects affecting > 25% of inspection area. <b>Urgent replacement/rehabilitation required</b>

Notes:

- The above descriptions are considered generic and apply to all hard standing constructions regardless of material type.



- Minor defects include, Cracking < 5mm wide, Chipping or Spalling < 150mm diameter & < 25mm deep, Corner or Edge Breaks < 150mm diagonal & < 15mm distortion.
- Major defects include, Cracking > 5mm width, Cracking with > 5mm differential movement, Stepping > 25mm, Distortion > 75mm, Inadequate surface grip.

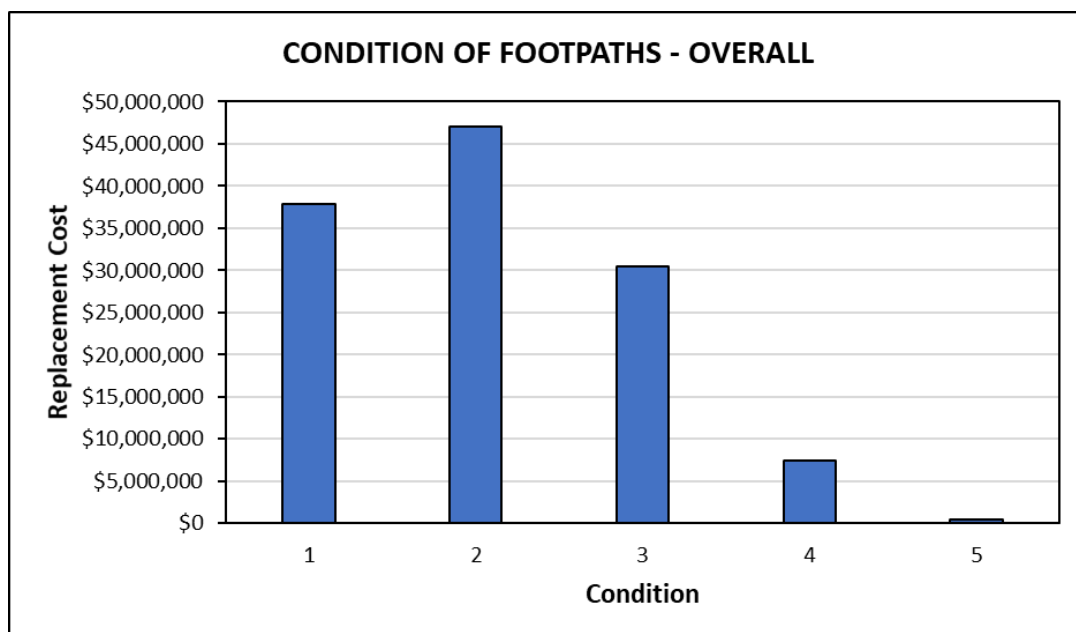
The Table below shows the Replacement Cost for each of the condition scores. It should be noted that the replacement cost is based on the condition of footpaths in minimum 10m segments. In practice and where funds permit footpath sections in condition 3 are generally replaced at the same time as footpath sections in condition 4 or 5 if they are adjacent, there are potential risks, and it is cost effective.

**Table 6: Footpaths Condition Survey Results - Overall**

Condition	Length (m)	Replacement Cost	% Condition (based on cost)
1 (Very Good)	61,701	\$37,818,161	30.6%
2 (Good)	116,883	\$47,054,502	38.2%
3 (Fair)	71,857	\$30,436,684	24.7%
4 (poor)	12,513	\$7,461,319	6.1%
5 (Very Poor)	682	\$472,020	0.4%
<b>Total</b>	<b>263,637</b>	<b>\$123,242,686</b>	<b>100.0%</b>

It is important to note that replacement costs are based on “like for like” replacement only. Council has an adopted Public Domain Style Manual (PDSM) which includes, for example, replacing standard pavers on road base with granite pavers on a concrete base in the CBD. Therefore, replacing the existing footpath materials with upgraded materials will increase the replacement cost significantly.

The Graph below shows the condition of Footpath assets in terms of replacement cost.



**Footpaths – Review of Useful Lives**

- 10 -

The Table below shows the ranges of Useful Lives from the IPWEA 2017 Practice Note – “Useful Life of Infrastructure” from detailed studies in South Australia, Tasmania, as well as an IPWEA Workshop.

USEFUL LIVES OF FOOTPATHS			
Primary Material	IPWEA	South Aust.	Tasmania
Asphaltic Concrete	25 to 30	40 to 80 aver 54	Lower 20 upper 30
CNS Brick paver	40 to 60	30 to 60 aver 46	Lower 10 upper 50
Concrete	50	40 to 80 aver 54	Lower 50 upper 80
Gravel		5 to 40 aver 16	

The useful lives of all types of kerb and gutter assets were reviewed by Australis Pty Ltd and are shown in the following Table.

Footpath Type	Material	Useful Life (Years)
<b>Foot Bridge</b>	Concrete	60
	Fibreglass	30
	Steel	60
	Timber	30
<b>Pedestrian Footpath</b>	Asphaltic Concrete	20
	Brick Paver	30
	CNS Brick paver (Chamfered)	30
	CNS Brick Paver (Not Chamfered)	30
	Concrete	40
	Concrete Paver	30
	Ernest Place Style Honed Concrete Paver	40
	Granite Paver	50
	Gravel	10
	Interlocking Concrete Paver - Charcoal	40
	Interlocking Concrete Paver - Terracotta	40
	Mitchell St Plaza Style Pavers	40
	Precast Concrete Paver- Honed	40
	Sandstone Paver	20
	Soft Fall Material	10
	Stone	20
	Stone Pitchers	20
	Synthetic Turf	10
	Unsealed	10
	<b>Stairs</b>	Asphaltic Concrete
Brick Paver		40
CNS Brick paver (Chamfered)		40
CNS Brick Paver (Not Chamfered)		40
Concrete		40
Concrete Paver		40
Granite Paver		40
Sandstone Paver		40
Steel		60
Stone	40	

- 11 -

Footpath Type	Material	Useful Life (Years)
	Stone Pitchers	40
	Timber	30
	Unsealed	10
<b>Viewing Platform</b>	Concrete	50
	Metal	60
	Timber	30
	Timber, Concrete	30
<b>Walking Track</b>	Gravel	10
	Soft Fall Material	10
	Stone	20
	Unsealed	10

Based on the useful lives as reviewed in the Table above, the forecast Depreciation is as follows:

<b>Capital funding to maintain a renewal ratio of 1</b>	
	<b>Annual Depreciation</b>
<b>Footpaths</b>	<b>\$3,190,669</b>

A budget of \$3,190,669 is required on average over the long term to maintain the condition of Council's footpath network, noting that fluctuations in renewal requirements in the medium term.

#### **Footpaths – Funding Strategy**

The Asset Renewal Funding Ratio is the most important indicator. It compares funding with depreciation. An Asset Renewal Funding Ratio of 1 or greater sustained over the long term indicates the optimal renewal and replacement of assets.

The forecast for Depreciation (or Long Term Average Annual Asset Consumption) is \$3,190,669. Therefore, an annual average capital renewal funding of \$3,190,669 (2021 dollars) will achieve an Asset Renewal Funding Ratio of 1.

The cost to fully replace assets identified by Consultants, Rapid Map Services Pty Ltd in condition 4 and 5 as well as the cost to replace the condition 3 assets which will become condition 4 over the next 10 is \$38,370,023. This is an average annual cost of \$3,837,002 which is greater than the \$3,190,669 Depreciation Expense and also greater than the average annual forecast budget of \$2,868,392. With further investigation and detailed design it is hoped that alternate and lesser cost solutions may be possible to maintain footpath assets at an optimal level.

#### **Footpaths – Capital works**

Replacement of footpath segments is assumed to be a Capital works project.

The ranking criteria used to determine priority of identified renewal and replacement proposals is detailed in Table 7. A priority for action of 1 to 5 has been assigned to each footpath requiring capital works as described in the following table.

#### **Footpaths – Managing the Risks**

There are risks associated with providing and maintaining footpaths. Critical risks identified include:

- Footpath failure caused by tree roots resulting in displacement, cracking or loose underfoot sections of pavement

- 12 -

- Damage by vehicles travelling, eg. footpath sweepers or standing, eg. utility services vehicles, delivery vehicles on the footpath causing collapse, cracking or loose underfoot sections of paving
- Significant ponding, excessive overland flow caused by significant rainfall event.
- Utility Services damage caused when Utility Authorities install new infrastructure or undertake maintenance on existing infrastructure
- Premature footpath failure due to poor initial construction by either Developer or Council contractors

The following risk response table was used to identify those footpath segments requiring action within the next 10 years.

**Table 7: Footpaths – Risk Response Table**

Level of Risk		Category	Action Required	Time frame for upgrade or replacement
VH	Very High Risk	5	Immediate corrective action	1 year
H	High Risk	4	Prioritised action required	2-10 Years
M	Medium Risk	3	Planned action required	4-10 Years
L	Low Risk	2	Manage by routine procedures	Inspections 1-2 years
New	No Risk	1	None	None

Consideration has been given to each footpath segment, whether to replace the asset or perform maintenance on it.

Footpath segments that have a **Very High or High** risk rating were considered to need replacement within 1-10 year forecast period.

Footpath segments with a **Medium** risk rating were also considered needing replacement within the 4-10 year forecast period.

**Examples of footpath risks in the North Sydney LGA.**



Asphaltic concrete footpath in poor condition





Utility services restorations/reinstatements



Stairs in poor condition



Concrete footpath in poor condition





Tree root affected pavers and tree site infill



Tree root affected concrete footpath including ponding



Footpath collapse due to base course wash out

Council will endeavour to manage these risks within available funding by prioritising Footpath renewal works based on the Footpaths Condition Audit prepared by Consultants, Rapid Map Services Pty Ltd.



**Table 8: Footpaths – Capital renewal Priorities based on Condition and Risk Rating**

Risk Matrix - Footpaths (Condition and Risk Rating)					
<b>Condition Criteria.</b> Refer to Table 5 for details	Footpaths – Length (m)				
	Footpath Hierarchy		All Other Areas	Medium Traffic	High Traffic
	Road Hierarchy	Lane	Local	Collector	Regional / State
	Park Hierarchy	Local	District	Regional	
	Priority	d	c	b	a
Condition 1 – Very Good (30.6%)	5	12,430	23,088	17,711	8,472
Condition 2 - Good (38.2%)	4	24,248	54,253	27,569	10,813
Condition 3 – Fair (24.7%)	3	14,441	31,284	18,542	7,589
Condition 4 – Poor (6.1%)	2	2,638	4,970	3,603	1,302
Condition 5 – Very Poor (0.4%)	1	240	189	110	143

**(Note: Also Refer to Table 6)**

**Note:** This table is based on data in the current register.

**Note:** Capital works is proposed for those footpaths identified in “Very Poor”, “Poor” and “Fair” condition.

**Note:** Factors which are used to determine the priority include ‘Footpath Hierarchy’, ‘Road Hierarchy’ and ‘Park Hierarchy’. The most critical factor is used to determine the priority.

It should be noted that footpaths may also be replaced based on other criteria including:

- Damage.
- Restorations.
- Association with other projects such as kerb & guttering or drainage works.
- Streetscape projects.

**Footpaths – Maintenance**

Routine maintenance is the regular on-going work that is necessary to keep assets operating, including instances where portions of the asset fail and need immediate repair to make the asset operational again, e.g. trip hazard repair.

Maintenance includes all actions necessary for retaining an asset as near as practicable to an appropriate service condition including regular ongoing day-to-day work necessary to keep assets operating.

Current maintenance expenditure levels are considered to be inadequate to meet projected service levels.

Over the longer term, future operations and maintenance expenditure is forecast to increase as the asset stock increases and asset type changes to meet the requirements of the Public Domain Style Manual.

**Footpaths – Prioritised Expenditure Forecast****Table 9a: Footpaths – Prioritised Expenditure Forecast – 10 years FY2023-FY2032 - Roads**

Year		Priority	Capital Costs	Maintenance Costs	Total Costs
1	2022/23	1a to 2a	\$3,170,000	\$619,781	\$3,789,781
2	2023/24	2a to 2b	\$3,137,920	\$619,781	\$3,757,701
3	2024/25	2b to 2c	\$2,782,000	\$619,781	\$3,401,781
4-10	2025/32	2c to 3b	\$17,374,000	\$4,338,464	\$21,712,464
Works Identified	2025/32	3b to 3d	\$11,906,103		\$11,906,103
<b>Grand Total</b>			<b>\$38,370,023</b>	<b>\$6,197,807</b>	<b>\$44,567,830</b>

Note: Includes budgets in EPS and Streetscape budgets.

**Table 9b: Footpaths – Prioritised Expenditure Forecast – 10 years FY2023-FY2032 – Parks and Walking Tracks**

Year		Priority	Capital Costs	Maintenance Costs	Total Costs
1	2022/23	1b to 2b	\$200,000	\$20,400	\$220,400
2	2023/24	2b	\$420,000	\$20,400	\$440,400
3	2024/25	2b	\$200,000	\$20,400	\$220,400
4-10	2025/32	2b to 2c	\$1,400,000	\$142,800	\$1,542,800
<b>Grand Total</b>			<b>\$2,220,000</b>	<b>\$204,000</b>	<b>\$2,424,000</b>

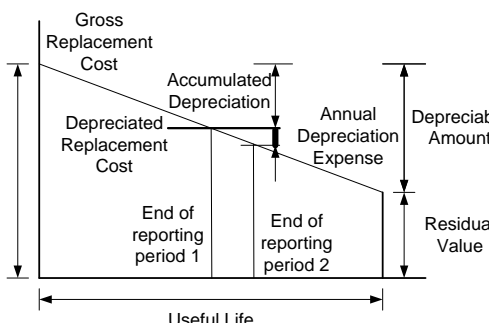
Note: Includes budgets in OSE.

In summary the current value of Kerb and Gutter assets is detailed in the Table below.

**Table 10: Footpaths - Valuation**

Asset Category	Length (m)	Replacement Value (2021)	Accumulated Depreciation	Fair Value (2021)	Depreciation Expense
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			(2021)		
<b>Footpaths - Roads</b>	263,637	\$123,242,686	\$41,397,229	\$81,845,457	\$3,190,669
<b>TOTAL</b>	<b>263,637</b>	<b>\$123,242,686</b>	<b>\$41,397,229</b>	<b>\$81,845,457</b>	<b>\$3,190,669</b>



**Footpaths – Valuation Forecast**

Asset values are forecast to increase as footpath assets are upgraded due to streetscape improvements. Additional assets will generally add to the operations and maintenance needs in the longer term, as well as the need for future renewal. Additional assets will also add to future depreciation forecasts.

**Footpaths – Key Assumptions – Financial Forecasts**

Key assumptions made in this asset management plan are:

**Table: 11. Key Assumptions made in AMP and Risks of Change**

Key Assumptions	Risks of Change to Assumptions
Useful Lives of Footpaths	Low risk
Rate of deterioration	Low risk

**Footpaths – Creation / Acquisition / Upgrade Program**

New works are those that create a new asset that did not previously exist, or works which will upgrade or improve an existing asset beyond its existing capacity. They may result from growth, social or environmental needs. Assets may also be acquired at no cost. Footpaths in CBD areas are being upgraded in accordance with Council’s Public Domain Style Manual. No new additional assets are currently identified.

**Footpaths – Disposal Plan**

No footpaths assets have been identified for disposal.

**Footpaths – Forecast reliability and confidence**

The estimated confidence level and reliability of data used in this AMP is considered to be reliable as the data is based on a detailed condition report on footpaths.

**Footpaths – Improvement Plan**

The improvement plan is shown in the table below.

Task No	Task	Responsibility	Resources Required	Timeline
1	Research the Useful Life of Footpaths	EPS	Staff Time	2024

### Footpaths – Monitoring and Review Procedures

This Asset Management Plan will be reviewed during annual budget planning processes and amended to show any material changes in service levels and/or resources available to provide those services as a result of budget decisions.

The Asset Management Plan has a life of 4 years and is due for complete revision and updating within 1 year of each Council election.

### Footpaths – Renewal and Replacement Program

Renewal and replacement expenditure is major work which does not increase the asset's design capacity but restores, rehabilitates, replaces or renews an existing asset to its original service potential. Work over and above restoring an asset to original service potential is considered to be an upgrade/expansion or new work expenditure resulting in additional future operations and maintenance costs.

Footpath assets requiring renewal/replacement have been identified by the Footpaths Condition Audit completed by Consultants, Rapid Map Services Pty Ltd in conjunction with Asset & Facilities Management Consulting Pty Ltd, in 2019.

### Footpaths – Funding Scenarios

The Long Term Financial Plan includes three scenarios, all of which maintain current services levels but propose differing levels of capital expenditure on the renewal of Council's ageing infrastructure assets.

In summary:

- Pessimistic Scenario - This Scenario results in a decline in operating results and deficits in the later years.
- Optimistic Scenario - This Scenario results in improvements in operating results for the life of the plan.
- Planned Scenario - This Scenario results modest surplus operating results for the life of the plan.

**Table 12: Funding Scenarios – Footpaths – North Sydney Council 10 Year Plan**

Scenario	Capital Funding Level required per annum	10 Year Plan \$ Total
Scenario 1.	\$2,868,392/year	\$28,683,920
Scenario 2.	\$2,868,392/year	\$28,683,920
Scenario 3.	\$2,868,392/year	\$28,683,920

**Note:** These Scenarios are based on the 10-year Long Term Financial Plan.

### Footpaths – Service and Risk Tradeoffs

The decisions made in adopting this AM Plan are based on the objective to achieve the optimum benefits from the available resources.

**Service trade-off**

If this funding Scenario is adopted, then the Level of Service will be maintained.

**Risk trade-off**

If this funding Scenario is adopted, then there is less risk of Footpath failures.

**Footpaths – Renewal and Replacement Program – FY2023-FY2032 (10 Year Plan)**

Council's projected 10 year Capital Renewal Program is shown in the Tables below. It is based on the funding required to replace Footpath assets identified by the Footpaths Condition Audit completed by Consultants, Rapid Map Services Pty Ltd in conjunction with Asset & Facilities Management Consulting Pty Ltd, in 2019.

It should be noted that footpaths may also be replaced based on other criteria including:

- Damage
- Restorations
- Association with other projects such as kerb & guttering or drainage works
- Streetscape projects

Project priorities may also be subject to change due to accelerated deterioration, sudden failure or finalization of detailed designs and project costings.

**Capital Renewal – Footpaths within Road Reserves**

**Table13: Footpaths – Renewal and Replacement Program (Within Road Reserves)**

**Priority Projects 2022/23 (Year 1)**

Replace Year	Priority	Location	Risk Rating/ Category	Condition	Capital Cost
2022/23	1a	Brook St (PSID 116)	Very High (5)	Very Poor	\$124,199
2022/23	1a	Miller St (PSID 379)	Very High (5)	Very Poor	\$103,867
2022/23	1b	Balls Head Reserve	Very High (5)	Very Poor	\$147,804
2022/23	1b	Bent St (PSID 94)	Very High (5)	Very Poor	\$22,486
2022/23	1c	Middlemiss St (PSID 362)	Very High (5)	Very Poor	\$14,039
2022/23	1c	Primrose Park	Very High (5)	Very Poor	\$4,056
2022/23	1c	Richmond Ave (PSID 468)	Very High (5)	Very Poor	\$190,489
2022/23	1c	Samora Ave (PSID 488)	Very High (5)	Very Poor	\$63,590
2022/23	1c	Shirley La (PSID 494)	Very High (5)	Very Poor	\$14,605
2022/23	1c	Waiwera St (PSID 853)	Very High (5)	Very Poor	\$9,057
2022/23	1d	Atchison La (PSID 625)	Very High (5)	Very Poor	\$7,922
2022/23	1d	Commodore To John Footway (PSID 943)	Very High (5)	Very Poor	\$3,152
2022/23	1d	Hayberry La (PSID 269)	Very High (5)	Very Poor	\$10,267
2022/23	1d	Lloyd Ave (PSID 341)	Very High (5)	Very Poor	\$37,418
2022/23	1d	Lodge Road Road Reserve	Very High (5)	Very Poor	\$5,800
2022/23	1d	Munro St (PSID 743)	Very High (5)	Very Poor	\$3,214
2022/23	1d	Robertson La (PSID 984)	Very High (5)	Very Poor	\$5,968
2022/23	1d	Russell To Boronia Footway (PSID 914)	Very High (5)	Very Poor	\$19,644
2022/23	2a	Chandos St (PSID 154)	High (4)	Poor	\$44,677
2022/23	2a	Chandos St (Westbound) (PSID 156)	High (4)	Poor	\$48,355
2022/23	2a	Ernest St (PSID 218)	High (4)	Poor	\$85,992

- 20 -

Replace Year	Priority	Location	Risk Rating/ Category	Condition	Capital Cost
2022/23	2a	Ernest St (PSID 220)	High (4)	Poor	\$66,847
2022/23	2a	Falcon St (PSID 231)	High (4)	Poor	\$134,069
2022/23	Contingency				\$2,483
2022/23	North Sydney CBD Public Domain Upgrades				\$500,000
2022/23	Crows Nest Public Domain Masterplan Implementation				\$500,000
2022/23	Kirribilli & McMahons Point Village Centres				\$500,000
2022/23	Neutral Bay & Cremorne Public Domain Masterplan Projects				\$500,000
<b>Total</b>					<b>\$3,170,000</b>

**Table 14: Footpaths – Renewal and Replacement Program (Within Road Reserves)**

**Priority Projects 2023/24 (Year 2)**

Replace Year	Priority	Location	Risk Rating/ Category	Condition	Capital Cost
2023/24	2a	Gerard St (PSID 245)	High (4)	Poor	\$50,204
2023/24	2a	Harriette St (PSID 265)	High (4)	Poor	\$101,022
2023/24	2a	Military Rd (PSID 366)	High (4)	Poor	\$12,567
2023/24	2a	Miller St (PSID 380)	High (4)	Poor	\$37,385
2023/24	2a	Miller St (PSID 383)	High (4)	Poor	\$69,054
2023/24	2a	Murdoch St (PSID 410)	High (4)	Poor	\$73,702
2023/24	2a	Pacific Hwy (PSID 816)	High (4)	Poor	\$160,707
2023/24	2a	River Rd (Westbound) (PSID 846)	High (4)	Poor	\$52,091
2023/24	2a	Shirley Rd (PSID 496)	High (4)	Poor	\$55,773
2023/24	2b	Alexander St (PSID 18)	High (4)	Poor	\$82,921
2023/24	2b	Alfred St North (Southbound) (PSID 891)	High (4)	Poor	\$166,697
2023/24	2b	Bay Rd (PSID 60)	High (4)	Poor	\$13,239
2023/24	2b	Bent St (PSID 92)	High (4)	Poor	\$115,958
2023/24	2b	Bent St (PSID 93)	High (4)	Poor	\$138,936
2023/24	2b	Blues Point Rd (PSID 106)	High (4)	Poor	\$200,636
2023/24	2b	Blues Point Rd (PSID 861)	High (4)	Poor	\$27,865
2023/24	2b	Carr St (PSID 145)	High (4)	Poor	\$81,537
2023/24	2b	Carr St (PSID 147)	High (4)	Poor	\$23,858
2023/24	2b	Earle St (PSID 195)	High (4)	Poor	\$39,087
2023/24	Contingency				\$134,681
2023/24	North Sydney CBD Public Domain Upgrades				\$500,000
2023/24	Crows Nest Public Domain Masterplan Implementation				\$500,000
2023/24	Kirribilli & McMahons Point Village Centres				\$250,000
2023/24	Neutral Bay & Cremorne Public Domain Masterplan Projects				\$250,000
<b>Total</b>					<b>\$3,137,920</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.



The streetscape budget is primarily used to upgrade footpaths in public domain areas. However, it should be noted that part of the streetscape budget is used to fund the upgrade and renewal of other assets such as street furniture, fences, etc.

**Table 15: Footpaths – Renewal and Replacement Program (Within Road Reserves)**

**Priority Projects 2024/25 (Year 3)**

Replace Year	Priority	Location	Risk Rating/ Category	Condition	Capital Cost
2024/25	2b	Ennis Rd (PSID 678)	High (4)	Poor	\$396,308
2024/25	2b	Ernest St (PSID 217)	High (4)	Poor	\$187,912
2024/25	2b	Gillies St (PSID 246)	High (4)	Poor	\$166,738
2024/25	2b	Henry Lawson Ave (PSID 275)	High (4)	Poor	\$129,379
2024/25	2b	Milson Rd (PSID 394)	High (4)	Poor	\$66,400
2024/25	2b	Milson Rd (PSID 395)	High (4)	Poor	\$101,435
2024/25	2b	Rangers Rd (PSID 457)	High (4)	Poor	\$64,117
2024/25	2b	Shirley Rd (PSID 499)	High (4)	Poor	\$194,193
2024/25	2b	Spruson St (PSID 514)	High (4)	Poor	\$124,716
2024/25	2b	Telopea St (PSID 520)	High (4)	Poor	\$139,183
2024/25	Contingency				\$29,619
2024/25	North Sydney CBD Public Domain Upgrades				\$500,000
2024/25	Crows Nest Public Domain Masterplan Implementation				\$500,000
2024/25	Neutral Bay & Cremorne Public Domain Masterplan Projects				\$182,000
<b>Total</b>					<b>\$2,782,000</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

The streetscape budget is primarily used to upgrade footpaths in public domain areas. However, it should be noted that part of the streetscape budget is used to fund the upgrade and renewal of other assets such as street furniture, fences, etc.

**Table 16: Footpaths – Renewal and Replacement Program (Within Road Reserves)**

**Priority Projects 2025/32 (Years 4-10)**

Replace Year	Priority	Location	Risk Rating/ Category	Condition	Capital Cost
2025/32	2b	West St (PSID 565)	High (4)	Poor	\$128,758
2025/32	2b	West St (PSID 566)	High (4)	Poor	\$42,449
2025/32	2b	West St (PSID 567)	High (4)	Poor	\$70,315
2025/32	2b	Young St (PSID 801)	High (4)	Poor	\$39,739
2025/32	2c	Alfred St North (Southbound) (PSID 95)	High (4)	Poor	\$119,159
2025/32	2c	Atchison St (PSID 37)	High (4)	Poor	\$101,500
2025/32	2c	Balls Head Rd (PSID 51)	High (4)	Poor	\$57,895
2025/32	2c	Bennett St (PSID 91)	High (4)	Poor	\$250,533
2025/32	2c	Cable St (PSID 130)	High (4)	Poor	\$73,467
2025/32	2c	Chandos St (PSID 155)	High (4)	Poor	\$67,891
2025/32	2c	Cowdroy Ave (PSID 176)	High (4)	Poor	\$105,201
2025/32	2c	Cowdroy Ave (PSID 177)	High (4)	Poor	\$91,266
2025/32	2c	Cremorne Rd (PSID 181)	High (4)	Poor	\$71,237
2025/32	2c	Currawang St (PSID 187)	High (4)	Poor	\$42,996
2025/32	2c	Devonshire St (PSID 190)	High (4)	Poor	\$136,767
2025/32	2c	Dumbarton St (PSID 192)	High (4)	Poor	\$121,884

- 22 -

Replace Year	Priority	Location	Risk Rating/ Category	Condition	Capital Cost
2025/32	2c	Earle St (PSID 194)	High (4)	Poor	\$129,828
2025/32	2c	Elamang Ave (PSID 206)	High (4)	Poor	\$206,431
2025/32	2c	Emmett St (PSID 212)	High (4)	Poor	\$143,088
2025/32	2c	Fifth Ave (PSID 234)	High (4)	Poor	\$184,986
2025/32	2c	Folly Point (PSID 136)	High (4)	Poor	\$3,593
2025/32	2c	Grasmere Rd (PSID 254)	High (4)	Poor	\$103,010
2025/32	2c	Hazelbank Rd (PSID 272)	High (4)	Poor	\$142,080
2025/32	2c	Highview Ave (PSID 693)	High (4)	Poor	\$65,508
2025/32	2c	Huntington St (PSID 299)	High (4)	Poor	\$80,258
2025/32	2c	Illiliwa St (PSID 301)	High (4)	Poor	\$94,965
2025/32	2c	Jenkins St (PSID 308)	High (4)	Poor	\$101,774
2025/32	2c	Kurraba Rd (PSID 322)	High (4)	Poor	\$204,373
2025/32	2c	Kurraba Rd (PSID 323)	High (4)	Poor	\$49,090
2025/32	2c	Kyngdon St (PSID 327)	High (4)	Poor	\$83,218
2025/32	2c	Lamont St (PSID 328)	High (4)	Poor	\$99,777
2025/32	2c	Lindsay St (PSID 337)	High (4)	Poor	\$73,459
2025/32	2c	Mcdougall St (PSID 353)	High (4)	Poor	\$124,294
2025/32	2c	Milner Cres (PSID 385)	High (4)	Poor	\$132,527
2025/32	2c	Milner Cres (PSID 386)	High (4)	Poor	\$83,364
2025/32	2c	Milray Ave (PSID 992)	High (4)	Poor	\$131,848
2025/32	2c	Montague Rd (PSID 399)	High (4)	Poor	\$171,899
2025/32	2c	Montpelier St (PSID 400)	High (4)	Poor	\$91,836
2025/32	2c	Nicholson St (PSID 419)	High (4)	Poor	\$168,134
2025/32	2c	Park Ave (PSID 880)	High (4)	Poor	\$63,821
2025/32	2c	Pine St (PSID 445)	High (4)	Poor	\$213,156
2025/32	2c	Pine St (PSID 844)	High (4)	Poor	\$154,310
2025/32	2c	Premier St (PSID 449)	High (4)	Poor	\$188,977
2025/32	2c	Premier St (PSID 450)	High (4)	Poor	\$41,273
2025/32	2c	Reed St (PSID 463)	High (4)	Poor	\$30,282
2025/32	2c	Reynolds St (PSID 465)	High (4)	Poor	\$6,849
2025/32	2c	Rocklands Rd (PSID 478)	High (4)	Poor	\$201,949
2025/32	2c	Rosalind St (PSID 479)	High (4)	Poor	\$161,182
2025/32	2c	Russell St (PSID 485)	High (4)	Poor	\$28,685
2025/32	2c	Selwyn St (PSID 489)	High (4)	Poor	\$49,784
2025/32	2c	Shirley La (PSID 495)	High (4)	Poor	\$28,840
2025/32	2c	Shirley Rd (PSID 501)	High (4)	Poor	\$230,239
2025/32	2c	Shirley Rd (PSID 502)	High (4)	Poor	\$85,803
2025/32	2c	Sinclair St (PSID 505)	High (4)	Poor	\$87,297
2025/32	2c	Sinclair St (PSID 506)	High (4)	Poor	\$89,312
2025/32	2c	Spruson St (PSID 896)	High (4)	Poor	\$95,545
2025/32	2c	St Thomas Rest Park	High (4)	Poor	\$2,059
2025/32	2c	Sutherland St (PSID 518)	High (4)	Poor	\$81,389
2025/32	2c	Thrupp St (PSID 524)	High (4)	Poor	\$49,363
2025/32	2c	Tobruk Ave (PSID 526)	High (4)	Poor	\$181,045
2025/32	2c	Tobruk Ave (PSID 527)	High (4)	Poor	\$94,503
2025/32	2c	Vale St (PSID 538)	High (4)	Poor	\$96,079
2025/32	2c	Vernon St (PSID 539)	High (4)	Poor	\$116,148
2025/32	2c	Walker St (PSID 543)	High (4)	Poor	\$113,227
2025/32	2c	Waruda St (PSID 788)	High (4)	Poor	\$13,954

- 23 -

Replace Year	Priority	Location	Risk Rating/ Category	Condition	Capital Cost
2025/32	2c	West St (PSID 568)	High (4)	Poor	\$154,730
2025/32	2c	Whaling Rd (PSID 570)	High (4)	Poor	\$156,622
2025/32	2c	Willoughby St (PSID 587)	High (4)	Poor	\$152,873
2025/32	2c	Wonga Rd (PSID 592)	High (4)	Poor	\$59,614
2025/32	2c	Woolcott St (PSID 598)	High (4)	Poor	\$52,242
2025/32	2c	Wycombe Rd (PSID 605)	High (4)	Poor	\$38,877
2025/32	2c	Young St (PSID 805)	High (4)	Poor	\$231,308
2025/32	2d	Arthur La (PSID 622)	High (4)	Poor	\$4,413
2025/32	2d	Arthur St (PSID 33)	High (4)	Poor	\$56,277
2025/32	2d	Ben Boyd Rd (PSID 830)	High (4)	Poor	\$17,219
2025/32	2d	Brightmore La (PSID 905)	High (4)	Poor	\$2,019
2025/32	2d	Bromley Avenue Road Reserve	High (4)	Poor	\$5,022
2025/32	2d	Burlington La (PSID 122)	High (4)	Poor	\$15,971
2025/32	2d	Cairo St (PSID 132)	High (4)	Poor	\$212,184
2025/32	2d	Chandos La (PSID 151)	High (4)	Poor	\$16,749
2025/32	2d	Cheal La (PSID 649)	High (4)	Poor	\$14,101
2025/32	2d	Christie St (PSID 159)	High (4)	Poor	\$25,239
2025/32	2d	Colin Street Road Reserve	High (4)	Poor	\$117,969
2025/32	2d	Cremorne La (PSID 179)	High (4)	Poor	\$3,678
2025/32	2d	Doohat Ave (PSID 191)	High (4)	Poor	\$14,449
2025/32	2d	Doris Street Reserve	High (4)	Poor	\$4,917
2025/32	2d	East Ave (PSID 847)	High (4)	Poor	\$5,109
2025/32	2d	Echo Street Reserve	High (4)	Poor	\$53,658
2025/32	2d	Ellalong Rd (PSID 866)	High (4)	Poor	\$5,422
2025/32	2d	Ernest To Byrnes Footway (PSID 951)	High (4)	Poor	\$16,867
2025/32	2d	Falcon La (PSID 226)	High (4)	Poor	\$12,651
2025/32	2d	Fifth To Bariston Footway (PSID 926)	High (4)	Poor	\$3,695
2025/32	2d	Four Figs Park	High (4)	Poor	\$42,807
2025/32	2d	Grasmere La (PSID 251)	High (4)	Poor	\$18,493
2025/32	2d	Hampden St (PSID 687)	High (4)	Poor	\$125,293
2025/32	2d	Harriott La (PSID 266)	High (4)	Poor	\$4,560
2025/32	2d	Johnstone Avenue Road Reserve	High (4)	Poor	\$208,984
2025/32	2d	Kiara Close (PSID 963)	High (4)	Poor	\$18,936
2025/32	2d	King La (PSID 313)	High (4)	Poor	\$31,417
2025/32	2d	Lambert St (PSID 999)	High (4)	Poor	\$8,931
2025/32	2d	Lambert Street Gardens	High (4)	Poor	\$163,520
2025/32	2d	Lillis St (PSID 716)	High (4)	Poor	\$31,963
2025/32	2d	Lloyd Avenue Reserve	High (4)	Poor	\$73,897
2025/32	2d	Lord Street Road Reserve	High (4)	Poor	\$39,186
2025/32	2d	Mcburney La (PSID 729)	High (4)	Poor	\$55,937
2025/32	2d	Mcdougall St (PSID 355)	High (4)	Poor	\$104,421
2025/32	2d	Metcalfe St (PSID 735)	High (4)	Poor	\$31,459
2025/32	2d	Miller To Edwin Footway (PSID 932)	High (4)	Poor	\$22,381
2025/32	2d	Milner To Carlyle Footway (PSID 916)	High (4)	Poor	\$85,118
2025/32	2d	Newlands La (PSID 415)	High (4)	Poor	\$728
2025/32	2d	Nicholas St (PSID 744)	High (4)	Poor	\$12,114
2025/32	2d	Olive La (PSID 750)	High (4)	Poor	\$2,115
2025/32	2d	Phillips Street Playground	High (4)	Poor	\$127,332
2025/32	2d	Robertson La (PSID 841)	High (4)	Poor	\$7,938

- 24 -

Replace Year	Priority	Location	Risk Rating/ Category	Condition	Capital Cost
2025/32	2d	Robertson Lane Road Closure	High (4)	Poor	\$83,130
2025/32	2d	Rocklands La (PSID 476)	High (4)	Poor	\$27,088
2025/32	2d	Short St (PSID 504)	High (4)	Poor	\$20,363
2025/32	2d	Sinclair St (PSID 901)	High (4)	Poor	\$6,725
2025/32	2d	Sophia St (PSID 509)	High (4)	Poor	\$19,131
2025/32	2d	Sophia St (PSID 510)	High (4)	Poor	\$43,469
2025/32	2d	Tiley Street Road Closure	High (4)	Poor	\$750,767
2025/32	2d	Toongarah Rd (PSID 528)	High (4)	Poor	\$66,196
2025/32	2d	Trafalgar St (PSID 783)	High (4)	Poor	\$22,885
2025/32	2d	Warringa Road Road Closure	High (4)	Poor	\$16,976
2025/32	2d	Westleigh Lane Road Closure	High (4)	Poor	\$41,996
2025/32	2d	Willoughby La (PSID 579)	High (4)	Poor	\$2,627
2025/32	2d	Winslow St (PSID 591)	High (4)	Poor	\$57,265
2025/32	2d	Winslow Street Road Closure	High (4)	Poor	\$47,733
2025/32	2d	Wonga To Tobruk Footway (PSID 938)	High (4)	Poor	\$57,372
2025/32	3a	Belgrave St (PSID 66)	Medium (3)	Fair	\$56,214
2025/32	3a	Belgrave St (PSID 67)	Medium (3)	Fair	\$89,963
2025/32	3a	Belgrave St (PSID 68)	Medium (3)	Fair	\$42,302
2025/32	3a	Ben Boyd Rd (PSID 958)	Medium (3)	Fair	\$20,910
2025/32	3a	Chandos St (Westbound) (PSID 157)	Medium (3)	Fair	\$36,439
2025/32	3a	Clark Rd (PSID 164)	Medium (3)	Fair	\$39,823
2025/32	3a	Clark Rd (PSID 165)	Medium (3)	Fair	\$52,204
2025/32	3a	Ernest St (PSID 221)	Medium (3)	Fair	\$86,181
2025/32	3a	Falcon St (PSID 229)	Medium (3)	Fair	\$88,695
2025/32	North Sydney CBD Public Domain Upgrades				\$3,500,000
2025/32	Crows Nest Public Domain Masterplan Implementation				\$1,400,000
2025/32	Neutral Bay & Cremorne Public Domain Masterplan Projects				\$1,274,000
<b>Total</b>					<b>\$17,374,000</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

The streetscape budget is primarily used to upgrade footpaths in public domain areas. However, it should be noted that part of the streetscape budget is used to fund the upgrade and renewal of other assets such as street furniture, fences, etc.

**Table 17: Footpaths – Renewal and Replacement Program (Within Road Reserves)**

**Works Identified – Years 2025 - 32 (Years 4 - 10)**

Replace Year	Priority	Location	Risk Rating/ Category	Condition	Capital Cost
2025/32	3a	Falcon St (PSID 230)	Medium (3)	Fair	\$67,583
2025/32	3a	Falcon St (PSID 232)	Medium (3)	Fair	\$58,168
2025/32	3a	Falcon St (PSID 874)	Medium (3)	Fair	\$16,854
2025/32	3a	Gerard St (PSID 244)	Medium (3)	Fair	\$11,369
2025/32	3a	High St (PSID 278)	Medium (3)	Fair	\$111,455
2025/32	3a	High St (PSID 882)	Medium (3)	Fair	\$26,373
2025/32	3a	Kurraba Rd (PSID 320)	Medium (3)	Fair	\$42,712
2025/32	3a	Kurraba Rd (PSID 321)	Medium (3)	Fair	\$31,879

- 25 -

Replace Year	Priority	Location	Risk Rating/ Category	Condition	Capital Cost
2025/32	3a	Macpherson St (Northbound) (PSID 347)	Medium (3)	Fair	\$58,421
2025/32	3a	Macpherson St (Northbound) (PSID 348)	Medium (3)	Fair	\$46,232
2025/32	3a	Military Rd (PSID 365)	Medium (3)	Fair	\$60,249
2025/32	3a	Military Rd (PSID 368)	Medium (3)	Fair	\$105,598
2025/32	3a	Miller St (PSID 376)	Medium (3)	Fair	\$268,781
2025/32	3a	Miller St (PSID 377)	Medium (3)	Fair	\$36,418
2025/32	3a	Miller St (PSID 378)	Medium (3)	Fair	\$123,263
2025/32	3a	Miller St (PSID 382)	Medium (3)	Fair	\$31,102
2025/32	3a	Pacific Hwy (PSID 817)	Medium (3)	Fair	\$209,202
2025/32	3a	Rangers Rd (PSID 458)	Medium (3)	Fair	\$89,501
2025/32	3a	River Rd (PSID 474)	Medium (3)	Fair	\$179,306
2025/32	3a	Tramway La (PSID 878)	Medium (3)	Fair	\$15,845
2025/32	3b	Albany St (PSID 7)	Medium (3)	Fair	\$17,958
2025/32	3b	Alfred St North (Northbound) (PSID 618)	Medium (3)	Fair	\$63,947
2025/32	3b	Alfred St North (PSID 620)	Medium (3)	Fair	\$43,500
2025/32	3b	Amherst St (PSID 23)	Medium (3)	Fair	\$103,665
2025/32	3b	Amherst St (PSID 24)	Medium (3)	Fair	\$106,313
2025/32	3b	Atchison St (PSID 35)	Medium (3)	Fair	\$56,954
2025/32	3b	Bay Rd (PSID 58)	Medium (3)	Fair	\$10,991
2025/32	3b	Bay Rd (PSID 61)	Medium (3)	Fair	\$99,693
2025/32	3b	Bay Rd (PSID 63)	Medium (3)	Fair	\$69,306
2025/32	3b	Ben Boyd Rd (PSID 80)	Medium (3)	Fair	\$11,894
2025/32	3b	Ben Boyd Rd (PSID 82)	Medium (3)	Fair	\$132,311
2025/32	3b	Ben Boyd Rd (PSID 83)	Medium (3)	Fair	\$136,518
2025/32	3b	Ben Boyd Rd (PSID 84)	Medium (3)	Fair	\$66,217
2025/32	3b	Ben Boyd Rd (PSID 85)	Medium (3)	Fair	\$28,496
2025/32	3b	Benelong Rd (PSID 88)	Medium (3)	Fair	\$49,531
2025/32	3b	Blues Point Rd (PSID 103)	Medium (3)	Fair	\$95,364
2025/32	3b	Blues Point Rd (PSID 104)	Medium (3)	Fair	\$6,446
2025/32	3b	Blues Point Rd (PSID 107)	Medium (3)	Fair	\$129,555
2025/32	3b	Brightmore St (PSID 115)	Medium (3)	Fair	\$82,734
2025/32	3b	Broughton St (PSID 118)	Medium (3)	Fair	\$198,447
2025/32	3b	Burton St (PSID 998)	Medium (3)	Fair	\$26,079
2025/32	3b	Carr St (PSID 146)	Medium (3)	Fair	\$165,038
2025/32	3b	Clark Rd (PSID 163)	Medium (3)	Fair	\$33,644
2025/32	3b	Crows Nest Rd (PSID 184)	Medium (3)	Fair	\$112,596
2025/32	3b	Crows Nest Rd (PSID 185)	Medium (3)	Fair	\$29,715
2025/32	3b	Crows Nest Rd (PSID 186)	Medium (3)	Fair	\$89,249
2025/32	3b	Ernest St (PSID 215)	Medium (3)	Fair	\$73,992
2025/32	3b	Ernest St (PSID 216)	Medium (3)	Fair	\$193,271
2025/32	3b	Euroka St (PSID 223)	Medium (3)	Fair	\$6,557

- 26 -

Replace Year	Priority	Location	Risk Rating/ Category	Condition	Capital Cost
2025/32	3b	Grafton St (PSID 249)	Medium (3)	Fair	\$52,032
2025/32	3b	Grasmere Rd (PSID 253)	Medium (3)	Fair	\$10,095
2025/32	3b	Grosvenor St (PSID 259)	Medium (3)	Fair	\$15,362
2025/32	3b	Lavender St (PSID 333)	Medium (3)	Fair	\$81,482
2025/32	3b	Lavender St (PSID 334)	Medium (3)	Fair	\$29,462
2025/32	3b	Merlin St (PSID 734)	Medium (3)	Fair	\$49,426
2025/32	3b	Milson Rd (PSID 393)	Medium (3)	Fair	\$28,517
2025/32	3b	Milson Rd (PSID 792)	Medium (3)	Fair	\$76,115
2025/32	3b	Montpelier St (PSID 401)	Medium (3)	Fair	\$68,592
2025/32	3b	Morton St (PSID 404)	Medium (3)	Fair	\$74,917
2025/32	3b	Morton St (PSID 405)	Medium (3)	Fair	\$34,673
2025/32	3b	Murdoch St (PSID 409)	Medium (3)	Fair	\$56,928
2025/32	3b	Murdoch St (PSID 411)	Medium (3)	Fair	\$24,923
2025/32	3b	Newlands St (PSID 417)	Medium (3)	Fair	\$86,328
2025/32	3b	Park Ave (PSID 434)	Medium (3)	Fair	\$28,916
2025/32	3b	Park Ave (PSID 435)	Medium (3)	Fair	\$51,192
2025/32	3b	Rawson St (PSID 459)	Medium (3)	Fair	\$49,636
2025/32	3b	Rawson St (PSID 460)	Medium (3)	Fair	\$62,119
2025/32	3b	Rocklands Rd (PSID 477)	Medium (3)	Fair	\$73,812
2025/32	3b	Shirley Rd (PSID 497)	Medium (3)	Fair	\$139,327
2025/32	3b	Shirley Rd (PSID 498)	Medium (3)	Fair	\$48,796
2025/32	3b	Shirley Rd (PSID 500)	Medium (3)	Fair	\$30,093
2025/32	3b	Spruson St (PSID 515)	Medium (3)	Fair	\$60,168
2025/32	3b	Union St (PSID 535)	Medium (3)	Fair	\$116,029
2025/32	3b	Walker St (PSID 544)	Medium (3)	Fair	\$148,198
2025/32	3b	Waters Rd (PSID 557)	Medium (3)	Fair	\$30,315
2025/32	3b	West St (PSID 564)	Medium (3)	Fair	\$43,185
2025/32	3b	Yeo St (PSID 607)	Medium (3)	Fair	\$52,074
2025/32	3b	Yeo St (PSID 608)	Medium (3)	Fair	\$27,970
2025/32	3b	Yeo St (PSID 609)	Medium (3)	Fair	\$31,568
2025/32	3b	Young St (PSID 803)	Medium (3)	Fair	\$43,710
2025/32	3b	Young St (PSID 804)	Medium (3)	Fair	\$72,861
2025/32	3c	Abbott St (PSID 965)	Medium (3)	Fair	\$12,966
2025/32	3c	Ada St (PSID 3)	Medium (3)	Fair	\$19,417
2025/32	3c	Allister St (PSID 22)	Medium (3)	Fair	\$52,074
2025/32	3c	Armstrong St (PSID 32)	Medium (3)	Fair	\$76,577
2025/32	3c	Atchison St (PSID 36)	Medium (3)	Fair	\$66,175
2025/32	3c	Aubin St (PSID 38)	Medium (3)	Fair	\$40,025
2025/32	3c	Balls Head Rd (PSID 50)	Medium (3)	Fair	\$107,515
2025/32	3c	Barry St (PSID 845)	Medium (3)	Fair	\$51,268
2025/32	3c	Bay View St (PSID 64)	Medium (3)	Fair	\$93,830



- 27 -

Replace Year	Priority	Location	Risk Rating/ Category	Condition	Capital Cost
2025/32	3c	Bellevue St (PSID 69)	Medium (3)	Fair	\$7,292
2025/32	3c	Bells Ave (PSID 200)	Medium (3)	Fair	\$4,035
2025/32	3c	Belmont Ave (PSID 72)	Medium (3)	Fair	\$9,099
2025/32	3c	Belmont Ave (PSID 74)	Medium (3)	Fair	\$29,394
2025/32	3c	Ben Boyd Rd (PSID 79)	Medium (3)	Fair	\$86,832
2025/32	3c	Benelong Rd (PSID 87)	Medium (3)	Fair	\$125,670
2025/32	3c	Bennett St (PSID 90)	Medium (3)	Fair	\$54,079
2025/32	3c	Bertha Rd (PSID 97)	Medium (3)	Fair	\$69,746
2025/32	3c	Billong St (PSID 99)	Medium (3)	Fair	\$1,071
2025/32	3c	Bligh St (PSID 100)	Medium (3)	Fair	\$82,776
2025/32	3c	Boyle St (PSID 110)	Medium (3)	Fair	\$61,552
2025/32	3c	Brightmore St (PSID 114)	Medium (3)	Fair	\$55,142
2025/32	3c	Bruce St (PSID 641)	Medium (3)	Fair	\$31,081
2025/32	3c	Burlington St (PSID 124)	Medium (3)	Fair	\$61,888
2025/32	3c	Burlington St (PSID 125)	Medium (3)	Fair	\$143,320
2025/32	3c	Burroway St (PSID 127)	Medium (3)	Fair	\$35,506
2025/32	3c	Bydown St (PSID 129)	Medium (3)	Fair	\$117,670
2025/32	3c	Cammeray Rd (PSID 135)	Medium (3)	Fair	\$13,870
2025/32	3c	Carabella St (PSID 137)	Medium (3)	Fair	\$95,047
2025/32	3c	Carabella St (PSID 138)	Medium (3)	Fair	\$206,861
2025/32	3c	Carabella St (PSID 139)	Medium (3)	Fair	\$37,343
2025/32	3c	Carlow St (PSID 140)	Medium (3)	Fair	\$53,881
2025/32	3c	Carlyle St (PSID 142)	Medium (3)	Fair	\$100,981
2025/32	3c	Carr St (PSID 144)	Medium (3)	Fair	\$22,591
2025/32	3c	Carter St (PSID 1005)	Medium (3)	Fair	\$58,610
2025/32	3c	Carter St (PSID 148)	Medium (3)	Fair	\$81,684
2025/32	3c	Claude Ave (PSID 168)	Medium (3)	Fair	\$69,934
2025/32	3c	Cranbrook Ave (PSID 178)	Medium (3)	Fair	\$60,564
2025/32	3c	Cremorne Rd (PSID 182)	Medium (3)	Fair	\$61,353
2025/32	3c	Cremorne Rd (PSID 183)	Medium (3)	Fair	\$21,976
2025/32	3c	Darley St (PSID 188)	Medium (3)	Fair	\$94,524
2025/32	3c	David St (PSID 189)	Medium (3)	Fair	\$14,605
2025/32	3c	Donnelly Rd (Westbound) (PSID 669)	Medium (3)	Fair	\$26,604
2025/32	3c	Dumbarton St (PSID 193)	Medium (3)	Fair	\$43,668
2025/32	3c	East Crescent St (PSID 196)	Medium (3)	Fair	\$47,178
2025/32	3c	East Crescent St (PSID 197)	Medium (3)	Fair	\$118,920
2025/32	3c	East Crescent St (PSID 198)	Medium (3)	Fair	\$59,666
2025/32	3c	Eaton St (PSID 199)	Medium (3)	Fair	\$100,849
2025/32	3c	Elamang Ave (PSID 207)	Medium (3)	Fair	\$21,162
2025/32	3c	Ellalong Rd (PSID 208)	Medium (3)	Fair	\$49,363
2025/32	3c	Ellalong Rd (PSID 209)	Medium (3)	Fair	\$136,406

- 28 -

Replace Year	Priority	Location	Risk Rating/ Category	Condition	Capital Cost
2025/32	3c	Fall St (PSID 233)	Medium (3)	Fair	\$48,733
2025/32	3c	Fitzroy St (PSID 236)	Medium (3)	Fair	\$112,125
2025/32	3c	Grasmere Rd (PSID 255)	Medium (3)	Fair	\$107,510
2025/32	3c	Green St (PSID 684)	Medium (3)	Fair	\$13,197
2025/32	3c	Hamilton La (PSID 686)	Medium (3)	Fair	\$6,662
2025/32	3c	Hampden Ave (PSID 261)	Medium (3)	Fair	\$32,825
2025/32	3c	Hardie St (PSID 688)	Medium (3)	Fair	\$117,324
2025/32	3c	Harriette St (PSID 263)	Medium (3)	Fair	\$157,904
2025/32	3c	Harriott St (PSID 267)	Medium (3)	Fair	\$63,002
2025/32	3c	Hayberry St (PSID 270)	Medium (3)	Fair	\$109,045
2025/32	3c	Hazelbank Rd (PSID 273)	Medium (3)	Fair	\$76,028
2025/32	3c	High St (PSID 277)	Medium (3)	Fair	\$18,009
2025/32	3c	Hodgson Ave (PSID 281)	Medium (3)	Fair	\$11,710
2025/32	3c	Holtermann St (PSID 288)	Medium (3)	Fair	\$121,758
2025/32	3c	Holtermann St (PSID 289)	Medium (3)	Fair	\$14,017
2025/32	3c	Hume St (PSID 294)	Medium (3)	Fair	\$43,836
2025/32	3c	Illiliwa St (PSID 300)	Medium (3)	Fair	\$63,443
2025/32	3c	Iredale Ave (PSID 302)	Medium (3)	Fair	\$35,178
2025/32	3c	Iredale Ave (PSID 303)	Medium (3)	Fair	\$30,408
2025/32	3c	Jeffreys St (PSID 306)	Medium (3)	Fair	\$36,019
2025/32	3c	Kareela Rd (PSID 311)	Medium (3)	Fair	\$41,838
2025/32	3c	King St (PSID 314)	Medium (3)	Fair	\$52,011
2025/32	3c	King St (PSID 315)	Medium (3)	Fair	\$58,820
2025/32	3c	King St (PSID 316)	Medium (3)	Fair	\$45,861
2025/32	3c	Kirribilli Ave (PSID 318)	Medium (3)	Fair	\$20,132
2025/32	3c	Kirribilli Ave (PSID 319)	Medium (3)	Fair	\$96,984
2025/32	3c	Kurraba Rd (PSID 324)	Medium (3)	Fair	\$70,531
2025/32	3c	Kurraba Rd (PSID 325)	Medium (3)	Fair	\$64,940
2025/32		Contingency			\$1,513,500
<b>Total</b>					<b>\$11,906,103</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

#### Capital Renewal – Footpaths Within Parks

**Table 18: Footpaths – Renewal and Replacement Program (Within Parks)**

#### Priority Projects 2022/23 (Year 1)

Replace Year	Priority	Location	Risk Rating / Category	Condition	Cost estimate
2022/23	1b	Blues Point Reserve - FP10055	Very High (5)	Very Poor	\$12,737
2022/23	1c	Brightmore Reserve - FP10107	Very High (5)	Very Poor	\$1,346
2022/23	1c	Smoothey Park - FP20149	Very High (5)	Very Poor	\$2,472

- 29 -

Replace Year	Priority	Location	Risk Rating / Category	Condition	Cost estimate
2022/23	1d	Walker Street Road Reserve - FP10570	Very High (5)	Very Poor	\$1,504
2022/23	1d	Carradah Park - FP10924	Very High (5)	Very Poor	\$1,250
2022/23	1d	Spains Wharf Road Reserve - FP20157	Very High (5)	Very Poor	\$1,937
2022/23	1d	Brennan Park - FP20023	Very High (5)	Very Poor	\$989
2022/23	2a	Falcon St (PSID 231)	High (4)	Poor	\$7,850
2022/23	2b	Cremorne Reserve - FP11165	High (4)	Poor	\$6,259
2022/23	2b	Cremorne Reserve - FP11135	High (4)	Poor	\$18,777
2022/23	2b	Cremorne Reserve - FP11137	High (4)	Poor	\$10,221
2022/23	2b	Cremorne Reserve - FP11096	High (4)	Poor	\$17,306
2022/23	2b	Cremorne Reserve - FP11100	High (4)	Poor	\$6,865
2022/23	2b	Balls Head Reserve - FP11008	High (4)	Poor	\$98,177
2022/23	Contingency				\$12,310
<b>Total</b>					<b>\$200,000</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

**Table 19: Footpaths – Renewal and Replacement Program (Within Parks)**

**Priority Projects 2023/24 (Year 2)**

Replace Year	Priority	Location	Risk Rating / Category	Condition	Cost estimate
2023/24	2b	Balls Head Reserve - FP10990	High (4)	Poor	\$15,332
2023/24	2b	Balls Head Reserve - FP10977	High (4)	Poor	\$55,947
2023/24	2b	Balls Head Reserve - FP10980	High (4)	Poor	\$43,843
2023/24	2b	Balls Head Reserve - FP10972	High (4)	Poor	\$60,520
2023/24	Contingency				\$24,358
2023/24	Formalise path between Munro St bridge and main path leading down to foreshore in Sawmillers Reserve and associated landscape improvements				\$220,000
<b>Total</b>					<b>\$420,000</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

**Table 20: Footpaths – Renewal and Replacement Program (Within Parks)**

**Priority Projects 2024/25 (Year 3)**

Replace Year	Priority	Location	Risk Rating / Category	Condition	Cost estimate
2024/25	2b	Balls Head Reserve - FP10953	High (4)	Poor	\$135,027
2024/25	Contingency				\$64,973

- 30 -

Replace Year	Priority	Location	Risk Rating / Category	Condition	Cost estimate
<b>Total</b>					<b>\$200,000</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

**Table 21: Footpaths – Renewal and Replacement Program (Within Parks)**

**Priority Projects 2025/32 (Year 4-10)**

Replace Year	Priority	Location	Risk Rating / Category	Condition	Cost Estimate
2025/32	2b	Balls Head Reserve - FP10880	High (4)	Poor	\$451,613
2025/32	2b	Balls Head Reserve - FP10884	High (4)	Poor	\$135,074
2025/32	2b	Blues Point Reserve - FP10809	High (4)	Poor	\$108,936
2025/32	2b	Blues Point Reserve - FP10057	High (4)	Poor	\$93,335
2025/32	2b	Blues Point Reserve - FP10060	High (4)	Poor	\$75,583
2025/32	2b	Berry Island Reserve - FP10044	High (4)	Poor	\$44,112
2025/32	2b	Balls Head Reserve - FP10020	High (4)	Poor	\$89,032
2025/32	2b	St Leonards Park - FP10527	High (4)	Poor	\$10,027
2025/32	2b	St Leonards Park - FP10532	High (4)	Poor	\$20,195
2025/32	2b	Balls Head Reserve - FP10899	High (4)	Poor	\$48,073
2025/32	2b	Balls Head Reserve - FP10903	High (4)	Poor	\$10,444
2025/32	2b	Balls Head Reserve - FP10968	High (4)	Poor	\$29,283
2025/32	2c	Kareela Rd (PSID 857)	High (4)	Poor	\$3,310
2025/32	2c	Waverton Park (includes Merrett Playground) - FP10984	High (4)	Poor	\$113,239
2025/32	2c	Brightmore Reserve - FP10101	High (4)	Poor	\$30,959
2025/32	2c	Milson Park - FP10391	High (4)	Poor	\$1,765
2025/32	2c	Quibaree Park - FP10464	High (4)	Poor	\$4,676
2025/32	2c	Smoothey Park - FP10502	High (4)	Poor	\$2,108
2025/32	2c	Smoothey Park - FP10505	High (4)	Poor	\$15,823
2025/32	2c	St Thomas Rest Park - FP10545	High (4)	Poor	\$9,230
2025/32	2c	Waverton Park (includes Merrett Playground) - FP10617	High (4)	Poor	\$27,305
2025/32	2c	St Thomas Rest Park - FP10836	High (4)	Poor	\$22,412
2025/32	2c	Waverton Park (includes Merrett Playground) - FP10863	High (4)	Poor	\$2,837
2025/32	Contingency				\$50,629
<b>Total</b>					<b>\$1,400,000</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

**Footpath Renewal Program**



Morton Street, Waverton



Walker Street, North Sydney



Pacific Highway, North Sydney – Mount Street to Walker Street





Alexander Street, Crows Nest – Pebblecrete



Grosvenor Street, Neutral Bay - Pebblecrete



Grosvenor Street, Neutral Bay – Before and After





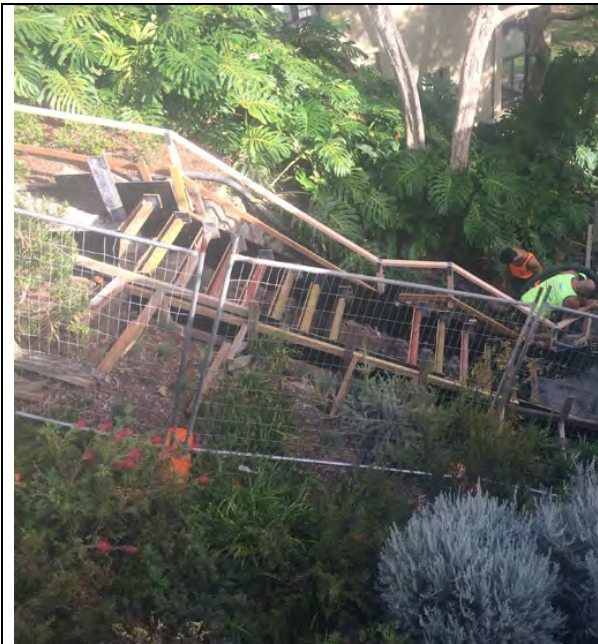
Pacific Highway, North Sydney – Granite



Doris Street, North Sydney – Before



Doris Street, North Sydney – After



Peel Street, Kirribilli – Before



Peel Street, Kirribilli – After



Carr Street, Waverton – Before



Carr Street, Waverton – After



- 35 -



#### Footpaths – Performance Measures

The effectiveness of the asset management plan can be measured in the following ways:

- The degree to which the required projected expenditures identified in this asset management plan are incorporated into the long term financial plan,
- The degree to which 1-5 year detailed works programs, budgets, business plans and corporate structures take into account the 'global' works program trends provided by the asset management plan,
- The degree to which the existing and projected service levels and service consequences (what we cannot do), risks and residual risks are incorporated into the Strategic Plan and associated plans,
- The Asset Renewal Funding Ratio achieving the target of 1.0.

**Footpaths – References**

- Footpaths Data Collection & Condition Survey Audit by Consultants, Rapid Map Services Pty Ltd in conjunction with Asset & Facilities Management Consulting Pty Ltd.
- IPWEA, 2006, 'International Infrastructure Management Manual', Institute of Public Works Engineering Australasia, Sydney, [www.ipwea.org/IIMM](http://www.ipwea.org/IIMM)
- IPWEA, 2008, 'NAMS.PLUS Asset Management', Institute of Public Works Engineering Australasia, Sydney,
- IPWEA, 2014, Version 2, 'Condition Assessment & Asset Performance Guidelines Practice Note 1: Footpaths & Cycleways', Institute of Public Works Engineering Australasia, Sydney
- IPWEA, 2015, 2nd edition, 'Australian Infrastructure Financial Management Manual', Institute of Public Works Engineering Australasia, Sydney
- IPWEA, 2015, 3rd edition, 'International Infrastructure Management Manual', Institute of Public Works Engineering Australasia, Sydney
- IPWEA, 2012 LTFP Practice Note 6 PN Long Term Financial Plan, Institute of Public Works Engineering Australasia, Sydney

## APPENDICES

### APPENDIX A: Maintenance Management System

Defect Management Inspection - Footpaths

Inspection areas have been defined in accordance with their usage – high (**red**), medium (**blue**) or low (**white**).

Inspection frequencies are based on these areas as defined by the reference maps and the resources currently available to undertake the inspections. The results of inspections are downloaded into the MMDS database

**Red** – 2 times per year;      **Blue** – Once each year;      **White** – Once every 2 years

There are 5 categories in which a defect may be placed.

<b>Cat 5</b>		Will be completed or <b>made safe</b> no later than 2 working days after allocation of defect to work crew. If made safe defect will then be re-categorised as Cat 4 or Cat 3.
<b>Cat 4</b>		Will be repaired no later than 10 working days after allocation of defect to work crew.
<b>Cat 3</b>		Will be repaired no later than 40 working days after allocation of defect to work crew.
<b>Cat 2</b>		Will be repaired no later than 160 working days after allocation of defect to work crew.
<b>Cat 1</b>		As new. Surface displaying no defects. May have aesthetic issues such as gum, stains, services mark-up, etc.

### Intervention Matrix – Footpaths

DISPLACEMENT (mm)	DISTORTION (mm) > 1 in 5 GRADE	SLIPPERINESS	SEVERITY	RISK ADJUSTED FOR PEDESTRIAN VOLUME AND AGE		
				WHITE	BLUE	RED
< 10	< 20			LOW	LOW	LOW
10 to 25	20 to 50		Slight	MEDIUM	HIGH	HIGH
25 to 50	50 to 100		Moderate	HIGH	HIGH	VERY HIGH
> 50	> 100	Yes	Extreme	HIGH	VERY HIGH	VERY HIGH

#### NOTES:

1. Appearance defects (gum, stains, surface marks etc) are not safety issues. Response time TBA. Record in "Category" as "A".
2. Slipperiness includes loose under foot.
3. Displacement may be height or width.
4. Distortion is uneven or undulating surface with gradient > 1 in 5.
5. "Red" footpaths have high pedestrian traffic and high usage by older pedestrians.
6. "Blue" footpaths have medium pedestrian traffic.
7. "White" footpaths have low pedestrian traffic.

The focus of footpath inspections is the hard surface areas - concrete, asphalt or paving - between the building line and the kerb.

Areas identified for repairs assume whole panel replacement unless otherwise specified by inspector.

### Scheduled Maintenance

Paver cleaning undertaken as per Paving Cleaning Program.




# NORTH SYDNEY COUNCIL ASSET MANAGEMENT PLAN KERB & GUTTER 2022-2032





- 2 -

<b>Document Control</b>		<b>Asset Management Plan</b>				
Document ID : NSC AMP Roads 2023 Kerb and Gutter						
<b>Rev No</b>	<b>Date</b>	<b>Revision Details</b>	<b>Author</b>	<b>Reviewer</b>	<b>Approver</b>	
1	25/10/2021	First Draft	IM	JVH/DM	DM	

## Table of Contents

Kerb and Gutter .....	4
Executive Summary .....	4
Kerb and Gutter – Future Demand .....	5
Kerb and Gutter – Levels of Customer Service .....	5
Kerb and Gutter – Levels of Technical Service .....	6
Kerb and Gutter – Condition .....	7
Kerb and Gutter – Review of Useful Lives .....	10
Kerb and Gutter – Funding Strategy .....	11
Kerb and Gutter – Capital works .....	11
Kerb and Gutter – Managing the Risks .....	11
Kerb and Gutter – Maintenance .....	16
Kerb and Gutter – Prioritised Expenditure Forecast .....	16
Kerb and Gutter – Valuation Forecast .....	16
Kerb and Gutter – Key Assumptions – Financial Forecasts .....	17
Kerb and Gutter – Creation / Acquisition / Upgrade Program .....	17
Kerb and Gutter – Disposal Plan .....	17
Kerb and Gutter – Forecast reliability and confidence .....	17
Kerb and Gutter – Improvement Plan .....	17
Kerb and Gutter – Monitoring and Review Procedures .....	17
Kerb and Gutter – Renewal and Replacement Program .....	17
Kerb and Gutter – Funding Scenarios .....	18
Kerb and Gutter – Service and Risk Tradeoffs .....	18
Service trade-off .....	18
Risk trade-off .....	18
Kerb and Gutter – Renewal and Replacement Program – FY2023-FY2032 (10 Year Plan) .....	18
Priority Projects 2022/23 (Year 1) .....	19
Priority Projects 2023/24 (Year 2) .....	20
Priority Projects 2024/25 (Year 3) .....	20
Priority Projects 2025/32 (Year 4-10) .....	21
Works Identified – Years 2025 - 32 (Year 4-10) .....	22
Kerb and Gutter – Performance Measures .....	27
Kerb and Gutter – References .....	27
APPENDICES .....	28
Appendix A: Maintenance Management System Kerb & Guttering .....	28

## Kerb and Gutter

### Executive Summary

North Sydney Council has approximately 258km of kerb and gutter assets located across the LGA. In 2018 Rapid Map Services consultants conducted a Kerb and Gutter condition audit for North Sydney Council. The objectives were to conduct a detailed inventory data collection, accurately map each Kerb and Gutter and assess each Kerb and Gutter in detail for condition and defects. Kerbs were split based on change of kerb type or material. The kerbs were further broken down into kerb segments based on change in condition and a condition score was assigned to each kerb segment.

Each Kerb and Gutter was attributed with a type, kerb material and gutter material.

Type:

- 248,411m of kerbs were barrier kerbs. This accounted for 96.3% by length of all kerbs surveyed. Other kerb types include dish crossing, mountable kerb and semi-mountable kerb.

Materials:

- 219,653m of all kerbs were made of concrete. This accounted for 85.2% by length of all kerbs surveyed.
- 26,871m of all kerbs were made of sandstone. This accounted for 10.4% by length of all kerbs surveyed.
- 5,198m of all kerbs were made of sandstone. This accounted for 2.0% by length of all kerbs surveyed.
- Other materials asphalt, brick, and timber

Each kerb and gutter were split into segments where the type, material and condition changed. A condition score was assigned to each segment.

Overall, some 62.7% by replacement cost of the portfolio is in very good to good condition (1-2). 32.7% is in fair condition (3) and 4.6% is in poor to very poor condition (4-5).

A Risk rating was assigned to each kerb segment. Overall, 95.4% of the portfolio has a low to medium risk rating and 4.6% has a high to very high risk rating.

The total Replacement Value of the portfolio is \$74,881,908 as at 30 June 2021. The values are shown in the Table below.

**Table 1: Kerb and Gutter – Summary Table**

Asset Category	Length (m) (2021)	Replacement Value (2021)	Accumulated Depreciation (2021)	Fair Value (2021)	Depreciation Expense
Kerb and Gutter	257,850	\$74,881,908	\$27,289,668	\$47,592,240	\$1,123,646

The following table provides a summary of the quantities and replacement values for each kerb and gutter type. The portfolio is dominated by concrete barrier kerbs with a concrete gutter.

- 5 -

**Table 2: Kerb and Gutter - Typology**

Kerb and Gutter Type	Kerb Material	Gutter Material	Length (m)	Replacement Cost
Barrier	Asphalt (Formed)	Asphalt (Formed)	46	\$5,097
	Asphalt (Formed)	Concrete	13	\$1,441
	Asphalt (Formed)	No Gutter	174	\$19,326
	Brick	No Gutter	21	\$3,561
	Concrete	Asphalt (Formed)	1,540	\$354,028
	Concrete	Concrete	205,879	\$47,339,846
	Concrete	No Gutter	8,981	\$1,546,000
	Granite	Concrete	5,128	\$5,035,717
	Sandstone	Concrete	11,227	\$7,662,900
	Sandstone	No Gutter	9,108	\$5,946,804
	Sandstone	Sandstone	6,273	\$4,281,586
	Timber	No Gutter	21	\$3,670
<b>Barrier Total</b>			<b>248,411</b>	<b>\$72,199,977</b>
Dish Crossing	No Kerb	Concrete	5,648	\$1,541,287
<b>Dish Crossing Total</b>			<b>5,648</b>	<b>\$1,541,287</b>
Mountable kerb	Asphalt (Formed)	No Gutter	205	\$22,733
	Concrete	Concrete	2,453	\$515,096
	Concrete	No Gutter	324	\$55,846
	Granite	Concrete	70	\$102,593
<b>Mountable kerb Total</b>			<b>3,052</b>	<b>\$696,268</b>
Semi-mountable kerb	Concrete	Concrete	286	\$59,961
	Concrete	No Gutter	190	\$32,713
	Sandstone	Concrete	263	\$351,702
<b>Semi-mountable kerb Total</b>			<b>739</b>	<b>\$444,375</b>
<b>Grand Total</b>			<b>257,850</b>	<b>\$74,881,908</b>

### Kerb and Gutter – Future Demand

Drivers affecting demand for Kerb and Gutter include things such as population growth, regulation changes – new development, community expectations (Public Safety), technological changes, economic factors and environmental factors.

### Kerb and Gutter – Levels of Customer Service

Service levels are defined service levels in two terms, customer levels of service and technical levels of service. These are supplemented by organisational measures.

**Customer Levels of Service** measure how the customer receives the service and whether value to the customer is provided.

Customer levels of service measures used in the asset management plan are:

**Quality**                      How good is the service ... *what is the condition or quality of the service?*

**Function**                     Is it suitable for its intended purpose .... *Is it the right service?*

**Capacity/Use**                Is the service over or under used ... *do we need more or less of these assets?*

The current and expected customer service levels are detailed in the Table below.

**Table 3: Kerb and Gutter – Levels of Customer Service**

Service Attribute	Expectation	Performance Measure Used	Current Performance	Desired Position in 10 Years.
<b>Quality</b>	Kerb and Gutter assets are well maintained.	Percentage of kerb and gutter in 'very good', 'good' or 'Fair' (1, 2, 3) condition and Percentage 'poor' or 'very poor' (4, 5) Condition.	95.4% (by length) of Kerb and Gutter in 'very good', 'good' or 'Fair' (1, 2, 3) condition.  4.6% (by length) of Kerb and Gutter assets in poor/very poor (4, 5) Condition.	Maintain – Condition 1-2-3  Improve and replace Condition 4-5
<b>Function</b>	Upgrade Kerb and Gutter assets in accordance with Public Domain Style Manual.	km of Kerb and Gutter assets constructed from granite.	5.2km (by length) of Kerb and Gutter assets constructed from granite.	Improve
<b>Capacity and Use</b>	Number of Kerb and Gutter assets required is appropriate.	Number of additional Kerb and Gutter assets required	New granite Kerb and Gutter assets are constructed on State Roads as part of Streetscape projects	New granite Kerb and Gutter assets on State Roads to be constructed as part of future Streetscape projects

**Kerb and Gutter – Levels of Technical Service**

**Technical Levels of Service** - Supporting the customer service levels are operational or technical measures of performance. These technical measures relate to the allocation of resources to service activities to best achieve the desired customer outcomes and demonstrate effective performance.

Technical service measures are linked to the activities and annual budgets covering:

- Operations – the regular activities to provide services (e.g., cleansing, inspections, etc).
- Maintenance – the activities necessary to retain an asset as near as practicable to an appropriate service condition. Maintenance activities enable an asset to provide service for its planned life (e.g., Kerb and Gutter repair – patching, minor works),
- Renewal – the activities that return the service capability of an asset up to that which it had originally (e.g. Kerb and Gutter replacement and or Kerb and Gutter component replacement),
- Upgrade/New – the activities to provide a higher level of service (e.g. additional Kerb and Gutter).

Table 4 shows the technical levels of service expected to be provided for Kerb and Gutter assets. The 'Desired' position in the table documents the position being recommended in this AM Plan.



**Table 4: Kerb and Gutter – Technical Levels of Service**

Service Attribute	Service Activity Objective	Activity Measure Process	Current Performance	Desired for Optimum Lifecycle Cost
<b>Operations</b>	Undertake network inspections to monitor condition	Network inspections to monitor condition	Network inspected in 2018	Network inspected every 5 years
<b>Maintenance</b>	Reactive service Requests completed in a timely manner or made safe.	Respond to complaints.	Minor repairs undertaken in accordance with Maintenance Management System	Minor repairs undertaken in accordance with Maintenance Management Delivery System.
<b>Renewal</b>	Maintain existing assets to a satisfactory condition	Percentage of kerb and gutter in 'very good', 'good' or 'Fair' (1, 2, 3) condition and Percentage 'poor' or 'very poor' (4, 5) Condition.	95.4% of Kerb and Gutter assets in 'very good', 'good' or 'Fair' (1, 2, 3) condition.  4.6% of Kerb and Gutter assets in poor/very poor (4, 5) Condition.	Improve or replace
<b>Upgrade</b>	Upgrade Kerb and Gutter assets in accordance with Public Domain Style Manual.	km of Kerb and Gutter assets constructed from granite.	5.2km (by length) of Kerb and Gutter assets constructed from granite in CBD.	Improve
<b>New</b>	Satisfactory provision of Kerb and Gutter assets.	Number of additional Kerb and Gutter assets required.	New granite Kerb and Gutter assets are constructed on State Roads as part of Streetscape projects	New granite Kerb and Gutter assets on State Roads to be constructed as part of future Streetscape projects

**Kerb and Gutter – Condition**

The condition of Council's kerb and gutter network was surveyed in 2018 by Consultants, Rapid Map Services Pty Ltd in conjunction with Asset & Facilities Management Consulting Pty Ltd. The following condition criteria was used.

**Table 5: Kerb and Gutter Condition Survey Criteria**

Grade	Condition	Description	
1	Very Good	As new, no need for intervention. Low risk to public safety.	
		<b>No work required</b>	
		<b>Cracking</b>	No cracks or only occasional fine surface cracks.
		<b>Misalignment</b>	

- 8 -

Grade	Condition	Description	
		<b>due to uplift/ settlement/ rotation</b>	Nil
		<b>Chipping/ Spalling</b>	Nil
		<b>Ponding</b>	Nil
2	Good	Some signs of wear and tear. No immediate intervention required. Note for review at next inspection. Low to Medium risk to public safety. <b>Only minor work required</b>	
		<b>Cracking</b>	Isolated fine cracking at intervals.
		<b>Misalignment due to uplift/ settlement/ rotation</b>	Isolated misalignment up to 5mm.
		<b>Chipping/ Spalling</b>	Minor cosmetic chipping only. No impact on performance.
		<b>Ponding</b>	Minor ponding in channel only.
3	Fair	Some isolated defects. Generally able to be addressed through routine/ scheduled maintenance. Medium to High risk to public safety and amenity. <b>Some work required</b>	
		<b>Cracking</b>	Block cracking typically 3 to 5mm width. Up to 20% of length.
		<b>Misalignment due to uplift/ settlement/ rotation</b>	Misalignments of 5 to 15mm with up to 30% of length affected.
		<b>Chipping/ Spalling</b>	Isolated chipping, max 30mm diameter. Average 5m apart.
		<b>Ponding</b>	More significant ponding up to 10mm deep but confined to channel. Now more than 30% affected.
4	Poor	Extensive wear and tear. Requiring replacement of sections. High to Very High risk to public safety and amenity. <b>Some replacement or rehabilitation needed within 1 year</b>	
		<b>Cracking</b>	Block cracking over 5mm width but still intact. Generally, over 20% to 50% of section affected.
		<b>Misalignment due to uplift/ settlement/ rotation</b>	Misalignments 15 to 50mm width over 50% of length affected. Water infiltration to pavement.
		<b>Chipping/ Spalling</b>	Chipping and spalling with some water infiltration evident. No more than 50% of section affected.
		<b>Ponding</b>	Ponding up to 30mm deeps encroaching onto pavement and isolated pavement damage. No more than 30% of section affected.
5	Very Poor	Significant defects in terms of severity and extent. Requires full length replacement. High to Very High risk to public safety and, pavement and amenity. <b>Urgent replacement/ rehabilitation required</b>	
		<b>Cracking</b>	Block cracking, displacement and sections missing. Water infiltrating pavement. Generally, over more than 50% of the section affected.
		<b>Misalignment</b>	Misalignments over 50mm and over 50% of the section

Grade	Condition	Description	
		<b>due to uplift/ settlement/ rotation</b>	affected. Water infiltration to pavement.
		<b>Chipping/ Spalling</b>	Major spalling of sections. Water infiltration common. Over 50% of the length affected.
		<b>Ponding</b>	Ponding over 30mm deep significantly encroaching onto pavement. Infiltration evident over 30% of length. Significant impact on adjoining pavement.

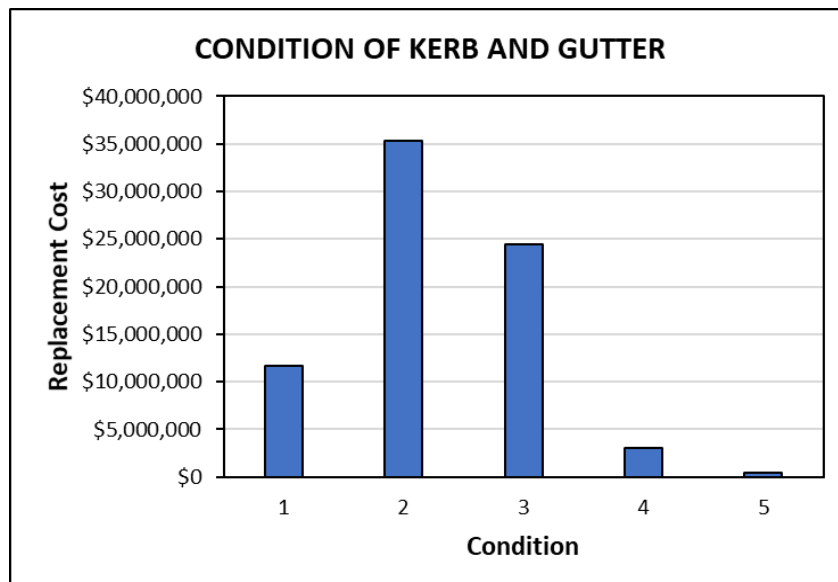
As per IPWEA Condition Assessment & Asset Performance Guidelines Practice Note 2 v2 2014 Kerb and Channel

The Table below shows the Replacement Cost for each of the condition scores. In practice and where funds permit Kerb and Gutter sections in condition 3 are generally replaced at the same time as Kerb and Gutter sections in condition 4 or 5 if they are adjacent if there are potential risks and if it is cost effective.

**Table 6: Kerb and Gutter Condition Survey Results - Overall**

CONDITION OF KERB AND GUTTER – ENTIRE NETWORK			
Condition	Length (m)	Replacement Cost	% Condition (based on cost)
1 (Very Good)	31,057	\$11,650,951	15.6%
2 (Good)	122,055	\$35,301,986	47.1%
3 (Fair)	90,528	\$24,457,441	32.7%
4 (poor)	12,515	\$2,991,530	4.0%
5 (Very Poor)	1,695	\$480,000	0.6%
<b>Total</b>	<b>257,850</b>	<b>\$74,881,908</b>	<b>100.0%</b>

The Graph below shows the condition of Kerb and Gutter assets over the entire network in terms of replacement cost.



- 10 -

**Kerb and Gutter – Review of Useful Lives**

The Table below shows the ranges of Useful Lives from the IPWEA 2017 Practice Note – “Useful Life of Infrastructure” from detailed studies in South Australia, Tasmania, as well as an IPWEA Workshop.

Kerb and Gutter – Review of Useful Lives							
Description	South Aust. Tonkin Rpt			IPWEA Workshop		Tasmania Audit Office	
	Min	Max	Avg	Min	Max	Min	Max
Upright Concrete Kerbs	55	100	74	55	100	50	80
Median Concrete Kerbs	40	100	70				
Valley Drain Concrete Kerbs	55	100	72				

The useful lives of all types of kerb and gutter assets were reviewed by Australis Pty Ltd and are shown in the following Table.

Kerb and Gutter Type	Kerb Material	Gutter Material	Useful Life (Years)
<b>Barrier</b>	Asphalt (Formed)	Asphalt (Formed)	20
	Asphalt (Formed)	Concrete	20
	Asphalt (Formed)	No Gutter	20
	Brick	No Gutter	60
	Concrete	Asphalt (Formed)	60
	Concrete	Concrete	60
	Concrete	No Gutter	60
	Granite	Concrete	80
	Sandstone	Concrete	80
	Sandstone	No Gutter	80
	Sandstone	Sandstone	80
	Timber	No Gutter	20
<b>Dish Crossing</b>	No Kerb	Concrete	60
<b>Mountable kerb</b>	Asphalt (Formed)	No Gutter	20
	Concrete	Concrete	60
	Concrete	No Gutter	60
	Granite	Concrete	80
<b>Semi-mountable kerb</b>	Concrete	Concrete	60
	Concrete	No Gutter	60
	Sandstone	Concrete	80

Based on reviewed useful lives the total annual Depreciation is as follows:

Capital funding to maintain a renewal ratio of 1	
	Annual Depreciation
<b>Kerb and Gutter</b>	<b>\$1,123,646</b>

- 11 -

A budget of \$1,123,646 is required on average over the long term to maintain the condition of Council's kerb and gutter network, noting that fluctuations in renewal requirements in the medium term.

#### **Kerb and Gutter – Funding Strategy**

The Asset Renewal Funding Ratio is the most important indicator. It compares funding with depreciation. An Asset Renewal Funding Ratio of 1 or greater sustained over the long term indicates the optimal renewal and replacement of assets.

The forecast for Depreciation (or Long Term Average Annual Asset Consumption) is \$1,123,646. Therefore, an annual average capital renewal funding of \$1,123,646 (2021 dollars) will achieve an Asset Renewal Funding Ratio of 1.

The cost to fully replace assets identified by Consultants, Rapid Map Services Pty Ltd in condition 4 and 5 as well as the cost to replace the condition 3 assets which will become condition 4 over the next 10 is \$18,151,447. This is an average annual cost of \$1,815,145 which is greater than the \$1,123,646 Depreciation Expense and is greater than the average annual forecast budget of \$1,580,000. With further investigation and detailed design it is hoped that alternate and lesser cost solutions may be possible to maintain kerb and gutter assets at an optimal level.

#### **Kerb and Gutter – Capital works**

Replacement of kerb and gutter sections is assumed to be a capital works project.

The ranking criteria used to determine priority of identified renewal and replacement proposals is detailed in Table 7. A priority for action of 1 to 5 has been assigned to each kerb and gutter section requiring capital works as described in the following table.

#### **Kerb and Gutter – Managing the Risks**

There are risks associated with providing and maintaining Kerb and Gutter assets are primarily as follows:

- Kerb and gutter in poor condition – causing possible trip hazard – public safety hazards, injury.
- Cracked Kerb and Gutter – causing water to enter the road pavement potentially causing premature road pavement failure

The following risk response table was used to identify those Kerb and Gutter assets requiring action within the next 10 years.

**Table 7: Kerb and Gutter – Risk Response Table**

Level of Risk		Category	Action Required	Time frame for repairs, upgrade or replacement (subject to funding)
VH	Very High Risk	5	Immediate corrective action	1-4 Years
H	High Risk	4	Prioritised action required	4-10 Years
M	Medium Risk	3	Planned action required	4-10 Years
L	Low Risk	2	Manage by routine procedures	Inspections 1-2 years
New	No Risk	1	None	None



Consideration has been given to each Kerb and Gutter asset whether to replace the Kerb and Gutter or perform maintenance on it.

Segments that have a **Very High or High** risk rating were considered to need replacement within the 1-4 year forecast period.

Segments with a **Medium** risk rating were also considered needing replacement within the 4-10 year forecast period.



Examples of failed and failing Kerb and Gutter in the North Sydney LGA



Examples of failed Kerb and Gutter in the North Sydney LGA





Examples of failed Kerb and Gutter in the North Sydney LGA

- 15 -



Examples of failed Kerb and Gutter in the North Sydney LGA

Council will endeavour to manage these risks within available funding by prioritising Kerb and Gutter renewal works based on the Kerb and Gutter Condition Audit prepared by Consultants, Rapid Map Services Pty Ltd.

**Table 8: Kerb and Gutter – Capital renewal Priorities based on Condition and Risk Rating**

Risk Matrix - Kerb and Gutter (Condition and Risk Rating)					
Likelihood of Kerb and Gutter failing (L) Refer to Table 5. Condition Criteria	Kerb and Gutter – Length (m)				
	Road Hierarchy	Lane	Local Road	Collector	State/ Regional Road
	Park Hierarchy	Local	District	Regional	
	Footpath Hierarchy	Category 3	Category 2	Category 1	
	Priority	d	c	b	a
Condition 1 – Very Good (15.6%)	5	10,300	15,380	6,472	3,617
Condition 2 - Good (47.1%)	4	31,065	53,445	27,122	8,233
Condition 3 – Fair (32.7%)	3	20,333	40,200	23,017	4,699
Condition 4 – Poor (4.6%)	2	2,496	5,663	3,259	858
Condition 5 – Very Poor (0.6%)	1	554	624	425	86

**(Note: Also Refer to Table 6)**

**Note:** This table is based on data in the current register.

**Note:** Capital works are proposed for those Kerb and Gutter sections identified in “Very Poor”, “Poor” and “Fair” condition.

**Note:** Factors which are used to determine the priority include ‘Footpath Hierarchy’, ‘Road Hierarchy’ and ‘Park Hierarchy’. The most critical factor is used to determine the priority.

It should be noted that Kerb and Gutter sections may also be replaced based on other criteria including:

- Damage
- Restorations
- Kerb and Gutter replaced in association with other projects such as road or drainage works
- Streetscape projects

**Kerb and Gutter – Maintenance**

Routine maintenance is the regular on-going work that is necessary to keep assets operating, including instances where portions of the asset fail and need immediate repair to make the asset operational again, e.g. repairs, patching.

Maintenance includes all actions necessary for retaining an asset as near as practicable to an appropriate service condition including regular ongoing day-to-day work necessary to keep assets operating.

Current maintenance expenditure levels are considered to be adequate to meet projected service levels.

Over the longer term future operations and maintenance expenditure is forecast to be steady as the asset stock is not forecast to increase. The following table summarises the prioritised capital works.

**Kerb and Gutter – Prioritised Expenditure Forecast**

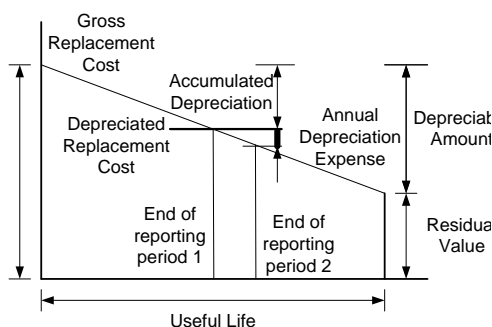
**Table 9: Kerb and Gutter – Prioritised Expenditure Forecast – 10 years FY2023-FY2032**

Year		Priority	Capital Costs	Maintenance Costs	Total Costs
1	2022/23	1a to 1b	\$1,400,000	\$10,000	\$1,410,000
2	2023/24	1b	\$1,600,000	\$10,000	\$1,610,000
3	2024/25	1c	\$1,600,000	\$10,000	\$1,610,000
4-10	2025/32	1c to 2b	\$11,200,000	\$70,000	\$11,270,000
Works Identified		2b	\$2,151,447		\$2,151,447
<b>Grand Total</b>			<b>\$17,951,447</b>	<b>\$100,000</b>	<b>\$18,051,447</b>

In summary the current value of Kerb and Gutter assets is detailed in the Table below.

**Table 10: Kerb and Gutter – Valuation**

Asset Category	Length (m) (2021)	Replacement Value (2021)	Accumulated Depreciation (2021)	Fair Value (2021)	Depreciation Expense
Kerb and Gutter	257,850	\$74,881,908	\$27,289,668	\$47,592,240	\$1,123,646



**Kerb and Gutter – Valuation Forecast**



- 17 -

Asset values (Kerb and Gutter) are forecast to increase slowly. It is forecast that some additional assets are expected to be added to the asset stock from new construction and acquisition by Council or from assets constructed by land developers or other assets donated to Council. New Kerb and Gutter assets include the construction of granite Kerb and Gutter on State Roads (Kerb and Gutter is normally owned by the State Government). Upgrade of existing concrete Kerb and Gutter to granite in the CBD will also increase values.

#### **Kerb and Gutter – Key Assumptions – Financial Forecasts**

Key assumptions made in this asset management plan for Kerb and Gutter are:

**Table: 11. Key Assumptions made in AM Plan and Risks of Change**

Key Assumptions	Risks of Change to Assumptions
Useful Lives of Kerb and Gutter	Low risk
Rate of deterioration	Low risk

#### **Kerb and Gutter – Creation / Acquisition / Upgrade Program**

New works are those that create a new asset that did not previously exist, or works which will upgrade or improve an existing asset beyond its existing capacity. They may result from growth, social or environmental needs. Assets may also be acquired at no cost. No new assets are currently identified.

#### **Kerb and Gutter – Disposal Plan**

No Kerb and Gutter Assets have been identified for disposal.

#### **Kerb and Gutter – Forecast reliability and confidence**

The estimated confidence level and reliability of data used in this AMP is considered to be reliable as the data is based on a detailed condition report on Kerb and Gutter.

#### **Kerb and Gutter – Improvement Plan**

The improvement plan is shown in the table below.

Task No	Task	Responsibility	Resources Required	Timeline
1	Research the Useful Life of Kerb and Gutter	EPS	Staff Time	2024

#### **Kerb and Gutter – Monitoring and Review Procedures**

This Asset Management Plan will be reviewed during annual budget planning processes and amended to show any material changes in service levels and/or resources available to provide those services as a result of budget decisions.

The Asset Management Plan has a life of 4 years and is due for complete revision and updating within 1 year of each Council election.

#### **Kerb and Gutter – Renewal and Replacement Program**



Renewal and replacement expenditure is major work which does not increase the asset's design capacity but restores, rehabilitates, replaces or renews an existing asset to its original service potential. Work over and above restoring an asset to original service potential is considered to be an upgrade/expansion or new work expenditure resulting in additional future operations and maintenance costs.

Kerb and Gutter assets requiring renewal/replacement have been identified by the Kerb and Gutter Condition Audit completed by Consultants, Rapid Map Services Pty Ltd in conjunction with Asset & Facilities Management Consulting Pty Ltd, in 2018.

#### **Kerb and Gutter – Funding Scenarios**

The Long Term Financial Plan includes three scenarios, all of which maintain current services levels but propose differing levels of capital expenditure on the renewal of Council's ageing infrastructure assets.

In summary:

- Pessimistic Scenario - This Scenario results in a decline in operating results and deficits in the later years.
- Optimistic Scenario - This Scenario results in improvements in operating results for the life of the plan.
- Planned Scenario - This Scenario results modest surplus operating results for the life of the plan.

**Table 12: Funding Scenarios – Kerb and Gutter – North Sydney Councils 10 Year Plan**

Scenario	Capital Funding Level required per annum	10 Year Plan \$ Total
Scenario 1.	\$1,580,000/year	\$15,800,000
Scenario 2.	\$1,580,000/year	\$15,800,000
Scenario 3.	\$1,580,000/year	\$15,800,000

**Note:** These Scenarios are based on the 10-year Long Term Financial Plan.

#### **Kerb and Gutter – Service and Risk Tradeoffs**

The decisions made in adopting this AM Plan are based on the objective to achieve the optimum benefits from the available resources.

##### **Service trade-off**

If this funding Scenario is adopted, then the Level of Service will be maintained.

##### **Risk trade-off**

If this funding Scenario is adopted, then there is less risk of Kerb and Gutter failures.

#### **Kerb and Gutter – Renewal and Replacement Program – FY2023-FY2032 (10 Year Plan)**

- 19 -

Council's projected 10 year Capital Renewal Program is shown in the Tables below. It is based on the funding required to replace Kerb and Gutter assets identified by the Kerb and Gutter Condition Audit completed by Consultants, Rapid Map Services Pty Ltd in conjunction with Asset & Facilities Management Consulting Pty Ltd, in 2018.

It should be noted that Kerb and Gutter sections may also be replaced based on other criteria including:

- Damage
- Restorations
- Kerb and Gutter replaced in association with other projects such as road or drainage works. Reasons for replacing kerb and gutter other than condition also includes the removal of gutter bridges, level adjustments, ponding issues etc.
- Streetscape projects

Project priorities may also be subject to change due to accelerated deterioration, sudden failure or finalization of detailed designs and project costings.

**Table13: Kerb and Gutter – Renewal and Replacement Program**

**Priority Projects 2022/23 (Year 1)**

Replace Year	Priority	Location	Risk Rating / Category	Condition	Cost Estimate
2022/23	1a	Shirley Rd (PSID 496)	Very High (5)	Very Poor	\$71,909
2022/23	1a	Ernest St (PSID 218)	Very High (5)	Very Poor	\$14,002
2022/23	1b	Bent St (PSID 94)	Very High (5)	Very Poor	\$122,226
2022/23	1b	West St (PSID 564)	Very High (5)	Very Poor	\$99,394
2022/23	1b	Albany St (PSID 8)	Very High (5)	Very Poor	\$13,557
2022/23	1b	Young St (PSID 802)	Very High (5)	Very Poor	\$50,270
2022/23	1b	Rocklands Rd (PSID 477)	Very High (5)	Very Poor	\$20,502
2022/23	1b	Shirley Rd (PSID 497)	Very High (5)	Very Poor	\$77,540
2022/23	1b	Alexander St (PSID 18)	Very High (5)	Very Poor	\$33,497
2022/23	1b	Morton St (PSID 404)	Very High (5)	Very Poor	\$106,372
		Estimated K&G works in association with Road Reconstruction Projects			\$490,731
		Estimated K&G works in association with Drainage Projects			\$300,000
<b>TOTAL</b>					<b>\$1,400,000</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

**Table 14: Kerb and Gutter – Renewal and Replacement Program**

- 20 -

**Priority Projects 2023/24 (Year 2)**

Year	Priority	Location	Risk Rating	Condition	Cost Estimate
2023/24	1a	Chandos St (Westbound) (PSID 157)	Very High (5)	Very Poor	\$86,331
2023/24	1b	Milson Rd (PSID 792)	Very High (5)	Very Poor	\$57,968
2023/24	1b	Young St (PSID 803)	Very High (5)	Very Poor	\$52,008
2023/24	1b	Shirley Rd (PSID 498)	Very High (5)	Very Poor	\$236,180
2023/24	1b	Murdoch St (PSID 409)	Very High (5)	Very Poor	\$214,696
2023/24	1b	Grafton St (PSID 249)	Very High (5)	Very Poor	\$54,956
2023/24	1b	Telopea St (PSID 520)	Very High (5)	Very Poor	\$13,723
2023/24	1b	Gillies St (PSID 246)	Very High (5)	Very Poor	\$93,950
2023/24	1b	Ernest St (PSID 216)	Very High (5)	Very Poor	\$17,942
2023/24	1b	Palmer St (PSID 433)	Very High (5)	Very Poor	\$43,903
		Estimated K&G works in association with Road Reconstruction Projects			\$428,343
		Estimated K&G works in association with Drainage Projects			\$300,000
<b>TOTAL</b>					<b>\$1,600,000</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

**Table 15: Kerb and Gutter – Renewal and Replacement Program****Priority Projects 2024/25 (Year 3)**

Year	Priority	Location	Risk Rating	Condition	Cost Estimate
2024/25	1c	Woolcott St (PSID 596)	Very High (5)	Very Poor	\$79,587
2024/25	1c	King St (PSID 314)	Very High (5)	Very Poor	\$220,961
2024/25	1c	Pine St (PSID 445)	Very High (5)	Very Poor	\$177,926
2024/25	1c	Armstrong St (PSID 32)	Very High (5)	Very Poor	\$43,630
2024/25	1c	Benelong Rd (PSID 87)	Very High (5)	Very Poor	\$84,016
2024/25	1c	Illiliwa St (PSID 300)	Very High (5)	Very Poor	\$72,974
2024/25	1c	Mckye St (PSID 357)	Very High (5)	Very Poor	\$210,789
		Estimated K&G works in association with Road Reconstruction Projects			\$410,117
		Estimated K&G works in association with Drainage Projects			\$300,000
<b>TOTAL</b>					<b>\$1,600,000</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

**Table 16: Kerb and Gutter – Renewal and Replacement Program****Priority Projects 2025/32 (Year 4-10)**

Year	Priority	Location	Risk Rating	Condition	Cost Estimate
2025/32	1c	Milner Cres (PSID 385)	Very High (5)	Very Poor	\$80,181
2025/32	1c	Cowdroy Ave (PSID 177)	Very High (5)	Very Poor	\$98,032
2025/32	1c	Mitchell St (PSID 397)	Very High (5)	Very Poor	\$39,159
2025/32	1c	Peel St (PSID 440)	Very High (5)	Very Poor	\$84,094
2025/32	1c	Rowlison Pde (PSID 482)	Very High (5)	Very Poor	\$115,195
2025/32	1c	Boyle St (PSID 110)	Very High (5)	Very Poor	\$94,685
2025/32	1c	Weringa Ave (PSID 561)	Very High (5)	Very Poor	\$148,534
2025/32	1c	Reed St (PSID 464)	Very High (5)	Very Poor	\$110,123
2025/32	1c	Sinclair St (PSID 505)	Very High (5)	Very Poor	\$162,598
2025/32	1c	Hazelbank Rd (PSID 273)	Very High (5)	Very Poor	\$151,831
2025/32	1c	Alan St (PSID 5)	Very High (5)	Very Poor	\$139,670
2025/32	1c	Ellalong Rd (PSID 208)	Very High (5)	Very Poor	\$124,993
2025/32	1c	Belmont Ave (PSID 73)	Very High (5)	Very Poor	\$42,565
2025/32	1c	Rosalind St (PSID 479)	Very High (5)	Very Poor	\$295,390
2025/32	1c	Belmont Ave (PSID 72)	Very High (5)	Very Poor	\$45,840
2025/32	1c	Spofforth St (Northbound) (PSID 513)	Very High (5)	Very Poor	\$58,264
2025/32	1c	Cammeray Park	Very High (5)	Very Poor	\$145,958
2025/32	1c	Palmer St (PSID 432)	Very High (5)	Very Poor	\$30,473
2025/32	1c	Carabella St (PSID 138)	Very High (5)	Very Poor	\$96,293
2025/32	1d	Robertson La (PSID 841)	Very High (5)	Very Poor	\$160,920
2025/32	1d	Westleigh La (PSID 836)	Very High (5)	Very Poor	\$122,810
2025/32	1d	Morden St (PSID 402)	Very High (5)	Very Poor	\$92,075
2025/32	1d	Mcintosh La (PSID 731)	Very High (5)	Very Poor	\$17,383
2025/32	1d	Cambridge St (PSID 644)	Very High (5)	Very Poor	\$8,340
2025/32	1d	Clarke La (PSID 655)	Very High (5)	Very Poor	\$76,524
2025/32	1d	Horace St (PSID 292)	Very High (5)	Very Poor	\$100,012
2025/32	1d	Elliott St (PSID 677)	Very High (5)	Very Poor	\$90,455
2025/32	1d	Lambert St (PSID 713)	Very High (5)	Very Poor	\$51,723
2025/32	1d	John St (PSID 309)	Very High (5)	Very Poor	\$38,405
2025/32	1d	Chapel La (PSID 647)	Very High (5)	Very Poor	\$15,055
2025/32	1d	Hume La (PSID 973)	Very High (5)	Very Poor	\$34,381
2025/32	1d	Balfour St (PSID 44)	Very High (5)	Very Poor	\$144,467
2025/32	1d	Priory Rd (PSID 453)	Very High (5)	Very Poor	\$152,598
2025/32	1d	Rocklands La (PSID 475)	Very High (5)	Very Poor	\$1,496

- 22 -

Year	Priority	Location	Risk Rating	Condition	Cost Estimate
2025/32	1d	Boronia St (PSID 109)	Very High (5)	Very Poor	\$158,066
2025/32	1d	Benelong La (PSID 1026)	Very High (5)	Very Poor	\$75,926
2025/32	1d	Holdsworth St (PSID 284)	Very High (5)	Very Poor	\$122,701
2025/32	1d	Guthrie Ave (PSID 856)	Very High (5)	Very Poor	\$7,729
2025/32	1d	Cairo St (PSID 132)	Very High (5)	Very Poor	\$28,251
2025/32	1d	Rodborough Ave (PSID 770)	Very High (5)	Very Poor	\$21,434
2025/32	1d	Colin St (PSID 171)	Very High (5)	Very Poor	\$132,641
2025/32	1d	Atchison La (PSID 625)	Very High (5)	Very Poor	\$18,652
2025/32	2a	High St (PSID 278)	High (4)	Poor	\$168,321
2025/32	2a	Chandos St (PSID 154)	High (4)	Poor	\$45,070
2025/32	2a	Wycombe Rd (PSID 604)	High (4)	Poor	\$81,424
2025/32	2a	Kurraba Rd (PSID 321)	High (4)	Poor	\$246,841
2025/32	2a	Chandos St (Westbound) (PSID 158)	High (4)	Poor	\$69,690
2025/32	2a	Rangers Rd (PSID 458)	High (4)	Poor	\$146,631
2025/32	2a	Bannerman St (PSID 54)	High (4)	Poor	\$144,855
2025/32	2a	Clark Rd (PSID 164)	High (4)	Poor	\$110,804
2025/32	2a	Clark Rd (PSID 165)	High (4)	Poor	\$139,182
2025/32	2a	Gerard St (PSID 244)	High (4)	Poor	\$2,545
2025/32	2b	Olympic Dr (PSID 752)	High (4)	Poor	\$151,855
2025/32	2b	Grosvenor La (PSID 257)	High (4)	Poor	\$42,304
2025/32	2b	Union St (PSID 535)	High (4)	Poor	\$270,879
2025/32	2b	West St (PSID 563)	High (4)	Poor	\$215,233
		Estimated K&G works in association with Road Reconstruction Projects			\$3,528,444
		Estimated K&G works in association with Drainage Projects			\$2,100,000
<b>TOTAL</b>					<b>\$11,200,000</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

**Table 17: Kerb and Gutter – Renewal and Replacement Program**

**Works Identified – Years 2025 - 32 (Year 4-10)**

Year	Priority	Location	Risk Rating	Condition	Cost Estimate
2025/32	2b	West St (PSID 566)	High (4)	Poor	\$27,196
2025/32	2b	Amherst St (PSID 24)	High (4)	Poor	\$165,081
2025/32	2b	Spruson St (PSID 514)	High (4)	Poor	\$69,327
2025/32	2b	Wycombe Rd (PSID 600)	High (4)	Poor	\$112,068
2025/32	2b	Milson Rd (PSID 393)	High (4)	Poor	\$167,843



- 23 -

Year	Priority	Location	Risk Rating	Condition	Cost Estimate
2025/32	2b	Park Ave (PSID 434)	High (4)	Poor	\$103,700
2025/32	2b	Yeo St (PSID 608)	High (4)	Poor	\$89,409
2025/32	2b	Parraween St (PSID 438)	High (4)	Poor	\$3,026
2025/32	2b	Mclaren St (PSID 358)	High (4)	Poor	\$121,648
2025/32	2b	Hume St (PSID 295)	High (4)	Poor	\$9,600
2025/32	2b	Lavender St (PSID 332)	High (4)	Poor	\$95,802
2025/32	2b	Ridge St (PSID 470)	High (4)	Poor	\$187,682
2025/32	2b	Rangers Rd (PSID 457)	High (4)	Poor	\$9,327
2025/32	2b	Murdoch St (PSID 411)	High (4)	Poor	\$170,106
2025/32	2b	Rawson St (PSID 459)	High (4)	Poor	\$28,584
2025/32	2b	Ridge St (PSID 469)	High (4)	Poor	\$130,831
2025/32	2b	Willoughby Rd (PSID 586)	High (4)	Poor	\$55,175
2025/32	2b	Little Spring St (PSID 717)	High (4)	Poor	\$152,551
2025/32	2b	Ennis Rd (PSID 678)	High (4)	Poor	\$237,510
		Contingency			\$214,981
<b>TOTAL</b>					<b>\$2,151,447</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

**Kerb and Gutter Renewal Program**



Cremorne Lane, Cremorne - Before



Cremorne Lane, Cremorne - After





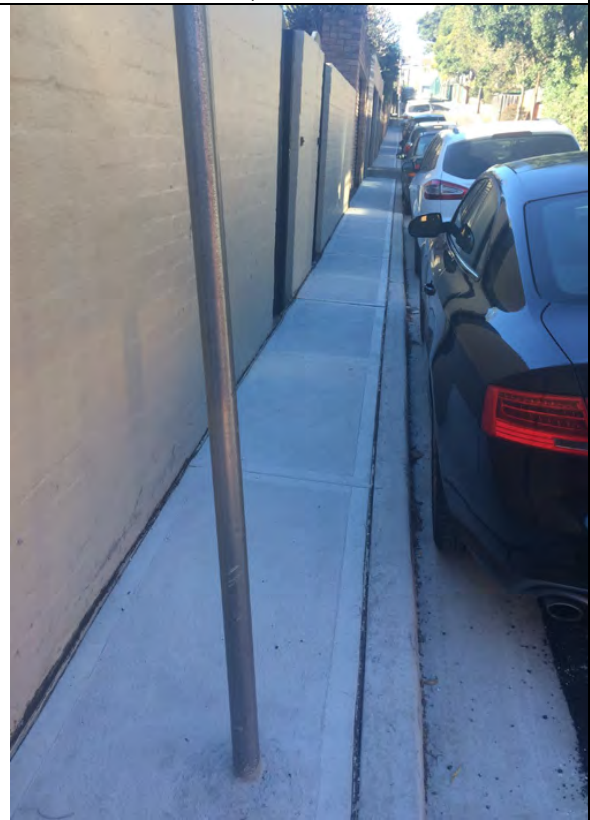
Ernest Lane, Crows Nest - Before



Ernest Lane, Crows Nest - After



Crescent Place, Kirribilli - Before



Crescent Place, Kirribilli - After





Whatmore Street, Waverton - Before

Whatmore Street, Waverton - After

**Kerb and Gutter – Performance Measures**

The effectiveness of the asset management plan can be measured in the following ways:

- The degree to which the required projected expenditures identified in this asset management plan are incorporated into the long term financial plan,
- The degree to which 1-5 year detailed works programs, budgets, business plans and corporate structures take into account the 'global' works program trends provided by the asset management plan,
- The degree to which the existing and projected service levels and service consequences (what we cannot do), risks and residual risks are incorporated into the Strategic Plan and associated plans,
- The Asset Renewal Funding Ratio achieving the target of 1.0.

**Kerb and Gutter – References**

- Kerb and Gutter Data Collection & Condition Survey Audit by Consultants, Rapid Map Services Pty Ltd in conjunction with Asset & Facilities Management Consulting Pty Ltd.
- IPWEA, 2006, 'International Infrastructure Management Manual', Institute of Public Works Engineering Australasia, Sydney, [www.ipwea.org/IIMM](http://www.ipwea.org/IIMM)
- IPWEA, 2008, 'NAMS.PLUS Asset Management', Institute of Public Works Engineering Australasia, Sydney, [www.ipwea.org/namsplus](http://www.ipwea.org/namsplus).
- IPWEA, 2015, 2nd edn., 'Australian Infrastructure Financial Management Manual', Institute of Public Works Engineering Australasia, Sydney, [www.ipwea.org/AIFMM](http://www.ipwea.org/AIFMM).
- IPWEA, 2015, 3rd edn., 'International Infrastructure Management Manual', Institute of Public Works Engineering Australasia, Sydney, [www.ipwea.org/IIMM](http://www.ipwea.org/IIMM)
- IPWEA, 2012 LTFP Practice Note 6 PN Long Term Financial Plan, Institute of Public Works Engineering Australasia, Sydney



## APPENDICES

### Appendix A: Maintenance Management System Kerb & Guttering

Inspection areas have been defined in accordance with the identified key factors of:

- Volume of pedestrian traffic, eg. transport hubs; retail/commercial areas; schools and hospitals.
- Use by people over 50 years old.

Inspection frequencies are based on these areas as defined by the reference maps and the resources currently available to undertake the inspections.

**Red** – 2 times per year;                      **Blue** – Annual;                      **Other** – Once every 2 years;

The results of inspections will be downloaded into the MMDS database. There are 5 categories in which a defect may be placed. Not all categories may be applicable to every inspection area and/or type of asset:

<b>Cat 5</b>		Will be <b>made safe</b> no later than 2 working days after allocation of defect to work crew. Defect may then be re-categorised as Cat 4 or Cat 3.
<b>Cat 4</b>		Will be repaired no later than 10 working days after allocation of defect to work crew.
<b>Cat 3</b>		Will be placed on Zone Maintenance Program. This program operates on an 8 week cycle, however, depending on workload and reactive maintenance requests, Cat 3 defects may miss a cycle or more before repairs are able to be undertaken.
<b>Cat 2</b>		Deferred maintenance. Could also have aesthetic issues such as gum, stains, services mark-up, etc. May be addressed if close-by to Cat 4 or Cat 3 defect that is being repaired. Otherwise will be re-inspected on next area inspection.
<b>Cat 1</b>		As new. Surface displaying no defects.

#### Intervention Matrix

KERB + GUTTER	RED	BLUE	OTHER
MISSING/DAMAGED/LOOSE	28	24	21
> 50mm/GRATE NOT BICYCLE SAFE	23	19	16
25mm – 50mm/GRATE BLOCKED	20	16	13
10mm – 25mm	18	14	11
AESTHETIC	12	8	5
AS NEW	10	6	3

**Scoring example:** 28 = High Use Area score 10 and Defect of Missing or Loose score 18

The focus of inspections will be the kerb section and unobstructed gutter sections. It is noted that the gutter section may be obstructed and not visible due to parked vehicles during inspection. Inspectors are not expected to get down on their hands and knees to look for defects. The kerb and guttering includes all drainage kerb inlets, convertor outlets, gutter grates or access pit lids in gutter. Driveway crossings shall be listed as private when selecting the owner of the asset.


- 29 -

NORTH SYDNEY COUNCIL - GUIDE FOR KERB + GUTTER DEFECT RATING		
AN EXPLANATION OF THE DEFECT INSPECTION SYSTEM		
AREA OF INSPECTION		SCORE
<b>RED</b>	HIGH PEDESTRIAN TRAFFIC AREAS WITH SIGNIFICANT USAGE BY PEDESTRIANS OVER 50 YEARS OLD  INSPECTIONS - 2 PER YEAR	<b>10</b>
<b>BLUE</b>	HIGH PEDESTRIAN TRAFFIC AREAS WITH MODERATE USAGE BY PEDESTRIANS OVER 50 YEARS OLD or MEDIUM PEDESTRIAN TRAFFIC AREAS WITH SIGNIFICANT USAGE BY PEDESTRIANS OVER 50 YEARS OLD  INSPECTIONS - ANNUAL	<b>6</b>
<b>WHITE</b>	ALL OTHER AREAS IN LGA EXCLUDING PARKS; RESERVES and PLAZAS  INSPECTION - EVERY 2 YEARS  NOTE: IN THESE AREAS ONLY DEFECTS GREATER THAN ABOUT 10mm WILL HAVE DETAILS RECORDED.	<b>3</b>
KERB + GUTTER TYPE		
CONCRETE	SANDSTONE	
GRANITE	OTHER	
DRIVEWAY CROSSING - STANDARD or GUTTER BRIDGE	LETTERBOX or OTHER PIT TYPE	
KERB INLET or CONVERTOR OUTLET	GUTTER GRATE or PIT LID IN GUTTER	
DEFECT – MAY BE HEIGHT or WIDTH		
SECTION MISSING, BADLY DAMAGED or LOOSE UNDER FOOT		<b>18</b>
GREATER THAN ABOUT 50mm – MAY BE HEIGHT or WIDTH		<b>13</b>
GUTTER GRATE NOT BICYCLE SAFE/DAMAGED		<b>13</b>
BETWEEN ABOUT 25mm AND ABOUT 50mm – MAY BE HEIGHT or WIDTH		<b>10</b>
GUTTER GRATE BLOCKED - LEAF LITTER, DEBRIS or OTHER ITEM eg. POLLUTION CONTROLS		<b>10</b>
BETWEEN ABOUT 10mm AND ABOUT 25mm – MAY BE HEIGHT or WIDTH		<b>8</b>
AESTHETIC ISSUES - GUM; STAINS, SERVICES MARK-UP; etc		<b>2</b>
NO DEFECT - IF THIS IS SELECTED A PHOTO MUST BE TAKEN OF THE INSPECTED ITEM or PSID		<b>0</b>
HAZARD TYPE		
TRIP - LIFTING/DROPPING OF SECTION TO ADJACENT SECTION	UNEVEN SURFACE - CHIPPED or ERODED SURFACE	
CRACKING - DEFECT NOT AT CONSTRUCTION JOINT	MISSING - SECTION OF KERB MISSING EG. OVER DRAIN PIPE	
BROKEN/OUT OF ALIGNMENT- LOOSE UNDER FOOT	SERVICE ACCESS COVER - LOOSE/LIFTED/DROPPED	
OTHER ASPECTS		
AREA HAS OBSTRUCTIONS DUE TO TREE ROOTS or OTHER VEGETATION	PRESENCE OF PARTICULAR ASPECT/S NOTED PRIOR TO DEPARTURE FROM PSID. REFERRED TO RELEVANT NSC SECTION VIA EMAIL	
AREA HAS EDGE SCOUR (DROP OFF ALONG EDGE OF VERGE/TREE SITE) > 50MM		
AREA HAS PLANTING, GRASS and/or WEED GROWTH OVERGROWING KERB		

# NORTH SYDNEY COUNCIL ASSET MANAGEMENT PLAN MARINE STRUCTURES 2022-2032





<b>Document Control</b>		<b>Asset Management Plan</b>				
Document ID : NSC AMP Other Infrastructure 2023 Marine Structures						
<b>Rev No</b>	<b>Date</b>	<b>Revision Details</b>	<b>Author</b>	<b>Reviewer</b>	<b>Approver</b>	
1	12/01/2022	First Draft	IM	JVH/DM	DM	

## Table of Contents

Marine Structures .....	4
Executive summary.....	4
Marine Structures – Future Demand .....	5
Marine Structures – Levels of Customer Service .....	5
Marine Structures – Levels of Technical Service.....	6
Marine Structures - Condition .....	7
Marine Structures – Review of Useful Lives .....	8
Marine Structures – Funding Strategy.....	9
Marine Structures – Capital works .....	10
Marine Structures – Managing the Risks.....	10
Marine Structures – Maintenance .....	16
Marine Structures – Prioritised Expenditure Forecast .....	17
Marine Structures – Valuation Forecast .....	17
Marine Structures – Key Assumptions – Financial Forecasts.....	17
Marine Structures – Creation / Acquisition / Upgrade Program .....	17
Marine Structures – Disposal Plan .....	18
Marine Structures – Forecast reliability and confidence .....	18
Marine Structures – Improvement Plan .....	18
Marine Structures – Monitoring and Review Procedures .....	18
Marine Structures – Renewal and Replacement Program .....	18
Marine Structures – Funding Scenarios .....	18
Marine Structures – Service and Risk Tradeoffs .....	19
Service trade-off .....	19
Risk trade-off .....	19
Marine Structures – Renewal and Replacement Program – FY2023-FY2032 (10 Year Plan).....	19
Priority Projects 2022/23 (Year 1) .....	20
Priority Projects 2023/24 (Year 2) .....	20
Priority Projects 2024/25 (Year 3) .....	20
Priority Projects 2025/32 (Year 4-10) .....	21
Works Identified – Years 2025 - 32 (Years 4 - 10).....	21
Marine Structures – Performance Measures.....	23
Marine Structures – References .....	23
APPENDICES .....	24
Appendix A: Maintenance Management System .....	24



## Marine Structures

### Executive summary

Located across the North Sydney Council LGA are 28 Marine Structures comprised of timber boardwalks, bridges, boat ramps, decks, dinghy storage facilities, pontoons, Jetties, wharves, and slipways.

The condition of Marine Structures was assessed in 2018 by Manly Hydraulics Laboratory. For each marine structure each component was assessed and assigned a condition rating. In 2017 by Manly Hydraulics Laboratory was commissioned to carry out a condition assessment on Council's boat ramps. In total 28 Marine Structures were visited in the field.

Each marine structure was divided into its components and a condition score was assigned to each component.

Overall some 91.6% of the portfolio is in very good to fair condition (1-3) with some 8.4% in poor to very poor condition (4-5).

A Risk rating was assigned to each component. Overall 91.6% of the portfolio has a low to medium risk rating and 8.6% has a high to very high risk rating.

The total Replacement Value of the portfolio is \$28,312,337 as at 30 June 2021. The values are shown in the Table below.

**Table 1: Marine Structures – Summary Table**

Asset Category	Qty	Replacement Value (2021)	Accumulated Depreciation (2021)	Fair Value (2021)	Depreciation Expense
Marine Structures	28	\$28,312,337	\$10,588,649	\$17,723,688	\$636,292

The following table provides a summary of the quantities and replacement values for each marine structure type. The portfolio is dominated by timber deck, beams and piles.

**Table 2: Marine Structures- Typology**

Marine Structure Type	Count of Structure Type	Sum of Replacement Costs
Boardwalk	3	\$1,586,405
Boardwalk/Bridge	1	\$363,087
Boat ramp	5	\$984,638
Bridge	2	\$302,217
Bridge/Boardwalk	1	\$73,340
Decking	1	\$97,320
Dinghy Storage	5	\$474,679
Floating pontoon and access way	1	\$151,830
Jetty/Wharf	1	\$817,962
Sandstone Jetty	1	\$139,611

- 5 -

Marine Structure Type	Count of Structure Type	Sum of Replacement Costs
Shed	1	\$69,806
Slipway	1	\$0
Stairway and Jetty	1	\$139,273
Tunks Park, Pontoon, Access & Jetty	1	\$362,459
Wharf	1	\$343,290
Wharf/Jetty	2	\$22,406,419
<b>Grand Total</b>	<b>28</b>	<b>\$28,312,337</b>

### Marine Structures – Future Demand

Drivers affecting demand for marine structures include things such as population change, regulation changes – new development, community expectations (Public Safety), technological changes, economic factors and environmental factors.

### Marine Structures – Levels of Customer Service

Service levels are defined service levels in two terms, customer levels of service and technical levels of service. These are supplemented by organisational measures.

**Customer Levels of Service** measure how the customer receives the service and whether value to the customer is provided.

Customer levels of service measures used in the asset management plan are:

**Quality** How good is the service ... *what is the condition or quality of the service?*

**Function** Is it suitable for its intended purpose .... *Is it the right service?*

**Capacity/Use** Is the service over or under used ... *do we need more or less of these assets?*

The current and expected customer service levels are detailed in the table below.

**Table 3: Marine Structures – Levels of Customer Service**

Service Attribute	Expectation	Performance Measure Used	Current Performance	Desired Position in 10 Years
<b>Quality</b>	Marine structures are well maintained.	Percentage of marine structures in 'very good' or 'good' (1, 2, 3) condition and percentage 'poor' or 'very poor' (4, 5) Condition.	91.6% of marine structures in 'very good', 'good' or 'Fair' (1, 2, 3) condition.  8.4% of marine structure components in 'poor' or 'very poor' (4, 5) Condition.	Maintain – Condition 1-2-3  Improve and replace Condition 4-5

- 6 -

Service Attribute	Expectation	Performance Measure Used	Current Performance	Desired Position in 10 Years
<b>Function</b>	Standard marine structures are constructed from timber.	Percentage of marine structures constructed from sandstone where practical.	57% of marine structure components are constructed or partly constructed from timber.	Monitor/ Improve
<b>Capacity and Use</b>	Number of marine structures required is appropriate.	Number of additional marine structures required	No additional marine structures identified as being required	Monitor/ Improve

### Marine Structures – Levels of Technical Service

**Technical Levels of Service** - Supporting the customer service levels are operational or technical measures of performance. These technical measures relate to the allocation of resources to service activities to best achieve the desired customer outcomes and demonstrate effective performance.

Technical service measures are linked to the activities and annual budgets covering:

- Operations – the regular activities to provide services (e.g. cleaning, inspections, etc).
- Maintenance – the activities necessary to retain an asset as near as practicable to an appropriate service condition. Maintenance activities enable an asset to provide service for its planned life (e.g. deck repair – painting, minor works),
- Renewal – the activities that return the service capability of an asset up to that which it had originally (e.g. marine structure replacement and or marine structure component replacement),
- Upgrade/New – the activities to provide a higher level of service (e.g. increasing the size or length of a marine structure or upgrading its structural capacity through complete replacement to address new site conditions. (e.g. replacing a timber handrail with a stainless steel handrail).

Table 4 shows the technical levels of service expected to be provided for marine structures. The ‘Desired’ position in the table documents the position being recommended in this AM Plan.

**Table 4: Marine Structures – Technical Levels of Service**

Service Attribute	Service Activity Objective	Activity Measure Process	Current Performance	Desired for Optimum Lifecycle Cost
<b>Operations</b>	Undertake network inspections to monitor condition	Network inspections to monitor condition	Network inspected in 2018	Network inspected every 5 years
<b>Maintenance</b>	Reactive service Requests completed in a timely manner or made safe.	Respond to complaints.	Minor repairs undertaken in accordance with Maintenance Management System	Minor repairs undertaken in accordance with Maintenance Management Delivery System.
<b>Renewal</b>	Maintain existing	Percentage of	8.4% of marine	Improve or replace

- 7 -

Service Attribute	Service Activity Objective	Activity Measure Process	Current Performance	Desired for Optimum Lifecycle Cost
	assets to a satisfactory condition	marine structures in poor/very poor (4, 5) Condition.	structure components in poor/very poor (4, 5) Condition.	
<b>Upgrade</b>	Standard marine structures are constructed from timber where practical.	Percentage of marine structures constructed from timber where practical.	57% of marine structure components are constructed or partly constructed from timber	Maintain
<b>New</b>	Satisfactory provision of marine structures.	New marine structures provided as required.	No additional marine structures identified as being required	No additional marine structures identified as being required

### Marine Structures - Condition

The condition of Council's marine structures were surveyed in 2018 by Consultants, Manly Hydraulics Laboratory. The following condition criteria was used.

**Table 5: Marine Structures Condition Survey Criteria**

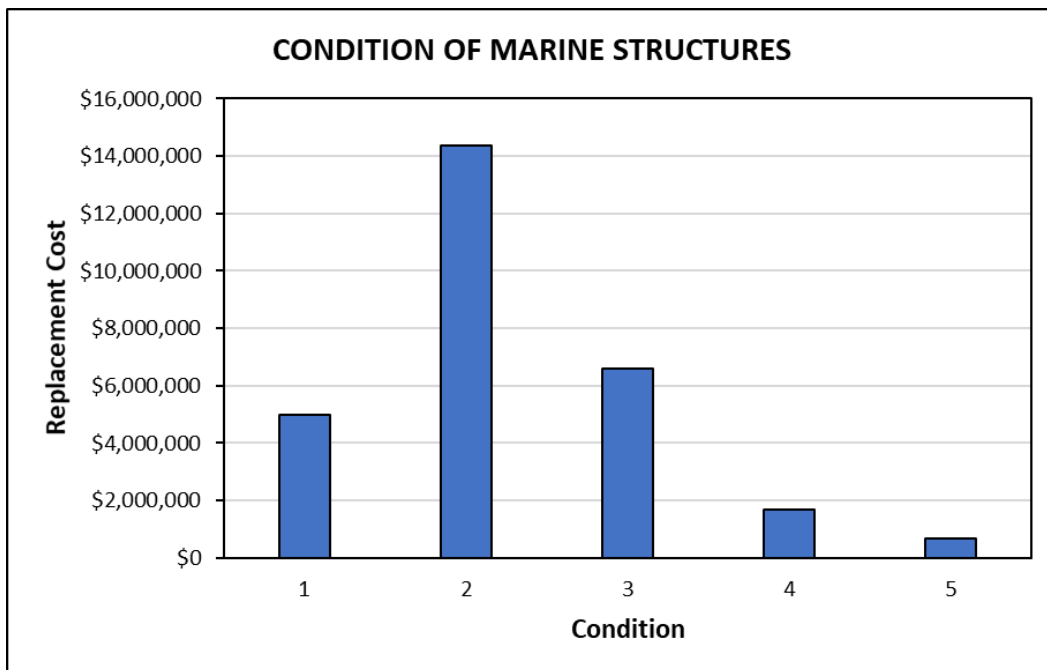
Grade	Condition	Description
1	Very good	Sound Physical condition. Asset likely to perform adequately without major work.
2	Good	Acceptable physical condition: minimal short-term failure risk but potential for deterioration in long-term (10 years plus). Only minor work required (if any).
3	Fair	Significant deterioration evident; failure unlikely within next 2 years but further deterioration likely and replacement likely within next 10 years. Work may be required but asset is still serviceable: minor components or isolated sections of the asset need replacement or repair now, but asset still functions safely at an adequate level of service.
4	Poor	Failure likely in short-term. Likely need to replace most or all of asset within 2 years. Substantial work required in short term, asset barely serviceable: no immediate risk to health or safety but works required within 2 years to ensure asset remains safe.
5	Very poor	Failed or failure imminent. Major work or replacement required urgently. Immediate need to replace most or all of asset. Health and safety hazards exist which present a possible risk to public safety, or asset cannot be serviced/operated without risk to users.

The Table below shows the condition of marine structure assets in terms of replacement cost where condition 1 is very good and 5 is very poor condition. It should be noted that the replacement cost is based on the condition of marine structure components. In practice and where funds permit marine structure components in condition 3 are generally replaced at the same time as marine structure components in condition 4 or 5 if they are adjacent, there are potential risks, and it is cost effective.

**Table 6: Marine Structures Condition Survey Results – Overall**

CONDITION OF MARINE STRUCTURES – ENTIRE NETWORK		
Condition	Replacement Cost	% Condition (based on cost)
1 (Very Good)	\$4,979,288	17.6%
2 (Good)	\$14,387,315	50.7%
3 (Fair)	\$6,447,601	23.3%
4 (poor)	\$1,674,449	5.9%
5 (Very Poor)	\$693,684	2.5%
<b>Total</b>	<b>\$28,312,337</b>	<b>100.0%</b>

The Graph below shows the condition of Marine structures assets over the entire network in terms of replacement cost.



**Marine Structures – Review of Useful Lives**

The Useful Lives of Marine Structures such as timber wharves and jetties are affected by termites, borers, and physical collisions. Also the reduced availability of quality timber such as Turpentine as well as the banning of chromated copper arsenate timber has resulted in a reduced life of timber components. The Ports Australia “wharf Structures Condition Assessment Manual” has been used as a guide for the adopted Useful Lives of Marine Structures components. Generally, anything made from concrete and steel has a life of 50 years and anything made from timber has a life of 25 years, refer Table below.



- 9 -

Asset Type	Component	Material	Expected Life (years)	Adopted Useful Life (years)
Wharves, Jetty, Pier	Piles	Concrete	20 - 50	50
		Steel	50	50
		Timber	20 - 50	25
	Deck	Concrete	50	50
		Timber	20 - 25	25
	Fenders	Rubber	20	25
		Timber	10 – 20	25
	Substructure	Concrete	50	50
		Steel	50	50
Timber		25	25	
Pontoon	Pontoon	Concrete	50	50
		Steel	50	50
Fixed Furniture	Walkways	Steel	50	50
		Timber	20 - 25	25
	Handrails	Steel (galvanised)	10 - 20	50

Based on this Depreciation is as follows:

Capital funding to maintain a renewal ratio of 1	
	Annual Depreciation
Marine Structures	\$636,292

A budget of \$636,292 is required on average over the long term to maintain the condition of Council's marine structures network, noting that fluctuations in renewal requirements in the medium term.

#### Marine Structures – Funding Strategy

The Asset Renewal Funding Ratio is the most important indicator. It compares funding with depreciation. An Asset Renewal Funding Ratio of 1 or greater sustained over the long term indicates the optimal renewal and replacement of assets.

The forecast for Depreciation (or Long Term Average Annual Asset Consumption) is \$636,292. Therefore, an annual average capital renewal funding of \$636,292 (2021 dollars) will achieve an Asset Renewal Funding Ratio of 1.

The cost to fully replace assets identified by Consultants, Manly Hydraulics Laboratory in condition 4 and 5 as well as the cost to replace the condition 3 assets which will become condition 4 over the next 10 is \$8,164,273. This is an average annual cost of \$816,427 which is greater than the \$636,292 Depreciation Expense and also greater than the average annual forecast budget of \$468,500. With further investigation and detailed design it is hoped that alternate and lesser cost solutions may be possible to maintain marine structures assets at an optimal level.

- 10 -

**Marine Structures – Capital works**

Replacement of marine structure components is assumed to be a Capital works project.

The ranking criteria used to determine priority of identified renewal and replacement proposals is detailed in table 7. A priority for action of 1 to 5 has been assigned to each marine structure requiring capital works as described in the following table.

**Marine Structures – Managing the Risks**

There are risks associated with providing and maintaining marine structures. They are primarily as follows:

- Sudden failure of marine structures providing structural support to public boardwalks, shelters and private jetties – causing property damage – public safety hazards, injury or death.
- Marine structure asset renewals not funded when required. Conditions will deteriorate and funding shortfall grows due to higher cost renewal treatments being required.
- Damage to infrastructure as a result of major storm events.

The following risk response table was used to identify those marine structure components requiring action within the next 10 years.

**Table 7: Marine Structures – Risk Response Table**

Level of Risk		Condition	Action Required	Time frame for repairs, upgrade or replacement
VH	Very High Risk	5	Immediate corrective action	1-10 years
H	High Risk	4	Prioritised action required	4-10 Years
M	Medium Risk	3	Planned action required	4-10 Years
L	Low Risk	2	Manage by routine procedures	Inspections 1-2 years
New	No Risk	1	None	None

Consideration has been given to each marine structure component, whether to replace the marine structure component or perform maintenance on it.

Components that have a **Very High or High** risk rating were considered to need replacement within the 1-10 year forecast period.

Components with a **Medium** risk rating were also considered needing replacement within the 4-10 year forecast period.



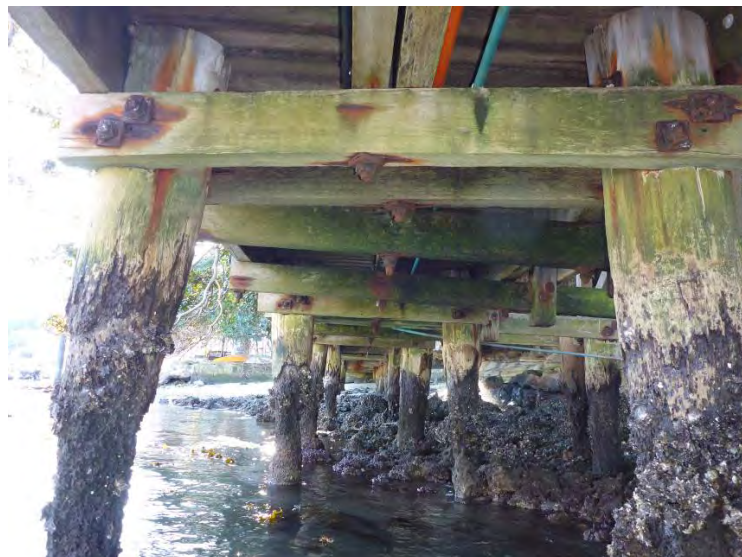
Examples failing timber piles – Wondakiah wharf



Examples failing steel piles – Boatbuilders Walk Bridge



Examples corroding fence – Jefferys Street Bridge



Examples timber piles – Hayes Street Boardwalk – Currently closed





Examples of piles in very poor condition



Termites found in timber marine structure





Evidence of marine worms in timber structure

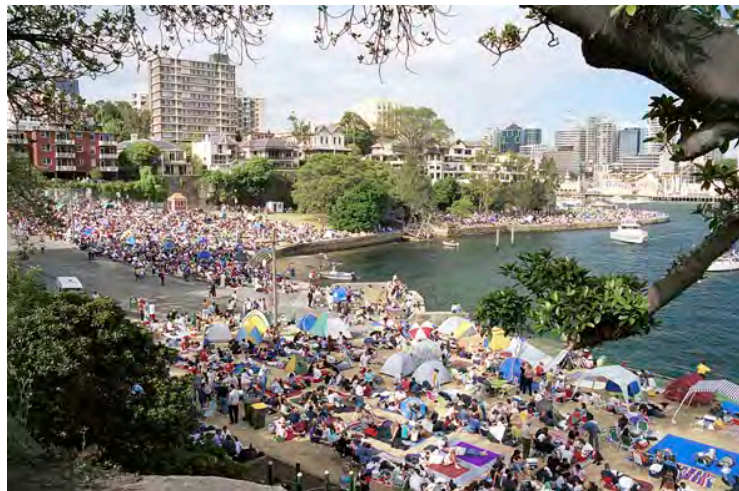


Neutral Bay Jetty – Currently closed





East Crescent Street Jetty – Currently closed



Examples of crowded foreshore on New Years Eve in the North Sydney LGA – Blues Point

Council will endeavour to manage these risks within available funding by prioritising marine structure renewal works based on the North Sydney Council Marine Structures Condition Audit prepared by Consultants, Manly Hydraulics Laboratory.



**Table 8: Marine Structures – Capital renewal Priorities based on Condition and Risk Rating**

Risk Matrix - Marine Structures (Condition and Risk Rating)					
Likelihood of Marine Structure failing (L) Refer to Table 5. Condition Criteria	Marine Structures (No of Components)				
	Relative Usage	Low	Medium	High	Very High
	Park Hierarchy	Local	District	Regional	
	Priority	d	c	b	a
Condition 1 – Very Good (17.6%)	5	2	96	11	477
Condition 2 - Good (50.7%)	4	29	931	23	92
Condition 3 – Fair (23.3%)	3	10	388	5	6
Condition 4 – Poor (5.9%)	2	13	122	N/A	N/A
Condition 5 – Very Poor (2.5%)	1	2	72	4	N/A

**(Note: Also Refer to Table 6)**

**Note:** This table has been based on data from the 2018 North Sydney Council Marine Structures Condition Audit, performed by Manly Hydraulics Laboratory.

**Note:** Factors which are used to determine the priority include 'Relative Usage' and 'Park Hierarchy'. The most critical factor is used to determine the priority.

It should be noted that marine structures may also be replaced based on other criteria including:

- Damage
- Marine structures replaced in association with other projects such as seawall works
- Landscape projects

#### **Marine Structures – Maintenance**

Routine maintenance is the regular on-going work that is necessary to keep assets operating, including instances where portions of the asset fail and need immediate repair to make the asset operational again, e.g. minor repair of decking, fence repair.

Maintenance includes all actions necessary for retaining an asset as near as practicable to an appropriate service condition including regular ongoing day-to-day work necessary to keep assets operating.

Current maintenance expenditure levels are considered to be adequate to meet projected service levels.

Over the longer term future operations and maintenance expenditure is forecast to be steady as the asset stock is not forecast to increase. The following table summarises the prioritised capital and maintenance works.

**Marine Structures – Prioritised Expenditure Forecast**

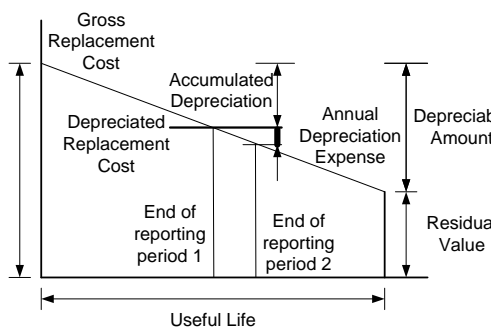
**Table 9: Marine Structures – Prioritised Expenditure Forecast – 10 years FY2023-FY2032**

Year		Priority	Capital Costs	Maintenance Costs	Total Costs
1	2022/23	1d	\$475,000	\$24,378	\$499,378
2	2023/24	1d	\$550,000	\$24,378	\$574,378
3	2024/25	1d	\$510,000	\$24,378	\$534,378
4-10	2025/32	1d	\$3,150,000	\$170,646	\$3,320,646
Works Identified		2025/32	3c to 3d	\$3,479,273	\$3,479,273
<b>Grand Total</b>			<b>\$8,164,273</b>	<b>\$243,780</b>	<b>\$8,408,053</b>

In summary the value of marine structure assets in the Table below.

**Table 10: Marine Structures – Valuation**

Asset Category	Qty	Replacement Value (2021)	Accumulated Depreciation (2021)	Fair Value (2021)	Depreciation Expense
Marine Structures	28	\$28,312,337	\$10,588,649	\$17,723,688	\$636,292



**Marine Structures – Valuation Forecast**

Asset values (Marine Structures) are forecast to remain steady. It is forecast that no additional assets are expected to be added to the asset stock from new construction and acquisition by Council or from assets constructed by land developers or other assets donated to Council.

**Marine Structures – Key Assumptions – Financial Forecasts**

Key assumptions made in this asset management plan for Marine Structures are:

**Table 11: Key Assumptions made in AM Plan and Risks of Change**

Key Assumptions	Risks of Change to Assumptions
Useful Lives of Marine Structures	Low risk
Rate of deterioration	Low risk

**Marine Structures – Creation / Acquisition / Upgrade Program**

New works are those that create a new asset that did not previously exist, or works which will upgrade or improve an existing asset beyond its existing capacity. They may result from growth, social or environmental needs. Assets may also be acquired at no cost. No new assets are currently identified.

**Marine Structures – Disposal Plan**

No marine structure assets have been identified for disposal. Marine structures will be periodically reviewed for disposal on the basis of relative usage and/ or public safety concerns.

**Marine Structures – Forecast reliability and confidence**

The estimated confidence level and reliability of data used in this AMP is considered to be reliable as the data is based on a detailed condition report on Marine Structures.

**Marine Structures – Improvement Plan**

The improvement plan is shown in the table below.

Task No	Task	Responsibility	Resources Required	Timeline
1	Research the Useful Life of Marine Structures	EPS	Staff Time	2024

**Marine Structures – Monitoring and Review Procedures**

This Asset Management Plan will be reviewed during annual budget planning processes and amended to show any material changes in service levels and/or resources available to provide those services as a result of budget decisions.

The Asset Management Plan has a life of 4 years and is due for complete revision and updating within 1 year of each Council election.

**Marine Structures – Renewal and Replacement Program**

Renewal and replacement expenditure is major work which does not increase the asset's design capacity but restores, rehabilitates, replaces or renews an existing asset to its original service potential. Work over and above restoring an asset to original service potential is considered to be an upgrade/expansion or new work expenditure resulting in additional future operations and maintenance costs.

Marine structure assets requiring renewal/replacement have been identified by the North Sydney Council Marine Structures Condition Audit completed by Consultants, Manly Hydraulics Laboratory, in 2018.

**Marine Structures – Funding Scenarios**

The Long Term Financial Plan includes three scenarios, all of which maintain current services levels but propose differing levels of capital expenditure on the renewal of Council's ageing infrastructure assets.

In summary:

- Pessimistic Scenario - This Scenario results in a decline in operating results and deficits in the later years.
- Optimistic Scenario - This Scenario results in improvements in operating results for the life of the plan.
- Planned Scenario - This Scenario results modest surplus operating results for the life of the plan.



**Table 12: Funding Scenarios – Marine Structures – North Sydney Councils 10 Year Plan**

Scenario	Capital Funding Level Required Per Annum	10 Year Plan \$ Total
Scenario 1.	\$468,500/year	\$4,685,000
Scenario 2.	\$468,500/year	\$4,685,000
Scenario 3.	\$468,500/year	\$4,685,000

**Note:** These Scenarios are based on the 10-year Long Term Financial Plan.

#### **Marine Structures – Service and Risk Tradeoffs**

The decisions made in adopting this AM Plan are based on the objective to achieve the optimum benefits from the available resources.

#### **Service trade-off**

If this funding Scenario is adopted, then the Level of Service will be maintained.

#### **Risk trade-off**

If funding Scenario is adopted, then it there is less risk of a sudden collapse of a marine structure.

#### **Marine Structures – Renewal and Replacement Program – FY2023-FY2032 (10 Year Plan)**

Council's projected 10 year Capital Renewal Program is shown in the Tables below. It is based on the funding required to replace marine structure assets identified by North Sydney Council Marine Structures Condition Audit completed by Consultants, Manly Hydraulics Laboratory, in 2018.

It should be noted that Marine Structures may also be replaced based on other criteria including:

- Damage
- Marine structures replaced in association with other projects such as seawall works
- Landscape projects

Project priorities may also be subject to change due to accelerated deterioration, sudden failure or finalization of detailed designs and project costings. Due to the amount of funding required to complete seawall and marine structure projects, funds may be pooled to carry out either marine structure projects, seawall projects or projects from both asset categories.

**Table 13: Marine Structures – Renewal and Replacement Program****Priority Projects 2022/23 (Year 1)**

Replace Year	Priority	Marine Structure ID	Location	Risk Rating / Category	Condition	Capital Cost
2022/23	1d	MS019	BETWEEN 9 AND 11 SHELLCOVE ROAD, NEUTRAL BAY - Stairway and Jetty	Very High (5)	Very Poor	\$450,000
2022/23		New	Milson Park - Storage Facilities for Kayaks			\$25,000
<b>Total</b>						<b>\$475,000</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

**Table 14: Marine Structures – Renewal and Replacement Program****Priority Projects 2023/24 (Year 2)**

Replace Year	Priority	Marine Structure ID	Location	Risk Rating / Category	Condition	Capital Cost
2023/24	1d	MS015	WRIXTON PARK - Floating pontoon and access way	Very High (5)	Very Poor	\$450,000
2023/24		New	John Street Open Space - Small Watercraft Storage Facilities and Improved Access			\$40,000
2023/24		New	Tunks Park - Storage Facilities for Kayaks an Improved Access			\$60,000
<b>Total</b>						<b>\$550,000</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

**Table 15: Marine Structures – Renewal and Replacement Program****Priority Projects 2024/25 (Year 3)**

Replace Year	Priority	Marine Structure ID	Location	Risk Rating / Category	Condition	Capital Cost
2024/25	1d	MS002	WANDAKIAH - Wharf/Jetty – Stage 1	Very High (5)	Very Poor	\$450,000
2024/25		New	Anderson Park - Small Watercraft Storage Facilities			\$20,000
2024/25		New	Dowling Street Reserve - Small Watercraft Storage Facilities and Improved Access to Foreshore			\$40,000
<b>Total</b>						<b>\$510,000</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

**Table 16: Marine Structures – Renewal and Replacement Program****Priority Projects 2025/32 (Year 4-10)**

Replace Year	Priority	Marine Structure ID	Location	Risk Rating / Category	Condition	Capital Cost
2025/32	1d	MS002	WANDAKIAH - Wharf/Jetty – Stage 2	Very High (5)	Very Poor	\$3,150,000
<b>Total</b>						<b>\$3,150,000</b>

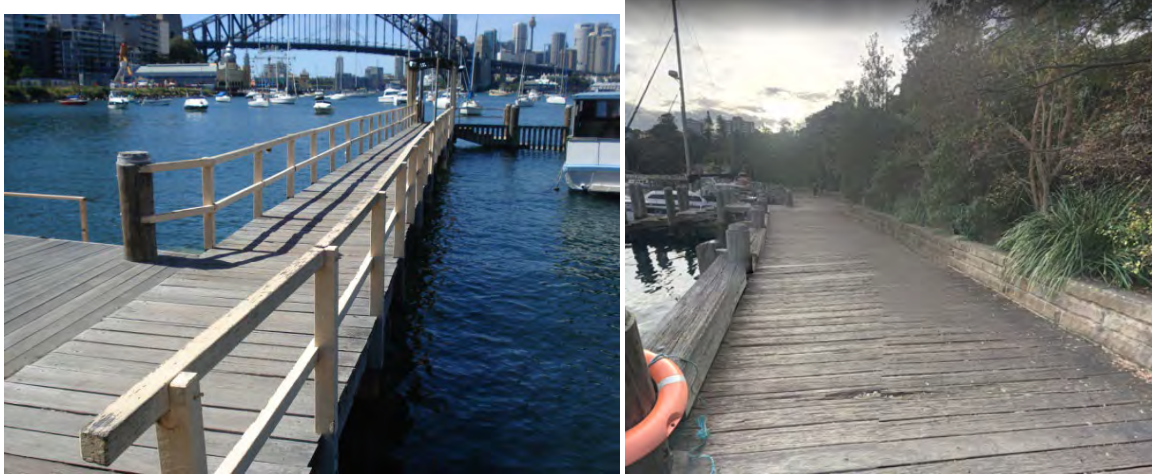
**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

**Table 17: Marine Structures – Renewal and Replacement Program****Works Identified – Years 2025 - 32 (Years 4 - 10)**

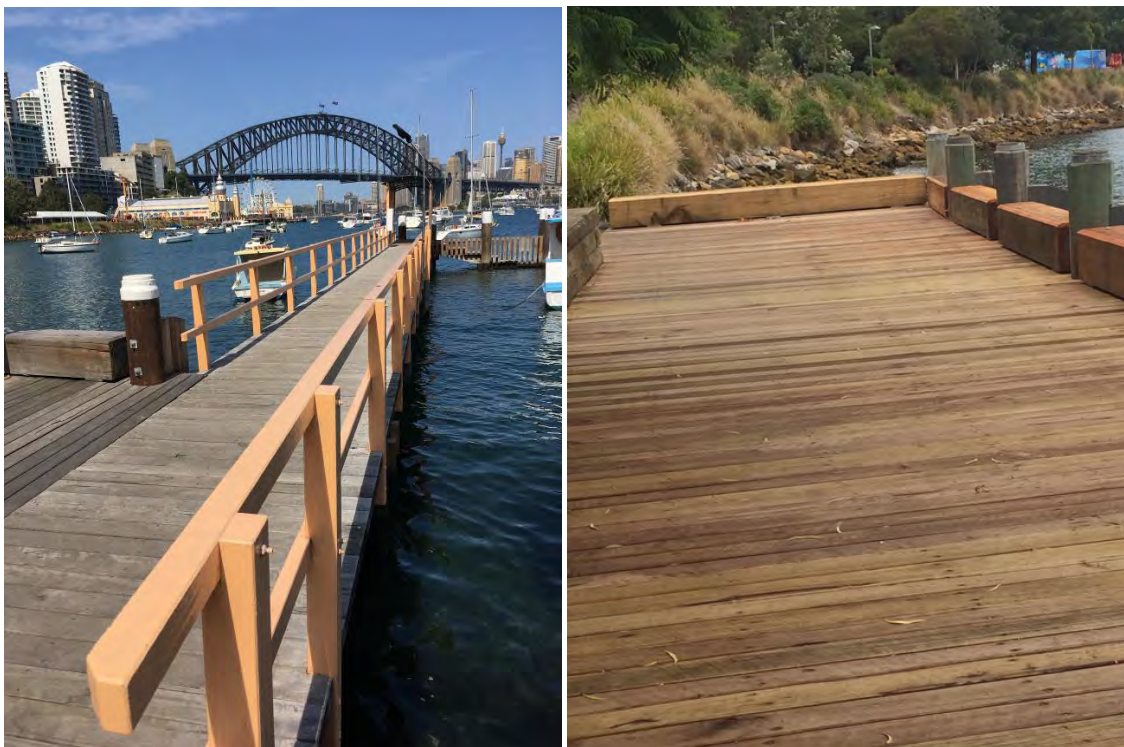
Replace Year	Priority	Marine Structure ID	Location	Risk Rating / Category	Condition	Capital Cost
2025/32	3c	MS022	TUNKS PARK - Tunks Park, Pontoon, Access & Jetty	Medium (3)	Fair	\$1,020,000
2025/32	3c	MS026	SHELLBANK PARADE DINGHY STORAGE - Dinghy Storage	Medium (3)	Fair	\$80,000
2025/32	3d	MS005	SRA SHED - Shed	Medium (3)	Fair	\$200,000
2025/32	3d	MS007	SAWMILLERS RESERVE/BOATBUILDERS WALK - Boardwalk/Bridge	Medium (3)	Fair	\$503,000
2025/32	3d	MS018	KURRABA POINT RESERVE BOAT RAMP - Boat Ramp	Medium (3)	Fair	\$240,000
2025/32	3d	MS023	KURRABA POINT RESERVE DINGHY STORAGE - Dinghy Storage	Medium (3)	Fair	\$390,000
2025/32	3d	MS024	SAWMILLERS RESERVE/BOATBUILDERS WALK - Boat ramp	Medium (3)	Fair	\$700,000
2025/32	3d	MS029	KURRABA RESERVE DINGHY STORAGE - Dinghy Storage	Medium (3)	Fair	\$14,273
2025/32			Contingency			\$332,000
<b>Total</b>						<b>\$3,479,273</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

**Marine Structures Renewal Program**



Lavender Bay Wharf and Boardwalk - Before



Lavender Bay Wharf and Boardwalk – After – Completed 2017

**Marine Structures – Performance Measures**

The effectiveness of the asset management plan can be measured in the following ways:

- The degree to which the required projected expenditures identified in this asset management plan are incorporated into the long term financial plan,
- The degree to which 1-5 year detailed works programs, budgets, business plans and corporate structures take into account the 'global' works program trends provided by the asset management plan,
- The degree to which the existing and projected service levels and service consequences (what we cannot do), risks and residual risks are incorporated into the Strategic Plan and associated plans,
- The Asset Renewal Funding Ratio achieving the target of 1.0.

**Marine Structures – References**

- North Sydney Council Marine Structures Condition Audit by Consultants, Manly Hydraulics Laboratory
- North Sydney Council Seawalls and Backfill Condition Audit by Consultants, Manly Hydraulics Laboratory – Appendix E – Boat Ramp Investigations
- IPWEA, 2006, 'International Infrastructure Management Manual', Institute of Public Works Engineering Australasia, Sydney, [www.ipwea.org/IIMM](http://www.ipwea.org/IIMM)
- IPWEA, 2008, 'NAMS.PLUS Asset Management', Institute of Public Works Engineering Australasia, Sydney, [www.ipwea.org/namsplus](http://www.ipwea.org/namsplus).
- IPWEA, 2015, 2nd edn., 'Australian Infrastructure Financial Management Manual', Institute of Public Works Engineering Australasia, Sydney, [www.ipwea.org/AIFMM](http://www.ipwea.org/AIFMM).
- IPWEA, 2015, 3rd edn., 'International Infrastructure Management Manual', Institute of Public Works Engineering Australasia, Sydney, [www.ipwea.org/IIMM](http://www.ipwea.org/IIMM)
- IPWEA, 2012 LTFP Practice Note 6 PN Long Term Financial Plan, Institute of Public Works Engineering Australasia, Sydney



## APPENDICES

### Appendix A: Maintenance Management System Defect Management Inspection – Marine Structures

Inspection areas have been defined in accordance with the identified key factors of:

- Areas where failure is most disruptive and expensive to the community/users.
- Traffic (both vehicular and pedestrian) flows, e.g. pedestrian use areas; retail/commercial areas; schools and hospitals

Inspection frequencies are based on these areas as defined by the reference maps and the resources currently available to undertake the inspections.

**Red** – 2 times per year;                      **Blue** – Annual;                      **Other** – Once every 2 years;

The results of inspections will be downloaded into the MMDS database.

There are 5 categories in which a defect may be placed. Not all categories may be applicable to every inspection area and/or type of asset:

<b>Cat 5</b>		Will be <b>made safe</b> no later than 2 working days after allocation of defect to work crew. Defect may then be re-categorised as Cat 4 or Cat 3.
<b>Cat 4</b>		Will be repaired no later than 10 working days after allocation of defect to work crew.
<b>Cat 3</b>		Will be placed on Zone Maintenance Program. This program operates on an 8 week cycle, however, depending on workload and reactive maintenance requests, Cat 3 defects may miss a cycle or more before repairs are able to be undertaken.
<b>Cat 2</b>		Deferred maintenance. Defect may be repaired if close-by to Cat 4 or Cat 3 defect that is being repaired. Otherwise will be re-inspected on next area inspection.
<b>Cat 1</b>		As new. Surface displaying no defects. May have aesthetic aspects such as gum, stains, services mark-up, etc.

### Intervention Matrix

MARINE STRUCTURES	RED	BLUE	OTHER
MISSING or UNSTABLE	28	24	21
NOT FUNCTIONAL	23	19	16
DAMAGED BUT STILL FUNCTIONAL	20	16	13
FUNCTIONAL - PAINT/GRAFFITI/DIRTY	18	14	11
AS NEW	10	6	3

**Scoring example:** 28 = High Use Area score 10 and Defect of Missing or Unstable score 18

Inspections of marine structures will include all the marine structures that the EPS Division is responsible for. Inspections will involve the identification of **surface visible defects** only.

Expert structural assessments of each marine structure will be a separate element of the asset management regime.

- 25 -

<b>NORTH SYDNEY COUNCIL - GUIDE FOR MARINE STRUCTURES DEFECT RATING</b>		
<b>AN EXPLANATION OF THE DEFECT INSPECTION SYSTEM</b>		
<b>SITE OF INSPECTION</b>		<b>SCORE</b>
<b>RED</b>	MS001; MS002; MS003; MS006; MS007; MS008; MS009; MS010; MS011; MS012; MS013; MS014; MS016; MS021 and MS022 <b>INSPECTIONS - 2 PER YEAR</b>	<b>10</b>
<b>BLUE</b>	MS015; MS017; MS018 and MS024 <b>INSPECTION - ANNUAL</b>	<b>6</b>
<b>WHITE</b>	MS004; MS005; MS019; MS023 and MS025 <b>INSPECTION - EVERY 2 YEARS</b>	<b>3</b>
<b>MARINE STRUCTURE TYPE</b>		
TIMBER DECKING - WHARF, JETTY or BOARDWALK	HANDRAIL - WHARF, JETTY or BOARDWALK	
CONCRETE DECKING - WHARF, JETTY or BOARDWALK	PONTOON + GANGWAY	
KERBING - WHARF or BOARDWALK	ACCESS LADDER or STAIRS	
BOAT RAMP	PILES or OTHER VISIBLE STRUCTURAL MEMBERS *	
LIGHTING - WHARF, JETTY or BOARDWALK	OTHER eg. SHELTER or SIGNAGE	
* INSPECTION WILL BE UNDERTAKEN FROM DECK. PHOTOS TAKEN and IDENTIFIED DEFECTS WILL BE REFERRED TO MARINE STRUCTURE EXPERTS FOR ASSESSMENT + RECOMMENDATION		
<b>DEFECT - WHEN UNSURE REFER TO PHOTOS IN GUIDELINES FOR GUIDANCE</b>		
MISSING, DAMAGED AT A CRITICAL LOCATION or UNSTABLE		<b>18</b>
NON-FUNCTIONAL - THE DAMAGE IS SUCH THAT NO LONGER FIT FOR PURPOSE.		<b>13</b>
RED/BLUE SITES - GAPS and/or RISE & FALL BETWEEN TIMBER DECK PLANKS GREATER THAN 10MM		<b>13</b>
WHITE SITES - GAPS and/or RISE & FALL BETWEEN TIMBER DECK PLANKS GREATER THAN 20MM		<b>13</b>
ALL SITES - GAPS, SETTLEMENT, RISE & FALL ON CONCRETE DECK SECTIONS GREATER THAN 10MM		<b>13</b>
FUNCTIONAL - THE DAMAGE IS SUCH THAT THE ASSET CAN STILL BE USED.		<b>10</b>
RED/BLUE SITES - GAPS and/or RISE & FALL BETWEEN TIMBER DECK PLANKS LESS THAN 10MM		<b>10</b>
WHITE SITES - GAPS and/or RISE & FALL BETWEEN TIMBER DECK PLANKS LESS THAN 20MM		<b>10</b>
ALL SITES - GAPS, SETTLEMENT, RISE & FALL ON CONCRETE DECK SECTIONS LESS THAN 10MM		<b>10</b>
FUNCTIONAL - THE DAMAGE IS FADED PAINT; GRAFFITI; PEELING PAINT; DIRTY; etc		<b>8</b>
AS NEW		<b>0</b>
<b>HAZARD TYPE</b>		
MISSING - SECTION or PART NO LONGER IN ITS PLACE	BROKEN - SECTION DAMAGED, eg. HOLES, SPLITS, CRACKS	
ROTTEN - TIMBER ROTTING/SPLIT; METAL RUSTING, etc.	BENT/SAGGING - NOT IN LINE/FLUSH (VERT or HORIZ)	
LOOSE - ABLE TO BE MOVED WHEN IT SHOULDN'T BE	FINISH - FADED; PEELING; DIRTY; GRAFFITI	
NECKING OF TIMBER PILE - DIAMETER < 300MM		








NORTH SYDNEY COUNCIL  
**ASSET MANAGEMENT PLAN**  
**OPEN SPACE & RECREATION 2022-2032**

- 2 -

<b>Document Control</b>		<b>Asset Management Plan</b>				
Document ID : NSC AMP Roads 2023 Park Furniture, Playgrounds, Sporting Infrastructure						
<b>Rev No</b>	<b>Date</b>	<b>Revision Details</b>	<b>Author</b>	<b>Reviewer</b>	<b>Approver</b>	
1	25/4/2022	First Draft	IM	JVH/DM	DM	



## Table of Contents

Park Furniture, Playgrounds, Sporting Infrastructure .....	4
Executive Summary .....	4
Park Furniture, Playgrounds, Sporting Infrastructure – Future Demand .....	6
Park Furniture, Playgrounds, Sporting Infrastructure – Levels of Customer Service.....	6
Park Furniture, Playgrounds, Sporting Infrastructure – Levels of Technical Service .....	7
Park Furniture, Playgrounds, Sporting Infrastructure – Condition .....	9
Park Furniture, Playgrounds, Sporting Infrastructure – Review of Useful Lives.....	10
Park Furniture, Playgrounds, Sporting Infrastructure – Funding Strategy .....	12
Park Furniture, Playgrounds, Sporting Infrastructure – Capital works .....	12
Park Furniture, Playgrounds, Sporting Infrastructure – Managing the Risks.....	13
Park Furniture, Playgrounds, Sporting Infrastructure – Maintenance .....	17
Park Furniture, Playgrounds, Sporting Infrastructure – Prioritised Expenditure Forecast .....	17
Park Furniture, Playgrounds, Sporting Infrastructure – Valuation Forecast.....	18
Park Furniture, Playgrounds, Sporting Infrastructure – Key Assumptions – Financial Forecasts .....	18
Park Furniture, Playgrounds, Sporting Infrastructure – Creation / Acquisition / Upgrade Program.....	18
Park Furniture, Playgrounds, Sporting Infrastructure – Disposal Plan .....	18
Park Furniture, Playgrounds, Sporting Infrastructure – Forecast reliability and confidence .....	18
Park Furniture, Playgrounds, Sporting Infrastructure – Improvement Plan .....	18
Park Furniture, Playgrounds, Sporting Infrastructure – Monitoring and Review Procedures.....	18
Park Furniture, Playgrounds, Sporting Infrastructure – Renewal and Replacement Program .....	19
Park Furniture, Playgrounds, Sporting Infrastructure – Funding Scenarios .....	19
Park Furniture, Playgrounds, Sporting Infrastructure – Service and Risk Tradeoffs.....	19
Service trade-off .....	19
Risk trade-off .....	19
Park Furniture, Playgrounds, Sporting Infrastructure – Renewal and Replacement Program – FY2023- FY2032 (10 Year Plan) .....	20
Priority Projects 2022/23 (Year 1) .....	20
Priority Projects 2023/24 (Year 2) .....	21
Priority Projects 2024/25 (Year 3) .....	21
Priority Projects 2025/32 (Year 4-10) .....	22
Park Furniture, Playgrounds, Sporting Infrastructure – Performance Measures .....	25
Park Furniture, Playgrounds, Sporting Infrastructure – References.....	25
APPENDICES .....	26
APPENDIX A: List of Parks and Open Spaces.....	26
APPENDIX B: List of Playgrounds .....	31

## Park Furniture, Playgrounds, Sporting Infrastructure

### Executive Summary

North Sydney Council has 148ha of open space and parks located across the LGA. Within these parks and open space areas there are 32 playgrounds and 9 sportsgrounds. In 2019 consultant Rapid Map Services conducted a Park Furniture condition audit for North Sydney Council. The objectives were to conduct a detailed inventory data collection, accurately map each Park Furniture asset and assess each Park Furniture asset in detail for condition and defects.

The 2020 consultant, Xyst Pty Ltd conducted a condition audit of Council's Playgrounds and Sporting Infrastructure assets.

Overall, some 66.7% by replacement cost of the portfolio is in very good to good condition (1-2). 30.5% is in fair condition (3) and 2.8% is in poor to very poor condition (4-5).

A Risk rating was assigned to each Park Furniture, Playgrounds, Sporting Infrastructure asset. Overall, 97.2% of the portfolio has a low to medium risk rating and 2.8% has a high to very high risk rating.

The total Replacement Value of the portfolio is \$27,607,802 as at 30 June 2021. The values are shown in the Table below.

**Table 1: Park Furniture, Playgrounds, Sporting Infrastructure– Summary Table**

Asset Category	Quantity	Replacement Value (2021)	Accumulated Depreciation (2021)	Fair Value (2021)	Depreciation Expense
Playgrounds	44	\$10,170,291	\$4,214,483	\$5,955,808	\$656,983
Outdoor Furniture	2,510	\$6,667,600	\$2,376,109	\$4,291,490	\$221,562
Sports and Fitness	84	\$10,051,136	\$2,884,273	\$7,166,863	\$339,208
Other (NSO Media Screen)	1	\$718,775	\$41,748	\$677,027	\$75,511
<b>TOTAL</b>	<b>2,639</b>	<b>\$27,607,802</b>	<b>\$9,516,613</b>	<b>\$18,091,188</b>	<b>\$1,293,264</b>

The following table provides a summary of the quantities and replacement values for each Park Furniture, Playgrounds, Sporting Infrastructure type.

**Table 2: Park Furniture, Playgrounds, Sporting Infrastructure – Typology**

Asset Category	Type	Number	Replacement Cost
Park Furniture	Air Pump	1	\$4,348
	Backflow Device	21	\$65,064
	BBQ	8	\$102,317
	Bike Rack	40	\$127,896
	Bin - Cigarette	5	\$2,132
	Bin Enclosure	41	\$163,648
	Bin Stand	77	\$36,930
	Bird Bath	2	\$435

- 5 -

Asset Category	Type	Number	Replacement Cost
	Bubbler	68	\$576,170
	Emergency Phone	1	\$5,436
	Entrance - Large	4	\$326,134
	Entrance - Medium	2	\$63,948
	Entrance - Small	1	\$15,987
	Fire Hydrant	18	\$28,968
	Fish Cleaning Station	1	\$4,348
	Flag Pole	14	\$52,224
	Information Board	11	\$41,033
	Park Sign - Name	62	\$132,159
	Park Sign - Small	730	\$622,426
	Picnic setting - shelter	5	\$79,935
	Planter Box	39	\$41,566
	Plaque	197	\$214,161
	Power Outlet	30	\$11,670
	Seat	639	\$1,853,849
	Shade Sail	1	\$26,645
	Shade Structure	4	\$6,395
	Shelter	15	\$286,097
	Shower	2	\$5,329
	Storage Space	1	\$3,730
	Table	111	\$325,335
	Table Tennis	1	\$9,439
	Tap	158	\$64,496
	Telephone Box	1	\$31,974
	Wall - Brick	16	\$43,831
	Wall - Concrete	75	\$181,417
	Wall - Metal	2	\$112,966
	Wall - Rendered Brick	4	\$4,467
	Wall - Stone	57	\$803,620
	Wall - Stone - Low <500mm	43	\$183,714
	Wall - Timber	2	\$5,362
	<b>SUBTOTAL</b>	<b>2,510</b>	<b>\$6,667,600</b>
Playgrounds	Com. Cent. Playground - Large	1	\$360,284
	Com. Cent. Playground - Medium	3	\$617,629
	Com. Cent. Playground - Small	7	\$1,008,794
	Playground - District	9	\$4,632,218
	Playground - Local	22	\$1,801,418
	Playground - Regional	2	\$1,749,948
	<b>SUBTOTAL</b>	<b>44</b>	<b>\$10,170,291</b>
Sporting Infrastructure	Basketball Goal	1	\$3,302
	Cricket Nets - Double	2	\$165,094
	Cricket Nets - Single	2	\$113,502
	Cricket Sight Screens - Set	3	\$247,641
	Fitness Equipment	4	\$74,292
	Goal Posts - Set	8	\$73,261
	Hockey Nets	2	\$10,318
	Irrigation System	11	\$1,016,361
	Long Jump Pit	1	\$2,580
	Marquee	1	\$38,694
	Netball/Basketball Court	1	\$113,502

- 6 -

Asset Category	Type	Number	Replacement Cost
	Ornamental Well	1	\$2,580
	Playground - Local	1	\$25,796
	Pool - Outdoor Ocean	1	\$381,780
	Safety Fencing	1	\$16,097
	Skate Park	1	\$626,842
	Sportsfield Lighting - Large	1	\$722,287
	Sportsfield Lighting - Std.	6	\$1,114,385
	Stage	1	\$26,002
	Stormwater Harvesting	3	\$1,547,757
	Synthetic Cricket Wicket - Base	8	\$288,915
	Synthetic Cricket Wicket - Surface	8	\$86,674
	Synthetic Sports Field - Base	1	\$735,185
	Synthetic Sports Field - Surface	1	\$588,148
	Tennis Courts	3	\$670,695
	Tennis-Netball Court Fencing	3	\$139,298
	Turf Cricket Drop in pitch	1	\$1,083,430
	Turf Wicket Covers	3	\$54,172
	Water Tank	4	\$82,547
	<b>SUBTOTAL</b>	<b>84</b>	<b>\$10,051,136</b>
Other	North Sydney Oval Media Screen	1	\$718,775
	<b>SUBTOTAL</b>	<b>1</b>	<b>\$718,775</b>
	<b>TOTAL</b>	<b>2,639</b>	<b>\$27,607,802</b>

### Park Furniture, Playgrounds, Sporting Infrastructure – Future Demand

Drivers affecting demand for Park Furniture, Playgrounds, Sporting Infrastructure include things such as population change, regulation changes – new development, community expectations (Public Safety), technological changes, economic factors and environmental factors.

### Park Furniture, Playgrounds, Sporting Infrastructure – Levels of Customer Service

Service levels are defined service levels in two terms, customer levels of service and technical levels of service. These are supplemented by organisational measures.

**Customer Levels of Service** measure how the customer receives the service and whether value to the customer is provided.

Customer levels of service measures used in the asset management plan are:

**Quality**                      How good is the service ... *what is the condition or quality of the service?*

**Function**                     Is it suitable for its intended purpose .... *Is it the right service?*

**Capacity/Use**                Is the service over or under used ... *do we need more or less of these assets?*

The current and expected customer service levels are detailed in the Table below.

**Table 3: Park Furniture, Playgrounds, Sporting Infrastructure – Levels of Customer Service**

Service Attribute	Expectation	Performance Measure Used	Current Performance	Desired Position in 10 Years.
<b>Quality</b>	Park Furniture, Playgrounds, Sporting Infrastructure assets are well maintained.	Percentage of Park Furniture, Playgrounds, Sporting Infrastructure in 'very good', 'good' or 'Fair' (1, 2, 3) condition and Percentage 'poor' or 'very poor' (4, 5) Condition.	97.2% (by length) of Park Furniture, Playgrounds, Sporting Infrastructure in 'very good', 'good' or 'Fair' (1, 2, 3) condition.  2.8% (by length) of Park Furniture, Playgrounds, Sporting Infrastructure assets in poor/very poor (4, 5) Condition.	Maintain – Condition 1-2-3  Improve and replace Condition 4-5
<b>Function</b>	Upgrade Park Furniture, Playgrounds, Sporting Infrastructure assets in accordance with Public Domain Style Manual.	Number of Park Furniture, Playgrounds, Sporting Infrastructure assets constructed in accordance with Public Domain Style Manual.	Park Furniture, Playgrounds, Sporting Infrastructure assets are to be upgraded as part of future upgrade projects	Improve
<b>Capacity and Use</b>	Number of Park Furniture, Playgrounds, Sporting Infrastructure assets required is appropriate.	Number of additional Park Furniture, Playgrounds, Sporting Infrastructure assets required	New Park Furniture, Playgrounds, Sporting Infrastructure assets are constructed as part of future new projects	Improve

**Park Furniture, Playgrounds, Sporting Infrastructure – Levels of Technical Service**

**Technical Levels of Service** - Supporting the customer service levels are operational or technical measures of performance. These technical measures relate to the allocation of resources to service activities to best achieve the desired customer outcomes and demonstrate effective performance.

Technical service measures are linked to the activities and annual budgets covering:

- Operations – the regular activities to provide services (e.g., cleansing, inspections, etc).
- Maintenance – the activities necessary to retain an asset as near as practicable to an appropriate service condition. Maintenance activities enable an asset to provide service for its planned life (e.g., repairs, minor works),
- Renewal – the activities that return the service capability of an asset up to that which it had originally (e.g. component replacement),
- Upgrade/New – the activities to provide a higher level of service (e.g. additional Park Furniture, Playgrounds, Sporting Infrastructure assets).



- 8 -

Table 4 shows the technical levels of service expected to be provided for Park Furniture, Playgrounds, Sporting Infrastructure assets. The 'Desired' position in the table documents the position being recommended in this AM Plan.

**Table 4: Park Furniture, Playgrounds, Sporting Infrastructure – Technical Levels of Service**

<b>Service Attribute</b>	<b>Service Activity Objective</b>	<b>Activity Measure Process</b>	<b>Current Performance</b>	<b>Desired for Optimum Lifecycle Cost</b>
<b>Operations</b>	Undertake network inspections to monitor condition	Network inspections to monitor condition	Network inspected in 2020	Network inspected every 5 years
<b>Maintenance</b>	Reactive service Requests completed in a timely manner or made safe.	Respond to complaints.	Minor repairs undertaken in accordance with Maintenance Management System	Minor repairs undertaken in accordance with Maintenance Management Delivery System.
<b>Renewal</b>	Maintain existing assets to a satisfactory condition	Percentage of Park Furniture, Playgrounds, Sporting Infrastructure assets in 'very good', 'good' or 'Fair' (1, 2, 3) condition and Percentage 'poor' or 'very poor' (4, 5) Condition.	97.2% of Park Furniture, Playgrounds, Sporting Infrastructure assets in 'very good', 'good' or 'Fair' (1, 2, 3) condition.  2.8% of Park Furniture, Playgrounds, Sporting Infrastructure assets in poor/very poor (4, 5) Condition.	Improve or replace
<b>Upgrade</b>	Upgrade Park Furniture, Playgrounds, Sporting Infrastructure assets in accordance with Public Domain Style Manual.	Number of Park Furniture, Playgrounds, Sporting Infrastructure assets constructed in accordance with Public Domain Style Manual.	Park Furniture, Playgrounds, Sporting Infrastructure assets are to be upgraded as part of future upgrade projects	Improve
<b>New</b>	Number of Park Furniture, Playgrounds, Sporting Infrastructure assets required is appropriate.	Number of additional Park Furniture, Playgrounds, Sporting Infrastructure assets required	New Park Furniture, Playgrounds, Sporting Infrastructure assets are constructed as part of future new projects	Improve

### Park Furniture, Playgrounds, Sporting Infrastructure – Condition

The condition of Council's Park Furniture was surveyed in 2019 by Consultants, Rapid Map Services Pty Ltd. The condition of Council's Playgrounds and Sporting Infrastructure was surveyed in 2020 by Consultants, Xyst Pty Ltd. The following condition criteria was used.

**Table 5: Park Furniture, Playgrounds, Sporting Infrastructure Condition Survey Criteria**

Grade	Condition	Description
1	Very Good	Sound - constructed to current standards, well maintained with no defects. with no defects. Meets council's current Public Domain Style Manual standards. <b>No work required</b>
2	Good	As grade 1 but not constructed to current standards or showing minor wear, tear and deterioration. E.g. weathering of timber, staining of fastenings but no decay of timber or corrosion of steel. Deterioration has no significant impact on safety & appearance of the Park furniture. <b>Only minor work required</b>
3	Fair	Park furniture functionally sound, but appearance affected by minor defects e.g. vandalism, slight decay of timber, and mild corrosion of fastenings. Deterioration beginning to affect the stability, functionality or appearance of the Park furniture or does not meet council's current Public Domain Style Manual. <b>Some work required</b>
4	Poor	Park furniture functioning but with problems due to significant defects e.g. rotting/ splitting of timber, corrosion, loosening of fastenings, causing a marked deterioration in stability, functionality or appearance or does not meet council's current Public Domain Style Manual. <b>Some replacement or rehabilitation needed within 1 year</b>
5	Very Poor	Park furniture has serious problems and has failed or are about to fail in the near future, causing unacceptable deterioration in stability, safety and appearance. <b>Urgent replacement/ rehabilitation required</b>

*As per IPWEA Condition Assessment & Asset Performance Guidelines Practice Note 10.1*

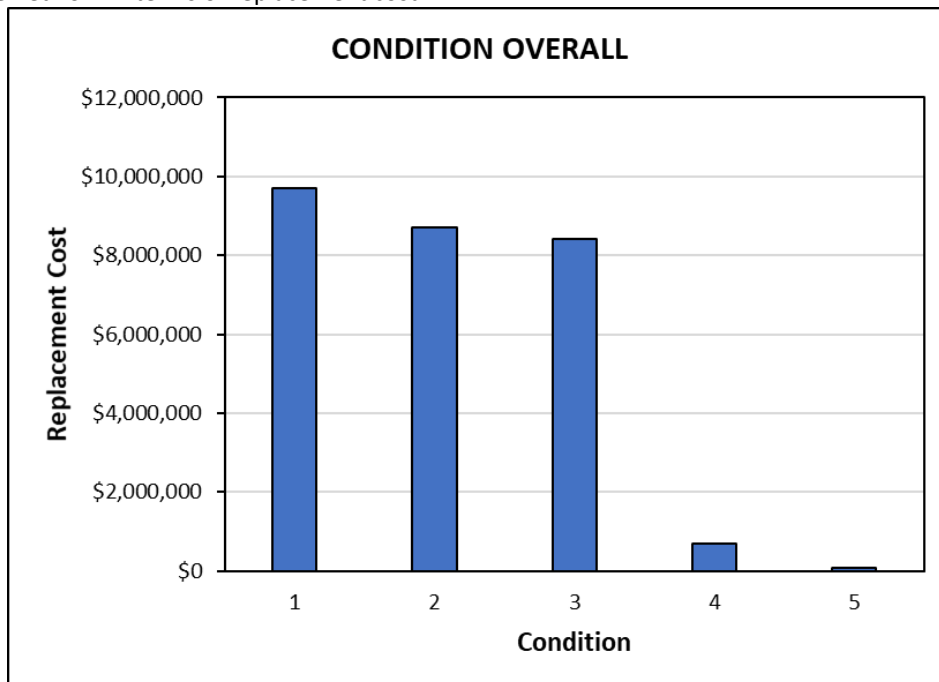
The Table below shows the Replacement Cost for each of the condition scores.

**Table 6: Park Furniture, Playgrounds, Sporting Infrastructure Survey Results - Overall**

CONDITION OVERALL			
Condition	Quantity	Replacement Cost	% Condition (based on cost)
1 (Very Good)	679	\$9,711,351	35.2%
2 (Good)	1,077	\$8,706,566	31.5%
3 (Fair)	682	\$8,426,991	30.5%
4 (poor)	165	\$693,761	2.5%
5 (Very Poor)	36	\$69,134	0.3%
<b>Total</b>	<b>2,639</b>	<b>\$27,607,802</b>	<b>100.0%</b>

- 10 -

The Graph below shows the condition of Park Furniture, Playgrounds, Sporting Infrastructure assets over the entire network in terms of replacement cost.



#### Park Furniture, Playgrounds, Sporting Infrastructure – Review of Useful Lives

The Table below shows the ranges of Useful Lives from the Valuation undertaken by Xyst Australia Pty Ltd.

Asset Type	Useful Life
Air Pump	15
Backflow Device	15
Basketball Goal	25
BBQ	20
Bike Rack	20
Bin - Cigarette	20
Bin Enclosure	20
Bin Stand	20
Bird Bath	25
Bubbler	20
Com. Cent. Playground - Large	15
Com. Cent. Playground - Medium	15
Com. Cent. Playground - Small	15
Cricket Nets - Double	30
Cricket Nets - Single	30
Cricket Sight Screens - Set	30
Emergency Phone	20
Entrance - Large	75

- 11 -

<b>Asset Type</b>	<b>Useful Life</b>
Entrance - Medium	50
Entrance - Small	50
Fire Hydrant	50
Fish Cleaning Station	20
Fitness Equipment	15
Flag Pole	40
Goal Posts - Set	25
Hockey Nets	25
Information Board	15
Irrigation System	25
Long Jump Pit	15
Marquee	20
Media Screen	10
Netball/Basketball Court	20
Ornamental Well	50
Park Sign - Name	15
Park Sign - Small	15
Picnic setting - shelter	50
Planter Box	25
Plaque	75
Playground - District	15
Playground - Local	15
Playground - Regional	15
Pool - Outdoor Ocean	50
Power Outlet	15
Safety Fencing	40
Seat	25
Shade Sail	20
Shade Structure	20
Shelter	30
Shower	25
Sign	15
Skate Park	35
Sportsfield Lighting - Large	55
Sportsfield Lighting - Std.	55
Stage	35
Storage Space	30
Stormwater Harvesting	50
Synthetic Cricket Wicket - Base	40
Synthetic Cricket Wicket - Surface	10
Synthetic Sports Field - Base	40
Synthetic Sports Field - Surface	10
Table	25
Table Tennis	20

- 12 -

Asset Type	Useful Life
Tap	35
Telephone Box	50
Tennis – Netball Court Fencing	40
Tennis Courts	20
Tree Guard	15
Turf Cricket Drop In Pitch	15
Turf Wicket Covers	4
Wall - Brick	90
Wall - Concrete	90
Wall - Concrete, Brick	90
Wall - Metal	60
Wall - Rendered Brick	90
Wall - Stone	100
Wall - Stone - Low <500mm	80
Wall - Timber	60
Water Tank	40

Based on reviewed useful lives the total annual Depreciation is as follows:

Capital funding to maintain a renewal ratio of 1	
	Annual Depreciation
Park Furniture, Playgrounds, Sporting Infrastructure	\$1,293,264

A budget of \$1,293,264 is required on average over the long term to maintain the condition of Council's Park Furniture, Playgrounds, Sporting Infrastructure assets, noting that fluctuations in renewal requirements in the medium term.

#### **Park Furniture, Playgrounds, Sporting Infrastructure – Funding Strategy**

The Asset Renewal Funding Ratio is the most important indicator. It compares funding with depreciation. An Asset Renewal Funding Ratio of 1 or greater sustained over the long term indicates the optimal renewal and replacement of assets.

The forecast for Depreciation (or Long Term Average Annual Asset Consumption) is \$1,293,264. Therefore, an annual average capital renewal funding of \$1,293,264 (2021 dollars) will achieve an Asset Renewal Funding Ratio of 1.

The cost to fully replace assets identified by Consultants, Rapid Map Services Pty Ltd and Xyst Australia Pty Ltd in condition 4 and 5 as well as the cost to replace the condition 3 assets which will become condition 4 over the next 10 is \$9,189,886. This is an average annual cost of \$918,989 which is less than the \$1,293,264 Depreciation Expense and is less than the average annual forecast budget of \$1,356,500.

#### **Park Furniture, Playgrounds, Sporting Infrastructure – Capital works**

Replacement of Park Furniture, Playgrounds, Sporting Infrastructure assets is assumed to be a capital works project.



The ranking criteria used to determine priority of identified renewal and replacement proposals is detailed in Table 7. A priority for action of 1 to 5 has been assigned to each Park Furniture, Playgrounds, Sporting Infrastructure assets requiring capital works as described in the following table.

#### **Park Furniture, Playgrounds, Sporting Infrastructure – Managing the Risks**

There are risks associated with providing and maintaining Park Furniture, Playgrounds, Sporting Infrastructure assets are primarily as follows:

- Damage due to vandalism
- Park Furniture, Playgrounds, Sporting Infrastructure in poor condition – public safety hazards, injury

The following risk response table was used to identify those Park Furniture, Playgrounds, Sporting Infrastructure assets requiring action within the next 10 years.

**Table 7: Park Furniture, Playgrounds, Sporting Infrastructure – Risk Response Table**

Level of Risk		Category	Action Required	Time frame for repairs, upgrade or replacement (subject to funding)
VH	Very High Risk	5	Immediate corrective action	1-2 Years
H	High Risk	4	Prioritised action required	1-2 Years
M	Medium Risk	3	Planned action required	2-10 Years
L	Low Risk	2	Manage by routine procedures	Inspections 1-2 years
New	No Risk	1	None	None

Consideration has been given to each Park Furniture, Playgrounds, Sporting Infrastructure asset whether to replace the Park Furniture, Playgrounds, Sporting Infrastructure asset or perform maintenance on it.

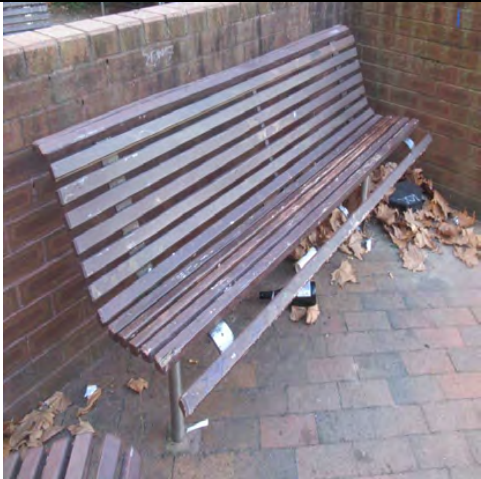
Segments that have a **Very High or High** risk rating were considered to need replacement within the 1-2 year forecast period.

Segments with a **Medium** risk rating were also considered needing replacement within the 2-10 year forecast period.

Examples of failed and failing Park Furniture, Playgrounds, Sporting Infrastructure assets in the North Sydney LGA









Council will endeavour to manage these risks within available funding by prioritising Park Furniture, Playgrounds, Sporting Infrastructure renewal works based on the condition audit of Council’s Park Furniture by Consultants, Rapid Map Services Pty Ltd as well as the condition audit of Council’s Playgrounds and Sporting Infrastructure by Consultants, Xyst Pty Ltd.

**Table 8: Park Furniture, Playgrounds, Sporting Infrastructure – Capital renewal Priorities based on Condition and Risk Rating**

Risk Matrix - Park Furniture, Playgrounds, Sporting Infrastructure (Condition and Risk Rating)				
Likelihood of Park Furniture, Playgrounds, Sporting Infrastructure failing Refer to Table 5. Condition Criteria	Park Furniture, Playgrounds, Sporting Infrastructure – Length (m)			
	Park Hierarchy	Local	District	Regional
	Priority	d	c	b
Condition 1 – Very Good (35.2%)	5	236	234	240
Condition 2 - Good (31.5%)	4	378	415	282
Condition 3 – Fair (30.5%)	3	237	230	215
Condition 4 – Poor (2.5%)	2	60	52	53
Condition 5 – Very Poor (0.3%)	1	15	13	8

**(Note: Also Refer to Table 6)**

**Note:** This table is based on data in the current register.

**Note:** The Factor used to determine the priority was ‘Park Hierarchy’.

It should be noted that Park Furniture, Playgrounds, Sporting Infrastructure assets may also be replaced based on other criteria including:

- Damage
- Plans of Management



- 17 -

### Park Furniture, Playgrounds, Sporting Infrastructure – Maintenance

Routine maintenance is the regular on-going work that is necessary to keep assets operating, including instances where portions of the asset fail and need immediate repair to make the asset operational again, e.g. repairs.

Maintenance includes all actions necessary for retaining an asset as near as practicable to an appropriate service condition including regular ongoing day-to-day work necessary to keep assets operating.

Current maintenance expenditure levels are considered to be adequate to meet projected service levels.

Over the longer term future operations and maintenance expenditure is forecast to be steady as the asset stock is not forecast to increase. The following table summarises the prioritised capital works.

### Park Furniture, Playgrounds, Sporting Infrastructure – Prioritised Expenditure Forecast

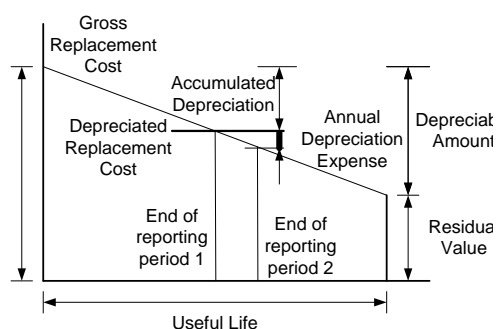
**Table 9: Park Furniture, Playgrounds, Sporting Infrastructure – Prioritised Expenditure Forecast – 10 years FY2023-FY2032**

Year		Priority	Capital Costs	Maintenance Costs	Total Costs
1	2022/23	1b – 2d	\$995,000	\$213,136	\$1,208,136
2	2023/24	2c – 3d	\$2,450,000	\$213,136	\$2,663,136
3	2024/25	3b – 3d	\$850,000	\$213,136	\$1,063,136
4-10	2025/32	3b – 3d	\$9,270,000	\$1,491,954	\$10,761,954
		<b>Grand Total</b>	<b>\$13,565,000</b>	<b>\$2,131,362</b>	<b>\$15,696,362</b>

In summary the current value of Park Furniture, Playgrounds, Sporting Infrastructure assets is detailed in the Table below.

**Table 10: Park Furniture, Playgrounds, Sporting Infrastructure – Valuation**

Asset Category	Quantity	Replacement Value (2021)	Accumulated Depreciation (2021)	Fair Value (2021)	Depreciation Expense
Playgrounds	44	\$10,170,291	\$4,214,483	\$5,955,808	\$656,983
Outdoor Furniture	2,510	\$6,667,600	\$2,376,109	\$4,291,490	\$221,562
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<b>TOTAL</b>	<b>2,639</b>	<b>\$27,607,802</b>	<b>\$9,516,613</b>	<b>\$18,091,188</b>	<b>\$1,293,264</b>





**Park Furniture, Playgrounds, Sporting Infrastructure – Valuation Forecast**

Asset values are forecast to increase slowly.

**Park Furniture, Playgrounds, Sporting Infrastructure – Key Assumptions – Financial Forecasts**

Key assumptions made in this asset management plan for Park Furniture, Playgrounds, Sporting Infrastructure are:

**Table: 11. Key Assumptions made in AM Plan and Risks of Change**

Key Assumptions	Risks of Change to Assumptions
Useful Lives of Park Furniture, Playgrounds, Sporting Infrastructure	Low risk
Rate of deterioration	Low risk

**Park Furniture, Playgrounds, Sporting Infrastructure – Creation / Acquisition / Upgrade Program**

New works are those that create a new asset that did not previously exist, or works which will upgrade or improve an existing asset beyond its existing capacity. They may result from growth, social or environmental needs. Assets may also be acquired at no cost. No new assets are currently identified.

**Park Furniture, Playgrounds, Sporting Infrastructure – Disposal Plan**

No Park Furniture, Playgrounds, Sporting Infrastructure Assets have been identified for disposal.

**Park Furniture, Playgrounds, Sporting Infrastructure – Forecast reliability and confidence**

The estimated confidence level and reliability of data used in this AMP is considered to be reliable as the data is based on a detailed condition report on Park Furniture, Playgrounds, Sporting Infrastructure.

**Park Furniture, Playgrounds, Sporting Infrastructure – Improvement Plan**

The improvement plan is shown in the table below.

Task No	Task	Responsibility	Resources Required	Timeline
1	Research the Useful Life of Park Furniture, Playgrounds, Sporting Infrastructure	OSE	Staff Time	2024

**Park Furniture, Playgrounds, Sporting Infrastructure – Monitoring and Review Procedures**

This Asset Management Plan will be reviewed during annual budget planning processes and amended to show any material changes in service levels and/or resources available to provide those services as a result of budget decisions.

The Asset Management Plan has a life of 4 years and is due for complete revision and updating within 1 year of each Council election.

### Park Furniture, Playgrounds, Sporting Infrastructure – Renewal and Replacement Program

Renewal and replacement expenditure is major work which does not increase the asset's design capacity but restores, rehabilitates, replaces or renews an existing asset to its original service potential. Work over and above restoring an asset to original service potential is considered to be an upgrade/expansion or new work expenditure resulting in additional future operations and maintenance costs.

Park Furniture, Playgrounds, Sporting Infrastructure assets requiring renewal/replacement have been identified by the condition audit of Council's Park Furniture by Consultants, Rapid Map Services Pty Ltd as well as the condition audit of Council's Playgrounds and Sporting Infrastructure by Consultants, Xyst Pty Ltd.

### Park Furniture, Playgrounds, Sporting Infrastructure – Funding Scenarios

The Long Term Financial Plan includes three scenarios, all of which maintain current services levels but propose differing levels of capital expenditure on the renewal of Council's ageing infrastructure assets.

In summary:

- Pessimistic Scenario - This Scenario results in a decline in operating results and deficits in the later years.
- Optimistic Scenario - This Scenario results in improvements in operating results for the life of the plan.
- Planned Scenario - This Scenario results modest surplus operating results for the life of the plan.

**Table 12: Funding Scenarios – Park Furniture, Playgrounds, Sporting Infrastructure – North Sydney Councils 10 Year Plan**

Scenario	Capital Funding Level required per annum	10 Year Plan \$ Total
Scenario 1.	\$1,356,500/year	<b>\$13,565,000</b>
Scenario 2.	\$1,356,500/year	<b>\$13,565,000</b>
Scenario 3.	\$1,356,500/year	<b>\$13,565,000</b>

**Note:** These Scenarios are based on the 10-year Long Term Financial Plan.

### Park Furniture, Playgrounds, Sporting Infrastructure – Service and Risk Tradeoffs

The decisions made in adopting this AM Plan are based on the objective to achieve the optimum benefits from the available resources.

#### Service trade-off

If this funding Scenario is adopted, then the Level of Service will be maintained.

#### Risk trade-off

If this funding Scenario is adopted, then there is less risk of Park Furniture, Playgrounds, Sporting Infrastructure failures.

### Park Furniture, Playgrounds, Sporting Infrastructure – Renewal and Replacement Program – FY2023-FY2032 (10 Year Plan)

Council's projected 10 year Capital Renewal Program is shown in the Tables below. It is based on the funding required to replace Park Furniture, Playgrounds, Sporting Infrastructure assets identified by the condition audit of Council's Park Furniture by Consultants, Rapid Map Services Pty Ltd as well as the condition audit of Council's Playgrounds and Sporting Infrastructure by Consultants, Xyst Pty Ltd.

It should be noted that Park Furniture, Playgrounds, Sporting Infrastructure assets may also be replaced based on other criteria including:

- Damage
- Restorations
- Streetscape projects

Project priorities may also be subject to change due to accelerated deterioration, sudden failure or finalization of detailed designs and project costings.

**Table13: Park Furniture, Playgrounds, Sporting Infrastructure – Renewal and Replacement Program**

#### Priority Projects 2022/23 (Year 1)

Replace Year	Priority	Location	Risk Rating / Category	Condition	Cost Estimate
2022/23	1b – 2b	Park Furniture - Various Parks - Park Furniture	Very High (5)	Very Poor	\$80,000
2022/23	1b – 2b	Park Furniture - Various Parks - Park Signs	Very High (5)	Very Poor	\$30,000
2022/23	2c	Sporting Infrastructure - Install a new cricket wicket on field 2 at Forsyth Park	High (4)	Poor	\$35,000
2022/23	2c	Sporting Infrastructure - Primrose Park – Reconfiguration to add Additional Full-Size Playing Field	High (4)	Poor	\$50,000
2022/23	2d	Playgrounds - Refurbish Prior Avenue Playground (Cremorne Point)	High (4)	Poor	\$170,000
2022/23	2b	Playgrounds - St Leonards Park - Playground Refurbishment	High (4)	Poor	\$600,000
2022/23		Sporting Infrastructure - Install new outdoor fitness equipment in Brennan Park			\$30,000
<b>TOTAL</b>					<b>\$995,000</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

**Table 14: Park Furniture, Playgrounds, Sporting Infrastructure – Renewal and Replacement Program****Priority Projects 2023/24 (Year 2)**

Year	Priority	Location	Risk Rating	Condition	Cost Estimate
2023/24	2c	Park Furniture - Various Parks - Park Furniture	High (4)	Poor	\$80,000
2023/24	2c	Park Furniture - Various Parks - Park Signs	High (4)	Poor	\$30,000
2023/24	2c	Park Furniture - Sawmillers Reserve - Replace Step Tower	High (4)	Poor	\$300,000
2023/24	2d	Sporting Infrastructure - Bon Andrews Oval – new irrigation system	High (4)	Poor	\$100,000
2023/24	2d	Sporting Infrastructure - Primrose Park - Drainage Improvements to Sportsfields	High (4)	Poor	\$200,000
2023/24	2d	Sporting Infrastructure - Primrose Park – Reconfiguration to add Additional Full-Size Playing Field	High (4)	Poor	\$1,120,000
2023/24	3b	Playgrounds - Refurbish Lodge Road Playground (Cremorne)	Medium (3)	Fair	\$170,000
2023/24	3b	Sporting Infrastructure - Renew synthetic surface in Bradfield Park Central	Medium (3)	Fair	\$100,000
2023/24	3d	Playgrounds - Refurbish the senior playground in Green Park (Camberay)	Medium (3)	Fair	\$170,000
2023/24		Sporting Infrastructure - Provide a new additional dual cricket net at Primrose Park			\$150,000
2023/24		Sporting Infrastructure - Install new outdoor fitness equipment in Berry Island Reserve			\$30,000
<b>TOTAL</b>					<b>\$2,450,000</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

**Table 15: Park Furniture, Playgrounds, Sporting Infrastructure – Renewal and Replacement Program****Priority Projects 2024/25 (Year 3)**

Year	Priority	Location	Risk Rating	Condition	Cost Estimate
2024/25	3b	Park Furniture - Various Parks - Park Furniture	Medium (3)	Fair	\$80,000
2024/25	3b	Park Furniture - Various Parks - Park Signs	Medium (3)	Fair	\$30,000
2024/25	3c	Sporting Infrastructure - Reconstruct Tunks Park turf cricket wicket table	Medium (3)	Fair	\$120,000

- 22 -

Year	Priority	Location	Risk Rating	Condition	Cost Estimate
2024/25	3c	Sporting Infrastructure - Replacement of synthetic turf at Cammeray Park	Medium (3)	Fair	\$400,000
2024/25	3d	Playgrounds - Upgrade Grasmere Reserve Playground	Medium (3)	Fair	\$170,000
2024/25		Sporting Infrastructure - Install new outdoor fitness equipment in Bradfield Park			\$30,000
2024/25		Park Furniture - Install new signage (directional and/or interpretive in Tunks Park			\$20,000
<b>TOTAL</b>					<b>\$850,000</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

**Table 16: Park Furniture, Playgrounds, Sporting Infrastructure – Renewal and Replacement Program**

**Priority Projects 2025/32 (Year 4-10)**

Year	Priority	Location	Risk Rating	Condition	Cost Estimate
2025/32	3b	Park Furniture - Various Parks - Park Furniture	Medium (3)	Fair	\$560,000
2025/32	3b	Park Furniture - Various Parks - Park Signs	Medium (3)	Fair	\$210,000
2025/32	3b – 3d	Playgrounds to be established*	Medium (3)	Fair	\$8,200,000
2025/32	3b – 3d	Sporting Infrastructure - Ongoing program of renewal of turf and synthetic cricket wicket tables at various sportsgrounds	Medium (3)	Fair	\$300,000
<b>TOTAL</b>					<b>\$9,270,000</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

\*Council has 31 playgrounds. The average lifespan of a playground is 15 years. This can vary + or – 5 years, according to level of use and coastal exposure. Therefore, Councils aim is to refurbish/upgrade 2 playgrounds per year in accordance with Council's Playgrounds Methodology document and Playgrounds Plan of Management.



Park Furniture, Playgrounds, Sporting Infrastructure Renewal Program







### **Park Furniture, Playgrounds, Sporting Infrastructure – Performance Measures**

The effectiveness of the asset management plan can be measured in the following ways:

- The degree to which the required projected expenditures identified in this asset management plan are incorporated into the long term financial plan,
- The degree to which 1-5 year detailed works programs, budgets, business plans and corporate structures take into account the 'global' works program trends provided by the asset management plan,
- The degree to which the existing and projected service levels and service consequences (what we cannot do), risks and residual risks are incorporated into the Strategic Plan and associated plans,
- The Asset Renewal Funding Ratio achieving the target of 1.0.

### **Park Furniture, Playgrounds, Sporting Infrastructure – References**

- Condition audit of Council's Park Furniture by Consultants, Rapid Map Services Pty Ltd
- Condition audit of Council's Playgrounds and Sporting Infrastructure by Consultants, Xyst Pty Ltd.
- IPWEA, 2006, 'International Infrastructure Management Manual', Institute of Public Works Engineering Australasia, Sydney, [www.ipwea.org/IIMM](http://www.ipwea.org/IIMM)
- IPWEA, 2008, 'NAMS.PLUS Asset Management', Institute of Public Works Engineering Australasia, Sydney, [www.ipwea.org/namsplus](http://www.ipwea.org/namsplus).
- IPWEA, 2015, 2nd edn., 'Australian Infrastructure Financial Management Manual', Institute of Public Works Engineering Australasia, Sydney, [www.ipwea.org/AIFMM](http://www.ipwea.org/AIFMM).
- IPWEA, 2015, 3rd edn., 'International Infrastructure Management Manual', Institute of Public Works Engineering Australasia, Sydney, [www.ipwea.org/IIMM](http://www.ipwea.org/IIMM)
- IPWEA, 2012 LTFP Practice Note 6 PN Long Term Financial Plan, Institute of Public Works Engineering Australasia, Sydney

## APPENDICES

## APPENDIX A: List of Parks and Open Spaces

Inventory No.	Park Name
1	Ancrum Street Reserve
2	Anderson Park
3	Anderson Street Road Closure
4	Anzac Avenue Reserve
5	Anzac Park
6	Badangi Reserve
7	Balls Head Reserve
8	Bank Reserve
9	Barry Street Road Reserve
10	Bay Road Reserve
11	Bellevue Park
12	Bellevue Street Reserve
13	Ben Boyd Road Park
14	Bernard Lane Road Closure
15	Berry Island Reserve
16	Beulah Street Reserve
17	Blues Point Reserve
18	Boatbuilders Walk
19	Bob Gordon Reserve
20	Boyle Street Road Closure
21	Bradfield Park
22	Brennan Park
23	Brightmore Reserve
24	Bromley Avenue Road Reserve
25	Brothers Memorial Reserve
26	Browns Lane Road Reserve
27	Bydown Street Road Reserve
28	Cahill Playground
29	Cammeray Park
30	Captain Henry Waterhouse Reserve
31	Carradah Park
32	Cheal Park
33	Clark Park
34	Clark Road Island
35	Clifton Street Road Reserve
36	Coal Loader Parklands
37	Colin Street Road Reserve
38	Colindia Avenue Road Reserve
39	Colindia Reserve
40	Copes Lookout

- 27 -

<b>Inventory No.</b>	<b>Park Name</b>
41	Cremorne Garden Plaza
42	Cremorne Reserve
43	Darby Gardens
44	David Earle Reserve
45	Doris Fitton Park
46	Doris Street Reserve
47	Dowling Street Road Reserve
48	Dr Mary Booth Lookout
49	East Avenue Road Reserve
50	East Crescent Street Lookout
51	Echo Street Reserve
52	Ellis Lookout
53	Ernest Place
54	Euroka Street Playground
55	Ex Platypus Site Open Space
56	Folly Point Reserve
57	Forsyth Park
58	Four Figs Park
59	Fred Hutley Reserve
60	French Street Reserve
61	Gannura Reserve
62	Glenferrie Avenue Road Reserve
63	Gore Cove Reserve
64	Grasmere Children's Park
65	Grasmere Reserve
66	Green Park
67	Guthrie Avenue Road Reserve
68	Hamilton Reserve
69	Harriette Street Road Closure
70	Harry Howard Reserve
71	Hayberry Street Road Closure
72	Hayes Street Foreshore
73	Henry Lawson Reserve
74	Highview Avenue Pedestrian Link
75	Hodgson Lookout
76	Holdsworth Road Reserve
77	Honda Road Reserve
78	Hopkins Park
79	Ilbery Park
80	Jeaffreson Jackson Reserve
81	John Street Open Space
82	Johnstone Avenue Road Reserve
83	Judith Ambler Reserve



- 28 -

<b>Inventory No.</b>	<b>Park Name</b>
84	Kenneth Bolton Lookout
85	Kesterton Park
86	King Street Road Reserve
87	Kurraba Reserve
88	Kurraba Wharf Reserve
89	Lady Gowrie Lookout
90	Lambert Street Gardens
91	Langley Place
92	Lavender Bay Foreshore
93	Lithgow Street Road Closure
94	Little Young Street Road Closure
95	Lloyd Avenue Reserve
96	Lloyd Rees Lookout
97	Lodge Road Island
98	Lodge Road Playground
99	Lodge Road Road Reserve
100	Lord Street Road Reserve
101	Lower Spofforth Walk (includes Hunts Lookout)
102	Manns Avenue Road Reserve
103	Margaret Street Road Reserve
104	Mary French Reserve
105	Mater Gardens
106	May Gibbs Place
107	McIntosh Lane Reserve
108	Merlin Street Reserve
109	Mil Mil Street Road Reserve
110	Miller Street Gardens
111	Milson Park
112	Miss Gladys Carey Reserve
113	Mitchell Street Park
114	Mitchell Street Plaza
115	Mortlock Reserve
116	Morton Lane Road Reserve
117	Mount Street Plaza
118	Neutral Bay Foreshore
119	Neutral Street Road Reserve
120	North Avenue Road Reserve
121	Ted Mack Civic Park
122	Nottingham Street Reserve
123	O'Briens Gardens
124	Olympic Park
125	Oyster Cove Reserve
126	Paling Street Road Closure

<b>Inventory No.</b>	<b>Park Name</b>
127	Phillips Street Playground
128	Pine Street/Arkland Street Reserve
129	Powell Street Open Space
130	Primrose Park
131	Prior Avenue Reserve
132	Prospect Avenue Road Reserve
133	Quibaree Park
134	Reserve Street Road Reserve
135	Richmond/Tobruk Pedestrian Link
136	Ridge Street Road Closure
137	Riley Street Road Closure
138	River Road Pedestrian Link
139	Robertson Lane Road Closure
140	Rose Avenue Reserve
141	Ryries Parade Road Closure
142	Samora Avenue Road Closure
143	Sawmillers Reserve
144	Shellbank Reserve
145	Shirley Road Pedestrian Link
146	Sinclair Street Pedestrian Link
147	Sinclair Street Rose Garden
148	Sirius Street Playground
149	Smoothey Park
150	Spains Wharf Road Reserve
151	Spruson Street Road Reserve
152	St Leonards Park
153	St Peters Park
154	St Thomas' Rest Park
155	Stanton Lookout
156	Sugar Works Reserve
157	Suspension Bridge Reserve
158	Tiley Street Road Closure
159	Tobruk Avenue Lookout
160	Toongarah Road Road Reserve
161	Tunks Park
162	Tye Park
163	Upper Pitt Street Pedestrian Link
164	Victoria Street Playground
165	Victoria/Mitchell Street Junction
166	Walker Street Road Reserve
167	Walumetta Park
168	Warringa Park
169	Warringa Road Road Closure

- 30 -

<b>Inventory No.</b>	<b>Park Name</b>
170	Watersleigh Park
171	Watt Park
172	Waverton Park (includes Merrett Playground)
173	Weaver Park
174	Weringa Avenue Road Reserve
175	West Crescent Street Road Reserve
176	Westleigh Lane Road Closure
177	Westleigh Street Road Closure
178	Whatmore Lane Reserve
179	Will Ashton Lookout
180	Willow Tree Park
181	Wilson Street Road Closure
182	Winnie Street Laneway Reserve
183	Winslow Lane Road Closure
184	Winslow Street Road Closure
185	Wonga Road Reserve
186	Woolcott Street Open Space
187	Wrixton Park
188	Wyagdon/Alfred Street North Reserve
189	Wyagdon Street Reserve
190	Wyong Road Open Space
191	Young Street/Earle Street Island

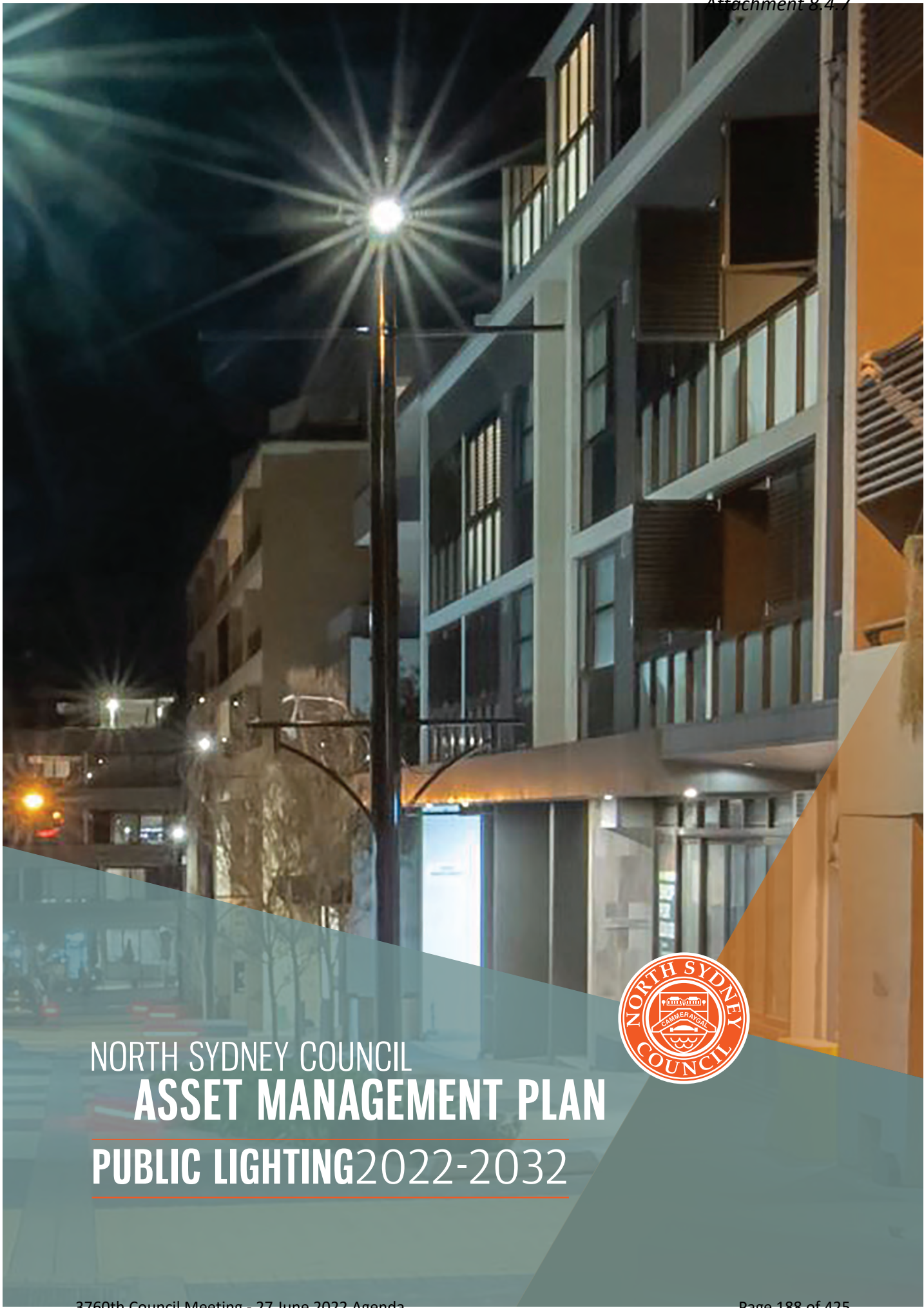
**APPENDIX B: List of Playgrounds**

<b>Description</b>	<b>Street Address</b>	<b>Relative Size of Playground</b>	<b>Land Ownership</b>
Berry Island Reserve	Southern end of Shirley Road, Wollstonecraft	Medium	Crown Land
Blues Point Reserve	Southern end of Blues Point Road, McMahons Point	Medium	North Sydney Council
Bradfield Park	Alfred Street south, Milsons Point	Large	North Sydney Council
Brennan Park	Hazelbank Road, Wollstonecraft	Medium	North Sydney Council
Cahill Park	Sophia Street, Crows Nest	Small	North Sydney Council
Cremorne Reserve	Southern end of Milson Road, Cremorne Point	Medium	Crown Land
Euroka Street Playground	Euroka Street, Waverton	Small	North Sydney Council
Fred Hutley Reserve	Hamilton Avenue, Cammeray	Small	North Sydney Council
Grasmere Children's Park	Cnr Young Street and Grasmere Road, Cremorne	Small	North Sydney Council
Grasmere Reserve	Little Young Street, Cremorne	Small	North Sydney Council
Green Park (Junior)	Cnr Warwick Avenue and Warringa Road, Cammeray	Small	Crown Land
Green Park (Senior)	Cnr Warwick Avenue and Warringa Road, Cammeray	Small	Crown Land
Hodgson's Lookout	Southern end of Kurraba Road, Neutral Bay	Small	North Sydney Council
Ilbery Reserve	Barry Street, Neutral Bay	Small	North Sydney Council
Kesterton Park	Eastern end of High Street, North Sydney	Medium	North Sydney Council
Lodge Road Playground	Cnr Lodge and Ellalong Roads, Cremorne	Small	North Sydney Council
Mary French Reserve	Mil Mil Street, McMahons Point	Small	North Sydney Council
Merrett Playground	Waverton Park, Woolcott Street, Waverton	Medium	Crown Land
Milson Park	McDougall Street, Milsons Point	Small	Crown Land
North Sydney Leisure Centre	Cnr Miller and McLaren Streets, North Sydney	Medium	North Sydney Council
Phillips Street Playground	Phillips Street, Neutral Bay	Small	North Sydney Council

- 32 -


<b>Description</b>	<b>Street Address</b>	<b>Relative Size of Playground</b>	<b>Land Ownership</b>
Primrose Park/Brightmore Reserve	Young Street, Cremorne	Medium	Crown Land/NSC
Prior Avenue Reserve	End of Prior Avenue, Cremorne	Small	North Sydney Council
Sirius Street Playground	Cnr Milson Road and Sirius Street, Cremorne Point	Small	North Sydney Council
St. Leonards Park	Cnr Miller and Falcon Streets, North Sydney	Large	Crown Land
St. Thomas' Rest Park	West Street, Crows Nest	Medium	North Sydney Council
Tunks Park	Brothers Avenue, Cammeray	Medium	Crown Land
Victoria Street Playground	Victoria Street, McMahons Point	Small	North Sydney Council
W H Brothers Memorial Reserve	Fifth Avenue, Cremorne	Small	North Sydney Council
Warringa Park	Cnr Rawson Street and Kurraba Road, North Sydney	Small	North Sydney Council
Watt Park	Lavender Crescent, McMahons Point	Medium	North Sydney Council
Wollstonecraft Railway Station Park	Milray Avenue, Wollstonecraft	Small	North Sydney Council





**NORTH SYDNEY COUNCIL**  
**ASSET MANAGEMENT PLAN**  
**PUBLIC LIGHTING 2022-2032**



<b>Document Control</b>		<b>Asset Management Plan</b>				
Document ID : NSC AMP Other Infrastructure 2023 Public Lighting						
<b>Rev No</b>	<b>Date</b>	<b>Revision Details</b>	<b>Author</b>	<b>Reviewer</b>	<b>Approver</b>	
1	12/01/2022	First Draft	IM	JVH/DM	DM	

## Table of Contents

Public Lighting.....	4
Executive Summary .....	4
Public Lighting – Future Demand.....	6
Public Lighting – Levels of Customer Service.....	7
Public Lighting – Levels of Technical Service .....	8
Public Lighting Condition .....	9
Public Lighting – Review of Useful Lives .....	12
Public Lighting – Funding Strategy.....	14
Public Lighting – Capital works .....	14
Public Lighting – Managing the Risks.....	14
Public Lighting – Maintenance.....	18
Public Lighting – Prioritised Expenditure Forecast .....	19
Public Lighting – Valuation Forecast.....	19
Public Lighting – Key Assumptions – Financial Forecasts .....	20
Public Lighting – Creation / Acquisition / Upgrade Program .....	20
Public Lighting – Disposal Plan.....	20
Public Lighting – Forecast reliability and confidence.....	20
Public Lighting – Improvement Plan .....	20
Public Lighting – Monitoring and Review Procedures .....	20
Public Lighting – Renewal and Replacement Program .....	21
Public Lighting – Funding Scenarios.....	21
Public Lighting – Service and Risk Tradeoffs.....	21
Service trade-off .....	21
Risk trade-off .....	21
Public Lighting – Renewal and Replacement Program – FY2023-FY2032 (10 Year Plan) .....	22
Capital Renewal – Public Lighting within Road Reserves.....	22
Priority Projects 2022/23 (Year 1) .....	22
Priority Projects 2023/24 (Year 2) .....	23
Priority Projects 2024/25 (Year 3) .....	23
Priority Projects 2025/32 (Year 4-10) .....	23
Capital Renewal – Public Lighting Within Parks.....	25
Priority Projects 2022/23 (Year 1) .....	25
Priority Projects 2023/24 (Year 2) .....	25
Priority Projects 2024/25 (Year 3) .....	26
Priority Projects 2025/32 (Year 4-10) .....	26
Works Identified – Years 2025 - 32 (Year 4-10) .....	26
Public Lighting – Performance Measures .....	31
Public Lighting – References .....	31
APPENDICES.....	32
Appendix A: Maintenance Management System .....	32

## Public Lighting

### Executive Summary

Located across the North Sydney LGA are 1,913 Lighting assets which are the direct responsibility of Council to maintain. In addition to this there are over 4,000 lights owned by Ausgrid. Council has engaged Steensen Varming (Australia) Pty Ltd to prepare a Public Lighting Strategy for North Sydney Council in 2021. The Public Lighting Strategy is currently in draft form.

Based on this data a report was prepared in 2018 by Gary Roberts & Associates Pty Ltd which prioritised the renewal of Public Lighting taking into other factors including obsolescence.

The types of lighting fixtures installed in the North Sydney area include poles, bollards, downlights, wall mounted, inground, and surface mounted. Each type of lighting fixture can have differing lamp sources installed. The ages of the lighting fixtures vary significantly across the various types from say 20-30 years to 1-2 years.

The efficiency of each type of lighting fixture varies significantly due to lamp technology and fixture physicalities such as diffuser and/or reflector material and shape etc. Aging effects such as lamp depreciation, reflector corrosion and diffuser UV damage can also affect the long-term efficiency.

There have been significant technological advances in recent years with lighting assets which has significantly improved efficiency and significantly reduced energy costs as well as reduced greenhouse gases. In addition, council has adopted a Public Domain Style Manual which aims to streamline the various lighting assets that currently exist in North Sydney. Therefore, apart from condition, lighting assets are increasingly replaced as result of obsolescence or streetscape improvements.

It is also important to note that Ausgrid owns and manages just over 4,000 lights within the North Sydney Council Local Government Area. Of these there are 124 "Decorative" light poles. This is an historic arrangement where Ausgrid used to supply "Decorative" light poles to councils upon request. In accordance with Ausgrid's "Policy for non-standard lighting" Ausgrid ceased to provide "Decorative" light poles to customers from 1/7/2014. Ausgrid no longer supplies parts for these "Decorative" light poles so if a pole requires replacement Ausgrid will replace the pole with a non-decorative pole unless council chooses to install a decorative pole itself. Ausgrid will not permit councils to use Ausgrid's conduits or wiring (which would need replacing anyway). For these existing 124 "Decorative" light poles council pays a high ongoing annual capital and maintenance charge. If council were to replace Ausgrid's 124 "Decorative" light poles the estimated cost would be \$900,000. This is currently unfunded.

Each Public Lighting asset was assigned a condition score. Overall some 82.3% by replacement cost of the portfolio is in very good to fair condition (1-3) and 17.7% is in poor to very poor condition (4-5).

A Risk rating was assigned to each component. Overall, 82.3% of the portfolio has a low to medium risk rating and 17.7% has a high to very high risk rating.

The total Replacement Value of the portfolio is \$19,010,576 as at 30 June 2021. The values are shown in the Table below.

- 5 -

**Table 1: Public Lighting – Summary Table**

Asset Category	Replacement Value (2021)	Accumulated Depreciation (2021)	Fair Value (2021)	Depreciation Expense
Lighting	\$19,010,576	\$4,844,870	\$14,165,705	\$596,857

The following table provides a summary of the quantities and replacement values for each Public Lighting type. The portfolio is dominated by Under Awning lights, Multi Function Poles, Taperline Pole Gooseneck Double and Single, Metal Ball Lights, and Hexagonal Vic Pole Space ship.

**Table 2: Public Lighting – Typology**

Public Lighting Type	Count of Structure Type	Sum of Replacement Costs
4 unit battery pole green coated	5	\$19,395
Awning Light - Elizabeth Plaza	7	\$25,168
Banner Pole	33	\$215,793
Bega Graphite finish 4.5 meters 100mm O/D straight pole with access door	2	\$14,458
Bollard	64	\$212,794
Brick Light	34	\$46,012
Burton St Tunnel	1	\$173,932
Bus Stop	61	\$47,306
Cammeraygal Pl Artwork	5	\$34,185
Catenary Light - Elizabeth Plaza	1	\$132,500
Decorative Fin Light - Brett Whiteley Place	2	\$17,861
Decorative Seating Light - Brett Whiteley Place	11	\$55,630
Down Light - Elizabeth Plaza	6	\$4,470
Eclipse Light Pole	5	\$36,144
FLEXIBLE LINEAR LED STRIP MOUNTED WITH U CLIPS ON CORTEN WALLS	3	\$14,823
Fountain Light - Brett Whiteley Place	3	\$144,108
GM Poles 4.5M 90MM Pipe Pole Galvanised Steel	17	\$107,192
GM Poles 5.0M 90MM Pipe Pole Galvanised Steel	9	\$66,113
GM Poles PP-90-4.0 4M 90MM Pipe Pole c/w Marine Grade Powder Coat	15	\$108,433
Handrail Light - Bob Gordon Reserve	35	\$27,591
Handrail Light - Brett Whiteley Place/ Elizabeth Plaza	15	\$25,431
Hexagonal Vic Pole Space ship	92	\$665,053
Inground Strip Light - Elizabeth Plaza	26	\$128,462
Inground Strip Light - Grosvenor Lane	17	\$83,994
Inground Uplight - Bradfield Plaza	37	\$93,295
Inground Uplight - Brett Whiteley Place	22	\$45,985
Inground Uplight Small	118	\$297,536
Interpol Metal pole	50	\$361,442
Lantern only special	2	\$7,758



- 6 -

Public Lighting Type	Count of Structure Type	Sum of Replacement Costs
LED RECESSED LINEAR LED WALL GRAZER MOUNTED	5	\$24,704
LED SPOTLIGHT WITH GLARE SHIELD MOUNTED ON TAPERED ROUND POLE	1	\$7,229
Memorial	4	\$46,542
Metal Pole Ball	75	\$542,163
Metal Pole Other	19	\$137,348
Multi Function Pole	290	\$10,770,132
Pedestrian Ceiling Light	4	\$4,173
Projector	7	\$81,449
Shelter Light	4	\$3,876
Shop Light - Elizabeth Plaza	4	\$14,445
Sign Light	4	\$15,516
Small Pedestrian Light	20	\$38,790
Sportsfield	5	\$96,960
Stair Light - Brett Whiteley Place	5	\$2,383
Stair Light - Mitchell Street Plaza	10	\$19,558
Stair Light only	8	\$7,752
Straight Round 140mm Diameter Pole	10	\$72,288
Tapered Octagonal Column	24	\$209,162
Tapered Round Pole	19	\$137,348
Taperline Pole Gooseneck Double	138	\$997,579
Taperline Pole Gooseneck Single	41	\$296,382
Totem Light Pole (Cluster)	7	\$50,602
Under Awning Light - Recessed	52	\$225,728
Under Awning Light - Recessed inherited	15	\$65,114
Under Awning Light - Surface Mount	368	\$1,597,457
Under seat lighting - Miller Street Forecourt	6	\$29,645
Vent Light only	9	\$17,455
Vic Poles - 4.0m Tapered Base Octagonal	8	\$57,831
Vic Poles - 4.6m Tapered Base Octagonal	16	\$115,661
Vic Poles - 8.0m Road Light Pole	2	\$14,458
VICPOLE Galvanised Steel	2	\$14,458
Wall Mounted Light	4	\$33,313
Wall mounted light - Cabramatta Rd & Spofforth St	15	\$25,972
Wall mounted light - lane Parraween carpark	14	\$24,240
<b>Grand Total</b>	<b>1,913</b>	<b>\$19,010,576</b>

#### Public Lighting – Future Demand

Drivers affecting demand for Public Lighting include things such as population growth, regulation changes – new development, community expectations (Public Safety), technological changes, economic factors and environmental factors.

- 7 -

The number of Public Lighting assets is expected to increase into the future. This is due to the following factors:

- When a number of lights in an area require replacing additional lights are often required to meet current standards.
- Replacing Ausgrid lights as part of CBD upgrades (note that whilst Ausgrid lights are owned by Ausgrid however they are funded by council).
- There are 124 Ausgrid “decorative” light poles. Ausgrid have a Policy of not replacing these assets and no longer store any parts. These will need to be replaced and owned by council.
- Assets constructed by Property developers

### Public Lighting – Levels of Customer Service

Service levels are defined service levels in two terms, customer levels of service and technical levels of service. These are supplemented by organisational measures.

**Customer Levels of Service** measure how the customer receives the service and whether value to the customer is provided.

Customer levels of service measures used in the asset management plan are:

**Quality**                                      How good is the service ... *what is the condition or quality of the service?*

**Function**                                      Is it suitable for its intended purpose .... *Is it the right service?*

**Capacity/Use**                                      Is the service over or under used ... *do we need more or less of these assets?*

The current and expected customer service levels are detailed in the Table below.

**Table 3: Public Lighting – Levels of Customer Service**

Service Attribute	Expectation	Performance Measure Used	Current Performance	Desired Position in 10 Years.
<b>Quality</b>	Public Lighting are well maintained.	Percentage of retaining walls in ‘very good’, ‘good’ or ‘Fair’ (1, 2, 3) condition and Percentage ‘poor’ or ‘very poor’ (4, 5) Condition.	82.3% of Public Lighting in ‘very good’, ‘good’ or ‘Fair’ (1, 2,3) condition.  17.7% of Public Lighting components in poor/very poor (4, 5) Condition.	Maintain – Condition 1-2-3  Improve and replace Condition 4-5
<b>Function</b>	Public Lighting meet the standard of the Public Domain Style Manual/ modern equivalent.	Number of Public Lighting Poles meet the standard of the Public Domain Style Manual/ modern equivalent.	298 Public Lighting Poles do not meet the standard of the Public Domain Style Manual/ modern equivalent.	Improve

Service Attribute	Expectation	Performance Measure Used	Current Performance	Desired Position in 10 Years.
Capacity and Use	Number of Public Lighting required is appropriate.	Number of additional Public Lighting required	Additional Public Lighting to be identified as part of a detailed re-design when existing lighting is replaced.	Improve

#### Public Lighting – Levels of Technical Service

**Technical Levels of Service** - Supporting the customer service levels are operational or technical measures of performance. These technical measures relate to the allocation of resources to service activities to best achieve the desired customer outcomes and demonstrate effective performance.

Technical service measures are linked to the activities and annual budgets covering:

- Operations – the regular activities to provide services (e.g. cleaning, inspections, etc).
- Maintenance – the activities necessary to retain an asset as near as practicable to an appropriate service condition. Maintenance activities enable an asset to provide service for its planned life (e.g. painting of light pole, globe replacement),
- Renewal – the activities that return the service capability of an asset up to that which it had originally (e.g. light pole replacement),
- Upgrade/New – the activities to provide a higher level of service (e.g. increasing the number of poles to improve lighting levels).

Table 4 shows the technical levels of service expected to be provided for Public Lighting. The 'Desired' position in the table documents the position being recommended in this AM Plan.

**Table 4: Public Lighting – Technical Levels of Service**

Service Attribute	Service Activity Objective	Activity Measure Process	Current Performance	Desired for Optimum Lifecycle Cost
<b>Operations</b>	Undertake network inspections to monitor condition	Network inspections to monitor condition	Network inspected in 2015	Network inspected every 5 years
<b>Maintenance</b>	Reactive service Requests completed in a timely manner or made safe.	Respond to complaints.	Minor repairs undertaken in accordance with Maintenance Management System	Minor repairs undertaken in accordance with Maintenance Management Delivery System.
<b>Renewal</b>	Maintain existing assets to a satisfactory condition	Percentage of Public Lighting in poor/very poor (4, 5) Condition.	17.7% of Public Lighting in poor/very poor (4, 5) Condition.	Improve or replace
<b>Upgrade</b>	Public Lighting	Number of Public	298 Public Lighting	Improve

Service Attribute	Service Activity Objective	Activity Measure Process	Current Performance	Desired for Optimum Lifecycle Cost
	meet the standard of the Public Domain Style Manual/ modern equivalent.	Lighting Poles meet the standard of the Public Domain Style Manual/ modern equivalent.	Poles do not meet the standard of the Public Domain Style Manual/ modern equivalent.	
<b>New</b>	Number of Public Lighting required is appropriate.	Number of additional Public Lighting required	Additional Public Lighting to be identified as part of a detailed re-design when existing lighting is replaced.	Improve

### Public Lighting Condition

A condition data report was prepared in 2018 by Gary Roberts & Associates Pty Ltd which prioritised the renewal of Public Lighting based on obsolete lighting technologies. The condition criteria used is described in Table 5.

**Table 5: Public Lighting Condition Survey Criteria**

Grade	Condition	General Meaning
<b>1</b>	<b>Very Good</b>	<p><b>Condition</b> Well maintained with no defects. Pole is sound, straight and true. No evidence of corrosion or decay. Pole surface finish in good condition. Lantern is intact and securely fixed to pole. No evidence of water or insect ingress. Lens is clear and intact. No corrosion visible on luminaire. No work required.</p> <p><b>Pole Obsolescence</b> The pole is suitable for use in contemporary lighting projects. This includes aesthetic and physical qualities including height, finish and utility access facilities etc.</p> <p><b>Luminaire attributes</b> The performance and efficiency of the lighting fixture is generally in line with current technology trends and provides compliance with current or recent public lighting design standards.</p>
<b>2</b>	<b>Good</b>	<p><b>Condition</b> The luminaires and supporting structures may show minor deterioration with some wear and tear typical of the age such as discolouration (fading) of the luminaire and hair line cracks in concrete around the support structure, but no concrete staining. Slight impact damage, but no loss of protective coating. Deterioration has no significant impact on strength, operation and appearance of the light. The luminaire internal reflective surfaces may show slight discolouration but are not excessive corrosion. Only minor work required. Luminaire has minor insect ingress that can be rectified with routine cleaning to manufacturers recommendations.</p>

Grade	Condition	General Meaning
		<p><b><u>Pole Obsolescence</u></b> The pole is older than grade 1 but remains suitable for use in contemporary lighting projects pending onsite inspection and general agreement that the aesthetic is suitable for new projects.</p> <p><b><u>Luminaire attributes</u></b> As grade 1 but the lighting fixture is older and may use obsolete or technology of lower efficiency. There may not be evidence of compliance with current or recent public lighting design standards.</p>
3	Fair	<p><b><u>Condition</u></b> The luminaire is functionally sound, but the appearance is affected by minor defects i.e. slight impact damage; concrete cracks &lt;2mm, loss of protective coating on fittings, minor chipping/ spalling of concrete. Poles have signs of light corrosion/decay especially at or just below ground level (May require further qualified inspection or testing). External deterioration is beginning to affect the strength, operation and appearance of the luminaire. The internal reflective surfaces of the luminaire may show signs of corrosion. Likely to require renewal within 6-10 years approx.</p> <p><b><u>Pole Obsolescence</u></b> The pole is older than grade 2 and may not be suitable for use in contemporary lighting projects pending onsite inspection and general agreement that the aesthetic is suitable for new projects.</p> <p><b><u>Luminaire attributes</u></b> As grade 2 but the lighting fixture uses obsolete or technology of lower efficiency. There is no evidence of compliance with current or past public lighting design standards.</p>
4	Poor	<p><b><u>Condition</u></b> The luminaire functions but has significant defects e.g. structural cracks &gt;2mm, concrete staining, impact damage, corrosion, instability of foundation; causing a marked deterioration in strength, stability, operation and appearance of the light within. Poles show signs of moderate corrosion/decay especially at or just below ground level (Will require further qualified inspection or testing). The luminaire has either insect or water ingress that can be rectified with replacement parts. The lens and/or reflector has deteriorated. Intermittent lamp failure may indicate lamp replacement is necessary. Likely to require renewal within 3-5 years.</p> <p><b><u>Pole Obsolescence</u></b> The pole is not suitable for use in contemporary lighting projects.</p> <p><b><u>Luminaire attributes</u></b> The lighting fixture uses obsolete technology of low efficiency. There is no evidence of compliance with current or past public lighting design standards.</p>



- 11 -

Grade	Condition	General Meaning
5	Very Poor	<p><b>Condition</b> The luminaire has failed or is about to fail in the near future due to irreparable deterioration in strength, stability, operation and appearance. Poles have sustained impact damage or clear signs of corrosion/decay – especially at or just below ground level. The luminaire shows signs of damage due to water and insect ingress. The lens is yellowed or broken. The luminaire body and reflector are corroded. Priority renewal is required.</p> <p><b>Pole Obsolescence</b> The pole is at the end of its life and should be replaced as a priority.</p> <p><b>Luminaire attributes</b> The lighting fixture uses obsolete technology of low efficiency. There is no evidence of compliance with current or past public lighting design standards. The lumen output is diminished due to both internal and external aging.</p>

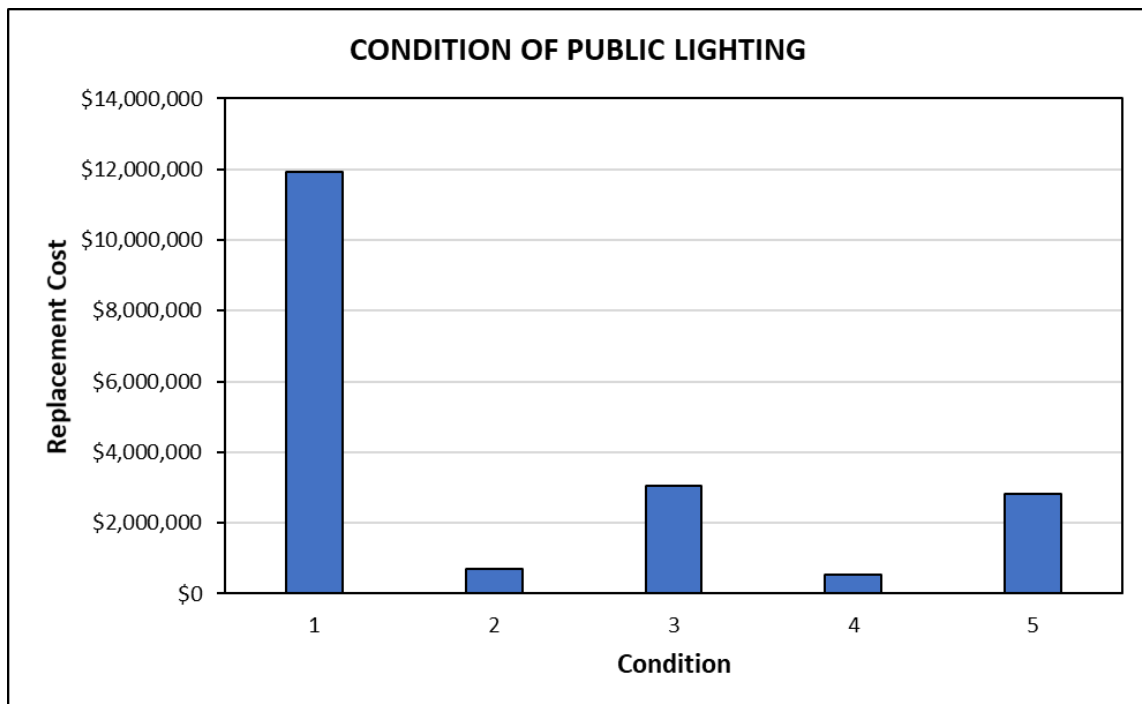
The Table below shows the condition of Public Lighting assets in terms of replacement cost where condition 1 is very good and 5 is very poor condition. In practice and where funds permit Public Lighting assets in condition 3 are generally replaced at the same time as Public Lighting assets in condition 4 or 5 if they are adjacent, there are potential risks, and it is cost effective.

**Table 6: Public Lighting Condition Survey Results - Overall**

CONDITION OF PUBLIC LIGHTING – ENTIRE NETWORK		
Condition	Replacement Cost	% Condition (based on known data and cost)
1 (Very Good)	\$11,916,993	62.7%
2 (Good)	\$688,489	3.6%
3 (Fair)	\$3,035,765	16.0%
4 (poor)	\$549,470	2.9%
5 (Very Poor)	\$2,819,858	14.8%
<b>Total</b>	<b>\$19,010,576</b>	<b>100.00%</b>

The Graph below shows the condition of Public Lighting assets over the entire network in terms of replacement cost.

- 12 -



#### Public Lighting – Review of Useful Lives

There are a wide variety of Lighting types in North Sydney. Lights are replaced as a result of poor condition as well as obsolescence. The useful lives of lighting assets have been reviewed and is detailed in the following Table.

Pole Type Group	Units	NSC Reviewed Useful Life (years)
4-unit battery pole green coated	Each	35
Awning Light - Elizabeth Plaza	Each	20
Banner Pole	Each	35
Bega Graphite finish 4.5 meters 100mm O/D straight pole with access door	Each	35
Bollard	Each	20
Brick Light	Each	20
Burton St Tunnel	Each	35
Bus Stop	Each	20
Cammeraygal PI Artwork	Each	20
Catenary Light - Elizabeth Plaza	Each	20
Decorative Fin Light - Brett Whiteley Place	Each	20
Decorative Seating Light - Brett Whiteley Place	Each	20
Down Light - Elizabeth Plaza	Each	20

- 13 -

Pole Type Group	Units	NSC Reviewed Useful Life (years)
Eclipse Light Pole	Each	35
Fountain Light - Brett Whiteley Place	Each	20
GM Poles 4.5M 90MM Pipe Pole Galvanised Steel	Each	20
GM Poles 5.0M 90MM Pipe Pole Galvanised Steel	Each	20
GM Poles PP-90-4.0 4M 90MM Pipe Pole c/w Marine Grade Powder Coat	Each	35
Handrail Light - Bob Gordon Reserve	Each	20
Handrail Light - Brett Whiteley Place/ Elizabeth Plaza	Each	20
Hexagonal Vic Pole Space ship	Each	35
Inground Strip Light - Elizabeth Plaza	Each	20
Inground Uplight - Bradfield Plaza	Each	20
Inground Uplight - Brett Whiteley Place	Each	20
Inground Uplight Small	Each	20
Interpol Metal pole	Each	35
Lantern only special	Each	35
Memorial	Each	35
Metal Pole Ball	Each	35
Metal Pole Other	Each	35
Multi Function Pole	Each	35
Pedestrian Ceiling Light	Each	20
Projector	Each	20
Rockstyle	Each	35
Shelter Light	Each	20
Shop Light - Elizabeth Plaza	Each	20
Sign Light	Each	20
Small Pedestrian Light	Each	20
Sportsfield	Each	35
Stair Light - Brett Whiteley Place	Each	20
Stair Light only	Each	20
Straight Round 140mm Diameter Pole	Each	35
Sylvania CUBAN Stainless Steel Bollard	Each	20
Tapered Octagonal Column	Each	35
Taperline Pole Gooseneck Double	Each	35
Taperline Pole Gooseneck Single	Each	35
Under Awning Light - Recessed	Each	20
Under Awning Light - Recessed inherited	Each	20
Under Awning Light - Surface Mount	Each	20
Vent Light only	Each	20
VICPOLE Galvanised Steel	Each	35
Wall Mounted Light	Each	20
Wall mounted light - Cabramatta Rd & Spofforth St	Each	20

- 14 -

Pole Type Group	Units	NSC Reviewed Useful Life (years)
Wall mounted light - lane Parraween carpark	Each	20

Based on these Useful Lives the Depreciation is as follows:

Capital funding to maintain a renewal ratio of 1	
	Annual Depreciation
Public Lighting	\$596,857

A budget of \$596,857 is required on average over the long term to maintain the condition of Council's Public Lighting network, noting that fluctuations in renewal requirements in the medium term.

#### Public Lighting – Funding Strategy

The Asset Renewal Funding Ratio is the most important indicator. It compares funding with depreciation. An Asset Renewal Funding Ratio of 1 or greater sustained over the long term indicates the optimal renewal and replacement of assets.

The cost to fully replace assets in condition 4 and 5 as well as the cost to replace the condition 3 assets which will become condition 4 over the next 10 is \$596,857. Therefore, an annual average capital renewal funding of \$596,857 (2021 dollars) will achieve an Asset Renewal Funding Ratio of 1.

The cost to fully replace assets in condition 3, 4, and 5, over the next 10 years, is \$6,405,093. This is an average annual cost of \$640,509 which is greater than the \$557,151 Depreciation Expense and is less than the average annual forecast budget of \$875,760. With further investigation and detailed design it is hoped that alternate and lesser cost solutions may be possible to maintain Public Lighting assets at an optimal level.

Council has entered into an agreement with Ausgrid to commence the replacement of all street light assets owned by Ausgrid to LED technology. This agreement will see considerable operating cost savings for Council. The agreement will see all Ausgrid street light assets replaced with LED luminaires by 2023.

#### Public Lighting – Capital works

Replacement of Public Lighting components is assumed to be a Capital works project.

The ranking criteria used to determine priority of identified renewal and replacement proposals is detailed in table 7. A priority for action of 1 to 5 has been assigned to each Public Lighting asset requiring capital works as described in the following table.

#### Public Lighting – Managing the Risks

There are risks associated with providing and maintaining Public Lighting are primarily as follows:

- Sudden failure of lighting poles – falling and causing property damage, injury or death.
- Luminaires failing – area poorly lit making the area unsafe for the public.

The following risk response table was used to identify those Public Lighting components requiring action within the next 10 years.

**Table 7: Public Lighting – Risk Response Table**

Level of Risk		Condition	Action Required	Time frame for repairs, upgrade or replacement
VH	Very High Risk	5	Immediate corrective action	1-10 years
H	High Risk	4	Prioritised action required	4-10 Years
M	Medium Risk	3	Planned action required	4-10 Years
L	Low Risk	2	Manage by routine procedures	Inspections 1-2 years
New	No Risk	1	None	None

Consideration has been given to each Public Lighting asset, whether to replace the asset or perform maintenance on it.

Components that have a **Very High** or **High** risk rating were considered to need replacement within the 1-10 year forecast period.

Components with a **Medium** risk rating were also considered needing replacement within the 4-10 year forecast period.

**Examples of Lighting Assets in Poor Condition**









- 18 -

Council will endeavour to manage these risks within available funding by prioritising Public Lighting renewal works based on the condition of Public Lighting assets assessed in 2015 by R J Mifsud Electrical as well as the report prepared in 2018 by Gary Roberts & Associates Pty Ltd which prioritised the renewal of Public Lighting.

**Table 8: Public Lighting - Overall – Capital renewal Priorities based on Condition and Risk Rating**

Risk Matrix – Public Lighting (Condition and Risk Rating)					
Likelihood of Public Lighting failing (L) Refer to Table 5. Condition Criteria	Public Lighting (No. of Lights)				
	Road Hierarchy	Lane	Local Road	Collector	State/ Regional Road
	Park Hierarchy	Local	District	Regional	
	Footpath Hierarchy	Category 3	Category 2	Category 1	
	Priority	d	c	b	a
Condition 1 – Very Good (62%)	5	93	204	215	123
Condition 2 - Good (4%)	4	NA	7	4	10
Condition 3 – Fair (16%)	3	49	99	307	222
Condition 4 – Poor (3%)	2	39	16	86	15
Condition 5 – Very Poor (15%)	1	106	83	227	8

(Note: Also Refer to Table 6)

**Note:** This table is based on data in the current register.

**Note:** Capital works is proposed for those public lighting assets identified in “Very Poor”, “Poor” and “Fair” condition.

**Note:** Factors which are used to determine the priority include ‘Footpath Hierarchy’, ‘Road Hierarchy’ and ‘Park Hierarchy’. The most critical factor is used to determine the priority.

It should be noted that Public Lighting may also be replaced based on other criteria including:

- Accidental damage
- A “group” of lights are typically replaced at the same time as pole spacing may change to meet lighting level requirements.
- Replaced as part of Streetscape projects or Reserve upgrades

### Public Lighting – Maintenance

Routine maintenance is the regular on-going work that is necessary to keep assets operating, including instances where portions of the asset fail and need immediate repair to make the asset operational again, e.g. painting, globe replacement.

Maintenance includes all actions necessary for retaining an asset as near as practicable to an appropriate service condition including regular ongoing day-to-day work necessary to keep assets operating.

- 19 -

Current maintenance expenditure levels are considered to be adequate to meet projected service levels.

Over the longer term future operations and maintenance expenditure is forecast to increase as the asset stock increases. The following table summarises the prioritised capital and maintenance works.

#### Public Lighting – Prioritised Expenditure Forecast

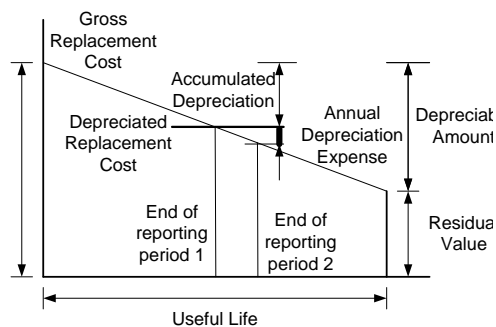
**Table 9: Public Lighting – Prioritised Expenditure Forecast – 10 years FY2023-FY2032**

Year		Priority	Capital Costs	Maintenance Costs	Total Costs
1	2022/23	1b	\$1,030,000	\$92,310	\$1,122,310
2	2023/24	1b	\$927,600	\$92,310	\$1,019,910
3	2024/25	1b	\$850,000	\$92,310	\$942,310
4-10	2025/32	1a – 2d	\$5,950,000	\$646,170	\$6,596,170
Works Identified	2025/32	1a – 1d	\$1,506,756		\$1,506,756
		<b>Grand Total</b>	<b>\$10,264,356</b>	<b>\$923,100</b>	<b>\$11,187,456</b>

In summary the current value of Public Lighting assets is detailed in the Table below.

**Table 10: Public Lighting - Valuation**

Asset Category	Replacement Value (2021)	Accumulated Depreciation (2021)	Fair Value (2021)	Depreciation Expense
Lighting	\$19,010,576	\$4,844,870	\$14,165,705	\$596,857



#### Public Lighting – Valuation Forecast

Asset values (Public Lighting) are forecast to increase. The number of Public Lighting assets is expected to increase into the future. This is due to the following factors:

- When a number of lights in an area require replacing additional lights are often required to meet current standards.
- Replacing Ausgrid lights as part of CBD upgrades (note that whilst Ausgrid lights are owned by Ausgrid however they are funded by council).



- 20 -

- There are 124 Ausgrid “decorative” light poles. Ausgrid have a Policy of not replacing these assets and no longer store any parts. These will need to be replaced and owned by council.
- Assets constructed by land developers

#### Public Lighting – Key Assumptions – Financial Forecasts

Key assumptions made in this asset management plan for Public Lighting are:

**Table: 11. Key Assumptions made in AM Plan and Risks of Change**

Key Assumptions	Risks of Change to Assumptions
Useful Lives of Public Lighting	Low risk
Rate of deterioration	Low risk

#### Public Lighting – Creation / Acquisition / Upgrade Program

New works are those that create a new asset that did not previously exist, or works which will upgrade or improve an existing asset beyond its existing capacity. They may result from growth, social or environmental needs. Assets may also be acquired at no cost. New assets are identified as part of the detailed lighting design process, for example, as part of a Streetscape upgrade.

#### Public Lighting – Disposal Plan

No Public Lighting assets have been identified for disposal.

#### Public Lighting – Forecast reliability and confidence

The estimated confidence level and reliability of data used in this AMP is considered to be reliable as the data is based on a detailed condition report on Public Lighting.

#### Public Lighting – Improvement Plan

The improvement plan is shown in the table below.

Task No	Task	Responsibility	Resources Required	Timeline
1	Research the Useful Life of Public Lighting	EPS	Staff Time	2024

#### Public Lighting – Monitoring and Review Procedures

This Asset Management Plan will be reviewed during annual budget planning processes and amended to show any material changes in service levels and/or resources available to provide those services as a result of budget decisions.

The Asset Management Plan has a life of 4 years and is due for complete revision and updating within 1 year of each Council election.



### Public Lighting – Renewal and Replacement Program

Renewal and replacement expenditure is major work which does not increase the asset's design capacity but restores, rehabilitates, replaces or renews an existing asset to its original service potential. Work over and above restoring an asset to original service potential is considered to be an upgrade/expansion or new work expenditure resulting in additional future operations and maintenance costs.

Public Lighting assets requiring renewal/replacement is based on the condition of Public Lighting assets assessed in 2015 by R J Mifsud Electrical as well as the report prepared in 2018 by Gary Roberts & Associates Pty Ltd which prioritised the renewal of Public Lighting.

### Public Lighting – Funding Scenarios

The Long Term Financial Plan includes three scenarios, all of which maintain current services levels but propose differing levels of capital expenditure on the renewal of Council's ageing infrastructure assets.

In summary:

- Pessimistic Scenario - This Scenario results in a decline in operating results and deficits in the later years.
- Optimistic Scenario - This Scenario results in improvements in operating results for the life of the plan.
- Planned Scenario - This Scenario results modest surplus operating results for the life of the plan.

**Table 12: Funding Scenarios – Public Lighting – North Sydney Councils 10 Year Plan**

Scenario	Capital Funding Level Required Per Annum	10 Year Plan \$ Total
Scenario 1.	\$875,760/year	<b>\$8,757,600</b>
Scenario 2.	\$875,760/year	<b>\$8,757,600</b>
Scenario 3.	\$875,760/year	<b>\$8,757,600</b>

**Note:** These Scenarios are based on the 10-year Long Term Financial Plan.

### Public Lighting – Service and Risk Tradeoffs

The decisions made in adopting this AM Plan are based on the objective to achieve the optimum benefits from the available resources.

#### Service trade-off

If this funding Scenario is adopted, then the Level of Service will be maintained.

#### Risk trade-off

If this funding Scenario is adopted, then it there is less risk of a sudden collapse of a Public Lighting asset.

### Public Lighting – Renewal and Replacement Program – FY2023-FY2032 (10 Year Plan)

Council’s projected 10 year Capital Renewal Program is shown in the Tables below. It is based on the funding required to replace Public Lighting assets identified by the condition of Public Lighting assets Audit completed in 2015 by R J Mifsud Electrical as well as the report prepared in 2018 by Gary Roberts & Associates Pty Ltd which prioritised the renewal of Public Lighting.

It should be noted that Public Lighting assets may also be replaced based on other criteria including:

- Accidental Damage
- A “group” of lights are typically replaced at the same time as pole spacing may change to meet lighting level requirements.
- Replaced as part of Streetscape projects or Reserve upgrades

Project priorities may also be subject to change due to accelerated deterioration, sudden failure or finalization of detailed designs and project costings. The project costs below include lights in poor or very poor condition. The actual project may vary subject to a detailed lighting design which may change pole spacing and therefore require the replacement of light poles in condition 3.

### Capital Renewal – Public Lighting within Road Reserves

**Table 13: Public Lighting – Renewal and Replacement Program (Within Road Reserves)**

#### Priority Projects 2022/23 (Year 1)

Replace Year	Priority	Location	Risk Rating / Category	Condition	Cost estimate
2022/23	1b	Lighting upgrade in association with Kirribilli Streetscape	Very High (5)	Very Poor	\$340,000
2022/23	1b	Lighting upgrade in association with McMahons Point Streetscape	Very High (5)	Very Poor	\$340,000
2022/23		Meadow Lane – new lights			\$100,000
2022/23		North Sydney CBD, Lighting Upgrade			\$50,000
2022/23		DESIGNS			\$150,000
2022/23	New	Banner Flag Poles			\$50,000
<b>TOTAL</b>					<b>\$1,030,000</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

**Table 14: Public Lighting – Renewal and Replacement Program (Within Road Reserves)****Priority Projects 2023/24 (Year 2)**

Replace Year	Priority	Location	Risk Rating / Category	Condition	Cost estimate
2023/24	1b	Lighting upgrade in association with Kirribilli Streetscape	Very High (5)	Very Poor	\$300,000
2023/24	1b	Lighting upgrade in association with McMahons Point Streetscape	Very High (5)	Very Poor	\$377,600
2023/24		North Sydney CBD, Lighting Upgrade			\$50,000
2023/24		DESIGNS			\$150,000
2023/24	New	Banner Flag Poles			\$50,000
<b>TOTAL</b>					<b>\$927,600</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

**Table 15: Public Lighting – Renewal and Replacement Program (Within Road Reserves)****Priority Projects 2024/25 (Year 3)**

Replace Year	Priority	Location	Risk Rating / Category	Condition	Cost estimate
2024/25	1b	Lighting upgrade in association with Kirribilli Streetscape	Very High (5)	Very Poor	\$300,000
2024/25	1b	Lighting upgrade in association with McMahons Point Streetscape	Very High (5)	Very Poor	\$300,000
2024/25		North Sydney CBD, Lighting Upgrade			\$50,000
2024/25		DESIGNS			\$150,000
2024/25	New	Banner Flag Poles			\$50,000
<b>TOTAL</b>					<b>\$850,000</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

**Table 16: Public Lighting – Renewal and Replacement Program (Within Road Reserves)****Priority Projects 2025/32 (Year 4-10)**

Replace Year	Priority	Location	Risk Rating / Category	Condition	Cost estimate
2025/32	1a	MILLER ST - Controlled from board side of Ros Crichton Pavilion	Very High (5)	Very Poor	\$109,600
2025/32	1a	FALCON ST - Supplied from SSS off Ausgrid pole MO 94355	Very High (5)	Very Poor	\$104,023

- 24 -

Replace Year	Priority	Location	Risk Rating / Category	Condition	Cost estimate
2025/32	1a	FALCON ST - Supplied from SSS off Ausgrid pole MO 94357	Very High (5)	Very Poor	\$41,609
2025/32	1b	BAY RD - Board in grass area adj to lights	Very High (5)	Very Poor	\$36,284
2025/32	1b	ALBANY ST - DB cnr Albany St and Alexander St	Very High (5)	Very Poor	\$395,286
2025/32	1b	ALEXANDER ST - DB cnr Ernest St and Alexander St	Very High (5)	Very Poor	\$561,723
2025/32	1b	MILLER ST - Green turret driveway North Sydney Community Centre	Very High (5)	Very Poor	\$83,218
2025/32	1b	MILLER ST - Light supply from Stanton library	Very High (5)	Very Poor	\$51,178
2025/32	1b	MILLER ST - Stanton Library	Very High (5)	Very Poor	\$177,600
2025/32	1b	MILLER ST - Supplied from distribution board Wylie Wing	Very High (5)	Very Poor	\$62,414
2025/32	1b	CAMMERAY RD - Supplied from SSS off Ausgrid pole MO 59083	Very High (5)	Very Poor	\$104,023
2025/32	1b	BLUES POINT RD - Supplied from SSS off Ausgrid pole MO 75395	Very High (5)	Very Poor	\$166,436
2025/32	1b	WILLOUGHBY RD - Supplied from SSS off Ausgrid pole MO 94311	Very High (5)	Very Poor	\$124,827
2025/32	1b	BURLINGTON ST - Supplied from SSS off pole in zig zag lane	Very High (5)	Very Poor	\$2,231
2025/32	1c	CAMMERAY RD - Distribution board in garden	Very High (5)	Very Poor	\$208,045
2025/32	1c	MILLER ST - Lights controlled from board on pole NSCL029	Very High (5)	Very Poor	\$20,805
2025/32	1c	ABBOTT ST - Supplied from SSS off Ausgrid pole MO 89453	Very High (5)	Very Poor	\$41,609
2025/32	1c	ABBOTT ST - Supplied from SSS off Ausgrid pole MO 89455	Very High (5)	Very Poor	\$41,609
2025/32	1d	HUME LA - Board located cnr Pole La and Hume La	Very High (5)	Very Poor	\$540,918
2025/32	1d	BALFOUR LA - Supplied from SSS	Very High (5)	Very Poor	\$28,707
2025/32	1d	RALEIGH ST - Supplied from SSS off Ausgrid pole MO 89448	Very High (5)	Very Poor	\$124,827
2025/32	1d	WILLOUGHBY LA - Supplied from SSS off Ausgrid pole MO 94347	Very High (5)	Very Poor	\$104,023
2025/32	1d	ZIG ZAG LA - Supplied from SSS off Ausgrid pole MO 94377	Very High (5)	Very Poor	\$228,850
2025/32	2a	MILITARY RD - Board in garden on pole Parraween St	High (4)	Poor	\$399,780
2025/32	2a	CABRAMATTA RD - Board in Located in Cabramatta Rd Adj to 285 Military Rd	High (4)	Poor	\$237,157
2025/32	2d	LAMONT ST - Board located in Parraween St car park	High (4)	Poor	\$69,763
2025/32	2d	LANGLEY AVE - Supplied from SSS off Ausgrid pole MO 73879	High (4)	Poor	\$88,800

- 25 -

Replace Year	Priority	Location	Risk Rating / Category	Condition	Cost estimate
2025/32	2d	LANGLEY LA - Supplied from SSS off Ausgrid pole MO 73880	High (4)	Poor	\$5,582
2025/32	2d	LANGLEY LA - Supplied from SSS off Ausgrid pole MO 73881	High (4)	Poor	\$5,582
2025/32	2d	LANGLEY LA - Supplied from SSS off Ausgrid pole MO 73882	High (4)	Poor	\$5,582
2025/32	2d	LANGLEY LA - Supplied from SSS off Ausgrid pole MO 73883	High (4)	Poor	\$5,582
2025/32	2d	LANGLEY LA - Supplied from SSS off Ausgrid pole MO 73884	High (4)	Poor	\$5,582
2025/32	2d	LANGLEY LA - Supplied from SSS off Ausgrid pole MO 73885	High (4)	Poor	\$5,582
2025/32	2d	LANGLEY LA - Supplied from SSS off Ausgrid pole MO 73886	High (4)	Poor	\$5,582
2025/32	2d	LANGLEY LA - Supplied from SSS off Ausgrid pole MO 73887	High (4)	Poor	\$5,581
2025/32		North Sydney CBD, Lighting Upgrade		N/A	\$350,000
2025/32		DESIGNS		N/A	\$1,050,000
2025/32	New	Banner Flag Poles			\$350,000
<b>TOTAL</b>					<b>\$5,950,000</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

#### Capital Renewal – Public Lighting Within Parks

**Table 17: Public Lighting – Renewal and Replacement Program (Within Parks)**

##### Priority Projects 2022/23 (Year 1)

Replace Year	Priority	Location	Risk Rating / Category	Condition	Cost estimate
2022/23		Projects to be established		N/A	\$0
<b>TOTAL</b>					<b>\$0</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

**Table 18: Public Lighting – Renewal and Replacement Program (Within Parks)**

##### Priority Projects 2023/24 (Year 2)

Replace Year	Priority	Location	Risk Rating / Category	Condition	Cost estimate
2023/24		Projects to be established		N/A	\$0
<b>TOTAL</b>					<b>\$0</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.



- 26 -

**Table 19: Public Lighting – Renewal and Replacement Program (Within Parks)****Priority Projects 2024/25 (Year 3)**

Replace Year	Priority	Location	Risk Rating / Category	Condition	Cost estimate
2024/25		Projects to be established		N/A	\$0
<b>TOTAL</b>					<b>\$0</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

**Table 20: Public Lighting – Renewal and Replacement Program (Within Parks)****Priority Projects 2025/32 (Year 4-10)**

Replace Year	Priority	Location	Risk Rating / Category	Condition	Cost estimate
2025/32					
<b>TOTAL</b>					<b>\$0</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

**Table 21: Public Lighting – Renewal and Replacement Program (Within Parks)****Works Identified – Years 2025 - 32 (Year 4-10)**

Replace Year	Priority	Location	Risk Rating / Category	Condition	Cost estimate
2025/32	1b	Cremorne Garden Plaza - Board in garden on pole Parraween St	Very High (5)	Very Poor	\$185,467
2025/32	1b	Civic Park - Light supply from Stanton library	Very High (5)	Very Poor	\$216,225
2025/32	1b	St Leonards Park - Nso main switch board	Very High (5)	Very Poor	\$69,607
2025/32	1b	Civic Park - Supplied from Stanton Library, pe cell on pole NSCL014	Very High (5)	Very Poor	\$14,415
2025/32	1b	St Leonards Park - Switch board Bon Andrews shed	Very High (5)	Very Poor	\$154,679
2025/32	1b	St Leonards Park - Switch board db1 near score board	Very High (5)	Very Poor	\$43,245
2025/32	1b	St Leonards Park - Switch board Planet X	Very High (5)	Very Poor	\$57,660
2025/32	1c	Smoothey Park - Battery on board	Very High (5)	Very Poor	\$38,675
2025/32	1c	Tunks Park - Board located end of park on footpath	Very High (5)	Very Poor	\$100,905
2025/32	1c	Barry Street Plaza/Car Park - Board located store room off car park	Very High (5)	Very Poor	\$100,905
2025/32	1c	Tunks Park - Board mounted end of park on footpath	Very High (5)	Very Poor	\$43,245
2025/32	1c	Civic Park - Stanton library	Very High (5)	Very Poor	\$19,891
2025/32	1c	Waterleigh Park - Supplied from SSS off Ausgrid pole MO 56633	Very High (5)	Very Poor	\$28,830
2025/32	1c	Hume Street Park - Supplied from switch board	Very High (5)	Very Poor	\$115,320

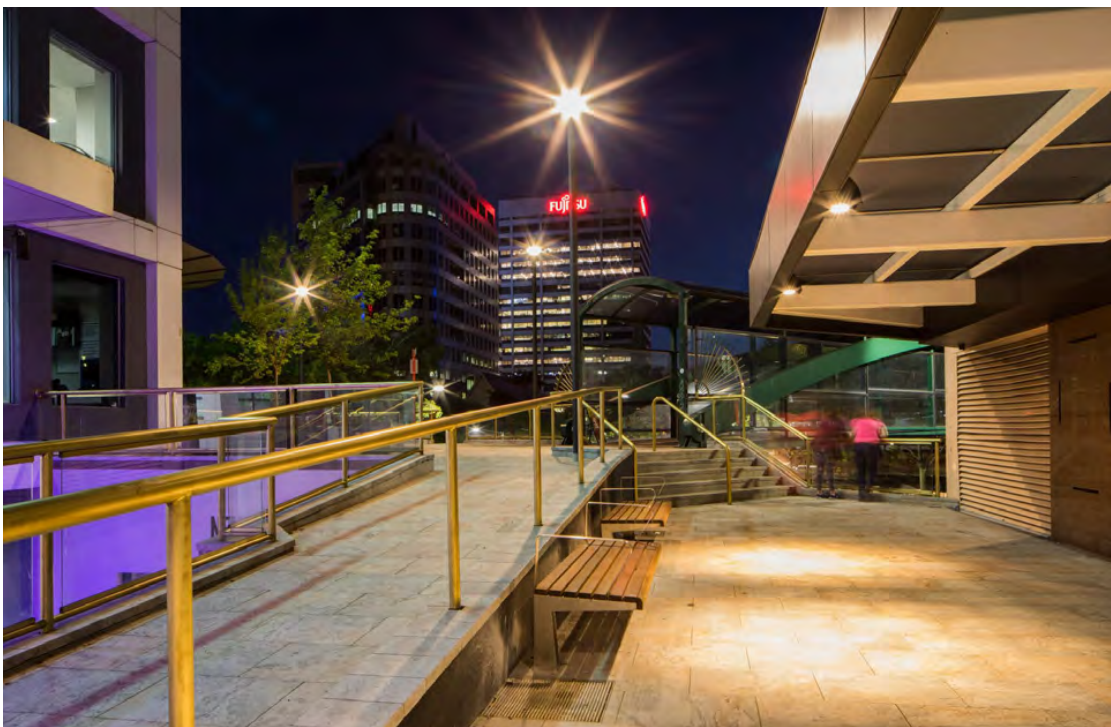
- 27 -

Replace Year	Priority	Location	Risk Rating / Category	Condition	Cost estimate
		Hume street car park			
2025/32	1d	Balls Head Reserve - Adjacent 3 Balls Head Rd	Very High (5)	Very Poor	\$115,320
2025/32	1d	Sugar Works Reserve - Supplied from SSS off Ausgrid pole GL 54537	Very High (5)	Very Poor	\$202,369
<b>TOTAL</b>					<b>\$1,506,756</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

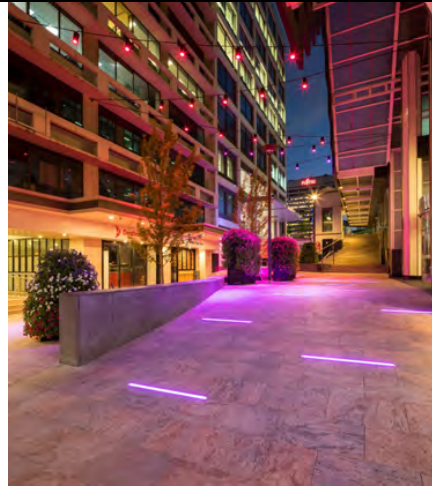
Public Lighting Renewal Program

Public Lighting – North Sydney Centre Upgrade





Public Lighting – North Sydney Centre Upgrade



Public Lighting – North Sydney Centre Upgrade





### Public Lighting – Performance Measures

The effectiveness of the asset management plan can be measured in the following ways:

- The degree to which the required projected expenditures identified in this asset management plan are incorporated into the long term financial plan,
- The degree to which 1-5 year detailed works programs, budgets, business plans and corporate structures take into account the ‘global’ works program trends provided by the asset management plan,
- The degree to which the existing and projected service levels and service consequences (what we cannot do), risks and residual risks are incorporated into the Strategic Plan and associated plans,
- The Asset Renewal Funding Ratio achieving the target of 1.0.

### Public Lighting – References

- Report from Gary Roberts & Associates Pty Ltd, “Prioritising the Upgrade of External Lighting Based on Technical Criteria”.
- IPWEA, 2006, ‘International Infrastructure Management Manual’, Institute of Public Works Engineering Australasia, Sydney, [www.ipwea.org/IIMM](http://www.ipwea.org/IIMM)
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- IPWEA, 2015, 2nd edn., ‘Australian Infrastructure Financial Management Manual’, Institute of Public Works Engineering Australasia, Sydney, [www.ipwea.org/AIFMM](http://www.ipwea.org/AIFMM).
- IPWEA, 2015, 3rd edn., ‘International Infrastructure Management Manual’, Institute of Public Works Engineering Australasia, Sydney, [www.ipwea.org/IIMM](http://www.ipwea.org/IIMM)
- IPWEA, 2012 LTFP Practice Note 6 PN Long Term Financial Plan, Institute of Public Works Engineering Australasia, Sydney

- 32 -

## APPENDICES

### Appendix A: Maintenance Management System

#### Defect Management Inspection – Street Lighting

Inspection areas have been defined in accordance with the identified key factors of:

- Areas where failure is most disruptive and expensive to the community/users.
- Traffic (both vehicular and pedestrian) flows, eg. pedestrian use areas; retail/commercial areas; schools and hospitals

Inspection frequencies are based on these areas as defined by the reference maps and the resources currently available to undertake the inspections.

**Red** – 2 times per year;                      **Blue** – Annual;                      **Other** – Once every 2 years;

The results of inspections will be downloaded into the MMDS database.

There are 5 categories in which a defect may be placed. Not all categories may be applicable to every inspection area and/or type of asset:

<b>Cat 5</b>		Will be <b>made safe</b> no later than 2 working days after allocation of defect to work crew. Defect may then be re-categorised as Cat 4 or Cat 3.
<b>Cat 4</b>		Will be repaired no later than 10 working days after allocation of defect to work crew.
<b>Cat 3</b>		Will be placed on Zone Maintenance Program. This program operates on an 8 week cycle, however, depending on workload and reactive maintenance requests, Cat 3 defects may miss a cycle or more before repairs are able to be undertaken.
<b>Cat 2</b>		Deferred maintenance. Defect may be repaired if close-by to Cat 4 or Cat 3 defect that is being repaired. Otherwise will be re-inspected on next area inspection.
<b>Cat 1</b>		As new. Surface displaying no defects. May have aesthetic aspects such as gum, stains, services mark-up, etc.

#### Intervention Matrix

STREET LIGHTING	RED	BLUE	OTHER
<b>NON-FUNCTIONING or STRUCTURALLY UNSOUND</b>	<b>28</b>	<b>24</b>	<b>21</b>
<b>DAMAGED BUT STILL FUNCTIONING</b>	<b>23</b>	<b>19</b>	<b>16</b>
<b>MINOR DAMAGE AND FUNCTIONING</b>	<b>20</b>	<b>16</b>	<b>13</b>
<b>FUNCTIONING – PAINT/DIRTY/BENT SHADE</b>	<b>18</b>	<b>14</b>	<b>11</b>
<b>AS NEW</b>	<b>10</b>	<b>6</b>	<b>3</b>

**Scoring example:** 28 = High Use Area score 10 and Defect of Missing or Unstable score 18

Inspections of street lighting will include all the street lighting that the EPS Division is responsible for.

- 33 -


<b>NORTH SYDNEY COUNCIL - GUIDE FOR STREET LIGHTING DEFECT RATING</b>		
<b>AN EXPLANATION OF THE DEFECT INSPECTION SYSTEM</b>		
<b>AREA OF INSPECTION</b>		<b>SCORE</b>
<b>RED</b>	<b>HIGH PEDESTRIAN TRAFFIC AREAS WITH SIGNIFICANT USAGE BY PEDESTRIANS OVER 50 YEARS OLD</b> <b>INSPECTIONS - 2 PER YEAR</b>	<b>10</b>
<b>BLUE</b>	<b>HIGH PEDESTRIAN TRAFFIC AREAS WITH MODERATE USAGE BY PEDESTRIANS OVER 50 YEARS OLD</b> or <b>MEDIUM PEDESTRIAN TRAFFIC AREAS WITH SIGNIFICANT USAGE BY PEDESTRIANS OVER 50 YEARS OLD</b> <b>INSPECTIONS - ANNUAL</b>	<b>6</b>
<b>WHITE</b>	<b>ALL OTHER AREAS IN LGA INCLUDING PARKS; RESERVES and PLAZAS</b> <b>INSPECTION - EVERY 2 YEARS</b>	<b>3</b>
<b>STREET LIGHTING TYPE</b>		
MULTI FUNCTION POLE	LANEWAY/SHARED ZONE LIGHT POLE	
HERITAGE LIGHT POLE	LANEWAY/SHARED ZONE LIGHT WALL MOUNTED	
CIVIC LIGHT POLE	ILLUMINATED BOLLARD	
OCTAGONAL LIGHT POLE	ILLUMINATED HAND RAIL	
UNDER AWNING LIGHTING	OTHER	
<b>DEFECT</b>		
NON-FUNCTIONAL, STRUCTURALLY UNSOUND - CORROSION, DAMAGED or UNSTABLE		<b>18</b>
MAJOR SURFACE EXTERNAL CORROSION, DISCOLOURED LAMP SHADE		<b>13</b>
MINOR SURFACE EXTERNAL CORROSION		<b>10</b>
FADED PAINT, BENT SHADE - STILL FULLY FUNCTIONAL OTHERWISE		<b>8</b>
AS NEW		<b>0</b>
<b>HAZARD TYPE</b>		
LIGHT OUT - BLOWN LAMP OR DAMAGE TO FITTING/POLE	BROKEN/DISCOLOURED - SECTION or PART DAMAGED	
MISSING - SECTION or PART NO LONGER IN ITS PLACE	BENT - NO LONGER AS INSTALLED VERTICAL POLE	
CORRODED - SHOWS OBVIOUS SIGNS OF CORROSION	FINISH - FADED; PEELING; DIRTY; GRAFFITI	
<b>OTHER ASPECTS</b>		
AREA HAS OBSTRUCTIONS DUE TO OVERHANGING TREE or VEGETATION	PRESENCE OF PARTICULAR ASPECT/S NOTED PRIOR TO DEPARTURE FROM PSID. REFERRED TO RELEVANT NSC SECTION VIA EMAIL	
AREA HAS GRASS and/or WEED GROWTH ENCROACHING ONTO ASSET		
AREA APPEARS TO HAVE BEEN AFFECTED BY NEARBY TREE ROOTS		





NORTH SYDNEY COUNCIL  
**ASSET MANAGEMENT PLAN**  
**RETAINING WALLS 2022-2032**

- 2 -

Document Control		Asset Management Plan			
					
Document ID : NSC AMP Other Infrastructure 2023 Retaining Walls					
Rev No	Date	Revision Details	Author	Reviewer	Approver
1	7/02/2022	First Draft	IM	JVH/DM	DM



## Table of Contents

Retaining Walls (Roads and Parks).....	4
Executive Summary.....	4
Retaining Walls – Future Demand .....	5
Retaining Walls – Levels of Customer Service.....	6
Retaining Walls – Levels of Technical Service .....	6
Retaining Walls - Condition.....	7
Retaining Walls – Review of Useful Lives .....	9
Retaining Walls – Funding Strategy .....	10
Retaining Walls – Capital works .....	10
Retaining Walls – Managing the Risks .....	10
Retaining Walls – Maintenance .....	14
Retaining Walls – Prioritised Expenditure Forecast .....	15
Retaining Walls – Valuation Forecast.....	15
Retaining Walls – Key Assumptions – Financial Forecasts .....	15
Retaining Walls – Creation / Acquisition / Upgrade Program.....	16
Retaining Walls – Disposal Plan .....	16
Retaining Walls – Forecast reliability and confidence .....	16
Retaining Walls – Improvement Plan.....	16
Retaining Walls – Monitoring and Review Procedures.....	16
Retaining Walls – Renewal and Replacement Program .....	16
Retaining Walls – Funding Scenarios .....	16
Retaining Walls – Service and Risk Tradeoffs.....	17
Service trade-off .....	17
Risk trade-off.....	17
Retaining Walls – Renewal and Replacement Program – FY2023-FY2032 (10 Year Plan) .....	17
Capital Renewal – Retaining Walls Within Road Reserves.....	18
Priority Projects 2022/23 (Year 1).....	18
Priority Projects 2023/24 (Year 2).....	18
Priority Projects 2024/25 (Year 3).....	18
Priority Projects 2025/32 (Year 4-10) .....	19
Works Identified – Years 2025 - 32 (Years 4 - 10) .....	21
Capital Renewal – Retaining Walls Within Parks .....	21
Priority Projects 2022/23 (Year 1).....	21
Priority Projects 2023/24 (Year 2).....	21
Priority Projects 2024/25 (Year 3).....	22
Priority Projects 2025/32 (Year 4-10) .....	22
Works Identified – Years 2025/32 (Years 4 - 10).....	22
Retaining Wall renewal Program .....	29
Retaining Walls – Performance Measures .....	30
Retaining Walls – References.....	30

## Retaining Walls (Roads and Parks)

### Executive Summary

Located in the North Sydney LGA is approximately 21.9km of retaining walls comprised of various materials and typologies. These retaining walls are located in road reserves and parks. In 2018 Rapid Map consultants conducted a retaining wall condition audit for North Sydney Council. The objectives were to conduct a detailed inventory data collection, accurately map each retaining wall and assess each wall in detail for condition and defects. Each wall was divided into 10m sections to assess the condition and risk.

805 retaining walls were visited in the field. Of these walls 801 were inspected. 4 were not inspected due to access issues.

The 801 inspected walls have a total length of 21,986m. Of these:

- 2,477 segments with a total length of 21,555m were inspected.
- 48 segments with a total length of 431m could not be inspected due to vegetation growth or access issues.

Each wall was attributed with a type and sub-type. Of these:

- 742 (19,759m) walls were Gravity walls. There were a number of sub-types including Block Wall, Brick Wall, Crib Wall, Gravity Block, Stone Pitching – Dry Packed and Stone Pitching – Mortar Packed.
- 59 (2,227m) walls were Piling walls. Sub-types for piling walls included Log Wall, Reinforced Concrete and Sleeper.

Each wall was divided into segments of 10m and a condition score was assigned to each segment.

Overall 95% by replacement cost of the portfolio is in very good to fair condition (1 to 3) with 5% in poor to very poor condition (4 or 5).

A Risk rating was assigned to each segment. Overall 95% of the portfolio had a low to medium risk rating and 5% had a high to very high risk rating.

The total Replacement Value of the portfolio is \$72,240,321 as at 30 June 2021. The values are shown in the Table below.

**Table 1: Retaining Walls (Roads and Parks) – Summary Table**

Asset Category	Replacement Value (2021)	Accumulated Depreciation (2021)	Fair Value (2021)	Depreciation Expense
Retaining Walls in Road Reserves	\$53,574,599	\$31,220,663	\$22,353,936	\$571,354
Retaining Walls in Parks	\$18,665,722	\$10,944,979	\$7,720,743	\$163,464
<b>TOTAL</b>	<b>\$72,240,321</b>	<b>\$42,165,643</b>	<b>\$30,074,678</b>	<b>\$734,818</b>

The following table provides a summary of the quantities and replacement values for each wall type. The portfolio is dominated by sandstone block walls, reinforced concrete walls and Stone pitching walls.

- 5 -

**Table 2: Retaining Walls (Roads and Parks)- Typology**

Wall Type	Count of Walls	Replacement Cost	Length (m)	Area (sqm)
Block Wall	432	\$43,700,588	12,985	19,088
Block Wall - Quality facing	3	\$307,972	66	90
Block Wall & Natural Rock	4	\$2,581,614	333	1,128
Boulder	4	\$98,543	103	86
Brick Wall	8	\$147,908	84	65
Brick Wall - no mortar	1	\$575	12	6
Brick Wall - rendered finish	1	\$3,877	3	2
Crib Wall	3	\$695,364	123	304
Crib Wall - Block wall each end	2	\$157,580	45	69
Gabion Wall	1	\$111,609	21	54
Gravity Block	12	\$1,598,298	563	698
Interlocking brick	1	\$47,895	16	21
Log Wall	2	\$5,847	24	9
Mass Concrete	2	\$1,769,654	159	607
Natural Sandstone Wall	3	\$0	207	608
Reinforced Concrete	39	\$9,557,670	1,911	4,175
Reinforced Concrete - Battered slope	3	\$25,360	26	14
Reinforced Concrete - Rendered finish	2	\$362,050	94	151
Reinforced Concrete - Sandstone capping	3	\$242,699	71	101
Shotcrete to Natural rock	1	\$167,363	47	179
Sleeper	12	\$17,745	119	28
Sleeper - freestanding	1	\$2,622	8	4
Stone Pitching - Battered slope	1	\$34,341	22	17
Stone Pitching - Dry Packed	49	\$880,169	736	470
Stone Pitching - Mortar Packed	201	\$9,285,642	3,989	4,056
Stone Pitching - Mortar packed - Battered slope	2	\$93,491	94	45
Stone Pitching - Mortar Packed - Composite	2	\$20,967	12	9
Stone Pitching - Mortar Packed - Rendered Finish	5	\$311,428	103	130
Unknown	1	\$11,447	10	5
<b>Grand Total</b>	<b>801</b>	<b>\$72,240,321</b>	<b>21,986</b>	<b>32,217</b>

**Retaining Walls – Future Demand**

Drivers affecting demand for retaining walls include things such as population change, regulation changes – new development, community expectations (Public Safety), technological changes, economic factors and environmental factors.

### Retaining Walls – Levels of Customer Service

Service levels are defined service levels in two terms, customer levels of service and technical levels of service. These are supplemented by organisational measures.

**Customer Levels of Service** measure how the customer receives the service and whether value to the customer is provided.

Customer levels of service measures used in the asset management plan are:

**Quality**                                How good is the service ... *what is the condition or quality of the service?*

**Function**                                Is it suitable for its intended purpose .... *Is it the right service?*

**Capacity/Use**                                Is the service over or under used ... *do we need more or less of these assets?*

The current and expected customer service levels are detailed in the table below.

**Table 3: Retaining Walls – Levels of Customer Service**

Service Attribute	Expectation	Performance Measure Used	Current Performance	Desired Position in 10 Years
<b>Quality</b>	Retaining walls are well maintained.	Percentage of retaining walls in 'very good', 'good' or 'Fair' (1, 2, 3) condition and Percentage 'poor' or 'very poor' (4, 5) Condition.	95% of retaining walls in 'very good', 'good' or 'Fair' (1, 2, 3) condition.  5% of retaining walls in 'poor' or 'very poor' (4, 5) Condition.	Maintain – Condition 1-2-3  Improve and replace Condition 4-5
<b>Function</b>	Standard retaining wall are constructed from sandstone.	Percentage of retaining walls constructed from sandstone where practical.	87% (by length) of retaining walls are partly constructed from sandstone	Maintain
<b>Capacity and Use</b>	Number of retaining walls required is appropriate.	Number of additional retaining walls required	No additional retaining walls identified as being required	Maintain

### Retaining Walls – Levels of Technical Service

**Technical Levels of Service** - Supporting the customer service levels are operational or technical measures of performance. These technical measures relate to the allocation of resources to service activities to best achieve the desired customer outcomes and demonstrate effective performance.

Technical service measures are linked to the activities and annual budgets covering:

- Operations – the regular activities to provide services (e.g. cleaning, inspections, etc).
- Maintenance – the activities necessary to retain an asset as near as practicable to an appropriate service condition. Maintenance activities enable an asset to provide service for its planned life (e.g. retaining wall repair – patching, minor works),
- Renewal – the activities that return the service capability of an asset up to that which it had originally (e.g. retaining wall replacement and or retaining wall component replacement),
- Upgrade/New – the activities to provide a higher level of service (e.g. increasing the size or length of a retaining wall or upgrading its structural / retaining capacity through complete replacement to

- 7 -

address new site conditions. (e.g. replacing a timber sleeper retaining wall with a reinforced shotcrete wall with a “mock rock face).

Table 4 shows the technical levels of service expected to be provided for Retaining Walls. The ‘Desired’ position in the table documents the position being recommended in this AM Plan.

**Table 4: Retaining Walls – Technical Levels of Service**

Service Attribute	Service Activity Objective	Activity Measure Process	Current Performance	Desired for Optimum Lifecycle Cost
<b>Operations</b>	Undertake network inspections to monitor condition	Network inspections to monitor condition	Network inspected in 2018	Network inspected every 5 years
<b>Maintenance</b>	Reactive service Requests completed in a timely manner or made safe.	Respond to complaints.	Minor repairs undertaken in accordance with Maintenance Management System	Minor repairs undertaken in accordance with Maintenance Management Delivery System.
<b>Renewal</b>	Maintain existing assets to a satisfactory condition	Percentage of retaining walls in poor/very poor (4, 5) Condition.	95% of retaining walls in ‘very good’, ‘good’ or ‘Fair’ (1, 2, 3) condition.  5% of retaining walls in ‘poor’ or ‘very poor’ (4, 5) Condition.	Maintain – Condition 1-2-3  Improve and replace Condition 4-5
<b>Upgrade</b>	Standard retaining wall are constructed from sandstone where practical.	Percentage of retaining walls constructed from sandstone where practical.	87% (by length) of retaining walls are partly constructed from sandstone	Maintain
<b>New</b>	Satisfactory provision of retaining walls.	New retaining walls provided as required.	No additional retaining walls identified as being required	No additional retaining walls identified as being required

#### **Retaining Walls - Condition**

The condition of council’s retaining wall network was surveyed at 10m intervals in 2018 by Consultants, Rapid Map Services Pty Ltd in conjunction with Asset & Facilities Management Consulting Pty Ltd. The following condition criteria was used.



- 8 -

**Table 5: Retaining Walls Condition Survey Criteria**

Grade	Condition	Description
0	Not inspected	Could not be inspected due to vegetation growth or private property access issues.
1	Very Good	Sound wall designed to current standards and well maintained with no defects. <b>No work required</b>
2	Good	As grade 1 but not designed to current standards or showing minor wear, tear and deterioration of surfaces e.g. minor mortar loss and weathering, but no undermining of foundation. Needs to be reinspected in 2- 3 years. Deterioration has no significant impact on stability and appearance of the wall. <b>Only minor work required</b>
3	Fair	Wall functionally sound, but appearance affected by minor defects e.g. cracks <2mm, surface weathering, chipping of stone and minor loss of mortar, isolated undermining of foundation, but no loss of stability. Some deterioration beginning to be reflected in stability and appearance of the wall. <b>Some work required</b>
4	Poor	Wall functioning but with problems due to significant defects e.g. cracks 2-10mm, mortar loss, loss of stone, undermining of foundations, deformation and loss of support, likely to cause marked deterioration of stability and appearance likely within 1 year. <b>Some replacement or rehabilitation needed within 1 year</b>
5	Very Poor	Wall has serious problems and has failed or are about to fail in the near future, causing unacceptable stability, appearance and is a Public Safety Hazard. <b>Urgent replacement/ rehabilitation required</b>

The Table below shows the Replacement Cost for each of the condition scores (score 0 indicates areas not surveyed due to access issues. In practice and where funds permit retaining wall sections in condition 3 are generally replaced at the same time as retaining wall sections in condition 4 or 5 if they are adjacent, there are potential risks, and it is cost effective.

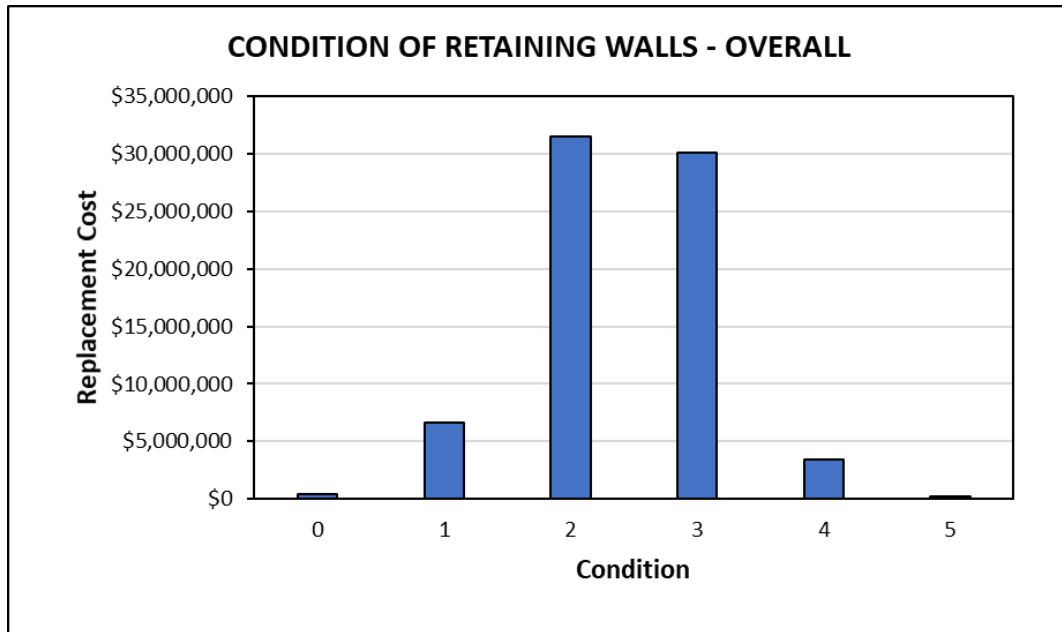
**Table 6: Retaining Walls Condition Survey Results - Overall**

CONDITION OF RETAINING WALLS – ENTIRE NETWORK		
Condition	Replacement Cost	% Condition (based on cost)
0 (Unknown)	\$449,790	0.6%
1 (Very Good)	\$6,613,538	9.2%
2 (Good)	\$31,461,521	43.6%
3 (Fair)	\$30,094,716	41.7%
4 (poor)	\$3,378,974	4.7%
5 (Very Poor)	\$241,784	0.3%
<b>Total</b>	<b>\$72,240,321</b>	<b>100.0%</b>

Note: A small number of retaining walls could not be surveyed due to access issues and are assigned Condition 0.

The Graph below shows the condition of Retaining Wall assets over the entire network in terms of replacement cost.

- 9 -



#### Retaining Walls – Review of Useful Lives

There are a wide variety of Retaining Wall types in North Sydney. Retaining Walls are replaced as a result of poor condition. Notes from the IPWEA 2017 Practice Note – “Useful Life of Infrastructure” are shown in the following Table.

RETAINING WALLS - Notes from IPWEA 2017 Practice Note – “Useful Life of Infrastructure”						
Component	Low rates' description	High rates' description	Unit ID	Useful Lives		
				Std	Low	High
Block Wall	150 block, footing no finish	250 block, footing, no finish	m2	75	60	90
Brick Wall	100 thick	200 thick	m2	50	40	60
Retaining Walls (Concrete)	600 max ret, Grip block precast interlocking	7400 max ret, Grip block precast interlocking	m2	75	60	90
Retaining Walls (Timber)	1800 max retaining, Timbercrib	6300 max retaining, Timbercrib	m2	60	45	72

Determining the useful lives of retaining walls in North Sydney is a challenging process. There appears to be limited information on sandstone “gravity” retaining walls. Until this further research has been carried out a conservative approach, following the IPWEA guidelines, has been undertaken and a useful life of 90 years has been assumed for all retaining walls.

- 10 -

Capital funding to maintain a renewal ratio of 1	
	Annual Depreciation
Retaining Walls	\$734,818

A budget of \$734,818 is required on average over the long term to maintain the condition of Council's retaining wall network, noting that fluctuations in renewal requirements in the medium term.

#### Retaining Walls – Funding Strategy

The Asset Renewal Funding Ratio is the most important indicator. It compares funding with depreciation. An Asset Renewal Funding Ratio of 1 or greater sustained over the long term indicates the optimal renewal and replacement of assets.

The forecast for the 2019 Depreciation (or Long Term Average Annual Asset Consumption) is \$734,818. Therefore, an annual average capital renewal funding of \$734,818 (2021 dollars) will achieve an Asset Renewal Funding Ratio of 1.

The cost to fully replace assets identified by Consultants, Rapid Map Services Pty Ltd in condition 4 and 5 as well as the cost to replace the condition 3 assets which will become condition 4 over the next 10 is \$15,865,525. This is an average annual cost of \$1,586,553 which is greater than the \$734,818 Depreciation Expense and is greater than the average annual forecast budget of \$1,404,000. With further investigation and detailed design it is hoped that alternate and lesser cost solutions may be possible to maintain retaining wall assets at an optimal level.

#### Retaining Walls – Capital works

Replacement of wall segments is assumed to be a capital works project.

The ranking criteria used to determine priority of identified renewal and replacement proposals is detailed in Table 7. A priority for action of 1 to 5 has been assigned to each wall requiring capital works as described in the following table.

#### Retaining Walls – Managing the Risks

There are risks associated with providing and maintaining retaining walls. They are primarily as follows:

- Sudden failure of retaining walls providing structural support to roads, footpaths and parks – causing property damage – public safety hazards, injury or death.

The following risk response table was used to identify those wall segments requiring action within the next 10 years.

**Table 7: Retaining Walls – Risk Response Table**

Level of Risk		Condition	Action Required	Time frame for repairs, upgrade or replacement
VH	Very High Risk	5	Immediate corrective action	1-2 Years
H	High Risk	4	Prioritised action required	2-10 Years
M	Medium Risk	3	Planned action required	4-10 Years
L	Low Risk	2	Manage by routine procedures	Inspections 1-2 years
New	No Risk	1	None	None

Consideration has been given to each retaining wall segment, whether to replace the retaining wall segment or perform maintenance on it.

Retaining wall segments that have a **Very High or High** risk rating were considered to need replacement within the 1-10 year forecast period.

Retaining wall segments with a **Medium** risk rating were also considered needing replacement within the 4-10 year forecast period.



Examples of failed and failing retaining walls in the North Sydney LGA





Examples of failed and failing retaining walls in the North Sydney LGA



Examples of failed and failing retaining walls in the North Sydney LGA





Examples of failed and failing retaining walls in the North Sydney LGA

Council will endeavour to manage these risks within available funding by prioritising retaining wall renewal works based on the Retaining Wall Condition Audit prepared by Consultants, Rapid Map Services Pty Ltd.

**Table 8: Retaining Walls – Capital renewal Priorities based on Condition and Risk Rating**

Risk Matrix - Retaining Walls (Condition and Risk Rating)					
Likelihood of wall failing (L) Refer to Table 5 Condition Criteria	Retaining Walls (No of Walls)				
	Wall Height	0 to 1m	>1m to 2m	>2m to 3m	>3m
	Road Hierarchy	Lane	Local Road	Collector	State/ Regional Road
	Park Hierarchy	Local	District	Regional	
	Priority	d	c	b	a
Unknown (0.6%)	0	2	N/A	N/A	N/A
Condition 1 – Very Good (9.2%)	5	26	20	12	3
Condition 2 - Good (43.6%)	4	74	53	42	19
Condition 3 – Fair (41.7%)	3	108	80	60	32
Condition 4 – Poor (4.7%)	2	130	74	49	8
Condition 5 – Very Poor (0.3%)	1	1	4	6	0

**(Note: Also Refer to Table 6)**

**Note:** This table is based on data in the current register.

**Note:** Capital works is proposed for those retaining walls identified in “*Very Poor*”, “*Poor*” and “*Fair*” condition.

**Note:** Factors which are used to determine the priority include ‘Wall Height’, ‘Road Hierarchy’ and ‘Park Hierarchy’. The most critical factor is used to determine the priority.

It should be noted that retaining walls may also be replaced based on other criteria including:

- Damage
- Restorations
- Retaining walls replaced in association with other projects such as kerb and gutter or drainage works
- Streetscape projects

### Retaining Walls – Maintenance

Routine maintenance is the regular on-going work that is necessary to keep assets operating, including instances where portions of the asset fail and need immediate repair to make the asset operational again, e.g. mortar repairs, minor block repairs.

Maintenance includes all actions necessary for retaining an asset as near as practicable to an appropriate service condition including regular ongoing day-to-day work necessary to keep assets operating.

Current maintenance expenditure levels are considered to be inadequate to meet projected service levels.

Over the longer term future operations and maintenance expenditure is forecast to be steady as the asset stock is not forecast to increase. The following table summarises the prioritised capital and maintenance works.

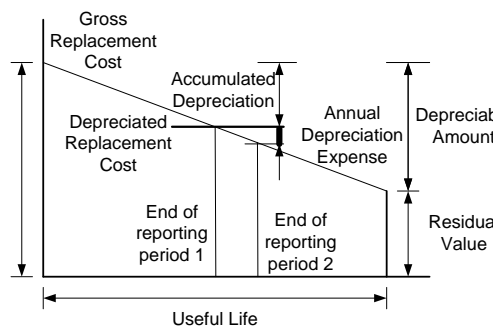
**Retaining Walls – Prioritised Expenditure Forecast****Table 9: Retaining Walls – Prioritised Expenditure Forecast – 10 years FY2023-FY2032**

Year		Priority	Capital Costs	Maintenance Costs	Total Costs
1	2022/23	1a – 1b	\$1,440,000	\$34,170	\$1,474,170
2	2023/24	1b – 2a	\$1,400,000	\$34,170	\$1,434,170
3	2024/25	2a	\$1,400,000	\$34,170	\$1,434,170
4-10	2025/32	2a – 3b	\$9,800,000	\$239,191	\$10,039,191
Works Identified	2025/32	1b – 2d	\$6,934,241		\$6,934,241
<b>Grand Total</b>			<b>\$20,974,241</b>	<b>\$341,701</b>	<b>\$21,315,942</b>

In summary the current value of retaining wall assets is detailed in the table below.

**Table 10: Retaining Walls – Valuation**

Asset Category	Replacement Value (2021)	Accumulated Depreciation (2021)	Fair Value (2021)	Depreciation Expense
Retaining Walls in Road Reserves	\$53,574,599	\$31,220,663	\$22,353,936	\$571,354
Retaining Walls in Parks	\$18,665,722	\$10,944,979	\$7,720,743	\$163,464
<b>TOTAL</b>	<b>\$72,240,321</b>	<b>\$42,165,643</b>	<b>\$30,074,678</b>	<b>\$734,818</b>

**Retaining Walls – Valuation Forecast**

Asset values (Retaining Walls) are forecast to remain steady. It is forecast that no additional assets are expected to be added to the asset stock from new construction and acquisition by Council or from assets constructed by land developers or other assets donated to Council. Whilst every endeavour has been made to capture all retaining walls occasionally additional walls are discovered which will change the valuation of this asset class.

**Retaining Walls – Key Assumptions – Financial Forecasts**

Key assumptions made in this asset management plan for retaining walls are:

**Table 11: Key Assumptions made in AM Plan and Risks of Change**

Key Assumptions	Risks of Change to Assumptions
Useful Lives of Retaining Walls	Low risk
Rate of deterioration	Low risk

**Retaining Walls – Creation / Acquisition / Upgrade Program**

New works are those that create a new asset that did not previously exist, or works which will upgrade or improve an existing asset beyond its existing capacity. They may result from growth, social or environmental needs. Assets may also be acquired at no cost. No new assets are currently identified.

**Retaining Walls – Disposal Plan**

No retaining wall Assets have been identified for disposal.

**Retaining Walls – Forecast reliability and confidence**

The estimated confidence level and reliability of data used in this AMP is considered to be reliable as the data is based on a detailed condition report on Retaining Walls.

**Retaining Walls – Improvement Plan**

The improvement plan is shown in the table below.

Task No	Task	Responsibility	Resources Required	Timeline
1	Research the Useful Life of Retaining Walls	EPS	Staff Time	2024

**Retaining Walls – Monitoring and Review Procedures**

This Asset Management Plan will be reviewed during annual budget planning processes and amended to show any material changes in service levels and/or resources available to provide those services as a result of budget decisions.

The Asset Management Plan has a life of 4 years and is due for complete revision and updating within 1 year of each Council election.

**Retaining Walls – Renewal and Replacement Program**

Renewal and replacement expenditure is major work which does not increase the asset's design capacity but restores, rehabilitates, replaces or renews an existing asset to its original service potential. Work over and above restoring an asset to original service potential is considered to be an upgrade/expansion or new work expenditure resulting in additional future operations and maintenance costs.

Retaining wall assets requiring renewal/replacement have been identified by the Retaining Wall Condition Audit completed by Consultants, Rapid Map Services Pty Ltd in conjunction with Asset & Facilities Management Consulting Pty Ltd, in 2018.

**Retaining Walls – Funding Scenarios**

The Long Term Financial Plan includes three scenarios, all of which maintain current services levels but propose differing levels of capital expenditure on the renewal of Council's ageing infrastructure assets.

In summary:

- Pessimistic Scenario - This Scenario results in a decline in operating results and deficits in the later years.
- Optimistic Scenario - This Scenario results in improvements in operating results for the life of the plan.
- Planned Scenario - This Scenario results modest surplus operating results for the life of the plan.

**Table 12: Funding Scenarios – Retaining Walls – North Sydney Councils 10 Year Plan**

Scenario	Capital Funding Level Required Per Annum	10 Year Plan \$ Total
Scenario 1.	\$1,404,000/year	<b>\$14,040,000</b>
Scenario 2.	\$1,404,000/year	<b>\$14,040,000</b>
Scenario 3.	\$1,404,000/year	<b>\$14,040,000</b>

**Note:** These Scenarios are based on the 10-year Long Term Financial Plan.

#### **Retaining Walls – Service and Risk Tradeoffs**

The decisions made in adopting this AM Plan are based on the objective to achieve the optimum benefits from the available resources.

#### **Service trade-off**

If funding Scenario 3 is adopted, then the Level of Service will be maintained.

#### **Risk trade-off**

If this funding Scenario 3 is adopted, then it there is less risk of a sudden collapse of a retaining wall.

#### **Retaining Walls – Renewal and Replacement Program – FY2023-FY2032 (10 Year Plan)**

Council's projected 10 year Capital Renewal Program is shown in Tables below. It is based on the funding required to replace Retaining wall assets identified by the Retaining Wall Condition Audit completed by Consultants, Rapid Map Services Pty Ltd in conjunction with Asset & Facilities Management Consulting Pty Ltd, in 2018.

It should be noted that retaining walls may also be replaced based on other criteria including:

- Damage
- Restorations
- Retaining walls replaced in association with other projects such as kerb and gutter or drainage works
- Streetscape projects

Project priorities may also be subject to change due to accelerated deterioration, sudden failure or finalization of detailed designs and project costings.



**Capital Renewal – Retaining Walls Within Road Reserves****Table13: Retaining Walls – Renewal and Replacement Program (Within Road Reserves)****Priority Projects 2022/23 (Year 1)**

Replace Year	Priority	Location	Risk Rating / Category	Condition	Cost Estimate
2022/23	1a	10025 - Wilson St, Cammeray	Very High (5)	Very Poor	\$33,000
2022/23	1a	10190 - Milson Rd, Cremorne Point	Very High (5)	Very Poor	\$761,090
2022/23	1b	10037 - Illiliwa St, Cremorne	Very High (5)	Very Poor	\$517,176
2022/23		Designs			\$128,734
<b>TOTAL</b>					<b>\$1,440,000</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

**Table 14: Retaining Walls – Renewal and Replacement Program (Within Road Reserves)****Priority Projects 2023/24 (Year 2)**

Replace Year	Priority	Location	Risk Rating / Category	Condition	Cost Estimate
2023/24	1b	10186 - Milson Rd, Cremorne Point	Very High (5)	Very Poor	\$304,590
2023/24	1b	10555 - Elamang Ave, Kirribilli	Very High (5)	Very Poor	\$72,160
2023/24	1b	10622 - Carr St, Waverton	Very High (5)	Very Poor	\$199,760
2023/24	1c	10021 - Pine St, Cammeray	Very High (5)	Very Poor	\$190,564
2023/24	1c	10024 - Lumsden St, Cammeray	Very High (5)	Very Poor	\$88,770
2023/24	1c	10043 - Lodge Rd Loop Access, Cremorne	Very High (5)	Very Poor	\$40,950
2023/24	1c	10117 - Miller St, Cammeray	Very High (5)	Very Poor	\$54,329
2023/24	1c	10604 - Milray Ave, Wollstonecraft	Very High (5)	Very Poor	\$33,000
2023/24	1c	10728 - Lithgow St (southbound), Wollstonecraft	Very High (5)	Very Poor	\$3,078
2023/24	2a	10028 - Fall St, Cammeray	High (4)	Poor	\$277,981
2023/24		Designs			\$134,818
<b>TOTAL</b>					<b>\$1,400,000</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

**Table 15: Retaining Walls – Renewal and Replacement Program (Within Road Reserves)****Priority Projects 2024/25 (Year 3)**

Replace Year	Priority	Location	Risk Rating / Category	Condition	Cost Estimate
2024/25	2a	10155 - Bent St, Neutral Bay	High (4)	Poor	\$315,610
2024/25	2a	10158 - Bent St, Neutral Bay	High (4)	Poor	\$408,650

- 19 -

Replace Year	Priority	Location	Risk Rating / Category	Condition	Cost Estimate
2024/25	2a	10159 - Bent St, Neutral Bay	High (4)	Poor	\$289,810
2024/25	2a	10160 - Bent St, Neutral Bay	High (4)	Poor	\$261,888
2024/25		Designs			\$124,042
<b>TOTAL</b>					<b>\$1,400,000</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

**Table 16: Retaining Walls – Renewal and Replacement Program (Within Road Reserves)**

**Priority Projects 2025/32 (Year 4-10)**

Replace Year	Priority	Location	Risk Rating / Category	Condition	Cost Estimate
2025/32	2a	10161 - Bent St, Neutral Bay	High (4)	Poor	\$537,020
2025/32	2a	10199 - Reserve St, Neutral Bay	High (4)	Poor	\$41,690
2025/32	2a	10288 - Kareela Rd, Cremorne Point	High (4)	Poor	\$148,060
2025/32	2a	10374 - Lavender St, Lavender Bay	High (4)	Poor	\$324,390
2025/32	2a	10388 - Jeffreys St, Kirribilli	High (4)	Poor	\$199,980
2025/32	2a	10390 - Carabella St, Kirribilli	High (4)	Poor	\$1,113,420
2025/32	2a	10547 - Holdsworth St, Neutral Bay	High (4)	Poor	\$707,025
2025/32	2a	10586 - Blues Point Rd, McMahons Point	High (4)	Poor	\$52,822
2025/32	2a	10629 - Carr St, Waverton	High (4)	Poor	\$324,137
2025/32	2a	10737 - Rosalind St, Cammeray	High (4)	Poor	\$142,329
2025/32	2b	10010 - The Boulevarde, Cammeray	High (4)	Poor	\$121,995
2025/32	2b	10027 - Carter St, Cammeray	High (4)	Poor	\$197,450
2025/32	2b	10039 - Reynolds St, Cremorne	High (4)	Poor	\$370,150
2025/32	2b	10051 - Cowdroy Ave, Cammeray	High (4)	Poor	\$141,350
2025/32	2b	10139 - Young St, Cremorne	High (4)	Poor	\$108,350
2025/32	2b	10154 - Eaton St, Neutral Bay	High (4)	Poor	\$116,050
2025/32	2b	10157 - Bent St, Neutral Bay	High (4)	Poor	\$40,040
2025/32	2b	10181 - Murdoch St, Cremorne Point	High (4)	Poor	\$14,850
2025/32	2b	10183 - Milson Rd, Cremorne Point	High (4)	Poor	\$160,864
2025/32	2b	10185 - Milson Rd, Cremorne Point	High (4)	Poor	\$338,910
2025/32	2b	10238 - Murdoch St, Cremorne Point	High (4)	Poor	\$15,180
2025/32	2b	10267 - Milson Rd, Cremorne Point	High (4)	Poor	\$60,940
2025/32	2b	10323 - Murdoch St, Cremorne Point	High (4)	Poor	\$8,100
2025/32	2b	10325 - Murdoch St, Cremorne Point	High (4)	Poor	\$105,820
2025/32	2b	10333 - Milson Rd, Cremorne Point	High (4)	Poor	\$4,928
2025/32	2b	10368 - Kareela Rd, Cremorne Point	High (4)	Poor	\$191,730
2025/32	2b	10370 - Milson Rd, Cremorne Point	High (4)	Poor	\$13,090

- 20 -

Replace Year	Priority	Location	Risk Rating / Category	Condition	Cost Estimate
2025/32	2b	10377 - Waiwera St, McMahons Point	High (4)	Poor	\$264,660
2025/32	2b	10419 - Blues Point Rd, McMahons Point	High (4)	Poor	\$61,160
2025/32	2b	10562 - Fitzroy St, Milsons Point	High (4)	Poor	\$95,260
2025/32	2b	10601 - Ellalong Rd, Cremorne	High (4)	Poor	\$390,291
2025/32	2b	10609 - Shirley Rd, Wollstonecraft	High (4)	Poor	\$222,750
2025/32	2c	10017 - Brothers Ave, Cammeray	High (4)	Poor	\$47,080
2025/32	2c	10018 - Weringa Ave, Cammeray	High (4)	Poor	\$161,920
2025/32	2c	10035 - Young St, Cremorne	High (4)	Poor	\$248,105
2025/32	2c	10038 - Illiliwa St, Cremorne	High (4)	Poor	\$92,290
2025/32	2c	10086 - Stratford St, Cammeray	High (4)	Poor	\$19,085
2025/32	2c	10150 - Hamilton La, Cammeray	High (4)	Poor	\$9,460
2025/32	2c	10173 - Bertha Rd, Cremorne	High (4)	Poor	\$191,950
2025/32	2c	10180 - Murdoch St, Cremorne Point	High (4)	Poor	\$40,810
2025/32	2c	10191 - Cremorne Rd, Cremorne Point	High (4)	Poor	\$83,270
2025/32	2c	10204 - Phillips St, Neutral Bay	High (4)	Poor	\$2,310
2025/32	2c	10237 - Kurraba Rd, Kurraba Point	High (4)	Poor	\$81,345
2025/32	2c	10290 - Eaton St, Neutral Bay	High (4)	Poor	\$106,700
2025/32	2c	10311 - Kurraba Rd, Kurraba Point	High (4)	Poor	\$17,050
2025/32	2c	10312 - Kurraba Rd, Kurraba Point	High (4)	Poor	\$92,356
2025/32	2c	10315 - Kurraba Rd, Kurraba Point	High (4)	Poor	\$14,454
2025/32	2c	10328 - Murdoch St, Cremorne Point	High (4)	Poor	\$31,140
2025/32	2c	10389 - Upper Pitt St, Kirribilli	High (4)	Poor	\$95,480
2025/32	2c	10507 - Spruson St, Neutral Bay	High (4)	Poor	\$5,544
2025/32	2c	10664 - Mckye St, Waverton	High (4)	Poor	\$1,848
2025/32	2c	10787 - Milray Ave, Wollstonecraft	High (4)	Poor	\$57,200
2025/32	2c	10789 - Milray Ave, Wollstonecraft	High (4)	Poor	\$87,670
2025/32	2c	10803 - Shirley Rd, Wollstonecraft	High (4)	Poor	\$2,068
2025/32	2c	10804 - Shirley Rd, Wollstonecraft	High (4)	Poor	\$7,920
2025/32	2d	10537 - Ormiston Ave, North Sydney	High (4)	Poor	\$4,400
2025/32	2d	10630 - Morton La, Wollstonecraft	High (4)	Poor	\$7,095
2025/32	2d	10727 - Walker St, North Sydney	High (4)	Poor	\$93,610
2025/32	2d	10770 - Hampden St, North Sydney	High (4)	Poor	\$32,054
2025/32	3a	10002 - Hamilton La, Cammeray	Medium (3)	Fair	\$326,700
2025/32	3a	10046 - Ellalong Rd, Cremorne	Medium (3)	Fair	\$141,460
2025/32	3a	10054 - Bridgeview Ave, Cammeray	Medium (3)	Fair	\$254,210
2025/32	3a	10122 - Carter St, Cammeray	Medium (3)	Fair	\$82,500
2025/32	3a	10172 - Barry St, Neutral Bay	Medium (3)	Fair	\$344,828
2025/32	3a	10174 - Murdoch St, Cremorne	Medium (3)	Fair	\$16,533
2025/32	3a	10175 - Murdoch St, Cremorne	Medium (3)	Fair	\$64,790

- 21 -

Replace Year	Priority	Location	Risk Rating / Category	Condition	Cost Estimate
2025/32		Designs			\$299,974
<b>TOTAL</b>					<b>\$9,800,000</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

**Table 17: Retaining Walls – Renewal and Replacement Program (Within Road Reserves)**

**Works Identified – Years 2025 - 32 (Years 4 - 10)**

Replace Year	Priority	Location	Risk Rating / Category	Condition	Cost Estimate
2025/32	3a	10182 - Milson Rd, Cremorne Point	Medium (3)	Fair	\$273,790
2025/32	3a	10364 - Bent St, Neutral Bay	Medium (3)	Fair	\$202,290
2025/32	3a	10376 - East Crescent St, Lavender Bay	Medium (3)	Fair	\$318,450
2025/32	3a	10380 - Ennis Rd, Kirribilli	Medium (3)	Fair	\$1,030,995
<b>TOTAL</b>					<b>\$1,825,525</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

**Capital Renewal – Retaining Walls Within Parks**

**Table 18: Retaining Walls – Renewal and Replacement Program (Within Parks)**

**Priority Projects 2022/23 (Year 1)**

Replace Year	Priority	Location	Risk Rating / Category	Condition	Cost Estimate
2022/23					
<b>TOTAL</b>					<b>\$0</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

**Table 19: Retaining Walls – Renewal and Replacement Program (Within Parks)**

**Priority Projects 2023/24 (Year 2)**

Replace Year	Priority	Location	Risk Rating / Category	Condition	Cost Estimate
2023/24					
<b>TOTAL</b>					<b>\$0</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

**Table 20: Retaining Walls – Renewal and Replacement Program (Within Parks)****Priority Projects 2024/25 (Year 3)**

Replace Year	Priority	Location	Risk Rating / Category	Condition	Cost Estimate
2024/25					
<b>TOTAL</b>					<b>\$0</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

**Table 21: Retaining Walls – Renewal and Replacement Program (Within Parks)****Priority Projects 2025/32 (Year 4-10)**

Replace Year	Priority	Location	Risk Rating / Category	Condition	Cost Estimate
2025/32					
<b>TOTAL</b>					<b>\$0</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

**Table 22: Retaining Walls – Renewal and Replacement Program (Within Parks)****Works Identified – Years 2025/32 (Years 4 - 10)**

Replace Year	Priority	Location	Risk Rating / Category	Condition	Cost Estimate
2025/32	1b	10281 - Cremorne Reserve, Cremorne Point	Very High (5)	Very Poor	\$97,240
2025/32	1b	10286 - Cremorne Reserve, Cremorne Point	Very High (5)	Very Poor	\$11,520
2025/32	1b	10338 - Cremorne Reserve, Cremorne Point	Very High (5)	Very Poor	\$15,576
2025/32	1b	10409 - Blues Point Reserve, McMahons Point	Very High (5)	Very Poor	\$110,110
2025/32	1b	10416 - Blues Point Reserve, McMahons Point	Very High (5)	Very Poor	\$37,950
2025/32	1b	10538 - Anderson Park, Neutral Bay	Very High (5)	Very Poor	\$490,941
2025/32	1b	10593 - Watt Park, Lavender Bay	Very High (5)	Very Poor	\$46,530
2025/32	1c	10078 - Green Park, Cammeray	Very High (5)	Very Poor	\$38,610
2025/32	1c	10129 - Primrose Park, Cammeray	Very High (5)	Very Poor	\$12,060
2025/32	1c	10137 - Young St, Cremorne	Very High (5)	Very Poor	\$3,150
2025/32	1c	10260 - Forsyth Park, Neutral Bay	Very High (5)	Very Poor	\$70,200
2025/32	1c	10293 - Wyagdon Street Reserve, Neutral Bay	Very High (5)	Very Poor	\$13,200



Replace Year	Priority	Location	Risk Rating / Category	Condition	Cost Estimate
2025/32	1c	10334 - Kurraba Wharf Reserve, Kurraba Point	Very High (5)	Very Poor	\$6,765
2025/32	1c	10487 - Anderson Park, Neutral Bay	Very High (5)	Very Poor	\$37,312
2025/32	1c	10673 - Brennan Park, Wollstonecraft	Very High (5)	Very Poor	\$19,855
2025/32	1c	10695 - Sawmillers Reserve, McMahons Point	Very High (5)	Very Poor	\$25,749
2025/32	1d	10015 - East Avenue Road Reserve, Cammeray	Very High (5)	Very Poor	\$35,816
2025/32	1d	10041 - Wyong Road Open Space, Cremorne	Very High (5)	Very Poor	\$6,050
2025/32	1d	10042 - Wyong Road Open Space, Cremorne	Very High (5)	Very Poor	\$7,040
2025/32	1d	10085 - Tiley Street Road Closure, Cammeray	Very High (5)	Very Poor	\$16,060
2025/32	1d	10090 - Colin Street Road Reserve, Cammeray	Very High (5)	Very Poor	\$19,712
2025/32	1d	10106 - Darby Gardens, Cammeray	Very High (5)	Very Poor	\$3,025
2025/32	1d	10140 - Prospect Avenue Road Reserve, Cremorne	Very High (5)	Very Poor	\$18,260
2025/32	1d	10148 - Tobruk Avenue Lookout, Cremorne	Very High (5)	Very Poor	\$8,052
2025/32	1d	10202 - Anderson Street Road Closure, Neutral Bay	Very High (5)	Very Poor	\$11,440
2025/32	1d	10259 - Wyagdon Street Reserve, Neutral Bay	Very High (5)	Very Poor	\$1,800
2025/32	1d	10295 - Wyagdon Street Reserve, Neutral Bay	Very High (5)	Very Poor	\$2,700
2025/32	1d	10438 - Watt Park, Lavender Bay	Very High (5)	Very Poor	\$19,239
2025/32	1d	10441 - Watt Park, Lavender Bay	Very High (5)	Very Poor	\$42,735
2025/32	1d	10472 - Margaret Street Road Reserve, North Sydney	Very High (5)	Very Poor	\$8,470
2025/32	1d	10491 - Warringa Park, Neutral Bay	Very High (5)	Very Poor	\$2,250
2025/32	1d	10508 - Spruson Street Road Reserve, Neutral Bay	Very High (5)	Very Poor	\$14,751
2025/32	1d	10571 - Walker Street Road Reserve, Lavender Bay	Very High (5)	Very Poor	\$7,062
2025/32	1d	10572 - Walker Street Road Reserve, Lavender Bay	Very High (5)	Very Poor	\$21,230
2025/32	1d	10613 - Rocklands La, Wollstonecraft	Very High (5)	Very Poor	\$4,290
2025/32	1d	10697 - Shirley Road Pedestrian Link, Wollstonecraft	Very High (5)	Very Poor	\$1,925
2025/32	1d	10709 - Brennan Park, Wollstonecraft	Very High (5)	Very Poor	\$22,220
2025/32	1d	10740 - Brennan Park, Wollstonecraft	Very High (5)	Very Poor	\$16,885
2025/32	1d	10756 - Brennan Park, Wollstonecraft	Very High (5)	Very Poor	\$10,098
2025/32	1d	10757 - Brennan Park, Wollstonecraft	Very High (5)	Very Poor	\$1,710
2025/32	2a	10069 - Primrose Park, Cremorne	High (4)	Poor	\$625,100
2025/32	2a	10070 - Primrose Park, Cremorne	High (4)	Poor	\$351,890

- 24 -

Replace Year	Priority	Location	Risk Rating / Category	Condition	Cost Estimate
2025/32	2a	10405 - Blues Point Reserve, McMahons Point	High (4)	Poor	\$13,024
2025/32	2b	10071 - Primrose Park, Cremorne	High (4)	Poor	\$155,650
2025/32	2b	10171 - Westleigh Street Road Closure, Neutral Bay	High (4)	Poor	\$87,120
2025/32	2b	10261 - Forsyth Park, Neutral Bay	High (4)	Poor	\$102,300
2025/32	2b	10337 - Cremorne Reserve, Cremorne Point	High (4)	Poor	\$16,110
2025/32	2b	10345 - Cremorne Reserve, Cremorne Point	High (4)	Poor	\$13,530
2025/32	2b	10346 - Cremorne Reserve, Cremorne Point	High (4)	Poor	\$53,350
2025/32	2b	10404 - Blues Point Reserve, McMahons Point	High (4)	Poor	\$2,772
2025/32	2b	10406 - Blues Point Reserve, McMahons Point	High (4)	Poor	\$11,880
2025/32	2b	10408 - Blues Point Reserve, McMahons Point	High (4)	Poor	\$72,820
2025/32	2b	10412 - Blues Point Reserve, McMahons Point	High (4)	Poor	\$19,030
2025/32	2b	10415 - Blues Point Reserve, McMahons Point	High (4)	Poor	\$29,854
2025/32	2b	10417 - Blues Point Reserve, McMahons Point	High (4)	Poor	\$2,106
2025/32	2b	10422 - Blues Point Reserve, McMahons Point	High (4)	Poor	\$23,320
2025/32	2b	10423 - Blues Point Reserve, McMahons Point	High (4)	Poor	\$51,370
2025/32	2b	10424 - Blues Point Reserve, McMahons Point	High (4)	Poor	\$51,260
2025/32	2b	10596 - Blues Point Reserve, McMahons Point	High (4)	Poor	\$30,360
2025/32	2b	10611 - Balls Head Reserve, Waverton	High (4)	Poor	\$42,020
2025/32	2b	10732 - Milray Ave, Wollstonecraft	High (4)	Poor	\$54,164
2025/32	2b	10794 - Balls Head Reserve, Waverton	High (4)	Poor	\$26,378
2025/32	2b	10800 - Berry Island Reserve, Wollstonecraft	High (4)	Poor	\$2,596
2025/32	2c	10005 - Four Figs Park, Cammeray	High (4)	Poor	\$111,540
2025/32	2c	10008 - Suspension Bridge Reserve, Cammeray	High (4)	Poor	\$70,400
2025/32	2c	10026 - Wilson Street Road Closure, Cammeray	High (4)	Poor	\$147,180
2025/32	2c	10033 - Primrose Park, Cremorne	High (4)	Poor	\$26,840
2025/32	2c	10040 - Wyong Road Open Space, Cremorne	High (4)	Poor	\$35,970
2025/32	2c	10075 - Little Young Street Road Closure, Cremorne	High (4)	Poor	\$19,580
2025/32	2c	10082 - Tiley Street Road Closure, Cammeray	High (4)	Poor	\$46,145
2025/32	2c	10095 - Pine St, Cammeray	High (4)	Poor	\$33,374

- 25 -

Replace Year	Priority	Location	Risk Rating / Category	Condition	Cost Estimate
2025/32	2c	10136 - Primrose Park, Cremorne	High (4)	Poor	\$26,400
2025/32	2c	10142 - Wyong Road Open Space, Cremorne	High (4)	Poor	\$21,045
2025/32	2c	10167 - Forsyth Park, Neutral Bay	High (4)	Poor	\$226,072
2025/32	2c	10228 - Spains Wharf Road Reserve, Kurraba Point	High (4)	Poor	\$14,762
2025/32	2c	10243 - Lower Spofforth Walk (includes Hunts Lookout), Cremorne Point	High (4)	Poor	\$39,204
2025/32	2c	10264 - Forsyth Park, Neutral Bay	High (4)	Poor	\$4,500
2025/32	2c	10355 - Lower Spofforth Walk (includes Hunts Lookout), Cremorne Point	High (4)	Poor	\$10,902
2025/32	2c	10435 - Watt Park, Lavender Bay	High (4)	Poor	\$74,690
2025/32	2c	10480 - Doris Street Reserve, North Sydney	High (4)	Poor	\$11,550
2025/32	2c	10486 - Anderson Park, Neutral Bay	High (4)	Poor	\$41,294
2025/32	2c	10528 - Beulah Street Reserve, Kirribilli	High (4)	Poor	\$19,580
2025/32	2c	10545 - Stannards To Reserve Footway, Kirribilli	High (4)	Poor	\$50,270
2025/32	2c	10616 - Harry Howard Reserve, Wollstonecraft	High (4)	Poor	\$11,352
2025/32	2c	10617 - Harry Howard Reserve, Wollstonecraft	High (4)	Poor	\$6,490
2025/32	2c	10626 - St Peters Park, North Sydney	High (4)	Poor	\$44,902
2025/32	2c	10640 - Waverton Park (includes Merrett Playground), Waverton	High (4)	Poor	\$22,752
2025/32	2c	10711 - North Sydney Civic Centre Park, North Sydney	High (4)	Poor	\$53,801
2025/32	2c	10733 - Smoothey Park, Wollstonecraft	High (4)	Poor	\$22,165
2025/32	2c	10735 - Gore Cove Reserve, Wollstonecraft	High (4)	Poor	\$6,156
2025/32	2c	10791 - Waverton Park (includes Merrett Playground), Waverton	High (4)	Poor	\$32,912
2025/32	2d	10077 - Tobruk Avenue Lookout, Cremorne	High (4)	Poor	\$10,230
2025/32	2d	10091 - Colin Street Road Reserve, Cammeray	High (4)	Poor	\$12,144
2025/32	2d	10092 - Colin Street Road Reserve, Cammeray	High (4)	Poor	\$10,780
2025/32	2d	10093 - Colin Street Road Reserve, Cammeray	High (4)	Poor	\$23,804
2025/32	2d	10094 - Colin Street Road Reserve, Cammeray	High (4)	Poor	\$18,040
2025/32	2d	10100 - Ellis Lookout, Cammeray	High (4)	Poor	\$6,270
2025/32	2d	10101 - Ellis Lookout, Cammeray	High (4)	Poor	\$1,540
2025/32	2d	10131 - Darby Gardens, Cammeray	High (4)	Poor	\$1,320
2025/32	2d	10132 - Darby Gardens, Cammeray	High (4)	Poor	\$4,312
2025/32	2d	10144 - Lloyd Avenue Reserve, Cremorne	High (4)	Poor	\$8,888
2025/32	2d	10145 - Tobruk Avenue Lookout, Cremorne	High (4)	Poor	\$12,760

- 26 -

Replace Year	Priority	Location	Risk Rating / Category	Condition	Cost Estimate
2025/32	2d	10200 - Reserve Street Road Reserve, Neutral Bay	High (4)	Poor	\$1,815
2025/32	2d	10201 - Anderson Street Road Closure, Neutral Bay	High (4)	Poor	\$12,540
2025/32	2d	10214 - Harriette Street Road Closure, Neutral Bay	High (4)	Poor	\$20,570
2025/32	2d	10216 - Honda Road Reserve, Kurraba Point	High (4)	Poor	\$4,275
2025/32	2d	10217 - Honda Road Reserve, Kurraba Point	High (4)	Poor	\$3,080
2025/32	2d	10224 - Prior Avenue Reserve, Cremorne Point	High (4)	Poor	\$41,855
2025/32	2d	10230 - Spains Wharf Road Reserve, Kurraba Point	High (4)	Poor	\$9,240
2025/32	2d	10233 - Kurraba Wharf Reserve, Kurraba Point	High (4)	Poor	\$553
2025/32	2d	10234 - Kurraba Wharf Reserve, Kurraba Point	High (4)	Poor	\$13,752
2025/32	2d	10241 - Lower Spofforth Walk (includes Hunts Lookout), Cremorne Point	High (4)	Poor	\$20,106
2025/32	2d	10251 - Lower Spofforth Walk (includes Hunts Lookout), Cremorne Point	High (4)	Poor	\$14,102
2025/32	2d	10255 - Wyagdon Street Reserve, Neutral Bay	High (4)	Poor	\$9,900
2025/32	2d	10257 - Wyagdon Street Reserve, Neutral Bay	High (4)	Poor	\$5,355
2025/32	2d	10258 - Wyagdon Street Reserve, Neutral Bay	High (4)	Poor	\$1,485
2025/32	2d	10276 - Sirius Street Playground, Cremorne Point	High (4)	Poor	\$8,140
2025/32	2d	10362 - Lower Spofforth Walk (includes Hunts Lookout), Cremorne Point	High (4)	Poor	\$10,758
2025/32	2d	10363 - Lower Spofforth Walk (includes Hunts Lookout), Cremorne Point	High (4)	Poor	\$14,784
2025/32	2d	10379 - Walker Street Road Reserve, Lavender Bay	High (4)	Poor	\$22,066
2025/32	2d	10439 - Watt Park, Lavender Bay	High (4)	Poor	\$4,510
2025/32	2d	10442 - Watt Park, Lavender Bay	High (4)	Poor	\$14,135
2025/32	2d	10443 - Walker Street Road Reserve, Lavender Bay	High (4)	Poor	\$8,250
2025/32	2d	10447 - Copes Lookout, Kirribilli	High (4)	Poor	\$25,740
2025/32	2d	10454 - Dr Mary Booth Lookout, Kirribilli	High (4)	Poor	\$8,690
2025/32	2d	10470 - Margaret Street Road Reserve, North Sydney	High (4)	Poor	\$15,532
2025/32	2d	10476 - Margaret Street Road Reserve, North Sydney	High (4)	Poor	\$3,740
2025/32	2d	10489 - Neutral Street Road Reserve, Neutral Bay	High (4)	Poor	\$51,370

- 27 -

Replace Year	Priority	Location	Risk Rating / Category	Condition	Cost Estimate
2025/32	2d	10501 - Ben Boyd Road Park, Neutral Bay	High (4)	Poor	\$6,600
2025/32	2d	10502 - Ben Boyd Road Park, Neutral Bay	High (4)	Poor	\$10,010
2025/32	2d	10517 - Winslow Street Road Closure, Kirribilli	High (4)	Poor	\$2,420
2025/32	2d	10524 - Lady Gowrie Lookout, Kirribilli	High (4)	Poor	\$2,838
2025/32	2d	10525 - Lady Gowrie Lookout, Kirribilli	High (4)	Poor	\$6,314
2025/32	2d	10550 - Warringa Park, Neutral Bay	High (4)	Poor	\$7,700
2025/32	2d	10552 - Stannards To Reserve Footway, Kirribilli	High (4)	Poor	\$23,100
2025/32	2d	10556 - Margaret Street Road Reserve, North Sydney	High (4)	Poor	\$1,650
2025/32	2d	10573 - Walker Street Road Reserve, Lavender Bay	High (4)	Poor	\$7,018
2025/32	2d	10574 - Walker Street Road Reserve, Lavender Bay	High (4)	Poor	\$6,864
2025/32	2d	10579 - Lady Gowrie Lookout, Kirribilli	High (4)	Poor	\$26,807
2025/32	2d	10588 - Watt Park, Lavender Bay	High (4)	Poor	\$24,332
2025/32	2d	10590 - Watt Park, Lavender Bay	High (4)	Poor	\$4,224
2025/32	2d	10591 - Watt Park, Lavender Bay	High (4)	Poor	\$5,456
2025/32	2d	10592 - Watt Park, Lavender Bay	High (4)	Poor	\$12,980
2025/32	2d	10643 - Clifton Street Road Reserve, Waverton	High (4)	Poor	\$8,800
2025/32	2d	10662 - Whatmore Lane Reserve, Waverton	High (4)	Poor	\$2,376
2025/32	2d	10672 - Brennan Park, Wollstonecraft	High (4)	Poor	\$18,029
2025/32	2d	10676 - Brennan Park, Wollstonecraft	High (4)	Poor	\$6,050
2025/32	2d	10677 - Brennan Park, Wollstonecraft	High (4)	Poor	\$3,080
2025/32	2d	10678 - Brennan Park, Wollstonecraft	High (4)	Poor	\$1,650
2025/32	2d	10680 - Brennan Park, Wollstonecraft	High (4)	Poor	\$616
2025/32	2d	10682 - Brennan Park, Wollstonecraft	High (4)	Poor	\$1,232
2025/32	2d	10729 - Sinclair Street Rose Garden, Wollstonecraft	High (4)	Poor	\$3,850
2025/32	2d	10738 - Brennan Park, Wollstonecraft	High (4)	Poor	\$18,084
2025/32	2d	10745 - Brennan Park, Wollstonecraft	High (4)	Poor	\$4,840
2025/32	2d	10750 - Rocklands La, Wollstonecraft	High (4)	Poor	\$4,026
2025/32	2d	10754 - Brennan Park, Wollstonecraft	High (4)	Poor	\$5,984
2025/32	2d	10760 - Brennan Park, Wollstonecraft	High (4)	Poor	\$1,045
2025/32	2d	10763 - Brennan Park, Wollstonecraft	High (4)	Poor	\$9,526
2025/32	2d	10765 - Shirley Road Pedestrian Link, Wollstonecraft	High (4)	Poor	\$2,464
2025/32	2d	10774 - Victoria Street Playground, McMahons Point	High (4)	Poor	\$3,300
				<b>TOTAL</b>	<b>\$5,108,716</b>



**Note:** *These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.*

**Retaining Wall renewal Program**



Before

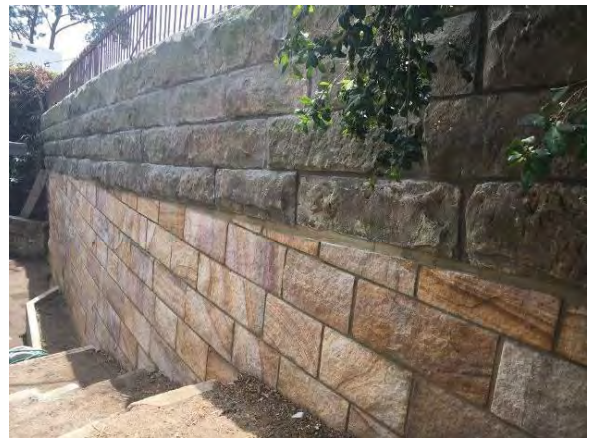


After

**Milson Road, Cremorne Retaining Wall - Re-build**



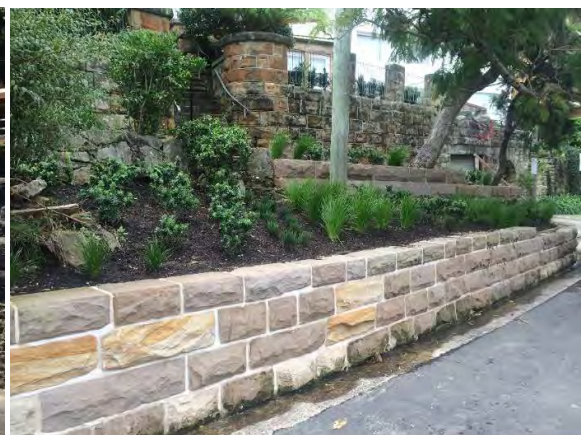
Middlemiss Street, North Sydney



Alfred Street North



Carter Street, Cremorne



Milson Road, Cremorne Point

**Retaining Walls – Performance Measures**

The effectiveness of the asset management plan can be measured in the following ways:

- The degree to which the required projected expenditures identified in this asset management plan are incorporated into the long term financial plan,
- The degree to which 1-5 year detailed works programs, budgets, business plans and corporate structures take into account the 'global' works program trends provided by the asset management plan,
- The degree to which the existing and projected service levels and service consequences (what we cannot do), risks and residual risks are incorporated into the Strategic Plan and associated plans,
- The Asset Renewal Funding Ratio achieving the target of 1.0.


**Retaining Walls – References**

- Retaining Walls Data Collection & Condition Survey Audit by Consultants, Rapid Map Services Pty Ltd in conjunction with Asset & Facilities Management Consulting Pty Ltd.
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NORTH SYDNEY COUNCIL  
**ASSET MANAGEMENT PLAN**  
**ROAD PAVEMENTS 2022-2032**

<b>Document Control</b>		<b>Asset Management Plan</b>				
Document ID : NSC AMP Roads 2023 Local and Regional Roads						
Rev No	Date	Revision Details	Author	Reviewer	Approver	
1	04/12/2021	First Draft	IM	JVH/DM	DM	



**Table of Contents**

Roads .....	4
Executive Summary .....	4
Local and Regional Roads – Future Demand .....	5
Local and Regional Roads – Levels of Customer Service .....	5
Local and Regional Roads – Levels of Technical Service .....	6
Local and Regional Roads – Condition .....	7
Local and Regional Roads – Review of Useful Lives .....	9
Local and Regional Roads – Funding Strategy .....	10
Local and Regional Roads – Capital works .....	11
Local and Regional Roads – Managing the Risks .....	11
Local and Regional Roads – Maintenance .....	15
Local and Regional Roads – Prioritised Expenditure Forecast .....	16
Local and Regional Roads – Valuation Forecast .....	16
Local and Regional Roads – Key Assumptions – Financial Forecast .....	16
Local and Regional Roads – Creation / Acquisition / Upgrade Program .....	17
Local and Regional Roads – Disposal Plan .....	17
Local and Regional Roads – Forecast reliability and confidence .....	17
Local and Regional Roads – Improvement Plan .....	17
Local and Regional Roads – Monitoring and Review Procedures .....	17
Local and Regional Roads – Renewal and Replacement Program .....	17
Local and Regional Roads – Funding Scenarios .....	17
Local and Regional Roads – Service and Risk Tradeoffs .....	18
Service trade-off .....	18
Risk trade-off .....	18
Local and Regional Roads – Renewal and Replacement Program – FY2023-FY2032 (10 Year Plan) .....	18
Priority Projects 2022/23 (Year 1) .....	19
Priority Projects 2023/24 (Year 2) .....	19
Priority Projects 2024/25 (Year 3) .....	20
Priority Projects 2025/32 (Years 4-10) .....	21
Works Identified – Years 2025 - 32 (Years 4 - 10) .....	22
Local and Regional Roads – Performance Measures .....	27
Local and Regional Roads – References .....	27
APPENDICES .....	28
Appendix A: Maintenance Management System .....	28
Appendix B: Capital Renewal Works Program Modelling .....	30

## Roads

### Executive Summary

The North Sydney Local Government Area covers 10.5km square kilometres or 1049 hectares, of this total area there is approximately 138.1km of local and regional roads. Many of the roads in North Sydney were originally built from 1880 onwards. Further development and subdivisions increased significantly with the opening of the Sydney Harbour Bridge in 1932 and continued after World War 2. It was during this development period that much of the infrastructure in North Sydney was originally built. Therefore, North Sydney faces the continual challenge of maintaining a large portfolio of aging road infrastructure.

In 2019 Pavement Management Services P/L conducted a road pavement condition audit for North Sydney Council using vehicles equipped with laser profilometers and 12 high definition cameras. Pavement Management Services P/L inspected the entire road network.

Council's 138.1km road network comprises of:

- 9.6km of regional roads,
- 28.1km of collector roads,
- 63.6km of local roads, and
- 36.8km of laneways.

Each road pavement segment was assessed in 10m intervals. A condition score was assigned to each segment.

Overall, some 68.9% by replacement cost of the portfolio is in very good to good condition (1-2). 24.3% is in fair condition (3) and 6.8% is in poor to very poor condition (4-5).

A Risk rating was assigned to each road segment. Overall 93.2% of the portfolio had a low to medium risk rating and 6.8% had a high to very high risk rating.

The total Replacement Value of the portfolio is \$260,872,395. The financial values are shown in the Table below.

**Table 1: Roads (Local and Regional) – Summary Table**

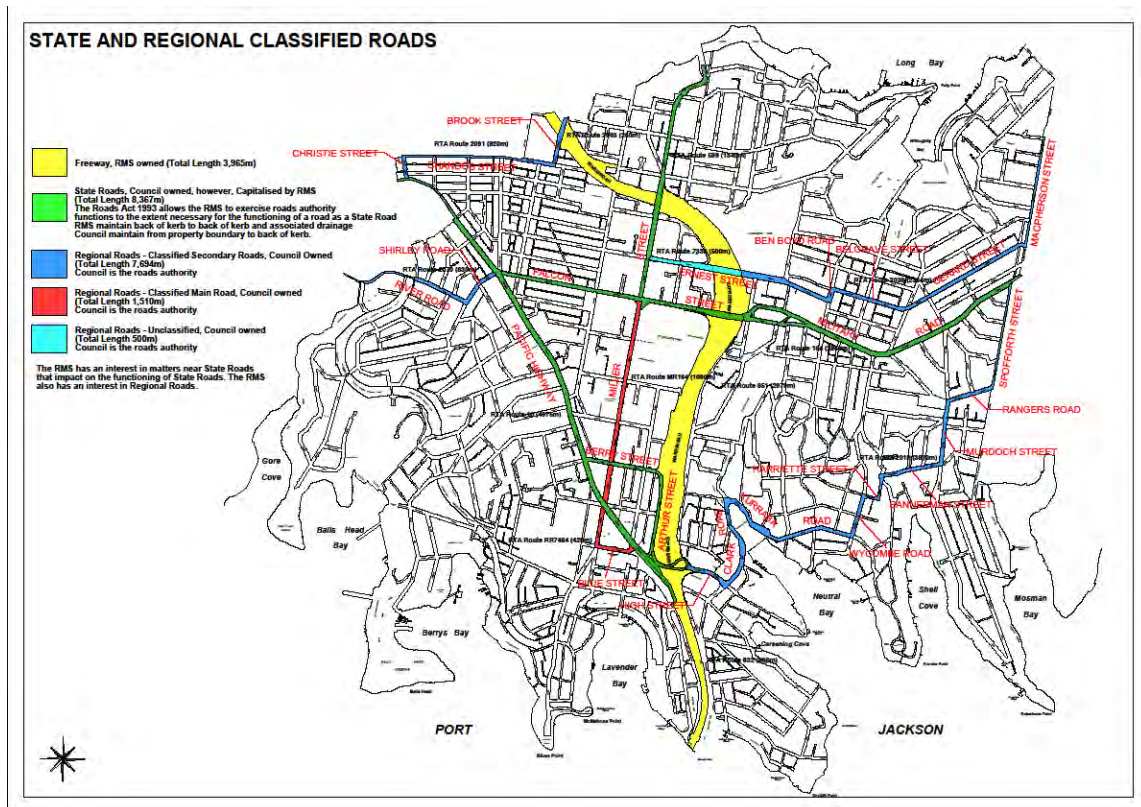
Asset Category	Length (m)	Replacement Value (2021)	Accumulated Depreciation (2021)	Fair Value (2021)	Depreciation Expense
Regional Roads	9,566	\$30,465,227	\$6,415,027	\$24,050,201	\$580,787
Local Roads	127,494	\$230,407,167	\$65,286,312	\$165,120,855	\$3,845,366
<b>Total</b>	<b>137,060</b>	<b>\$260,872,395</b>	<b>\$71,701,339</b>	<b>\$189,171,056</b>	<b>\$4,426,153</b>

Each Road Pavement segment comprises of the following components:

**Table 2: Roads Typology (Local and Regional)**

Asset Component	Length (m)	Replacement Value (2021)
Surface	134,798	\$51,543,626
Structure	137,060	\$191,111,116
Formation		\$18,217,652
<b>Total</b>		<b>\$260,872,395</b>

A map showing the road network in North Sydney is shown below. It includes Freeways and State Roads which are managed by the State Government. It also shows the Regional Roads which are managed by North Sydney Council.



**Local and Regional Roads – Future Demand**

There are no “green” field areas in the North Sydney LGA. Very few new roads have been constructed within the past few decades. No new assets are anticipated to be acquired. However, increasing development and population is likely to lead to increased traffic volumes resulting in increased deterioration of the road network. Traffic growth factors have been accounted for in council’s Pavement Management System and will be monitored in the future.

**Local and Regional Roads – Levels of Customer Service**

Service levels are defined service levels in two terms, customer levels of service and technical levels of service. These are supplemented by organisational measures.

**Customer Levels of Service** measure how the customer receives the service and whether value to the customer is provided.

- 6 -

Customer levels of service measures used in the asset management plan are:

<b>Quality</b>	How good is the service ... <i>what is the condition or quality of the service?</i>
<b>Function</b>	Is it suitable for its intended purpose .... <i>Is it the right service?</i>
<b>Capacity/Use</b>	Is the service over or under used ... <i>do we need more or less of these assets?</i>

The current and expected customer service levels are detailed in the Table below.

**Table 3: Local and Regional Roads – Levels of Customer Service**

Service Attribute	Expectation	Performance Measure Used	Current Performance	Desired Position in 10 Years
<b>Quality</b>	Roads are well maintained and smooth	Percentage of residents satisfied with the maintenance of local roads and footpaths	62% (2013) 71% (2016) 73% (2020)	Improve – Customer Satisfaction Survey
	Roads that are well maintained and smooth	Percentage of businesses satisfied with the maintenance of local roads and footpaths	67% (2013) 70% (2016) 73% (2020)	Improve – Customer Satisfaction Survey
	Roads are well maintained.	Percentage of Roads in ‘very good’, ‘good’ or ‘Fair’ (1, 2, 3) condition and percentage “poor” or “very poor” (4, 5) Condition.	93.2% of Roads in in ‘very good’, ‘good’ or ‘Fair’ (1, 2, 3) condition.  6.8% of Roads in “poor” or “very poor” (4, 5) Condition.	Maintain – Condition 1-2-3  Improve and replace Condition 4-5
<b>Function</b>	Roads constructed to standards.	Large road projects are tested and designed.	All large road projects are tested and designed unless in an emergency.	Maintain
<b>Capacity and Use</b>	Number of roads required is appropriate.	Number of additional roads required	No additional roads identified as being required. Limited by available land.	Maintain

#### Local and Regional Roads – Levels of Technical Service

**Technical Levels of Service** - Supporting the customer service levels are operational or technical measures of performance. These technical measures relate to the allocation of resources to service activities to best achieve the desired customer outcomes and demonstrate effective performance.

Technical service measures are linked to the activities and annual budgets covering:

- Operations – the regular activities to provide services (e.g. cleansing, inspections, etc).

- 7 -

- Maintenance – the activities necessary to retain an asset as near as practicable to an appropriate service condition. Maintenance activities enable an asset to provide service for its planned life (e.g. pothole repair, minor works),
- Renewal – the activities that return the service capability of an asset up to that which it had originally (e.g. resheeting, rehabilitation),
- Upgrade/New – the activities to provide a higher level of service (e.g. road widening).

Table 4 shows the technical levels of service expected to be provided for Roads. The ‘Desired’ position in the table documents the position being recommended in this AM Plan.

**Table 4: Local and Regional Roads – Technical Levels of Service**

Service Attribute	Service Activity Objective	Activity Measure Process	Current Performance	Desired for Optimum Lifecycle Cost
<b>Operations</b>	Streets are clean	Street sweeping frequency	Street sweeping frequency carried out by OSE in accordance with defined service levels	Maintain
<b>Maintenance</b>	Roads are safe for user’s needs	Regular Maintenance Inspections	Maintenance Inspections carried out in accordance with Mtce Mgmt System	Maintenance Inspections carried out in accordance with Mtce Mgmt System
<b>Renewal</b>	Roads are well maintained.	Percentage of Roads in ‘very good’, ‘good’ or ‘Fair’ (1, 2, 3) condition and percentage “poor” or “very poor” (4, 5) Condition.	93.2% of Roads in in ‘very good’, ‘good’ or ‘Fair’ (1, 2, 3) condition.  6.8% of Roads in “poor” or “very poor” (4, 5) Condition.	Maintain – Condition 1-2-3  Improve and replace Condition 4-5
<b>Upgrade/New</b>	Satisfactory provision of roads.	New roads provided as required.	No additional roads identified as being required. Limited by available land.	Maintain

#### Local and Regional Roads – Condition

The condition of Council’s Road Pavement network was surveyed in 2019 by Consultants, Pavement Management Services Pty Ltd. The following condition criteria was used.

**Table 5: Local and Regional Roads Condition Survey Criteria**

Grade	Condition	Description	Response
<b>0</b>	<b>Not Rated</b>		
<b>1</b>	<b>Very Good</b>	Structural: Sound physical condition. Insignificant deterioration. Asset likely to perform adequately without gravel resheeting work for typically 12 years or	No immediate action required. Routine patrol grading to be



Grade	Condition	Description	Response
		<p>more. (Austroads Guide to Pavement Technology Part 6: Unsealed Pavements 2009 8.3 Resheeting (Wear Course Replacement)</p> <p>Serviceability: No or insignificant surface defects apparent. Very good driveability. Routine maintenance only required.</p>	maintained. Maintain standard programmed condition assessment.
2	Good	<p>Structural: Acceptable physical condition; minor deterioration/ minor defects evident.</p> <p>Serviceability: Minor increase in pavement roughness counts. Some minor surface defects apparent. Driveability still good.</p> <p>Negligible short-term failure risk but potential for deterioration in medium-term (Typically 10 years plus). Only routine patrol grading required.</p>	No immediate action required other than routine maintenance and patrol grading. Maintain standard programmed condition assessment.
3	Fair	<p>Structural: Moderate to significant localised deterioration evident: Minor components or isolated sections of the asset need replacement or repair now but not affecting short term overall structural integrity.</p> <p>Serviceability: Moderate increase of pavement roughness but asset still functions safely at adequate level of service.</p> <p>Failure unlikely within the short term but further deterioration likely and major replacement likely within next 5 to 10 years.</p> <p>Significant maintenance grading and reshaping required but asset is still serviceable.</p>	Take action as appropriate to address defects and if necessary, major maintenance grading and shape correction. Monitor with programmed condition assessment for rehabilitation and/or renewal in medium term.
4	Poor	<p>Structural: Serious deterioration and significant defects evident affecting structural integrity.</p> <p>Serviceability: Significant increase in pavement roughness. Substantial work required in short-term to keep asset serviceable.</p> <p>Failure likely in short to medium term. Poor driveability.</p> <p>Likely need to carry out gravel resheeting within the next 1 to 2 years.</p> <p>No immediate risk to health or safety but works required within 1 to 2 years to ensure asset remains safe.</p>	Take immediate action as appropriate to address the defects. Immediately undertake risk assessment and further investigate options. Schedule appropriate action – rehabilitation or renewal in short term.
5	Very Poor	<p>Structural: Failed or failure imminent. Immediate need to replace most or all of asset.</p> <p>Serviceability: Large increase in pavement roughness and surface defects. Increase in road user costs and a</p>	Take immediate action as appropriate to address the defects. Immediately undertake

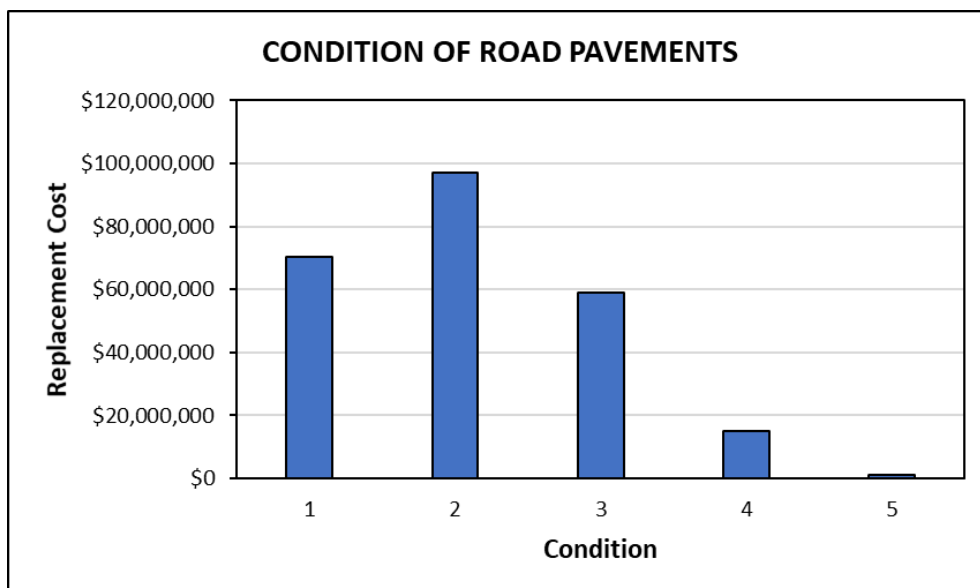
Grade	Condition	Description	Response
		deterioration in the safe performance of the asset. Very poor drivability. Major work including reshaping and gravel resheeting required urgently.	risk assessment and further investigate options. Schedule appropriate action – immediate rehabilitation or renewal.

The Table below shows the Replacement Cost for each of the condition scores of Road Pavement assets. In practice road pavements in condition 3 or below are often resheeted/replaced in conjunction with condition 4 and 5 assets as it is practical to do. Also, Regional Roads have high traffic volumes with high percentages of heavy vehicles. Intervention/treatment on Regional Roads is generally undertaken prior to reaching condition 4 where funds permit.

**Table 6: Local and Regional Roads Condition Survey Results – Overall**

CONDITION OF ROAD PAVEMENT - OVERALL		
Condition	Replacement Cost	% Condition (based on cost)
1 (Very Good)	\$70,189,232	28.9%
2 (Good)	\$97,025,369	40.0%
3 (Fair)	\$59,075,604	24.3%
4 (poor)	\$15,180,351	6.3%
5 (Very Poor)	\$1,184,186	0.5%
<b>Total</b>	<b>\$242,654,743</b>	<b>100.0%</b>

The Graph below shows the condition of Road Pavement assets over the entire network in terms of replacement cost.



**Local and Regional Roads – Review of Useful Lives**

- 10 -

The Table below compares the Useful Lives of North Sydney's road assets with detailed studies in South Australia, Queensland, as well as recommendations in the IPWEA 2017 Practice Note – "Useful Life of Infrastructure" which workshopped and reviewed all the reports. Given the local conditions, maintaining condition, population density, and traffic volumes the useful lives of road assets in North Sydney has been reviewed and adjusted.

USEFUL LIVES - ROADS							
Road Class	Component A = Asphalt C=Concrete	NSC Previous (years)	South Aust. 2014 Tonkin Report	QLD 2013 RAV Project Recommended (years)	NSW OLG 2015 data Group 2&3 Cnls	IPWEA 2017 Practice Note Recommended (years)	NSC Adopted (years)
Regional	Surface (A)	20	15 to 40 (24 Avg)	20 to 50	21 to 30 (25 Avg)	12 to 25	18
Collector		30					22
Local		40	15 to 35 (26 Avg)			15 to 30	24
Lanes		40					30
Regional	Structure (A)	70	45 to 100 (67 Avg)	20 to 100	92 to 104 (98 Avg)	50 to 100	60
Collector		90					72
Local		150	55 to 150 (83 Avg)				88
Lanes		150					100
All	Structure (C)	120		50 to 100			100
All	Formation	200		100 to 1000			200

Based on a useful lives as reviewed in the Table above, the forecast Depreciation is as follows:

Capital funding to maintain a renewal ratio of 1	
	Annual Depreciation
Local and Regional Roads	\$4,426,153

A budget of \$4,426,153 is required on average over the long term to maintain the condition of Council's Road Pavement network, noting that fluctuations in renewal requirements in the medium term.

#### Local and Regional Roads – Funding Strategy

The Asset Renewal Funding Ratio is the most important indicator. It compares funding with depreciation. An Asset Renewal Funding Ratio of 1 or greater sustained over the long term indicates the optimal renewal and replacement of assets.

The forecast for Depreciation (or Long Term Average Annual Asset Consumption) is \$4,426,153. Therefore, an annual average capital renewal funding of \$4,426,153 (2021 dollars) will achieve an Asset Renewal Funding Ratio of 1.

The cost to fully replace assets in condition 4 and 5 as well as the cost to replace the condition 3 assets which will become condition 4 over the next 10 is \$56,457,341. This is an average annual cost of \$5,645,734 which is greater than the \$4,426,153 Depreciation Expense and is greater than the average annual forecast budget of \$3,979,720. With further investigation and detailed design it is hoped that alternate and lesser cost solutions may be possible to maintain road pavement assets at an optimal level.

### Local and Regional Roads – Capital works

Replacement of Local and Regional Roads is assumed to be a Capital works project.

The ranking criteria used to determine priority of identified renewal and replacement proposals is detailed in Table 7. A priority for action of 1 to 5 has been assigned to each Local and Regional Roads Assets requiring capital works.

### Local and Regional Roads – Managing the Risks

There are risks associated with providing and maintaining Local and Regional Roads are primarily as follows:

- Damage to infrastructure as a result of major storm events
- Decreasing frequency of renewal resulting in deterioration of overall network

The following risk response table was used to identify roads requiring action within the next 10 years.

**Table 7: Local and Regional Roads – Risk Response Table**

Level of Risk		Category	Action Required	Time frame for repairs, upgrade or replacement
VH	Very High Risk	5	Immediate corrective action	1 Years
H	High Risk	4	Prioritised action required	1-4 Years
M	Medium Risk	3	Planned action required	4-10 Years
L	Low Risk	2	Manage by routine procedures	Inspections 1-2 years
New	No Risk	1	None	None

Consideration has been given to each road section, whether to replace the road section or perform maintenance on it.

Road sections that have a **Very High or High** risk rating were considered to need replacement within the 1-4 year forecast period.

Road sections segment with a **Medium** risk rating were also considered needing replacement within the 4-10 year forecast period.

Examples of road pavements in poor condition in the North Sydney LGA









Council will endeavour to manage these risks within available funding by prioritising road pavement renewal works based on the Road Pavement Condition Audit prepared by Consultants, Pavement Management Services Pty Ltd.

**Table 8: Local and Regional Roads – Capital renewal Priorities based on Condition and Risk Rating**

Risk Matrix – Local and Regional Roads – Overall (Condition and Risk Rating)					
Likelihood of Road failing (L) Refer to Table 5. Condition Criteria	Local and Regional Roads – Overall - Cost of Roads (\$)				
	Road Hierarchy	Lane	Local Road	Collector	State/ Regional Road
	Priority	d	c	b	a
Condition 1 – Very Good (28.9%)	5	\$15,279,104	\$40,801,600	\$21,595,160	\$10,731,021
Condition 2 - Good (40.0%)	4	\$12,777,932	\$37,872,818	\$31,295,120	\$15,079,499
Condition 3 – Fair (24.3%)	3	\$12,513,382	\$27,654,883	\$14,533,230	\$4,374,109
Condition 4 – Poor (6.3%)	2	\$5,243,191	\$7,005,475	\$2,651,086	\$280,599
Condition 5 – Very Poor (0.5%)	1	\$143,204	\$936,053	\$104,929	

**(Note: Also Refer to Table 6)**

**Note:** This table is based on data in the current register.

**Note:** Councils receive funding for Regional Roads based on the Transport for NSW assessment score.

**Note:** The priority in which works are done could vary depending on associated works such as Streetscape projects or drainage projects etc. Some roads may deteriorate faster than anticipated in a change in the order in which works are done, for example, due to increased traffic loads from increased development. In addition, Utility Authorities regularly upgrade their services in North Sydney. Whilst these service trenches are “permanently” restored to make the road safe the overall condition of the road is reduced. Roads with numerous patches have reduced Useful Life and require renewal sooner than planned.

**Note:** The PARMMS Road Manager software was used to produce the required future works program. The methodology used is detailed in Appendix B.

It should be noted that roads may also be replaced based on other criteria including:

- Damage
- Utility Authority Restorations
- Roads replaced in association with other projects such as kerb and gutter or drainage works
- Streetscape projects

#### **Local and Regional Roads – Maintenance**

Operations include regular activities to provide services such as public health, safety and amenity, e.g. cleaning and street sweeping.

Routine maintenance is the regular on-going work that is necessary to keep assets operating, including instances where portions of the asset fail and need immediate repair to make the asset operational again, e.g. pothole repairs.

Maintenance includes all actions necessary for retaining an asset as near as practicable to an appropriate service condition including regular ongoing day-to-day work necessary to keep assets operating.

Future operations and maintenance expenditure is forecast to trend in line with the value of the asset stock. The quantity of road pavement stock is not forecast to increase. North Sydney has a detailed Maintenance Management System. The inspection and response levels are described in Appendix A.



### Local and Regional Roads – Prioritised Expenditure Forecast

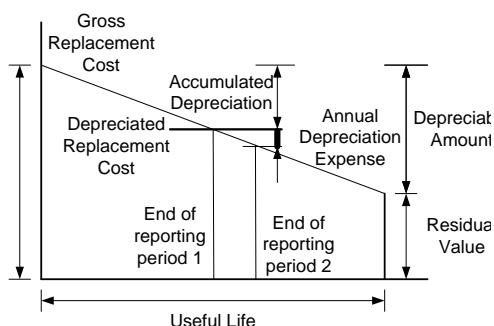
**Table 9: Local and Regional Roads – Prioritised Expenditure Forecast – 10 years FY2023-FY2032**

Year	Priority	Capital Costs	Maintenance Costs	Total Cost	
1	2022/23	1b to 2d	\$3,626,300	\$166,101	\$3,792,401
2	2023/24	2b to 2d	\$4,130,900	\$166,101	\$4,297,001
3	2024/25	2b to 2d	\$4,005,000	\$166,101	\$4,171,101
4-10	2025/32	2b to 3d	\$28,035,000	\$1,162,706	\$29,197,706
Works Identified	2025/32	3b to 3d	\$16,660,141		\$16,660,141
<b>Grand Total</b>			<b>\$56,457,341</b>	<b>\$1,661,009</b>	<b>\$58,118,350</b>

In summary the current value of Road Pavement assets is detailed in the Table below.

**Table 10: Roads – Valuation**

Asset Category	Length (m)	Replacement Value (2021)	Accumulated Depreciation (2021)	Fair Value (2021)	Depreciation Expense
Regional Roads	9,566	\$30,465,227	\$6,415,027	\$24,050,201	\$580,787
Local Roads	127,494	\$230,407,167	\$65,286,312	\$165,120,855	\$3,845,366
<b>Total</b>	<b>137,060</b>	<b>\$260,872,395</b>	<b>\$71,701,339</b>	<b>\$189,171,056</b>	<b>\$4,426,153</b>



### Local and Regional Roads – Valuation Forecast

Asset values are forecast to remain steady. It is forecast that no additional assets are expected to be added to the asset stock from new construction and acquisition by Council or from assets constructed by land developers or other assets donated to Council.

### Local and Regional Roads – Key Assumptions – Financial Forecast

Key assumptions made in this asset management plan are listed in the Table below.

**Table: 11. Key Assumptions made in AM Plan and Risks of Change**

Key Assumptions	Risks of Change to Assumptions
Use of Pavement Management System for renewal Requirements	Low risk (reviewed every 4 years with condition survey). Results of Pavement Management System verified by field checks.

- 17 -

Rate of deterioration	Low risk
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#### **Local and Regional Roads – Creation / Acquisition / Upgrade Program**

New works are those that create a new asset that did not previously exist, or works which will upgrade or improve an existing asset beyond its existing capacity. They may result from growth, social or environmental needs. Assets may also be acquired at no cost. No new assets are currently identified.

#### **Local and Regional Roads – Disposal Plan**

No Road Assets have been identified for disposal.

#### **Local and Regional Roads – Forecast reliability and confidence**

The estimated confidence level and reliability of data used in this AMP is considered to be reliable as the data is based on a detailed condition report on Roads.

#### **Local and Regional Roads – Improvement Plan**

The improvement plan is shown in the table below.

Task No	Task	Responsibility	Resources Required	Timeline
1	Review Useful Lives	EPS	Staff Time	2024

#### **Local and Regional Roads – Monitoring and Review Procedures**

This Asset Management Plan will be reviewed during annual budget planning processes and amended to show any material changes in service levels and/or resources available to provide those services as a result of budget decisions.

The Asset Management Plan has a life of 4 years and is due for complete revision and updating within 1 year of each Council election.

#### **Local and Regional Roads – Renewal and Replacement Program**

Renewal and replacement expenditure is major work which does not increase the asset's design capacity but restores, rehabilitates, replaces or renews an existing asset to its original service potential. Work over and above restoring an asset to original service potential is considered to be an upgrade/expansion or new work expenditure resulting in additional future operations and maintenance costs.

Road assets requiring renewal/replacement have been identified following a Condition Audit completed by Consultants, Pavement Management Service P/L.

#### **Local and Regional Roads – Funding Scenarios**

The Long Term Financial Plan includes three scenarios, all of which maintain current services levels but propose differing levels of capital expenditure on the renewal of Council's ageing infrastructure assets.

In summary:

- Pessimistic Scenario - This Scenario results in a decline in operating results and deficits in the later years.
- Optimistic Scenario - This Scenario results in improvements in operating results for the life of the plan.



- 18 -

- Planned Scenario - This Scenario results modest surplus operating results for the life of the plan.

**Table 12: Funding Scenarios – Local and Regional Roads – North Sydney Councils 10 Year Plan**

Scenario	Capital Funding Level required per annum	10 Year Plan \$ Total
Scenario 1.	\$3,979,720/year	\$39,797,200
Scenario 2.	\$3,979,720/year	\$39,797,200
Scenario 3.	\$3,979,720/year	\$39,797,200

**Note:** These Scenarios are based on the 10-year Long Term Financial Plan.

#### Local and Regional Roads – Service and Risk Tradeoffs

The decisions made in adopting this AM Plan are based on the objective to achieve the optimum benefits from the available resources.

##### Service trade-off

If this funding Scenario is adopted, then the Level of Service will be maintained.

##### Risk trade-off

If this funding Scenario is adopted, then it there is less risk of a sudden failure of a road asset.

#### Local and Regional Roads – Renewal and Replacement Program – FY2023-FY2032 (10 Year Plan)

Council's projected 10 year Capital Renewal Program is shown in the Tables below. It is based on the funding required to replace road assets identified following a Condition Audit completed by Consultants, Pavement Management Service P/L.

It should be noted that roads may also be replaced based on other criteria including:

- Damage
- Utility Authority Restorations
- Roads replaced in association with other projects such as kerb and gutter or drainage works
- Streetscape projects

Project priorities may also be subject to change due to accelerated deterioration, sudden failure or finalization of detailed designs and project costings.

**Table13: Local and Regional Roads – Renewal and Replacement Program – FY2023-FY2032 (10 Year Plan)****Priority Projects 2022/23 (Year 1)**

Replace Year	Priority	Location	Risk Rating/ Category	Condition	Capital Cost
2022/23	1b	Spruson St, Neutral Bay (PSID 514)	Very High (5)	Very Poor	\$668,884
2022/23	1b	Spruson St, Neutral Bay (PSID 515)	Very High (5)	Very Poor	\$177,428
2022/23	1b	Ben Boyd Rd, Neutral Bay (PSID 84)	Very High (5)	Very Poor	\$704,784
2022/23	2c	Phillips St, Neutral Bay (PSID 443)	High (4)	Poor	\$197,077
2022/23	2d	Phillips La, Neutral Bay (PSID 902)	High (4)	Poor	\$114,296
2022/23	2d	Ixion La, Cammeray (PSID 707)	High (4)	Poor	\$57,353
2022/23	Regional Roads Rehabilitation (priority subject to TfNSW funding assessment). Includes TfNSW REPAIR grant and Block Grant (Supplementary)				\$634,000
2022/23	Heavy Patching Budget (Local & Regional Roads)				\$864,600
2022/23	Contingency				\$207,878
<b>Total</b>					<b>\$3,626,300</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

Projects based on Pavement Management System using data provided by Pavement Management Services. Road pavements have been grouped into projects to improve economy of scale to provide better value for Council.

**Table 14: Local and Regional Roads – Renewal and Replacement Program****Priority Projects 2023/24 (Year 2)**

Replace Year	Priority	Location	Risk Rating/ Category	Condition	Capital Cost
2023/24	2b	Henry Lawson Ave, McMahan's Point (PSID 275)	High (4)	Poor	\$264,272
2023/24	2b	Carr St, Waverton (PSID 146)	High (4)	Poor	\$469,778
2023/24	2b	Grosvenor St, Neutral Bay (PSID 258)	High (4)	Poor	\$399,055
2022/23	2c	Hardie St, Neutral Bay (PSID 688)	High (4)	Poor	\$97,171
2022/23	2c	Highview La, Neutral Bay (PSID 692)	High (4)	Poor	\$56,724
2022/23	2c	Marks St (Westbound), Cammeray (PSID 724)	High (4)	Poor	\$94,445
2023/24	2c	Harriott St, Waverton (PSID 267)	High (4)	Poor	\$286,589
2023/24	2c	Carr St, Waverton (PSID 144)	High (4)	Poor	\$207,045
2023/24	2c	Oxley St, Crows Nest (PSID 427)	High (4)	Poor	\$139,839
2023/24	2d	Alexander La, Crows Nest (PSID 810)	High (4)	Poor	\$30,463
2023/24	2d	Waverton La, Waverton (PSID 560)	High (4)	Poor	\$136,623
2023/24	2d	Young La, Cremorne (PSID 611)	High (4)	Poor	\$77,133
2023/24	2d	Belgrave La, Cremorne (PSID 65)	High (4)	Poor	\$55,863

Replace Year	Priority	Location	Risk Rating/ Category	Condition	Capital Cost
2023/24		Regional Roads Rehabilitation (priority subject to TfNSW funding assessment). Includes TfNSW REPAIR grant and Block Grant (Supplementary)			\$634,000
2023/24		Heavy Patching Budget (Local & Regional Roads)			\$881,900
2023/24		Contingency			\$300,000
<b>Total</b>					<b>\$4,130,900</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

Projects based on Pavement Management System using data provided by Pavement Management Services. Road pavements have been grouped into projects to improve economy of scale to provide better value for Council.

**Table 15: Local and Regional Roads – Renewal and Replacement Program**

**Priority Projects 2024/25 (Year 3)**

Replace Year	Priority	Location	Risk Rating/ Category	Condition	Capital Cost
2024/25	2b	Newlands St, Wollstonecraft (PSID 417)	High (4)	Poor	\$283,877
2024/25	2c	Reed St, Cremorne (PSID 464)	High (4)	Poor	\$249,293
2023/24	2c	Kyngdon St, Cammeray (PSID 327)	High (4)	Poor	\$98,713
2024/25	2c	Reed St, Cremorne (PSID 463)	High (4)	Poor	\$304,842
2024/25	2c	Fifth Ave, Cremorne (PSID 234)	High (4)	Poor	\$272,909
2024/25	2d	Sinclair St, Wollstonecraft (PSID 901)	High (4)	Poor	\$32,746
2024/25	2d	Morton La, Wollstonecraft (PSID 403)	High (4)	Poor	\$108,688
2024/25	2d	Macarthur Ave, Crows Nest (PSID 723)	High (4)	Poor	\$122,429
2024/25	2d	Colin St, Cammeray (PSID 171)	High (4)	Poor	\$227,041
2024/25	2d	Wilson St, Cammeray (PSID 588)	High (4)	Poor	\$296,425
2024/25	2d	Cairo St, Cammeray (PSID 132)	High (4)	Poor	\$264,328
2024/25	2d	Greens Dr, Cammeray (PSID 685)	High (4)	Poor	\$181,611
2024/25	2d	Spofforth La, Cremorne (PSID 775)	High (4)	Poor	\$28,498
2024/25		Regional Roads Rehabilitation (priority subject to TfNSW funding assessment). Includes TfNSW REPAIR grant and Block Grant (Supplementary)			\$634,000
2024/25		Heavy Patching Budget (Local & Regional Roads)			\$899,600
<b>Total</b>					<b>\$4,005,000</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

Projects based on Pavement Management System using data provided by Pavement Management Services. Road pavements have been grouped into projects to improve economy of scale to provide better value for Council.

**Table 16: Local and Regional Roads – Renewal and Replacement Program****Priority Projects 2025/32 (Years 4-10)**

Replace Year	Priority	Location	Risk Rating/ Category	Condition	Capital Cost
2025/32	2b	Crows Nest Rd, Waverton (PSID 184)	High (4)	Poor	\$471,478
2025/32	2b	Grosvenor St, Neutral Bay (PSID 259)	High (4)	Poor	\$446,746
2025/32	2b	Alfred St North (Southbound), North Sydney (PSID 617)	High (4)	Poor	\$239,177
2025/32	2b	Willoughby Rd, Crows Nest (PSID 586)	High (4)	Poor	\$771,383
2025/32	2b	Brightmore St, Cremorne (PSID 115)	High (4)	Poor	\$671,465
2025/32	2b	Florence St, Cremorne (PSID 239)	High (4)	Poor	\$536,117
2025/32	2b	Gillies St, Wollstonecraft (PSID 246)	High (4)	Poor	\$765,980
2025/32	2b	Shirley Rd, Wollstonecraft (PSID 498)	High (4)	Poor	\$520,718
2025/32	2b	Ernest St, Crows Nest (PSID 216)	High (4)	Poor	\$664,345
2025/32	2b	Amherst St, Cammeray (PSID 24)	High (4)	Poor	\$1,164,610
2025/32	2b	Bellevue St, Cammeray (PSID 70)	High (4)	Poor	\$500,114
2025/32	2b	Lavender St, Lavender Bay (PSID 332)	High (4)	Poor	\$341,224
2025/32	2b	Walker St, North Sydney (PSID 544)	High (4)	Poor	\$502,429
2025/32	2b	Olympic Dr, Milsons Point (PSID 752)	High (4)	Poor	\$826,007
2025/32	2b	Ben Boyd Rd, Neutral Bay (PSID 85)	High (4)	Poor	\$796,057
2025/32	3c	Montague Rd, Cremorne (PSID 399)	Medium (3)	Fair	\$677,288
2025/32	3c	Balls Head Rd, Waverton (PSID 50)	Medium (3)	Fair	\$473,833
2025/32	3c	Balls Head Rd, Waverton (PSID 51)	Medium (3)	Fair	\$488,609
2025/32	3c	Balls Head Dr, Waverton (PSID 45)	Medium (3)	Fair	\$294,822
2025/32	3c	Ada St, Cremorne (PSID 3)	Medium (3)	Fair	\$268,010
2025/32	3c	Spencer Rd, Cremorne (PSID 512)	Medium (3)	Fair	\$408,600
2025/32	3c	Carabella St, Kirribilli (PSID 137)	Medium (3)	Fair	\$445,013
2025/32	3c	Elamang Ave, Kirribilli (PSID 207)	Medium (3)	Fair	\$340,937
2025/32	3c	Iredale Ave, Cremorne (PSID 302)	Medium (3)	Fair	\$201,992
2025/32	3c	Blue St, North Sydney (PSID 102)	Medium (3)	Fair	\$159,003
2025/32	3c	William St, North Sydney (PSID 575)	Medium (3)	Fair	\$191,617
2025/32	3c	Milray Ave, Wollstonecraft (PSID 387)	Medium (3)	Fair	\$514,887
2025/32	3c	Northcliff St, Milsons Point (PSID 746)	Medium (3)	Fair	\$178,964
2025/32	3c	Donnelly Rd (Westbound), Cammeray (PSID 957)	Medium (3)	Fair	\$16,869
2025/32	3c	Hollowforth Ave, Neutral Bay (PSID 285)	Medium (3)	Fair	\$180,375
2025/32	3c	Tiley St, Cammeray (PSID 865)	Medium (3)	Fair	\$51,427
2025/32	3c	Spofforth St (Northbound), Cremorne (PSID 513)	Medium (3)	Fair	\$143,338
2025/32	3c	Kareela Rd, Cremorne Point (PSID 857)	Medium (3)	Fair	\$108,173
2025/32	3c	Chandos St, Crows Nest (PSID 155)	Medium (3)	Fair	\$316,796
2025/32	3c	Ellalong Rd, Cremorne (PSID 209)	Medium (3)	Fair	\$452,723
2025/32	3c	Hodgson Ave, Cremorne Point (PSID 281)	Medium (3)	Fair	\$322,046
2025/32	3c	Macpherson St (Northbound), Cremorne	Medium (3)	Fair	\$320,995

Replace Year	Priority	Location	Risk Rating/ Category	Condition	Capital Cost
		(PSID 349)			
2025/32	3c	Barry St, Neutral Bay (PSID 845)	Medium (3)	Fair	\$45,499
2025/32	3c	Brothers Ave, Cammeray (PSID 117)	Medium (3)	Fair	\$100,469
2025/32	3c	Dumbarton St, McMahan's Point (PSID 193)	Medium (3)	Fair	\$196,390
2025/32	3c	Earle St, Cremorne (PSID 194)	Medium (3)	Fair	\$285,473
2025/32	3c	Balls Head Dr, Waverton (PSID 47)	Medium (3)	Fair	\$326,516
2025/32		Regional Roads Rehabilitation (priority subject to TfNSW funding assessment). Includes TfNSW REPAIR grant and Block Grant (Supplementary)			\$4,438,000
2025/32		Heavy Patching Budget (Local & Regional Roads)			\$6,822,364
2025/32		Contingency			\$46,122
<b>Total</b>					<b>\$28,035,000</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

Projects based on Pavement Management System using data provided by Pavement Management Services. Road pavements have been grouped into projects to improve economy of scale to provide better value for Council.

**Table 17: Local and Regional Roads – Renewal and Replacement Program**

**Works Identified – Years 2025 - 32 (Years 4 - 10)**

Replace Year	Priority	Location	Risk Rating / Category	Condition	Capital Cost
2025/32	3c	Wyong Rd (North-Westbound), Cremorne (PSID 606)	Medium (3)	Fair	\$138,088
2025/32	3c	Edward St, North Sydney (PSID 203)	Medium (3)	Fair	\$298,258
2025/32	3c	King St, Wollstonecraft (PSID 314)	Medium (3)	Fair	\$446,421
2025/32	3c	Russell St, Wollstonecraft (PSID 483)	Medium (3)	Fair	\$475,887
2025/32	3c	Vernon St, Cammeray (PSID 539)	Medium (3)	Fair	\$336,975
2025/32	3c	Woolcott St, Waverton (PSID 596)	Medium (3)	Fair	\$215,548
2025/32	3c	Hazelbank Rd, Wollstonecraft (PSID 273)	Medium (3)	Fair	\$555,849
2025/32	3c	Balls Head Dr, Waverton (PSID 48)	Medium (3)	Fair	\$374,319
2025/32	3c	Vale St, Cammeray (PSID 538)	Medium (3)	Fair	\$453,848
2025/32	3c	Carlow St, North Sydney (PSID 140)	Medium (3)	Fair	\$522,716
2025/32	3d	Chandos La, Crows Nest (PSID 151)	Medium (3)	Fair	\$108,230
2025/32	3d	Willoughby La, CROWS NEST (PSID 578)	Medium (3)	Fair	\$33,184
2025/32	3d	Honda Rd, Neutral Bay (PSID 291)	Medium (3)	Fair	\$129,302
2025/32	3d	Arthur La, Lavender Bay (PSID 622)	Medium (3)	Fair	\$70,701
2025/32	3d	Arthur St, Lavender Bay (PSID 33)	Medium (3)	Fair	\$201,551
2025/32	3d	Denos La, Cremorne (PSID 960)	Medium (3)	Fair	\$178,638
2025/32	3d	Rose Ave, Neutral Bay (PSID 771)	Medium (3)	Fair	\$76,004
2025/32	3d	Wyagdon St, Neutral Bay (PSID 798)	Medium (3)	Fair	\$168,741
2025/32	3d	Willoughby La, Crows Nest (PSID 581)	Medium (3)	Fair	\$64,434



Replace Year	Priority	Location	Risk Rating / Category	Condition	Capital Cost
2025/32	3d	Chapel La, Crows Nest (PSID 647)	Medium (3)	Fair	\$57,031
2025/32	3d	Willoughby La, Crows Nest (PSID 580)	Medium (3)	Fair	\$73,533
2025/32	3d	Zig Zag La, Crows Nest (PSID 808)	Medium (3)	Fair	\$42,567
2025/32	3d	Cooper La, Neutral Bay (PSID 172)	Medium (3)	Fair	\$48,720
2025/32	3d	Shirley Rd, Wollstonecraft (PSID 503)	Medium (3)	Fair	\$177,219
2025/32	3d	Como La, Cremorne (PSID 659)	Medium (3)	Fair	\$36,103
2025/32	3d	Elliott St, North Sydney (PSID 677)	Medium (3)	Fair	\$123,343
2025/32	3d	Newlands La, Wollstonecraft (PSID 415)	Medium (3)	Fair	\$164,694
2025/32	3d	Belmont La, Wollstonecraft (PSID 627)	Medium (3)	Fair	\$16,185
2025/32	3d	Lambert St, Cammeray (PSID 713)	Medium (3)	Fair	\$103,052
2025/32	3d	Ben Boyd La, Cremorne (PSID 75)	Medium (3)	Fair	\$46,279
2025/32	3d	Bray La, North Sydney (PSID 983)	Medium (3)	Fair	\$12,823
2025/32	3d	Langley Ave, Cremorne (PSID 329)	Medium (3)	Fair	\$198,507
2025/32	3d	Langley Ave, Cremorne (PSID 714)	Medium (3)	Fair	\$119,985
2025/32	3d	Education La, Cremorne (PSID 202)	Medium (3)	Fair	\$120,633
2025/32	3d	Edwin La, Cammeray (PSID 674)	Medium (3)	Fair	\$26,418
2025/32	3d	Shellbank Pde, Cremorne (PSID 773)	Medium (3)	Fair	\$97,881
2025/32	3d	Holdsworth Rd, Neutral Bay (PSID 695)	Medium (3)	Fair	\$50,111
2025/32	3d	Robertson La, Kirribilli (PSID 903)	Medium (3)	Fair	\$13,129
2025/32	3d	Doohat Ave, North Sydney (PSID 191)	Medium (3)	Fair	\$198,421
2025/32	3c	Mchatton St, Waverton (PSID 356)	Medium (3)	Fair	\$502,610
2025/32	3c	Oxley St, Crows Nest (PSID 428)	Medium (3)	Fair	\$131,764
2025/32	3b	Shirley Rd, Wollstonecraft (PSID 499)	Medium (3)	Fair	\$790,429
2025/32	3d	Boyd La, Neutral Bay (PSID 635)	Medium (3)	Fair	\$34,986
2025/32	3c	Victoria Pl, McMahons Point (PSID 785)	Medium (3)	Fair	\$84,139
2025/32	3c	Pine St, Cammeray (PSID 844)	Medium (3)	Fair	\$266,371
2025/32	3c	Berry St, North Sydney (PSID 96)	Medium (3)	Fair	\$385,855
2025/32	3b	Blues Point Rd, McMahons Point (PSID 105)	Medium (3)	Fair	\$385,223
2025/32	3b	Blues Point Rd, McMahons Point (PSID 106)	Medium (3)	Fair	\$463,935
2025/32	3d	Boronia St, Wollstonecraft (PSID 109)	Medium (3)	Fair	\$360,722
2025/32	3c	Boyle St, Cremorne (PSID 110)	Medium (3)	Fair	\$313,734
2025/32	3b	Amherst St, Cammeray (PSID 23)	Medium (3)	Fair	\$566,314
2025/32	3c	Grasmere Rd, Cremorne (PSID 254)	Medium (3)	Fair	\$348,383
2025/32	3c	Balls Head Dr, Waverton (PSID 46)	Medium (3)	Fair	\$439,353
2025/32	3d	Rialto Ave, Cremorne Point (PSID 467)	Medium (3)	Fair	\$103,927
2025/32	3b	Yeo St, Neutral Bay (PSID 609)	Medium (3)	Fair	\$501,429
2025/32	3b	Ben Boyd Rd, Neutral Bay (PSID 83)	Medium (3)	Fair	\$688,774
2025/32	3d	Ben Boyd Rd, Neutral Bay (PSID 830)	Medium (3)	Fair	\$49,970
2025/32	3b	Ernest St, Crows Nest (PSID 217)	Medium (3)	Fair	\$604,018
2025/32	3d	Ancrum St, Waverton (PSID 26)	Medium (3)	Fair	\$97,273
2025/32	3c	Hazelbank Rd, Wollstonecraft (PSID 274)	Medium (3)	Fair	\$318,361

- 24 -

Replace Year	Priority	Location	Risk Rating / Category	Condition	Capital Cost
2025/32	3d	Kareela La, Cremorne Point (PSID 310)	Medium (3)	Fair	\$311,095
2025/32	3d	Lloyd Ave, Cremorne (PSID 341)	Medium (3)	Fair	\$172,393
2025/32	3b	Mclaren St, North Sydney (PSID 358)	Medium (3)	Fair	\$602,741
2025/32	3d	Old La, Cremorne (PSID 425)	Medium (3)	Fair	\$101,021
2025/32	Contingency				\$1,459,993
<b>Total</b>					<b>\$16,660,141</b>

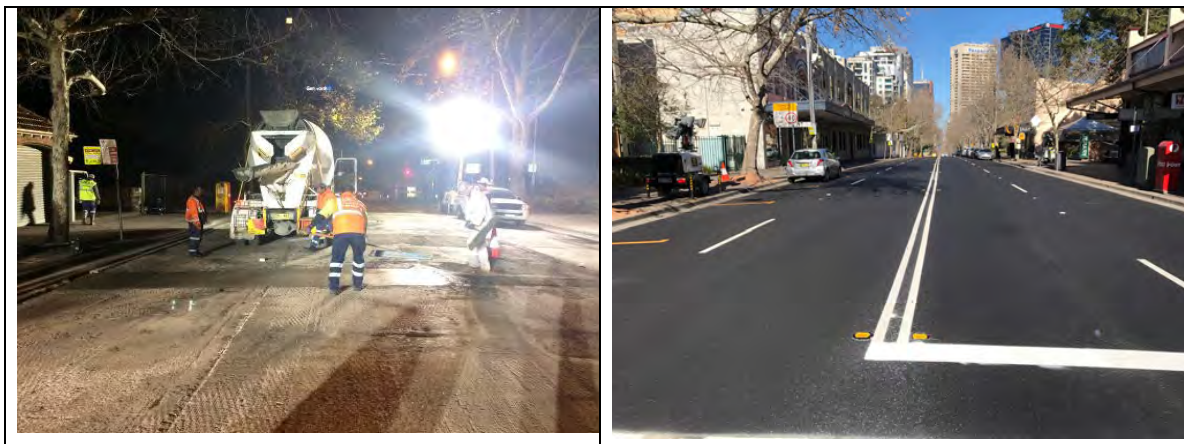
**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

*Projects based on Pavement Management System using data provided by Pavement Management Services. Road pavements have been grouped into projects to improve economy of scale to provide better value for Council.*

Local and Regional Roads Renewal Program



Mitchell Street, McMahon's Point, before and after



Miller Street, North Sydney, before and after





High and Hipwood Streets, Kirribilli



Folly Point, Cammeray, before and after



Montpellier St, Neutral Bay, before and after

### **Local and Regional Roads – Performance Measures**

The effectiveness of the asset management plan can be measured in the following ways:

- The degree to which the required projected expenditures identified in this asset management plan are incorporated into the long term financial plan,
- The degree to which 1-5 year detailed works programs, budgets, business plans and corporate structures take into account the ‘global’ works program trends provided by the asset management plan,
- The degree to which the existing and projected service levels and service consequences (what we cannot do), risks and residual risks are incorporated into the Strategic Plan and associated plans,
- The Asset Renewal Funding Ratio achieving the target of 1.0.

### **Local and Regional Roads – References**

- IPWEA, 2006, ‘International Infrastructure Management Manual’, Institute of Public Works Engineering Australasia, Sydney, [www.ipwea.org/IIMM](http://www.ipwea.org/IIMM)
- IPWEA, 2008, ‘NAMS.PLUS Asset Management’, Institute of Public Works Engineering Australasia, Sydney, [www.ipwea.org/namsplus](http://www.ipwea.org/namsplus).
- IPWEA, 2015, 2nd edn., ‘Australian Infrastructure Financial Management Manual’, Institute of Public Works Engineering Australasia, Sydney, [www.ipwea.org/AIFMM](http://www.ipwea.org/AIFMM).
- IPWEA, 2015, 3rd edn., ‘International Infrastructure Management Manual’, Institute of Public Works Engineering Australasia, Sydney, [www.ipwea.org/IIMM](http://www.ipwea.org/IIMM)
- IPWEA, 2012 LTFP Practice Note 6 PN Long Term Financial Plan, Institute of Public Works Engineering Australasia, Sydney



## APPENDICES

### Appendix A: Maintenance Management System

#### Defect Management Inspection - Roads

Inspection areas have been defined in accordance with the identified key factors of:

- Road pavement where failure is most disruptive and expensive to the community/users.
- Traffic (both vehicular and pedestrian) flows, eg. pedestrian use areas; retail/commercial areas; schools; hospitals; major collector roads; primary or sole access to significant population areas;

Inspection frequencies are based on these areas as defined by the reference maps and the resources currently available to undertake the inspections.

**Red** – 2 times per year;                      **Blue** – Annual;                      **Other** – Once every 2 years;

The results of inspections will be downloaded into the MMDS database.

There are 5 categories in which a defect may be placed. Not all categories may be applicable to every inspection area and/or type of asset:

<b>Cat 5</b>		Will be <b>made safe</b> no later than 2 working days after allocation of defect to work crew. Defect may then be re-categorised as Cat 4 or Cat 3.
<b>Cat 4</b>		Will be repaired no later than 10 working days after allocation of defect to work crew.
<b>Cat 3</b>		Will be placed on Zone Maintenance Program. This program operates on an 8 week cycle, however, depending on workload and reactive maintenance requests, Cat 3 defects may miss a cycle or more before repairs are able to be undertaken.
<b>Cat 2</b>		Deferred maintenance. Defect may be repaired if close-by to Cat 4 or Cat 3 defect that is being repaired. Otherwise will be re-inspected on next area inspection.
<b>Cat 1</b>		As new. Surface displaying no defects. May have aesthetic aspects such as gum, stains, services mark-up, etc.

#### Intervention Matrix

ROADS	RED	BLUE	OTHER
<b>USED BY PEDESTRIANS</b>	<b>28</b>	<b>24</b>	<b>21</b>
<b>&gt; 100mm or &gt; 10sqm and &gt; 30mm</b>	<b>23</b>	<b>19</b>	<b>16</b>
<b>30 – 100mm or 5-10sqm and &gt; 30mm</b>	<b>20</b>	<b>16</b>	<b>13</b>
<b>&lt; 30mm</b>	<b>18</b>	<b>14</b>	<b>11</b>
<b>AESTHETIC</b>	<b>10</b>	<b>6</b>	<b>3</b>

**Scoring example:** 28 = High Use Area score 10 and Defect of Slippery or Loose Underfoot score 18

The focus of road inspections will be the areas of road pavement used by pedestrians and the traffic lanes. Parking lanes will be inspected if visible at the time of inspection.

If defects appear at intervals at of approximately every 2.0m of road pavement, then the area of the defect recorded shall be the width by the distance from the first to the last identified defect.

- 29 -

<b>NORTH SYDNEY COUNCIL - GUIDE FOR ROAD DEFECT RATING</b>		
<b>AN EXPLANATION OF THE DEFECT INSPECTION SYSTEM</b>		
<b>AREA OF INSPECTION</b>	<b>SCORE</b>	
<b>RED</b>	ROAD PAVEMENT WHERE FAILURE IS MOST DISRUPTIVE AND EXPENSIVE TO THE COMMUNITY/USERS. HIGH TRAFFIC FLOWS. EG. HIGH PEDESTRIAN USE AREAS; RETAIL/COMMERCIAL AREAS; SCHOOLS; HOSPITALS; MAJOR COLLECTOR ROADS; PRIMARY OR SOLE ACCESS TO SIGNIFICANT POPULATION AREAS; <b>INSPECTIONS - 2 PER YEAR</b>	<b>10</b>
<b>BLUE</b>	ROAD PAVEMENT WHERE FAILURE IS LIKELY TO BE LESS DISRUPTIVE BUT STILL SIGNIFICANT TO THE COMMUNITY/USERS. MEDIUM TRAFFIC FLOWS. EG. MEDIUM PEDESTRIAN USE AREAS; SIDE STREETS NEAR RETAIL/COMMERCIAL AREAS, SCHOOLS and HOSPITALS; ALTERNATE ROUTES TO MAJOR COLLECTOR ROADS and ACCESS TO SIGNIFICANT POPULATION AREAS <b>INSPECTIONS - ANNUAL</b>	<b>6</b>
<b>WHITE</b>	ALL OTHER AREAS IN LGA EXCLUDING PARKS; RESERVES and PLAZAS <b>INSPECTION - EVERY 2 YEARS</b>  NOTE: IN THESE AREAS ONLY DEFECTS GREATER THAN ABOUT 30mm WILL HAVE DETAILS RECORDED.	<b>3</b>
<b>PAVEMENT TYPE</b>		
CONCRETE	PAVING - UNIPAVERS & OTHER TYPES OF PAVERS	
ASPHALT	STENCILLED/COLOURED ASPHALT	
<b>DEFECT – MAY BE HEIGHT or WIDTH</b>		
AREA OF ROAD PAVEMENT USED BY PEDESTRIANS	<b>18</b>	
DEFECT GREATER THAN ABOUT 100mm HEIGHT or WIDTH	<b>13</b>	
DEFECT AREA GREATER THAN 10 sqm and HEIGHT or WIDTH GREATER THAN 30mm	<b>13</b>	
DEFECT BETWEEN ABOUT 30mm AND ABOUT 100mm HEIGHT or WIDTH	<b>10</b>	
DEFECT AREA 5 to 10 sqm and HEIGHT or WIDTH GREATER THAN 30mm	<b>10</b>	
LESS THAN ABOUT 30MM	<b>8</b>	
AESTHETIC ISSUES - STAINS, SERVICES MARK-UP; etc	<b>0</b>	
<b>HAZARD TYPE (REFER TO ROAD DEFECT REFERENCE SHEETS)</b>		
TRIP - LIFTING/DROPPING OF SECTION TO ADJACENT SECTION	RUTTING - DEFORMATION IN ONE OR BOTH WHEEL PATHS	
DELAMINATION - PEELING OR LIFTING OF PAVEMENT SURFACE	POT HOLE - TYPICALLY BOWL SHAPED AND BREAKING EDGES	
CRACKING - ROAD PAVEMENT FRACTURES (SEE REF DIAGRAM)	UNEVEN SURFACE - LOWER OR ABOVE SURROUNDING AREA	
SERVICE ACCESS COVER - BELOW OR ABOVE SURROUNDING PAVEMENT or PAVEMENT BREAKING UP AROUND IT		
PAVEMENT SURFACE - SLIPPERY or LOOSE UNDER FOOT eg. SAND, LEAVES, SEEDS or OIL ON SURFACE		
<b>OTHER ASPECTS</b>		
AREA HAS KERB & GUTTER (K&G) FAILURE THAT HAS CONTRIBUTED TO ROAD PAVEMENT FAILURE AND NEEDS ATTENTION PRIOR TO ROAD PAVEMENT REPAIR	PRESENCE OF PARTICULAR ASPECT/S NOTED PRIOR TO DEPARTURE FROM PSID. REFERRED TO RELEVANT NSC SECTION VIA EMAIL	
AREA HAS DROP OFF ALONG EDGE OF ROAD PAVEMENT > 50MM - NO K&G		
AREA HAS OBSTRUCTIONS DUE TO OVERHANGING TREE or VEGETATION		

## Appendix B: Capital Renewal Works Program Modelling

The PARMMS® Road Manager software is used to produce the required future works programs. This system is detailed below.

### Pavement Treatments

The appropriate and applicable preventive, corrective and rehabilitation maintenance options considered are shown in the following Table.

**Table: Selected Treatments**

TREATMENT	DESCRIPTION OF TREATMENT
Routine	Routine maintenance involves work such as pothole repairs and clearing of drainage that is carried out during a patrol of the road network.
Do Nothing	No treatment is necessary at this time.
Crack Sealing	Sealing of cracks to waterproof the pavement surface and reduce the ingress of moisture into the pavement to extend the useful pavement life. This routine maintenance activity is not currently undertaken by NSC.
Pothole Patching	Repair of potholes to provide a safe pavement surface and reduce the moisture ingress into the pavement.
Heavy Patching	Repair of pavement affected by structural cracking to restore localised failures and reduce ingress of moisture leading to more significant failures.
Mill & Resheet	The existing pavement is profiled to allow the pavement to remain at the existing level after the treatment and therefore the existing drainage capacity of the pavement is retained. This treatment utilises a minimum 50mm of AC and is used where there is minimal structural distress and the pavement is sound.
Full Depth Asphalt	The existing pavement is profiled to allow the pavement to remain at the existing level after the treatment and therefore the existing drainage capacity of the pavement is retained. This treatment utilises a minimum 150mm of AC and is used where there is extensive distress and the pavement requires strengthening.

These pavement treatments are to be triggered based on the intervention levels described below.

### Intervention Levels

To allow investigation as to what treatment would be applicable once the pavement has reached a determined serviceability level, intervention levels are specified indicating the minimum condition under which work would be undertaken. These levels are set out for each of the classes based on North Sydney's road network as shown in the Table below. The intervention levels for the appropriate pavement condition are compared to the average current condition to assist in the interpretation of these levels.

Pavement Condition	Class 6 Regional	Class 7 Collector	Class 8 Local	Class 9 Lanes
Roughness (counts/km)	100	150	N/A	N/A
Rut Depth (mm)	6	12	18	18
Environmental Cracking (%)	5	10	20	20
Fatigue Cracking (%)	2	5	10	15
Potholes (%)	5	5	5	5
Ravelling (%)	10	25	35	50

### Treatment Selection

The treatment selection processes used in this analysis, via the Road Manager software is a two-phase analysis. The first phase is a broad classification of the pavement treatment needs based solely on the condition data and is referred to as "Classification"; the second is a more detailed "Resolution" of the required treatment based on both pavement condition and the attributes of the pavement.

### Classification

In this process the current condition of the pavement is used to determine an appropriate level of treatment. For example, less than 5% of cracking on a class 6 regional road may be acceptable and this condition would be ignored for the current year. If there is between 5% and 10% cracking it is recommended for "heavy patching". For over 10% the reason for the distress would be determined and the pavement would be redesigned according to the NAASRA road design manual. This is the "redesign" action of the resolution phase.

On occasions sections will satisfy more than one condition in the classification decision matrix. When this occurs the process selects the highest classification treatment group to be used in the resolution phase. The priorities from highest to lowest are listed in the following Table, with highest priority being reconstruction.

**Table: Classification Priorities**

Classification Treatment	Priority
Reconstruction	1
Redesign	2
Resurface	3
Pothole Patching	4
Heavy Patching	5
Crack Sealing	6
No Treatment	7

The following notes outline each of the classification priorities shown in above Table and how they are used to determine where road sections will be sent in the resolution matrix.

- **Roughness** – there is a minimum level for class 6 and 7 roads above which sections will be sent to the '*redesign*' area of the resolution phase. Class 8 and 9 roads do not consider roughness due to the low speed environment. A second intervention level has been set where a high roughness results in sections being sent to the '*reconstruction*' area of the resolution phase.
- **Rut depth** – there is a lower intervention level based on class above which sections will be sent to the '*redesign*' area of the resolution phase.
- **Environmental cracking** – there is a lower intervention level based on class above which sections will be sent to the '*crack sealing*' area of the resolution phase. When the cracking is greater than the upper intervention level the section will be sent to the '*redesign*' area of the resolution phase.
- **Fatigue cracking** – there is a lower intervention level based on class above which sections will be sent to the '*heavy patching*' area of the resolution phase. When the cracking is greater than the upper intervention level the section will be sent to the '*redesign*' area of the resolution phase to investigate the cause of the structural cracking.
- **Potholes** - there is a minimum level based on class above which sections will be sent to the '*pothole patching*' area of the resolution matrix. When the potholes are greater than the upper intervention level the section will be sent to the '*redesign*' area of the resolution matrix.

- 32 -

- **Ravelling** - there is a lower intervention level based on class above which sections will be sent to either the 'rejuvenation', or 'resurface' area of the resolution phase.

If a section has no characteristics exceeding the minimum intervention levels, the section will be sent to the 'no treatment' area of the resolution matrix.

### Resolution

This phase uses a series of decision trees in order to obtain a treatment suitable for routine maintenance, resurfacing or rehabilitation of each pavement section. The treatment can be based on a combination of both the condition and attributes of the pavement, such as: roughness, rut depth, NAASRA class, surface type, kerb height, overlay requirement, curvature function, geographical conditions, skid resistance parameters and surface life. The careful process of combining the desired factors allows the system to define the treatment selection process, with the process being flexible and tailored to the client's practices and pavement conditions, creating an expert system.

The following notes outline the operation of various areas of the resolution matrix in determining what, if any, treatment will be applied to a given section. The resolution matrix is read from left to right with a particular treatment being applied only if all criteria in the particular row are satisfied.

- **No Treatment** - When sections are assigned the Treatment Classification of 'no treatment' no treatment is applied.
- **Crack Sealing** - When sections are sent to crack sealing this treatment is applied to the areas affected by environmental cracking.
- **Pothole Patching** - When sections are sent to pothole patching this treatment is applied to the areas affected by potholes.
- **Heavy Patching** - When sections are sent to heavy patching this treatment is applied to the areas affected by structural cracking.
- **Resurface** - When sections are sent resurface and asphalt overlay treatment is applied based on the total area of the section.
- **Redesign** - Sections sent to the treatment classification 'redesign' are divided into a range of characteristics as outlined in the Resolution Matrix, Appendix A.
- **Reconstruction** - When sections are sent to reconstruction this treatment is applied based on a depth of 200mm of asphalt material.

### Works Effects

Post resolution adjustment, or the resetting of condition data after a treatment, is required so that decisions for future years can be made on the basis of defensible data. The adjustment modifies the condition of the pavement so that it reflects the predicted condition after performing a certain treatment. The following Table shows the works effects models used for all years in the analysis, for each treatment.

**Table: Works Effects Models, Reset Values**

Treatment	Roughness Reset, Min Value	Potholes	Environmental Cracking	Fatigue Cracking	Rutting	Surface Age	Structural Capacity
Crack Sealing	N/A	N/A	0	N/A	N/A	No	No
Pothole Patching	+1, N/A	0	N/A	N/A	N/A	No	No
Heavy Patching	+2, N/A	0	N/A	0	N/A	No	No
Mill & Resheet	-60, 70	0	0	0	0	Yes	No
Full Depth Asphalt	-150, 70	0	0	0	0	Yes	Yes

\* Ravelling condition is also reset to zero where indicated by "Yes"



### **Risk Scenarios**

Each pavement condition is examined through five scenarios. These include DO NOTHING, ROUTINE and three USER DEFINED risk scenarios.

The three USER DEFINED risk scenarios are based on the statistical risk of failure. For example, if we want to be 100% sure our decision is correct then we will have to use a safety factor to ensure all failure contingencies are met. If it is possible to accept a 25% failure (i.e. expect to be correct 75% of the time) then it is possible to accept a lower safety factor, and if we are considered to be correct 50% of the time we need not use a safety factor at all.

The risk scenarios used in the analysis for North Sydney Council are 5, 15 and 25%.

The ROUTINE scenario is when the system adopts a strategy of only crack sealing, pothole and heavy patching until such time as the pavement reaches terminal roughness and public objection would dominate. At this point reconstruction is necessary.

The DO NOTHING scenario adopts a strategy of no treatments on the pavement section until reconstruction is required. This is a viable option when the pavement is in a poor condition thus making it more cost effective to allow deterioration to the terminal point, and then reconstructing.

### **Data Synchronisation**

The PARMMS<sup>®</sup> Road Manager system is capable of accepting input data on a cyclical basis, where treatments are applied on an annual basis reflecting the work undertaken in that year. As a result, there will be age discrepancies between the data sets for different pavement sections with some being based on measured data and others on predicted data.

Because the pavement section's data maybe collected once every five years, the information necessary to compute the pavement sections maintenance strategy is out of synchronisation with the starting year of the analysis. Thus there is a preliminary activity to bring this condition into synchronisation before the optimum redesign treatment can be identified.

The PARMMS<sup>®</sup> Road Manager system will deteriorate the condition for each pavement section in accordance with the deterioration models and the time interval between the pavement sections condition date and the analysis start date.

After the pavement condition has been deteriorated using the appropriate deterioration models, all conditions are in synchronisation with the analysis start date. At this point further analysis and decisions identify the optimum redesign treatment for the applicable scenario and study period.

### **Model Calibration**

The deterioration models have previously been calibrated based on Long Term Pavement Performance (LTPP) site data previously collected across the North Sydney and Sydney road networks. The following environmental factor and rainfall figures are also used;

- Environmental Factor: 1.0% (deterioration in roughness per annum associated with the temperature and rainfall environment of the NSC network)
- Mean Monthly Precipitation: 100mm

### **Traffic**

Traffic count data has been provided for 43% of the road network over a period of 19 years with close to half this data less than 5 years old. Where traffic count data is not available, traffic data was interpolated using traffic data from adjacent road segments or surrounding roads by representatives of NSC in order to provide 100% coverage of the network.

### **Classification Matrix**

- 34 -

ROUGHNESS (NRM)	NAASRA CLASS 6	NAASRA CLASS 7	NAASRA CLASS 8	NAASRA CLASS 9
0 - 100	No Treatment	No Treatment	No Treatment	No Treatment
100 - 150	Redesign	No Treatment	No Treatment	No Treatment
150 - 200	Redesign	Redesign	No Treatment	No Treatment
200 - 350	Redesign	Redesign	Redesign	No Treatment
350 - 400	Redesign	Redesign	Redesign	Redesign
> 400	Reconstruction	Reconstruction	Reconstruction	Reconstruction

RUT DEPTH (mm)	NAASRA CLASS 6	NAASRA CLASS 7	NAASRA CLASS 8	NAASRA CLASS 9
0 - 6	No Treatment	No Treatment	No Treatment	No Treatment
6 - 12	Redesign	No Treatment	No Treatment	No Treatment
12 - 18	Redesign	Redesign	No Treatment	No Treatment
18 - 24	Redesign	Redesign	Redesign	No Treatment
> 24	Redesign	Redesign	Redesign 1	Redesign

ENVIRONMENTAL CRACKING (%)	NAASRA CLASS 6	NAASRA CLASS 7	NAASRA CLASS 8	NAASRA CLASS 9
0 - 5	No Treatment	No Treatment	No Treatment	No Treatment
5 - 10	Heavy Patching	No Treatment	No Treatment	No Treatment
10 - 20	Heavy Patching	Heavy Patching	No Treatment	No Treatment
20 - 30	Redesign	Redesign	Heavy Patching	Heavy Patching
> 30	Redesign	Redesign	Redesign	Redesign

STRUCTURAL CRACKING (%)	NAASRA CLASS 6	NAASRA CLASS 7	NAASRA CLASS 8	NAASRA CLASS 9
0 - 2	No Treatment	No Treatment	No Treatment	No Treatment
2 - 5	Heavy Patching	No Treatment	No Treatment	No Treatment
5 - 10	Heavy Patching	Heavy Patching	No Treatment	No Treatment
10 - 15	Heavy Patching	Heavy Patching	Heavy Patching	No Treatment
15 - 20	Heavy Patching	Heavy Patching	Heavy Patching	Heavy Patching
20 - 30	Redesign	Redesign	Heavy Patching	Heavy Patching
30 - 50	Redesign	Redesign	Heavy Patching	Heavy Patching
> 50	Redesign	Redesign	Redesign	Redesign

POTHoles & POTHOLE PATCHING (%)	NAASRA CLASS 6	NAASRA CLASS 7	NAASRA CLASS 8	NAASRA CLASS 9
0 - 5	No Treatment	No Treatment	No Treatment	No Treatment
5 - 8	Pothole Patching	Pothole Patching	Pothole Patching	Pothole Patching
8 - 13	Heavy Patching	Heavy Patching	Heavy Patching	Pothole Patching
13 - 15	Redesign	Redesign	Heavy Patching	Pothole Patching
15 - 20	Redesign	Redesign	Redesign	Heavy Patching
> 20	Redesign	Redesign	Redesign	Redesign

RAVELLING (%)	NAASRA CLASS 6	NAASRA CLASS 7	NAASRA CLASS 8	NAASRA CLASS 9
0 - 10	No Treatment	No Treatment	No Treatment	No Treatment
10 - 25	Resurface	No Treatment	No Treatment	No Treatment
25 - 35	Resurface	Resurface	No Treatment	No Treatment
35 - 50	Resurface	Resurface	Resurface	No Treatment
50 - 75	Redesign	Resurface	Resurface	Resurface
80 - 100	Redesign	Redesign	Resurface	Resurface

## Resolution Matrix

NAASRA Class	Treatment Classification	Surface Type	Minimum Age	Structural Cracking	Treatment Number	Treatment		
6	No Treatment				2	No Treatment		
	Crack Sealing				5	Crack Sealing		
	Heavy Patching				7	Heavy Patching		
	Pothole Patching				6	Pothole Repair		
	Resurfacing	Asphalt	≤ Min			2	No Treatment	
			> Min			9	Mill & Resheet	
			Concrete			2	No Treatment	
	Pavers					2	No Treatment	
			Asphalt	≤ Min			2	No Treatment
				> Min	≤ 20		9	Mill & Resheet
	Redesign	Asphalt		> 20		11	Full Depth Asphalt	
			Concrete	< 50		2	No Treatment	
		Pavers		> 50		18	Reconstruction Concrete	
						2	No Treatment	
	Reconstruction	Asphalt				17	Reconstruction Asphalt	
Concrete					18	Reconstruction Concrete		
Pavers					2	No Treatment		

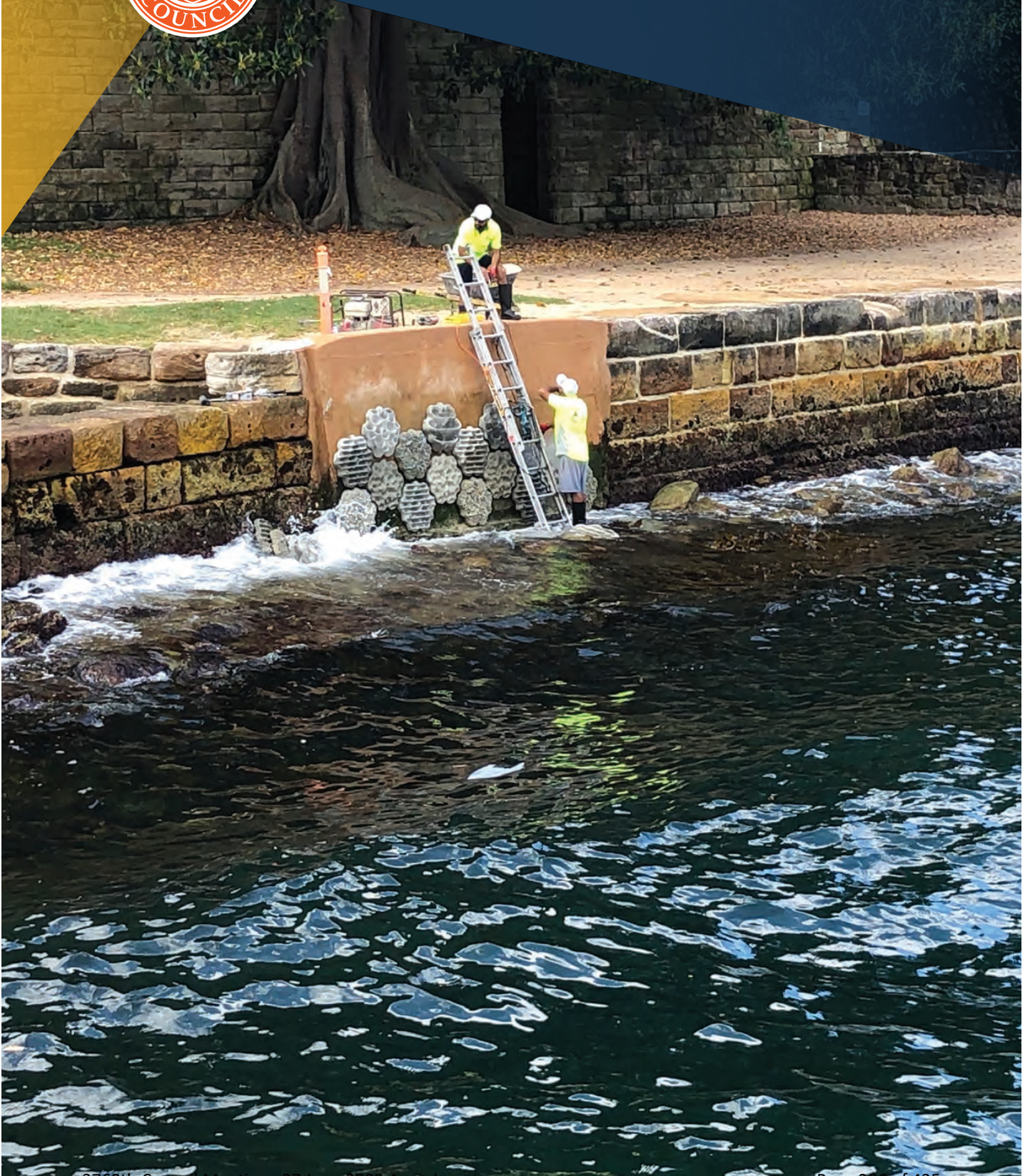
NAASRA Class	Treatment Classification	Surface Type	Minimum Age	Structural Cracking	Treatment Number	Treatment	
7	No Treatment				2	No Treatment	
	Crack Sealing				5	Crack Sealing	
	Heavy Patching				7	Heavy Patching	
	Pothole Patching				6	Pothole Repair	
	Resurfacing	Asphalt	≤ Min			2	No Treatment
			> Min			9	Mill & Resheet
			Concrete			2	No Treatment
	Redesign	Asphalt	≤ Min			2	No Treatment
				> Min	≤ 25	9	Mill & Resheet
			> Min	> 25	11	Full Depth Asphalt	
		Concrete		< 50	2	No Treatment	
				> 50	18	Reconstruction Concrete	
	Reconstruction	Pavers				2	No Treatment
		Asphalt				17	Reconstruction Asphalt
		Concrete				18	Reconstruction Concrete
Pavers					2	No Treatment	

NAASRA Class	Treatment Classification	Surface Type	Minimum Age	Structural Cracking	Treatment Number	Treatment	
8	No Treatment				2	No Treatment	
	Crack Sealing				5	Crack Sealing	
	Heavy Patching				7	Heavy Patching	
	Pothole Patching				6	Pothole Repair	
	Resurfacing	Asphalt	≤ Min			2	No Treatment
			> Min			9	Mill & Resheet
			Concrete			2	No Treatment
	Redesign	Asphalt	≤ Min			2	No Treatment
				> Min	≤ 40	9	Mill & Resheet
			> Min	> 40	11	Full Depth Asphalt	
		Concrete		< 50	2	No Treatment	
				> 50	18	Reconstruction Concrete	
	Reconstruction	Pavers				2	No Treatment
		Asphalt				17	Reconstruction Asphalt
		Concrete				18	Reconstruction Concrete
Pavers					2	No Treatment	


NAASRA Class	Treatment Classification	Surface Type	Minimum Age	Structural Cracking	Treatment Number	Treatment	
9	No Treatment				2	No Treatment	
	Crack Sealing				5	Crack Sealing	
	Heavy Patching				7	Heavy Patching	
	Pothole Patching				6	Pothole Repair	
	Resurfacing	Asphalt	≤ Min			2	No Treatment
			> Min			9	Mill & Resheet
			Concrete			2	No Treatment
	Redesign	Asphalt	≤ Min			2	No Treatment
				> Min	≤ 50	9	Mill & Resheet
			> Min	> 50	11	Full Depth Asphalt	
		Concrete		< 50	2	No Treatment	
				> 50	18	Reconstruction Concrete	
	Reconstruction	Pavers				2	No Treatment
		Asphalt				17	Reconstruction Asphalt
		Concrete				18	Reconstruction Concrete
Pavers					2	No Treatment	



# NORTH SYDNEY COUNCIL ASSET MANAGEMENT PLAN SEAWALLS 2022-2032





<b>Document Control</b>		<b>Asset Management Plan</b>				
Document ID : NSC AMP Other Infrastructure 2023 Seawalls						
Rev No	Date	Revision Details	Author	Reviewer	Approver	
1	12/12/2021	First Draft	IM	JVH/DM	DM	



## Table of Contents

Seawalls .....	4
Executive summary.....	4
Seawalls – Future Demand .....	5
Seawalls – Levels of Customer Service .....	5
Seawalls – Levels of Technical Service .....	5
Seawalls - Condition.....	6
Seawalls – Review of Useful Lives.....	8
Seawalls – Funding Strategy .....	9
Seawalls – Capital works.....	9
Seawalls – Managing the Risks .....	9
Seawalls – Maintenance .....	14
Seawalls – Prioritised Expenditure Forecast.....	14
Seawalls – Valuation Forecast .....	15
Seawalls – Key Assumptions – Financial Forecasts.....	15
Seawalls – Creation / Acquisition / Upgrade Program .....	15
Seawalls – Disposal Plan .....	15
Seawalls – Forecast reliability and confidence .....	15
Seawalls – Improvement Plan.....	15
Seawalls – Monitoring and Review Procedures.....	15
Seawalls – Renewal and Replacement Program.....	15
Seawalls – Funding Scenarios .....	16
Seawalls – Service and Risk Tradeoffs .....	16
Service trade-off .....	16
Risk trade-off .....	16
Seawalls – Renewal and Replacement Program – FY2023-FY2032 (10 Year Plan).....	16
Priority Projects 2022/23 (Year 1) .....	17
Priority Projects 2023/24 (Year 2) .....	17
Priority Projects 2024/25 (Year 3) .....	17
Priority Projects 2025/32 (Year 4-10) .....	18
Works Identified – Years 2025 - 32 (Years 4 - 10).....	18
Seawalls Renewal Program.....	20
Seawalls – Performance Measures.....	22
Seawalls – References.....	22

## Seawalls

### Executive summary

Located across the North Sydney LGA is approximately 4.7km of seawalls which are comprised of various materials and typologies. The condition of Sea Walls was assessed in 2017 by Manly Hydraulics Laboratory for every 10m section of wall. Each wall was divided into 10m sections to assess the condition and risk. Forty two seawalls were visited in the field. The total length of seawalls is 4,666m and the total area is 16,615 Sq.m.

The Seawalls are generally vertical or sloped gravity walls constructed from sandstone blocks and mortar.

Each wall was divided into segments of 10m or less and a condition score was assigned to each segment.

Overall some 87.6% of the portfolio is in very good to fair condition (1-3) with some 12.4% in poor to very poor condition (4-5).

A Risk rating was assigned to each segment. Overall 87% of the portfolio has a low to medium risk rating and 13% has a high to very high risk rating.

The total Replacement Value of the portfolio is \$91,267,050 as at 30 June 2021. The values are shown in the Table below.

**Table 1: Seawalls – Summary Table**

Asset Category	Length (m)	Replacement Value (2021)	Accumulated Depreciation (2021)	Fair Value (2021)	Depreciation Expense
Seawalls	4,666	\$91,267,050	\$45,914,051	\$45,352,999	\$838,992

The following table provides a summary of the quantities and replacement values for each wall type. The portfolio is dominated by sandstone block walls.

**Table 2: Seawalls – Typology**

Seawall Type	Total Length (m)	Sum of Replace Costs
Concrete	396	\$5,301,615
Concrete, Granite, Sandstone	10	\$369,934
Concrete, Sandstone	848	\$24,132,430
Concrete, Sandstone, Steel	20	\$383,140
Concrete, Steel	30	\$547,931
Concrete, Timber	70	\$980,431
Concrete, Timber, Sandstone	10	\$137,326
Sandstone	3,028	\$56,475,540
Sandstone, Concrete	234	\$2,680,529
Sandstone, Timber	20	\$258,173
<b>Grand Total</b>	<b>4,666</b>	<b>\$91,267,050</b>

- 5 -

### Seawalls – Future Demand

Drivers affecting demand for seawalls include things such as population growth, regulation changes – new development, community expectations (Public Safety), technological changes, climate change, economic factors and environmental factors.

### Seawalls – Levels of Customer Service

Service levels are defined service levels in two terms, customer levels of service and technical levels of service. These are supplemented by organisational measures.

**Customer Levels of Service** measure how the customer receives the service and whether value to the customer is provided.

Customer levels of service measures used in the asset management plan are:

<b>Quality</b>	How good is the service ... <i>what is the condition or quality of the service?</i>
<b>Function</b>	Is it suitable for its intended purpose .... <i>Is it the right service?</i>
<b>Capacity/Use</b>	Is the service over or under used ... <i>do we need more or less of these assets?</i>

The current and expected customer service levels are detailed in table below.

**Table 3: Seawalls – Levels of Customer Service**

Service Attribute	Expectation	Performance Measure Used	Current Performance	Desired Position in 10 Years
<b>Quality</b>	Seawalls are well maintained.	Percentage of seawalls in 'very good' or 'good' (1, 2) and percentage poor/very poor (4, 5) Condition.	87.6% of seawalls in 'very good', 'good' or 'Fair' (1, 2, 3) condition.  12.4% of seawalls in poor/very poor (4, 5) Condition.	Maintain – Condition 1-2-3  Improve and replace Condition 4-5
<b>Function</b>	Standard seawalls are constructed from sandstone.	Percentage of seawalls constructed from sandstone where practical.	92.5% (by length) of seawalls are constructed or partly constructed from sandstone	Improve
<b>Capacity and Use</b>	Number of seawalls required is appropriate.	Number of additional seawalls required	No additional seawalls identified as being required	Improve

### Seawalls – Levels of Technical Service

**Technical Levels of Service** - Supporting the customer service levels are operational or technical measures of performance. These technical measures relate to the allocation of resources to service activities to best achieve the desired customer outcomes and demonstrate effective performance.

Technical service measures are linked to the activities and annual budgets covering:

- Operations – the regular activities to provide services (e.g. cleaning, inspections, etc).

- 6 -

- Maintenance – the activities necessary to retain an asset as near as practicable to an appropriate service condition. Maintenance activities enable an asset to provide service for its planned life (e.g. seawall repair – patching, minor works),
- Renewal – the activities that return the service capability of an asset up to that which it had originally (e.g. seawall replacement and or seawall component replacement),
- Upgrade/New – the activities to provide a higher level of service (e.g. increasing the size or length of a seawall or upgrading its structural / retaining capacity through complete replacement to address new site conditions. (e.g. replacing a sandstone block seawall with a reinforced concrete seawall with sandstone flagging.

Table 4 shows the technical levels of service expected to be provided for seawalls. The ‘Desired’ position in the table documents the position being recommended in this AM Plan.

**Table 4: Seawalls – Technical Levels of Service**

Service Attribute	Service Activity Objective	Activity Measure Process	Current Performance	Desired for Optimum Lifecycle Cost
<b>Operations</b>	Undertake network inspections to monitor condition	Network inspections to monitor condition	Network inspected in 2018	Network inspected every 5 years
<b>Maintenance</b>	Reactive service Requests completed in a timely manner or made safe.	Respond to complaints.	Minor repairs undertaken in accordance with Maintenance Management System	Minor repairs undertaken in accordance with Maintenance Management Delivery System.
<b>Renewal</b>	Maintain existing assets to a satisfactory condition	Percentage of seawalls in poor/very poor (4, 5) Condition.	12.4% of seawalls in poor/very poor (4, 5) Condition.	Improve or replace
<b>Upgrade</b>	Standard seawalls are constructed from sandstone where practical.	Percentage of seawalls constructed from sandstone where practical.	92.5% (by length) of seawalls are constructed or partly constructed from sandstone	Maintain
<b>New</b>	Satisfactory provision of seawalls.	New seawalls provided as required.	No additional seawalls identified as being required	No additional seawalls identified as being required

#### **Seawalls - Condition**

The condition of council’s 4,666m of seawalls was surveyed at 10m intervals in 2017 by Consultants, Manly Hydraulics Laboratory.

- 7 -

**Table 5: Seawalls Condition Survey Criteria**

Grade	Condition	Description
1	Very Good	Sound wall designed to current standards and well maintained with no defects. <b>No work required</b>
2	Good	As grade 1 but not designed to current standards or showing minor wear, tear and deterioration of surfaces e.g. minor mortar loss and weathering, but no undermining of foundation. Needs to be reinspected in 2- 3 years. Deterioration has no significant impact on stability and appearance of the wall. <b>Only minor work required</b>
3	Fair	Wall functionally sound, but appearance affected by minor defects e.g. cracks <2mm, surface weathering, chipping of stone and minor loss of mortar, isolated undermining of foundation, but no loss of stability. Some deterioration beginning to be reflected in stability and appearance of the wall. <b>Some work required</b>
4	Poor	Wall functioning but with problems due to significant defects e.g. cracks 2-10mm, mortar loss, loss of stone, undermining of foundations, deformation and loss of support, likely to cause marked deterioration of stability and appearance likely within 1 year. <b>Some replacement or rehabilitation needed within 1 year</b>
5	Very Poor	Wall has serious problems and has failed or are about to fail in the near future, causing unacceptable stability, appearance and is a Public Safety Hazard. <b>Urgent replacement/ rehabilitation required</b>

The table below shows the condition of Seawall assets in terms of replacement cost where condition 1 is very good and 5 is very poor condition. In practice and where funds permit seawall sections in condition 3 are generally replaced at the same time as seawall sections in condition 4 or 5 if they are adjacent, there are potential risks, and it is cost effective.

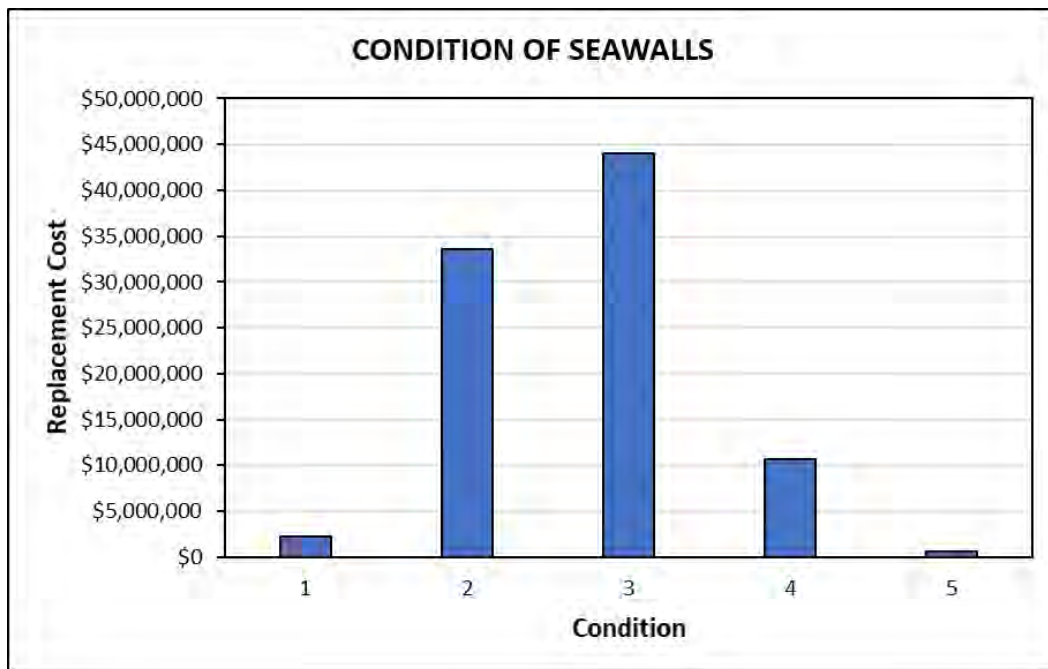
**Table 6: Seawalls Condition Survey Results - Overall**

CONDITION OF SEAWALLS			
Condition	Length (m)	Replacement Cost	% Condition (based on cost)
1 (Very Good)	85	\$2,287,657	2.5%
2 (Good)	1,699	\$33,583,297	36.8%
3 (Fair)	2,258	\$44,057,119	48.3%
4 (poor)	584	\$10,709,725	11.7%
5 (Very Poor)	40	\$629,251	0.7%
<b>Total</b>	<b>4,666</b>	<b>\$91,267,050</b>	<b>100.0%</b>

The Graph below shows the condition of Seawall assets over the entire network in terms of replacement cost.



- 8 -



### Seawalls – Review of Useful Lives

Determining the useful lives of seawalls in North Sydney is a challenging process. There appears to be limited information on sandstone “gravity” seawalls. Research into the historical construction date is currently being undertaken. Most of the seawalls (if not all) in North Sydney were constructed by the State Government on Crown Land and then handed over to North Sydney Council for “Care, Control, and Management”. As council did not construct most of these seawalls (if any) information on the construction date is unknown and is currently being sought from various State Government Departments. Once the construction date is determined the current Age of each seawall is found. Adding the estimated Remaining Life to the Age will provide an estimate of the total Useful Life.

Detailed aerial photography taken in 1943 is available through the State Government. This shows that 84% of seawalls existed in their current location in 1943. This information, whilst vague, at least provides evidence of the existence of seawalls at a point in time. It is interesting to note that about 40% of the sandstone seawalls that were in existence in 1943 have significant concrete sections within them. This suggests that major rehabilitation work was undertaken to stabilise these walls at some time unknown (prior to the 1980s). What is known is that, as a result of significant deterioration of these seawalls, North Sydney has undertaken major rehabilitation on many sections of nearly every single seawall under its care since the early 1990s onwards. This includes major rehabilitation on seawalls that must have been constructed after 1943. It is also very clear that if this action was not undertaken these seawalls would have fully collapsed into the harbour. In some instances due to the nature of sudden failures some sections of seawalls have previously collapsed into the harbour before rehabilitation could be carried out. The seawall at McMahons Point fully collapsed which required full reconstruction in 2006.

The aggressive nature of the harbour environment affects the Useful Life of seawalls with waves constantly pounding against the sandstone wall founded on the harbour foreshore often on soil with weak bearing capacity. Both the volume, type, and size of harbour traffic also influence the Useful Life of seawalls including Ferries, Cruise Liners, commercial, and recreational craft. The river cat with the unique wave frequency and

- 9 -

amplitude affects the life of seawalls. Also under certain tides and conditions waves currently overtops at some seawall locations. This combined with future sea level rise will further increase the frequency waves currently overtop seawalls and reduce the remaining life of seawalls and therefore reduce the useful life.

Most of the original seawall sandstone blocks are still in place and most of these seawalls have been rehabilitated. Until further detailed research is completed a “long life short life” approach has been adopted in accordance with accounting standards. Until further detailed research is completed a short life of 80 years has been adopted which is the estimated period when major seawall rehabilitation is required. This major seawall rehabilitation may extend the life of seawalls by a further 40 years. Therefore, until further detailed research is completed a long life of 120 years has been adopted for seawalls. Based on this Depreciation is as follows:

Capital funding to maintain a renewal ratio of 1	
	Annual Depreciation
Seawalls	\$838,992

A budget of \$838,992 is required on average over the long term to maintain the condition of Council’s Seawall network, noting that fluctuations in renewal requirements in the medium term.

#### Seawalls – Funding Strategy

The Asset Renewal Funding Ratio is the most important indicator. It compares funding with depreciation. An Asset Renewal Funding Ratio of 1 or greater sustained over the long term indicates the optimal renewal and replacement of assets.

The forecast for Depreciation (or Long Term Average Annual Asset Consumption) is \$838,992. Therefore, an annual average capital renewal funding of \$838,992 (2021 dollars) will achieve an Asset Renewal Funding Ratio of 1.

The cost to fully replace assets identified by Consultants, Manly Hydraulics Laboratory, in condition 4 and 5 as well as the cost to replace the condition 3 assets which will become condition 4 over the next 10 is \$27,539,158. This is an average annual cost of \$2,753,916 which is greater than the \$838,992 Depreciation Expense and is greater than the average annual forecast budget of \$1,983,785. With further investigation and detailed design it is hoped that alternate and lesser cost solutions may be possible to maintain seawall assets at an optimal level.

#### Seawalls – Capital works

Replacement of seawall segments is assumed to be a capital works project.

The ranking criteria used to determine priority of identified renewal and replacement proposals is detailed in table 7. A priority for action of 1 to 5 has been assigned to each seawall requiring capital works as described in the following table.

#### Seawalls – Managing the Risks

There are risks associated with providing and maintaining seawalls. They are primarily as follows:

- Sudden failure of seawalls providing structural support to roads, footpaths and parks – causing property damage – public safety hazards, injury.

The following risk response table was used to identify those seawall segments requiring action within the next 10 years.

**Table 7: Seawalls – Risk Response Table**

Level of Risk		Condition	Action Required	Time frame for repairs, upgrade or replacement
VH	Very High Risk	5	Immediate corrective action	1-12 months
H	High Risk	4	Prioritised action required	2-10 Years
M	Medium Risk	3	Planned action required	4-10 Years
L	Low Risk	2	Manage by routine procedures	Inspections 1-2 years
New	No Risk	1	None	None

Consideration has been given to each seawall segment, whether to replace the seawall segment or perform maintenance on it.

Seawall segments that have a **Very High or High** risk rating were considered to need replacement within the 1-10 year forecast period.

Seawall segments with a **Medium** risk rating were also considered needing replacement within the 4-10 year forecast period.



Examples of failed and failing seawalls in the North Sydney LGA – Bradfield Park





Examples of failed and failing seawalls in the North Sydney LGA – Cremorne Point



Examples of failed and failing seawalls in the North Sydney LGA – Sawmillers Reserve





Examples of failed and failing seawalls in the North Sydney LGA – Blues Point



Examples of failed and failing seawalls in the North Sydney LGA – McMahons Point





Examples of crowded foreshore on New Years Eve in the North Sydney LGA – Blues Point

Council will endeavour to manage these risks within available funding by prioritising seawall renewal works based on the North Sydney Council Seawalls and Backfill Condition Audit prepared by Consultants, Manly Hydraulics Laboratory.

**Table 8: Seawalls – Capital renewal Priorities based on Condition and Risk Rating**

Risk Matrix - Seawalls (Condition and Risk Rating)					
Likelihood of seawall failing (L) Refer to Table 5 Condition Criteria	Seawalls (No. of walls)				
	Seawall Height	0 to 1m	>1m to 2m	>2m to 3m	>3m
	Relative Usage	Low	Medium	High	Very High
	Park Hierarchy	Local	District	Regional	
	Priority	d	c	b	a
Condition 1 – Very Good (2.5%)	5	N/A	1	N/A	1
Condition 2 - Good (36.8%)	4	N/A	N/A	11	2
Condition 3 – Fair (48.3%)	3	N/A	3	8	6
Condition 4 – Poor (11.7%)	2	N/A	1	2	5
Condition 5 – Very Poor (0.7%)	1	N/A	1	1	N/A

**(Note: Also Refer to Table 6)**

**Note:** This table has been based on data from the 2017 North Sydney Council Seawalls and Backfill Condition Audit, performed by Manly Hydraulics Laboratory.

**Note:** Factors which are used to determine the priority include ‘Seawall Height’, ‘Road Hierarchy’ and ‘Park Hierarchy’. The most critical factor is used to determine the priority.

It should be noted that seawalls may also be replaced based on other criteria including:

- Damage
- Seawalls replaced in association with other projects such as marine structure works
- Landscape projects

**Seawalls – Maintenance**

Routine maintenance is the regular on-going work that is necessary to keep assets operating, including instances where portions of the asset fail and need immediate repair to make the asset operational again, e.g. Resetting of loose blocks, re-pointing mortar.

Maintenance includes all actions necessary for retaining an asset as near as practicable to an appropriate service condition including regular ongoing day-to-day work necessary to keep assets operating.

**Seawalls – Prioritised Expenditure Forecast**

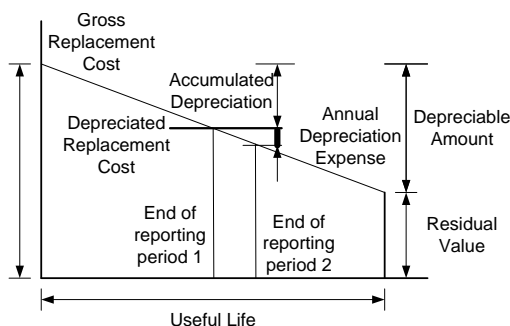
**Table 9: Seawalls – Prioritised Expenditure Forecast – 10 years FY2023-FY2032**

Year	Priority	Capital Costs	Maintenance Costs	Total Costs	
1	2022/23	1a	\$1,000,000	\$0	\$1,000,000
2	2023/24	2a	\$1,237,856	\$0	\$1,237,856
3	2024/25	2a	\$2,200,000	\$0	\$2,200,000
4-10	2025/32	2a to 2c	\$15,400,000	\$0	\$15,400,000
Works Identified	2025/32	3a to 3c	\$7,501,302	\$0	\$7,501,302
		<b>Grand Total</b>	<b>\$27,339,158</b>	<b>\$0</b>	<b>\$27,339,158</b>

In summary the current value of seawall assets is detailed in the table below.

**Table 10: Seawalls – Valuation**

Asset Category	Length (m)	Replacement Value (2021)	Accumulated Depreciation (2021)	Fair Value (2021)	Depreciation Expense
Seawalls	4,666	\$91,267,050	\$45,914,051	\$45,352,999	\$838,992



### Seawalls – Valuation Forecast

Asset values (Seawalls) are forecast to increase slowly. It is forecast that no additional assets are expected to be added to the asset stock from new construction and acquisition by Council or from assets constructed by land developers or other assets donated to Council.

### Seawalls – Key Assumptions – Financial Forecasts

Key assumptions made in this asset management plan for Seawalls are:

**Table 11: Key Assumptions made in AM Plan and Risks of Change**

Key Assumptions	Risks of Change to Assumptions
Useful Lives of Seawalls	Low risk
Rate of deterioration	Low risk

### Seawalls – Creation / Acquisition / Upgrade Program

New works are those that create a new asset that did not previously exist, or works which will upgrade or improve an existing asset beyond its existing capacity. They may result from growth, social or environmental needs. Assets may also be acquired at no cost. No new assets are currently identified.

### Seawalls – Disposal Plan

No seawall assets have been identified for disposal.

### Seawalls – Forecast reliability and confidence

The estimated confidence level and reliability of data used in this AMP is considered to be reliable as the data is based on a detailed condition report on Seawalls.

### Seawalls – Improvement Plan

The improvement plan is shown in the table below.

Task No	Task	Responsibility	Resources Required	Timeline
1	Research the Useful Life of Seawalls	EPS	Staff Time	2024

### Seawalls – Monitoring and Review Procedures

This Asset Management Plan will be reviewed during annual budget planning processes and amended to show any material changes in service levels and/or resources available to provide those services as a result of budget decisions.

The Asset Management Plan has a life of 4 years and is due for complete revision and updating within 1 year of each Council election.

### Seawalls – Renewal and Replacement Program

Renewal and replacement expenditure is major work which does not increase the asset's design capacity but restores, rehabilitates, replaces or renews an existing asset to its original service potential. Work over and above restoring an asset to original service potential is considered to be an upgrade/expansion or new work expenditure resulting in additional future operations and maintenance costs.

Seawall assets requiring renewal/replacement have been identified by the North Sydney Council Seawalls and Backfill Condition Audit completed by Consultants, Manly Hydraulics Laboratory, in 2017.

### Seawalls – Funding Scenarios

The Long Term Financial Plan includes three scenarios, all of which maintain current services levels but propose differing levels of capital expenditure on the renewal of Council’s ageing infrastructure assets.

In summary:

- Pessimistic Scenario - This Scenario results in a decline in operating results and deficits in the later years.
- Optimistic Scenario - This Scenario results in improvements in operating results for the life of the plan.
- Planned Scenario - This Scenario results modest surplus operating results for the life of the plan.

**Table 12: Funding Scenarios – Seawalls – North Sydney Councils 10 Year Plan**

Scenario	Capital Funding Level Required Per Annum	10 Year Plan \$ Total
Scenario 1.	\$1,983,785/year	<b>\$19,837,856</b>
Scenario 2.	\$1,983,785/year	<b>\$19,837,856</b>
Scenario 3.	\$1,983,785/year	<b>\$19,837,856</b>

**Note:** These Scenarios are based on the 10-year Long Term Financial Plan.

### Seawalls – Service and Risk Tradeoffs

The decisions made in adopting this AM Plan are based on the objective to achieve the optimum benefits from the available resources.

#### Service trade-off

If this funding Scenario is adopted, then the Level of Service will be maintained.

#### Risk trade-off

If this funding Scenario is adopted, then it there is less risk of a sudden collapse of a seawall.

### Seawalls – Renewal and Replacement Program – FY2023-FY2032 (10 Year Plan)

Council’s projected 10 year Capital Renewal Program is shown in the Tables below. It is based on the funding required to replace Seawall assets identified by North Sydney Council Seawalls and Backfill Condition Audit completed by Consultants, Manly Hydraulics Laboratory, in 2017.

It should be noted that seawalls may also be replaced based on other criteria including:

- Damage
- Seawalls replaced in association with other projects such as marine structure works
- Landscape projects

Project priorities may also be subject to change due to accelerated deterioration, sudden failure or finalization of detailed designs and project costings.

Due to the amount of funding required to complete seawall and marine structure projects, funds may be pooled to carry out either marine structure projects, seawall projects or projects from both asset categories.

**Table13: Seawalls – Renewal and Replacement Program – FY2023-FY2032 (10 Year Plan)**

**Priority Projects 2022/23 (Year 1)**

Replace Year	Priority	Seawall ID	Location	Risk Rating / Category	Condition	Capital Cost
2022/23	1a	SW009	Kesterton Park and High St	Very High (5)	Very Poor	\$250,000
2022/23	1a	SW036	Neutral Bay - West of Hayes Street Wharf	Very High (5)	Very Poor	\$450,000
2022/23	1a	SW032a	Tunks Park - Brothers Avenue	Very High (5)	Very Poor	\$300,000
<b>Total</b>						<b>\$1,000,000</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

**Table 14: Seawalls – Renewal and Replacement Program**

**Priority Projects 2023/24 (Year 2)**

Replace Year	Priority	Seawall ID	Location	Risk Rating / Category	Condition	Capital Cost
2023/24	2a	SW002	WILLOUGHBY BAY - PRIMROSE PARK	High (4)	Poor	\$1,237,856
<b>Total</b>						<b>\$1,237,856</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

**Table 15: Seawalls – Renewal and Replacement Program**

**Priority Projects 2024/25 (Year 3)**

Replace Year	Priority	Seawall ID	Location	Risk Rating / Category	Condition	Capital Cost
2024/25	2a	SW024	MILSONS POINT - LUNA PARK WHARF TO JEFFREYS STREET WHARF	High (4)	Poor	\$2,200,000
<b>Total</b>						<b>\$2,200,000</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.



**Table 16: Seawalls – Renewal and Replacement Program****Priority Projects 2025/32 (Year 4-10)**

Replace Year	Priority	Seawall ID	Location	Risk Rating / Category	Condition	Capital Cost
2025/32	2a	SW023	LAVENDER BAY FORESHORE - CLARK PARK AND HARBOURVIEW CR	High (4)	Poor	\$10,460,000
2025/32	2a	SW035a	WONDAKIAH - OYSTER COVER RESERVE	High (4)	Poor	\$350,000
2025/32	2b	SW006	BERRYS BAY - SAWMILLERS RESERVE	High (4)	Poor	\$2,390,000
2025/32	2b	SW026	JEFFREY STREET WHARF - BETWEEN CAPTAIN HENRY WATERHOUSE AND DR MARY BOOTH LOOKOUT	High (4)	Poor	\$420,000
2025/32	2b	SW028	NEUTRAL BAY FORESHORES - WALLARINGA MANSIONS	High (4)	Poor	\$560,000
2025/32	2c	SW008	BALLS HEAD BAY - BERRY ISLAND RESERVE	High (4)	Poor	\$1,220,000
<b>Total</b>						<b>\$15,400,000</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

**Table 17: Seawalls – Renewal and Replacement Program****Works Identified – Years 2025 - 32 (Years 4 - 10)**

Replace Year	Priority	Seawall ID	Location	Risk Rating / Category	Condition	Capital Cost
2025/32	3a	SW019	BERRYS BAY - MUNRO ST	Medium (3)	Fair	\$520,000
2025/32	3a	SW025	JEFFREY STREET WHARF - CAPTAIN HENRY WATERHOUSE RESERVE	Medium (3)	Fair	\$710,000
2025/32	3a	SW035b	WONDAKIAH - OYSTER COVER RESERVE	Medium (3)	Fair	\$900,000
2025/32	3b	SW001	BERRYS BAY - WAVERTON PARK	Medium (3)	Fair	\$550,000
2025/32	3b	SW007b	GORE COVE - BERRY ISLAND RESERVE	Medium (3)	Fair	\$230,000
2025/32	3b	SW010	BEULAH ST WHARF - BEULAH STREET	Medium (3)	Fair	\$100,000
2025/32	3b	SW012	KURRABA POINT - KURRABA POINT RESERVE	Medium (3)	Fair	\$1,660,000
2025/32	3b	SW022	LAVENDER BAY WHARF -	Medium (3)	Fair	\$860,000

- 19 -

Replace Year	Priority	Seawall ID	Location	Risk Rating / Category	Condition	Capital Cost
2025/32	3b	SW030	KURRABA WHARF - NEUTRAL BAY	Medium (3)	Fair	\$100,000
2025/32	3b	SW031	CREMORNE WHARF - MILSON ROAD	Medium (3)	Fair	\$110,000
2025/32	3b	SW032b	TUNKS PARK - BROTHERS AVE	Medium (3)	Fair	\$711,302
2025/32	3b	SW035c	WONDAKIAH - OYSTER COVER RESERVE	Medium (3)	Fair	\$200,000
2025/32	3c	SW027	DR MARY BOOTH LOOKOUT - WARUDA STREET	Medium (3)	Fair	\$70,000
2025/32	3c	SW032c	TUNKS PARK - BROTHERS AVE	Medium (3)	Fair	\$570,000
2025/32	3c	SW033	COLINDA RESERVE -	Medium (3)	Fair	\$90,000
2025/32	3c	SW035d	WONDAKIAH - OYSTER COVER RESERVE	Medium (3)	Fair	\$120,000
<b>Total</b>						<b>\$7,501,302</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

**Seawalls Renewal Program**



Before



After

Sawmillers Reserve – Grout Injection - Completed 2017



Henry Lawson Avenue - Before



Henry Lawson Avenue - After





Before



After

Anderson Park – Grout Injection – Completed 2018



Before



After

Quibaree Park – Grout Injection – Completed 2018

### Seawalls – Performance Measures

The effectiveness of the asset management plan can be measured in the following ways:

- The degree to which the required projected expenditures identified in this asset management plan are incorporated into the long term financial plan,
- The degree to which 1-5 year detailed works programs, budgets, business plans and corporate structures take into account the ‘global’ works program trends provided by the asset management plan,
- The degree to which the existing and projected service levels and service consequences (what we cannot do), risks and residual risks are incorporated into the Strategic Plan and associated plans,
- The Asset Renewal Funding Ratio achieving the target of 1.0.

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NORTH SYDNEY COUNCIL  
**ASSET MANAGEMENT PLAN**  
**SPECIALISED BUILDINGS  
(AMENITIES) 2022-2032**

- 2 -

<b>Document Control</b>		<b>Asset Management Plan</b>				
Document ID : NSC AMP Property 2023 Specialised Buildings (Amenities)						
<b>Rev No</b>	<b>Date</b>	<b>Revision Details</b>	<b>Author</b>	<b>Reviewer</b>	<b>Approver</b>	
1	12/4/2022	First Draft	IM	JVH/DM	DM	

## Table of Contents

Specialised Buildings (Amenities) .....	4
Executive Summary .....	4
Specialised Buildings (Amenities) – Future Demand .....	5
Specialised Buildings (Amenities) – Levels of Customer Service .....	5
Specialised Buildings (Amenities) – Levels of Technical Service .....	6
Specialised Buildings (Amenities) – Condition .....	7
Specialised Buildings (Amenities) – Review of Useful Lives .....	9
Specialised Buildings (Amenities) – Funding Strategy .....	9
Specialised Buildings (Amenities) – Capital works .....	10
Specialised Buildings (Amenities) – Managing the Risks .....	10
Specialised Buildings (Amenities) – Maintenance .....	14
Specialised Buildings (Amenities) – Prioritised Expenditure Forecast .....	14
Specialised Buildings (Amenities) – Valuation Forecast .....	15
Specialised Buildings (Amenities) – Key Assumptions – Financial Forecasts .....	15
Specialised Buildings (Amenities) – Creation / Acquisition / Upgrade Program .....	15
Specialised Buildings (Amenities) – Disposal Plan .....	15
Specialised Buildings (Amenities) – Forecast reliability and confidence .....	15
Specialised Buildings (Amenities) – Improvement Plan .....	16
Specialised Buildings (Amenities) – Monitoring and Review Procedures .....	16
Specialised Buildings (Amenities) – Renewal and Replacement Program .....	16
Specialised Buildings (Amenities) – Funding Scenarios .....	16
Specialised Buildings (Amenities) – Service and Risk Tradeoffs .....	17
Service trade-off .....	17
Risk trade-off .....	17
Specialised Buildings (Amenities) – Renewal and Replacement Program – FY2023-FY2032 (10 Year Plan) .....	17
Priority Projects 2022/23 (Year 1) .....	17
Priority Projects 2023/24 (Year 2) .....	18
Priority Projects 2024/25 (Year 3) .....	18
Priority Projects 2025/32 (Year 4-10) .....	18
Specialised Buildings (Amenities) – Performance Measures .....	21
Specialised Buildings (Amenities) – References .....	21

## Specialised Buildings (Amenities)

### Executive Summary

Located across the North Sydney LGA are 27 specialised public amenity buildings. In 2018 WebFM consultants conducted a Specialised Buildings (Amenities) condition report for North Sydney Council. The objectives were to conduct a detailed inventory data collection and assess each asset in detail for condition and defects.

The condition report identified for each of the nominated sites, the planned maintenance activities required, the lifecycle maintenance works, and the potential sustainability initiatives available. Onsite assessments were carried out for each structure. These structures ranged from amenities blocks, shelters, and canteens.

Council in 2018 also engaged Conybeare Morrison International to prepare a public amenities strategy and action plan. This strategy and action plan detailed a number of key issues, outcomes and recommendations on how to improve public amenities in the North Sydney LGA. The strategy and action plan is being progressively implemented.

Overall, some 78.8% by replacement cost of the portfolio is in very good to good condition (1-2). 21.2% is in fair condition (3) and 0% is in poor to very poor condition (4-5).

A Risk rating was assigned to each Specialised Buildings (Amenities) asset. Overall, 100% of the portfolio has a low to medium risk rating and 0% has a high to very high risk rating.

The total Replacement Value of the portfolio is \$5,888,601 as at 30 June 2021. The values are shown in the Table below.

**Table 1: Specialised Buildings (Amenities) – Summary Table**

Asset Category	Quantity	Replacement Value (2021)	Accumulated Depreciation (2021)	Fair Value (2021)	Depreciation Expense
Specialised Buildings (Amenities)	27	\$5,888,601	\$2,008,284	\$3,880,317	\$113,768

The following table provides a summary of the quantities and replacement values for each Specialised Buildings (Amenities) type.

**Table 2: Specialised Buildings (Amenities) – Typology**

Specialised Buildings (Amenities) Type	Replacement Cost
Anderson Park, Public Toilets and Amenities	\$592,100
Balls Head Reserve, Public Toilet	\$281,408
Barry Street Car Park, Toilet Block	\$191,300
Berry Island Reserve, Public Toilet	\$130,300
Blues Point Reserve, Public Toilet	\$329,163
Bradfield Park, Exeloo (Fitzroy St)	\$170,800

- 5 -

Specialised Buildings (Amenities) Type	Replacement Cost
Bradfield Park, Heritage Shelter North	\$176,636
Bradfield Park, Heritage Shelter South	\$176,636
Bradfield Park, Exeloo (Olympic Drive)	\$242,200
Brennan Park, Exeloo and adjoining men's toilet	\$159,450
Brightmore Reserve, Toilet	\$44,050
Cammeray Park, Amenities and Canteen	\$306,670
Civic Centre Park, Public Toilets	\$124,500
Cremorne Reserve, Public Toilets	\$130,300
Kesterton Park, Public Toilets	\$130,300
Lavender Bay Wharf	\$51,800
Milson Park, Public Toilets	\$103,250
Primrose Park - Toilet Block	\$237,800
St Leonards Park - BBQ Shelter	\$67,900
St Leonards Park - Bon Andrews Pavilion	\$548,400
St Leonards Park - Bon Andrews Pavilion (New Build)	\$210,600
St Leonards Park - Toilet Block (Round)	\$130,300
Tunks Park - Kiosk	\$95,250
Tunks Park - Single Story Toilet	\$277,400
Tunks Park - Toilet & Dressing Shed	\$511,238
Waverton Park - Dressing Shed	\$338,550
Waverton Park - Toilet Block	\$130,300
<b>Grand Total</b>	<b>\$5,888,601</b>

### Specialised Buildings (Amenities) – Future Demand

Drivers affecting demand for Specialised Buildings (Amenities) include things such as population growth, regulation changes – new development, community expectations (Public Safety), technological changes, economic factors and environmental factors.

### Specialised Buildings (Amenities) – Levels of Customer Service

Service levels are defined service levels in two terms, customer levels of service and technical levels of service. These are supplemented by organisational measures.

**Customer Levels of Service** measure how the customer receives the service and whether value to the customer is provided.

Customer levels of service measures used in the asset management plan are:

- Quality**                      How good is the service ... *what is the condition or quality of the service?*
- Function**                    Is it suitable for its intended purpose .... *Is it the right service?*
- Capacity/Use**              Is the service over or under used ... *do we need more or less of these assets?*

The current and expected customer service levels are detailed in the Table below.



**Table 3: Specialised Buildings (Amenities) – Levels of Customer Service**

Service Attribute	Expectation	Performance Measure Used	Current Performance	Desired Position in 10 Years
<b>Quality</b>	Specialised Buildings are well maintained in safe, clean & presentable conditions	Percentage of Specialised Buildings in 'very good', 'good' or 'Fair' (1, 2, 3) condition and Percentage 'poor' or 'very poor' (4, 5) Condition.	100% of the properties in 'very good', 'good' or 'Fair' (1, 2, 3) condition.  0% of properties in 'poor' or 'very poor' (4, 5) Condition.	Maintain – Condition 1-2-3
<b>Function</b>	Specialised Buildings are fit for purpose and suitable for lease on investment properties	Regular inspection to assess the building conditions; number of complaints & feedbacks from the building users on defects and improvements	Building facilities maintained or upgraded by qualified contractors meeting users' needs, legislative compliance and Australian Standards.	Specialised Buildings well maintained and upgraded to meet community needs
<b>Capacity and Use</b>	Specialised Buildings are sustainable for long term use and community use	Regular review with the building users to address the community demands from time to time; closely work with managing agent to keep the investment properties vacancy rate less than 5%	Operational Specialised Buildings in 100% usage rate and about 93% occupied for investment properties excluding properties sold or awaiting demolition	Maintain 100% usage rate in operational Specialised Buildings & above 95% leased out rate for investment properties

**Specialised Buildings (Amenities) – Levels of Technical Service**

**Technical Levels of Service** - Supporting the customer service levels are operational or technical measures of performance. These technical measures relate to the allocation of resources to service activities to best achieve the desired customer outcomes and demonstrate effective performance.

Technical service measures are linked to the activities and annual budgets covering:

- Operations – the regular activities to provide services (e.g. cleaning, inspections, etc).
- Maintenance – the activities necessary to retain an asset as near as practicable to an appropriate service condition. Maintenance activities enable an asset to provide service for its planned life (e.g. Building repair – painting, minor works).
- Renewal – the activities that return the service capability of an asset up to that which it had originally (e.g. Building services and or Building components replacement).

- 7 -

- Upgrade/New – the activities to provide a higher level of service (e.g. demolition of existing building and complete re-construction).

Table 4 shows the technical levels of service expected to be provided for Specialised Buildings (Amenities) assets. The 'Desired' position in the table documents the position being recommended in this AM Plan.

**Table 4: Specialised Buildings (Amenities) – Technical Levels of Service**

Service Attribute	Service Activity Objective	Activity Measure Process	Current Performance	Desired for Optimum Lifecycle Cost
<b>Operations</b>	Periodic inspections to assess condition	Periodic inspections and feedback from building users and maintenance teams	Building portfolio maintained as per dedicated maintenance plan	Building portfolio assessed every 10 years
<b>Maintenance</b>	Maintain existing assets and facilities operating properly and safely	Regular service & response to complaints	Regular service & repairs to any defects found	Regular service & repairs to any defects found
<b>Renewal</b>	Maintain existing assets to good condition	Replace the building components beyond their normal lifecycle	Renewal work done as per replacement schedule	Renewal work done as per replacement schedule
<b>Upgrade</b>	Upgrade existing assets to meet the needs of the community	Number of upgraded assets	Upgrade or alteration work when required	Upgrade or alteration work as per Asset Management Plan
<b>New</b>	New assets to meet public needs	Number of new assets	Review existing needs	Add new assets to meet public needs

**Specialised Buildings (Amenities) – Condition**

The condition of Council's Specialised Buildings (Amenities) network was assessed in 2018 by Consultants, Australis, as part of a Valuation of this asset class. The following condition criteria was used.

**Table 5: Specialised Buildings (Amenities) Condition Survey Criteria**

Grade	Condition	Description
1	Very Good	Newly constructed or renovated assets in very good overall condition. <b>Only planned maintenance work required</b>
2	Good	Assets generally in good condition. <b>Planned maintenance with only minor repair work required</b>

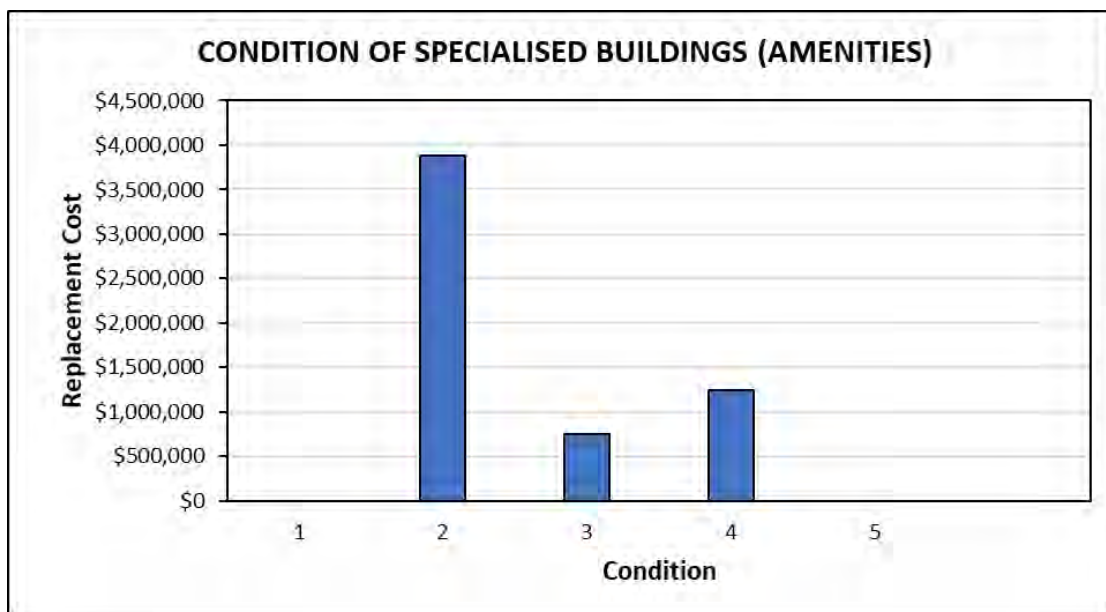
Grade	Condition	Description
3	Fair	Assets generally in average condition. <b>Planned maintenance with moderate to significant repair or renewal work required</b>
4	Poor	Assets generally in poor condition. Service unable to operate in short or medium term. <b>Significant renovation or upgrade work required</b>
5	Very Poor	Assets in critical condition near failure or not safe to use. <b>Urgent reconstruction or complete refurbishment required</b>

The Table below shows the Replacement Cost for each of the condition scores.

**Table 6: Specialised Buildings (Amenities) Condition Survey Results – Overall**

CONDITION OF SPECIALISED BUILDINGS (AMENITIES)			
Condition	Qty	Replacement Cost	% Condition (based on cost)
0 (Unknown)	0	\$0	0.00%
1 (Very Good)	18	\$3,887,300	66.00%
2 (Good)	5	\$753,200	12.80%
3 (Fair)	4	\$1,248,101	21.20%
4 (poor)	0	\$0	0.00%
5 (Very Poor)	0	\$0	0.00%
<b>Total</b>	<b>27</b>	<b>\$5,888,601</b>	<b>100.00%</b>

The Graph below shows the condition of Specialised Buildings (Amenities) assets over the entire network in terms of replacement cost.



### Specialised Buildings (Amenities) – Review of Useful Lives

Consultants Australis undertook a valuation of Specialised Buildings (Amenities) assets in 2018. The following Useful Lives were adopted as part of this valuation.

Specialised Buildings (Amenities)	Useful Life (years)
General amenities, toilet blocks, pavilions, kiosks, dressing sheds	50
Exeloo (automated toilet)	25 - 35
BBQ Shelter - Sandstone	70
Bradfield Park - Heritage Shelters	150

Based on reviewed useful lives the total annual Depreciation is as follows:

Capital funding to maintain a renewal ratio of 1	
	Annual Depreciation
Specialised Buildings (Amenities)	\$113,768

A budget of \$113,768 is required on average over the long term to maintain the condition of Council's Specialised Buildings (Amenities) network, noting that there may be fluctuations in renewal requirements in the medium term.

### Specialised Buildings (Amenities) – Funding Strategy

The Asset Renewal Funding Ratio is the most important indicator. It compares funding with depreciation. An Asset Renewal Funding Ratio of 1 or greater sustained over the long term indicates the optimal renewal and replacement of assets.

The forecast for Depreciation (or Long Term Average Annual Asset Consumption) is \$113,768. Therefore, an annual average capital renewal funding of \$113,768 (2021 dollars) will achieve an Asset Renewal Funding Ratio of 1.

The cost to fully replace assets identified by Consultants, Australis Pty Ltd in condition 4 and 5 as well as the cost to replace the condition 3 assets which will become condition 4 over the next 10 is \$964,532. This is an average annual cost of \$96,453 which is less than the \$113,768 Depreciation Expense and is less than the average annual forecast budget of \$730,000.

### Specialised Buildings (Amenities) – Capital works

Replacement of Specialised Buildings (Amenities) components is assumed to be a capital works project.

The ranking criteria used to determine priority of identified renewal and replacement proposals is detailed in Table 7. A priority for action of 1 to 5 has been assigned to each Specialised Buildings (Amenities) component requiring capital works as described in the following table.

### Specialised Buildings (Amenities) – Managing the Risks

There are risks associated with providing and maintaining Specialised Buildings (Amenities) assets are primarily as follows:

- Sudden failure of Building components – damage due to environmental impact or disasters– causing property damage – public safety hazards, injury or death.

The following risk response table was used to identify those Specialised Buildings (Amenities) assets requiring action within the next 10 years.

**Table 7: Specialised Buildings (Amenities) – Risk Response Table**

Level of Risk		Category	Action Required	Time frame for repairs, upgrade or replacement (subject to funding)
VH	Very High Risk	5	Immediate corrective action	1-4 Years
H	High Risk	4	Prioritised action required	1-4 Years
M	Medium Risk	3	Planned action required	4-10 Years
L	Low Risk	2	Manage by routine procedures	Inspections 1-2 years
New	No Risk	1	None	None

Consideration has been given to each Specialised Building (Amenity) asset whether to replace the Specialised Building (Amenity) or perform maintenance on it.

Segments that have a **Very High or High** risk rating were considered to need replacement within the 1-4 year forecast period.

Segments with a **Medium** risk rating were also considered needing replacement within the 4-10 year forecast period.

Examples of defects in Specialised Buildings (Amenities) in the North Sydney LGA











Council will endeavour to manage these risks within available funding by prioritising Specialised Buildings (Amenities) renewal works based on the North Sydney Council Amenities Condition Report prepared by Consultants, WebFM.

**Table 8: Specialised Buildings (Amenities) – Capital renewal Priorities based on Condition and Risk Rating**

Risk Matrix - Specialised Buildings (Amenities) (Condition and Risk Rating)
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- 14 -

Likelihood of Specialised Buildings (Amenities) failing (L) Refer to Table 5. Condition Criteria	Specialised Buildings (Amenities) – Length (m)			
	Park Hierarchy	Local	District	Regional
	Priority	d	c	b
Condition 1 – Very Good (66.0%)	5	2	8	8
Condition 2 - Good (12.8%)	4	1	2	2
Condition 3 – Fair (21.2%)	3	0	2	2
Condition 4 – Poor (0%)	2	0	0	0
Condition 5 – Very Poor (0%)	1	0	0	0

**(Note: Also Refer to Table 6)**

**Note:** This table is based on data in the current register.

**Note:** The Factor used to determine the priority was ‘Park Hierarchy’.

It should be noted that Specialised Buildings (Amenities) assets may also be replaced based on other criteria including:

- Damage
- Plans of Management

#### Specialised Buildings (Amenities) – Maintenance

Routine maintenance is the regular on-going work that is necessary to keep assets operating, including instances where portions of the asset fail and need immediate repair to make the asset operational again, e.g. cleaning, regular service and minor repairs.

Maintenance includes all actions necessary for retaining an asset as near as practicable to an appropriate service condition including regular ongoing day-to-day work necessary to keep assets operating.

Current maintenance expenditure levels are considered to be adequate to meet projected service levels.

Over the longer term future operations and maintenance expenditure is forecast to be steady as the asset stock is not forecast to increase. The following table summarises the prioritised capital works.

#### Specialised Buildings (Amenities) – Prioritised Expenditure Forecast

**Table 9: Specialised Buildings (Amenities) – Prioritised Expenditure Forecast – 10 years FY2023-FY2032**

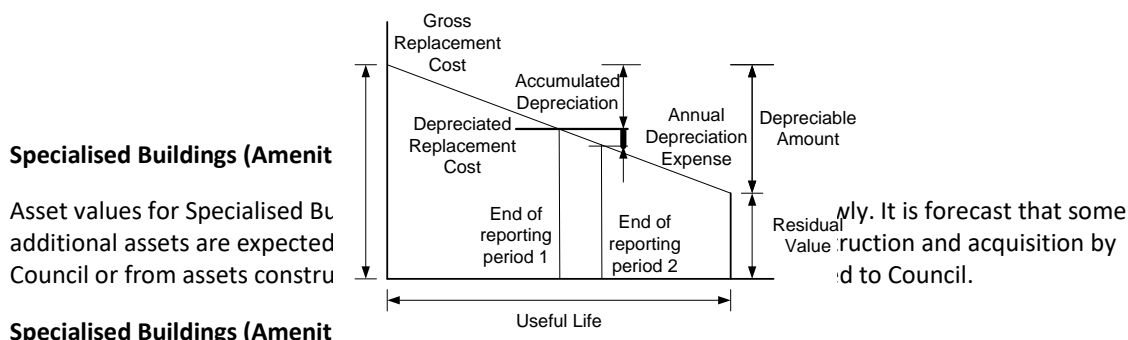
Year		Priority	Capital Costs	Maintenance Costs	Total Costs
1	2022/23	3b – 3d	\$200,000	\$505,410	\$705,410
2	2023/24	3b – 3d	\$500,000	\$505,410	\$1,005,410
3	2024/25	3b – 3d	\$1,700,000	\$505,410	\$2,205,410
4-10	2025/32	3b – 4d	\$4,900,000	\$3,537,870	\$8,437,870
		<b>Grand Total</b>	<b>\$7,300,000</b>	<b>\$5,054,100</b>	<b>\$12,354,100</b>

Note: Capital budget includes \$200,000 each year for OSES Asset Condition Report - Remedial Work. It also includes \$300,000 in 2023/24 for Upgrade Berry Island amenities block, \$600,000 in 2024/25 for Waverton Park amenities building renovation, \$900,000 in 2024/25 Coal Loader - Additional Public Toilets.

In summary the current value of Specialised Buildings (Amenities) assets is detailed in the Table below.

**Table 10: Specialised Buildings (Amenities) – Valuation**

Asset Category	Quantity	Replacement Value (2021)	Accumulated Depreciation (2021)	Fair Value (2021)	Depreciation Expense
Specialised Buildings (Amenities)	27	\$5,888,601	\$2,008,284	\$3,880,317	\$113,768



Key assumptions made in this asset management plan for Specialised Buildings (Amenities) are:

**Table: 11. Key Assumptions made in AM Plan and Risks of Change**

Key Assumptions	Risks of Change to Assumptions
Useful Lives	Low risk
Rate of deterioration	Low risk

**Specialised Buildings (Amenities) – Creation / Acquisition / Upgrade Program**

New works are those that create a new asset that did not previously exist, or works which will upgrade or improve an existing asset beyond its existing capacity. They may result from growth, social or environmental needs. Assets may also be acquired at no cost. No new assets are currently identified.

**Specialised Buildings (Amenities) – Disposal Plan**

No Specialised Buildings (Amenities) Assets have been identified for disposal.

**Specialised Buildings (Amenities) – Forecast reliability and confidence**

The estimated confidence level and reliability of data used in this AMP is considered to be reliable as the data is based on a detailed condition report on Specialised Buildings (Amenities).



### Specialised Buildings (Amenities) – Improvement Plan

The improvement plan is shown in the table below.

Task No	Task	Responsibility	Resources Required	Timeline
1	Research the Useful Life of Specialised Buildings (Amenities)	OSE	Staff Time	2024

### Specialised Buildings (Amenities) – Monitoring and Review Procedures

This Asset Management Plan will be reviewed during annual budget planning processes and amended to show any material changes in service levels and/or resources available to provide those services as a result of budget decisions.

The Asset Management Plan has a life of 4 years and is due for complete revision and updating within 1 year of each Council election.

### Specialised Buildings (Amenities) – Renewal and Replacement Program

Renewal and replacement expenditure is major work which does not increase the asset's design capacity but restores, rehabilitates, replaces or renews an existing asset to its original service potential. Work over and above restoring an asset to original service potential is considered to be an upgrade/expansion or new work expenditure resulting in additional future operations and maintenance costs.

Specialised Buildings (Amenities) assets requiring renewal/replacement have been identified by the North Sydney Council Amenities Condition Report prepared by Consultants, WebFM.

### Specialised Buildings (Amenities) – Funding Scenarios

The Long Term Financial Plan includes three scenarios, all of which maintain current services levels but propose differing levels of capital expenditure on the renewal of Council's ageing infrastructure assets.

In summary:

- Pessimistic Scenario - This Scenario results in a decline in operating results and deficits in the later years.
- Optimistic Scenario - This Scenario results in improvements in operating results for the life of the plan.
- Planned Scenario - This Scenario results modest surplus operating results for the life of the plan.

**Table 12: Funding Scenarios – Specialised Buildings (Amenities) – North Sydney Councils 10 Year Plan**

Scenario	Capital Funding Level required per annum	10 Year Plan \$ Total
Scenario 1.	\$730,000/year	<b>\$7,300,000</b>

- 17 -

Scenario 2.	\$730,000/year	<b>\$7,300,000</b>
Scenario 3.	\$730,000/year	<b>\$7,300,000</b>

**Note:** These Scenarios are based on the 10-year Long Term Financial Plan.

### Specialised Buildings (Amenities) – Service and Risk Tradeoffs

The decisions made in adopting this AM Plan are based on the objective to achieve the optimum benefits from the available resources.

#### Service trade-off

If this funding Scenario is adopted, then the Level of Service will be maintained.

#### Risk trade-off

If this funding Scenario is adopted, then there is less risk of Specialised Buildings (Amenities) failures.

### Specialised Buildings (Amenities) – Renewal and Replacement Program – FY2023-FY2032 (10 Year Plan)

Council's projected 10 year Capital Renewal Program is shown in the Tables below. It is based on the funding required to replace Specialised Buildings (Amenities) assets identified by the North Sydney Council Amenities Condition Report prepared by Consultants, WebFM.

It should be noted that Specialised Buildings (Amenities) assets may also be replaced based on other criteria including:

- Accident Damage
- Related Property Developments

Project priorities may also be subject to change due to accelerated deterioration, sudden failure or finalization of detailed designs and project costings.

#### **Table13: Specialised Buildings (Amenities) – Renewal and Replacement Program**

##### Priority Projects 2022/23 (Year 1)

Replace Year	Priority	Location	Risk Rating / Category	Condition	Cost Estimate
2022/23	3b – 3d	Remedial Work identified by the North Sydney Council Amenities Condition Report prepared by Consultants, WebFM.	Medium (3)	Fair	\$200,000
<b>TOTAL</b>					<b>\$200,000</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

#### **Table 14: Specialised Buildings (Amenities) – Renewal and Replacement Program**

- 18 -

**Priority Projects 2023/24 (Year 2)**

Year	Priority	Location	Risk Rating	Condition	Cost Estimate
2023/24	3b – 3d	Remedial Work identified by the North Sydney Council Amenities Condition Report prepared by Consultants, WebFM.	Medium (3)	Fair	\$200,000
2023/24	3b	Upgrade Berry Island amenities block	Medium (3)	Fair	\$300,000
<b>TOTAL</b>					<b>\$500,000</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

**Table 15: Specialised Buildings (Amenities) – Renewal and Replacement Program****Priority Projects 2024/25 (Year 3)**

Year	Priority	Location	Risk Rating	Condition	Cost Estimate
2024/25	3b – 3d	Remedial Work identified by the North Sydney Council Amenities Condition Report prepared by Consultants, WebFM.	Medium (3)	Fair	\$200,000
2024/25	3c	Waverton Park amenities building renovation	Medium (3)	Fair	\$600,000
2024/25	New	Coal Loader - Additional Public Toilets			\$900,000
<b>TOTAL</b>					<b>\$1,700,000</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

**Table 16: Specialised Buildings (Amenities) – Renewal and Replacement Program****Priority Projects 2025/32 (Year 4-10)**

Year	Priority	Location	Risk Rating	Condition	Cost Estimate
2025/32	4b – 4d	Remedial Work identified by the North Sydney Council Amenities Condition Report prepared by Consultants, WebFM.	Low (2)	Good	\$1,400,000
2025/32	3c	(2025) Kesterton Park public amenities	Medium (3)	Fair	\$400,000

- 19 -

Year	Priority	Location	Risk Rating	Condition	Cost Estimate
		upgrade			
2025/32	3b	(2026) St Leonards Park public amenities upgrade and relocation (also identified in the St Leonards Park landscape masterplan)	Medium (3)	Fair	\$650,000
2025/32	3c	(2027) Forsyth Park public amenities upgrade	Medium (3)	Fair	\$450,000
2025/32	3b – 3c	Amenity upgrades to be established	Medium (3)	Fair	\$2,000,000
<b>TOTAL</b>					<b>\$4,900,000</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

**Specialised Buildings (Amenities) Renewal Program**



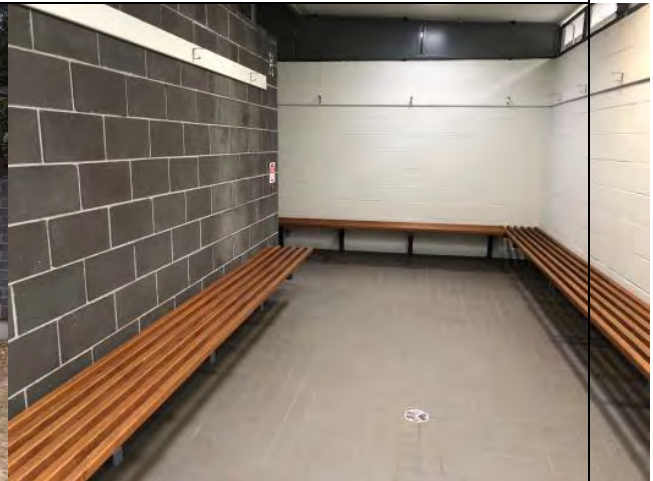
Balls Head Reserve – Public Amenities



Bradfield Park – Exeloo Toilets



Anderson Park – Amenities



Anderson Park – Amenities



Brightmore Reserve – Toilet Block



Cammeray Park – Amenities and Canteen



### **Specialised Buildings (Amenities) – Performance Measures**

The effectiveness of the asset management plan can be measured in the following ways:

- The degree to which the required projected expenditures identified in this asset management plan are incorporated into the long term financial plan,
- The degree to which 1-5 year detailed works programs, budgets, business plans and corporate structures take into account the 'global' works program trends provided by the asset management plan,
- The degree to which the existing and projected service levels and service consequences (what we cannot do), risks and residual risks are incorporated into the Strategic Plan and associated plans,
- The Asset Renewal Funding Ratio achieving the target of 1.0.

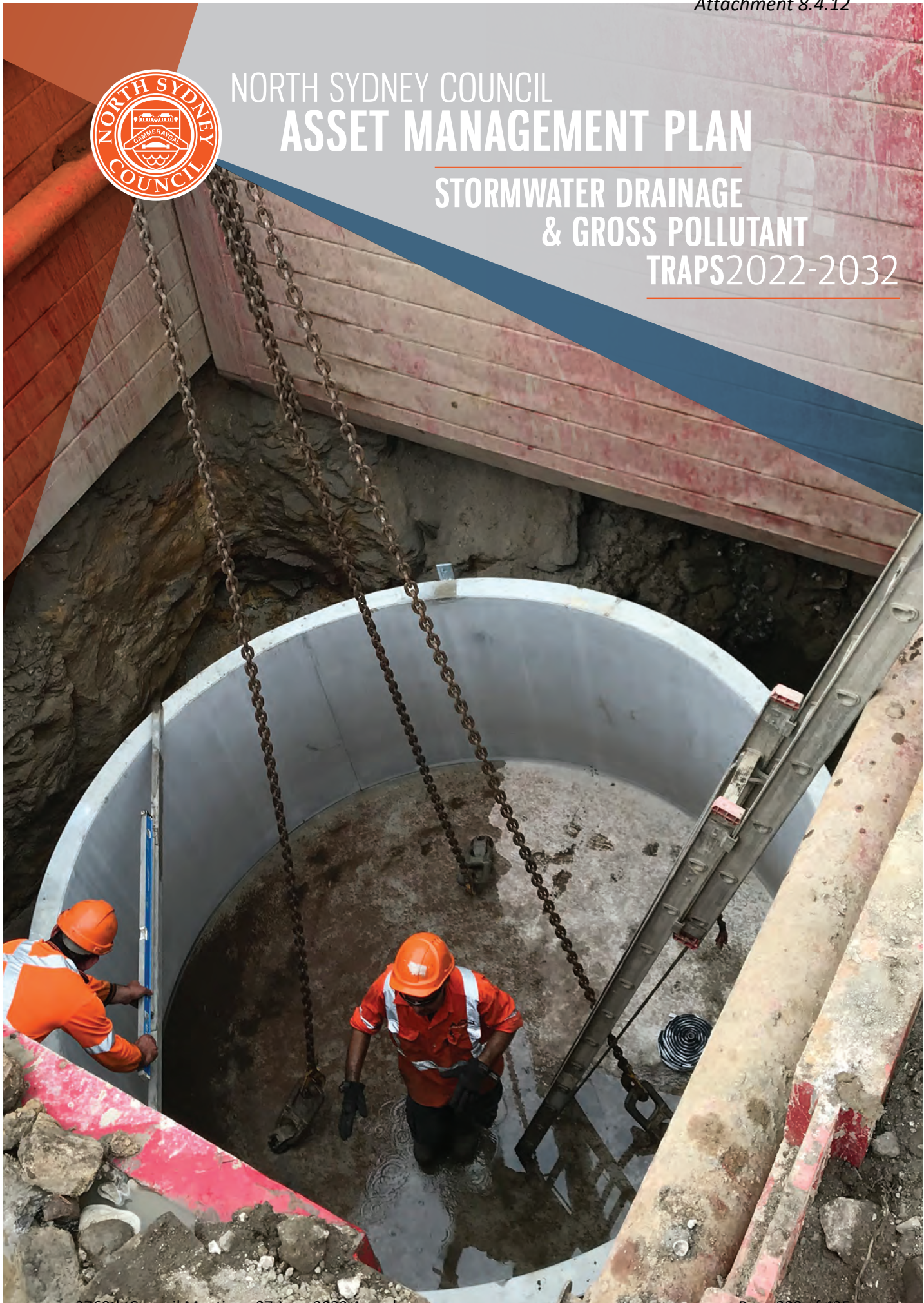
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# NORTH SYDNEY COUNCIL ASSET MANAGEMENT PLAN

## STORMWATER DRAINAGE & GROSS POLLUTANT TRAPS 2022-2032



<b>Document Control</b>		<b>Asset Management Plan</b>				
Document ID : NSC AMP Stormwater Drainage 2023 Stormwater Drainage and GPT Assets						
Rev No	Date	Revision Details	Author	Reviewer	Approver	
1	12/12/2022	First Draft	IM	JVH/DM	DM	

## Table of Contents

Stormwater Drainage and GPT Assets.....	4
Executive Summary .....	4
Stormwater Drainage and GPT Assets – Future demand .....	7
Stormwater Drainage and GPT Assets – Levels of Customer Service .....	7
Stormwater Drainage and GPT Assets – Levels of Technical Service .....	8
Stormwater Drainage and GPT Assets - condition .....	11
Stormwater Drainage and GPT Assets – Review of Useful Lives .....	13
Stormwater Drainage and GPT Assets – Funding Strategy.....	13
Stormwater Drainage and GPT Assets – Capital Works.....	14
Stormwater Drainage and GPT Assets – Managing the Risks.....	14
Stormwater Drainage and GPT Assets – Maintenance.....	20
Stormwater Drainage and GPT Assets – Prioritised Expenditure Forecast .....	20
Stormwater Drainage and GPT Assets – Valuation Forecast.....	21
Stormwater Drainage and GPT Assets – Key Assumptions – Financial Forecasts .....	21
Stormwater Drainage and GPT Assets – Creation / Acquisition / Upgrade Program .....	21
Stormwater Drainage and GPT Assets – Disposal Plan.....	21
Stormwater Drainage and GPT Assets – Forecast reliability and confidence.....	21
Stormwater Drainage and GPT Assets – Improvement Plan .....	21
Stormwater Drainage and GPT Assets – Monitoring and Review Procedures .....	22
Stormwater Drainage and GPT Assets – Renewal and Replacement Program .....	22
Stormwater Drainage and GPT Assets – Funding Scenarios.....	22
Stormwater Drainage and GPT Assets – Service and Risk Tradeoffs .....	23
Service trade-off.....	23
Risk trade-off .....	23
Stormwater Drainage and GPT Assets – Renewal and Replacement Program – FY2023-FY2032 (10 Year Plan).....	23
Priority Projects 2022/23 (Year 1) .....	24
Priority Projects 2023/24 (Year 2) .....	24
Priority Projects 2024/25 (Year 3) .....	25
Priority Projects 2025/32 (Year 4-10) .....	25
Priority Projects 2022/23 (Year 1) .....	28
Priority Projects 2023/24 (Year 2) .....	28
Priority Projects 2024/25 (Year 3) .....	29
Priority Projects 2025/32 (Year 4-10) .....	29
Works Identified 2025/32 (Year 4-10) .....	29
Stormwater Drainage Assets – Renewal Program.....	30
Gross Pollutant Traps Assets – Renewal Program.....	33
Stormwater Drainage and GPT Assets – Performance Measures .....	35
Stormwater Drainage and GPT Assets – References .....	35
APPENDICES.....	36
Appendix A: Maintenance Management System Drainage Pits and Kerb & Guttering.....	36



## **Stormwater Drainage and GPT Assets**

### **Executive Summary**

Located across the North Sydney LGA are 25 individual gross Pollutant Traps (GPTs). These are supported by a network of approximately 101km of stormwater drainage pipes and 5,926 individual pit structures.

### **Stormwater Drainage Assets**

Stormwater drainage assets in North Sydney provide a vital service to the local community. During rainfall events stormwater flows from surfaces, in particular, hard surfaces such as roofs, footpaths, and roads. This water is then collected by street gutters, pits, and pipes. North Sydney Council embraces the principles of Water Sensitive Urban Design (WSUD). As such some of this water is harvested for the watering of a number of sporting fields as well as Cammeray Golf Course. Also seventy percent (70%) of stormwater in the North Sydney catchment passes through Stormwater Quality Improvement Devices (SQIDS) to improve water quality before entering the harbour. In addition, Council has built several rain gardens and bio retention swales to improve water quality.

A significant proportion of the main trunk drainage pipes in North Sydney were built around 100 years ago and are now approaching the end of their useful life and require replacement. Also a large number of concrete pipes under roads have prematurely failed due to excessive vehicle loads.

North Sydney has an area of 10 square km. The catchments are generally short and steep. The characteristics of the catchments have also changed over the decades. Increased development, increased hard surfaces, and therefore increased rainfall runoff has meant that the useful life of many of these pipes has reduced due to capacity issues.

- Councils has approximately 101km of stormwater drainage pipes.
- Council has approximately 5,926 stormwater drainage pits.
- Detailed proactive CCTV condition surveys are carried out on approximately 4 to 8% of Council's pipe network each year. Reactive CCTV inspections are also carried out as required.

### **Gross Pollutant Trap Assets**

Stormwater drainage assets and the associated Gross Pollutant Trap (GPT) network in North Sydney provide a vital service to the local community. During rainfall events stormwater flows from surfaces, in particular, hard surfaces such as roofs, footpaths, and roads. Stormwater is rainwater plus anything the rain carries along with it including litter, nutrients, chemicals, sediments. This water is then collected by street gutters, pits, pipes, and then where present, the water flows into various Stormwater Quality Improvement Devices (SQIDS). Stormwater eventually enters our waterways inhabited by fish, frogs and other aquatic animals and plants.

The two main issues that need to be addressed when managing stormwater are quantity and quality. North Sydney covers an area of 10 square km. The stormwater catchments are generally short and steep. North Sydney is an established area that is highly urbanised. This means that there is a significant amount of stormwater carrying pollution flowing from hard surfaces that needs to be managed by council. North Sydney Council embraces the principles of Water Sensitive Urban Design (WSUD) and has invested a significant amount of funds on improving the quality of stormwater.

North Sydney Council has recently undertaken an audit of the performance of its Gross Pollutant Traps (GPTs) network within the North Sydney LGA. Consultants, Optimal Stormwater, were engaged to undertake a detailed audit on the performance of each of Council's Gross Pollutant Traps (GPTs). The audit findings were presented to Council's Environment Reference Group Meeting held in the Ros Crichton Pavilion on Monday, 30 May 2016. GPTs contain trash racks or litter basket components. Many of these components are exposed to salt water and require replacement every five years. The consultant report recommended to increase the maintenance budget of the GPTs so that trash racks or litter basket components can be replaced when broken or rusted.



Each Gross Pollutant Trap has been categorised as a GPT or a Trash Rack / Litter basket:

- 15 are GPTs
- 10 are Trash Racks/ Litter Baskets, which are split into Litter Basket structure and Litter baskets
- A detailed inspection and inventory of Councils GPT network was undertaken in 2016 by consultants "Optimal Stormwater". The report is attached to the Appendix of this Asset Management Plan.

**Note:** in 2020-21 Council's network of 25 GPTs collected a total of 539 tonnes of rubbish and debris from entering the harbour. The total amount of rubbish and debris collected and prevented from entering the harbour since 2013 is now 3,645 tonnes.

As per the recommendation of Council's Environment Reference Group Asset Management Plan has been prepared to facilitate the identified upgrade requirements for Councils GPT network to ensure that they are working as designed and to maximise efficiency in reducing the amount of pollutants from entering Sydney Harbour.

Overall, some 88% by replacement cost of the stormwater drainage portfolio is in very good to good condition (1-2), 1.5% is in fair condition (3) and 10.5% is in poor to very poor condition (4-5). Also 48% by replacement cost of the GPT portfolio is in very good to good condition (1-2), 12% is in fair condition (3) and 40% is in poor to very poor condition (4-5).

A Risk rating was assigned to each stormwater drainage asset. Overall, 89.5% of the portfolio has a low to medium risk rating and 10.5% has a high to very high risk rating. Also a Risk rating was assigned to each GPT asset. Overall, 60% of the portfolio has a low to medium risk rating and 40% has a high to very high risk rating.

The total Replacement Value of the portfolio is \$204,552,675 as at 30 June 2021. The values are shown in the Table below.

**Table 1: Stormwater Drainage and GPT Assets – Summary Table**

Asset Category	Replacement Value (2021)	Accumulated Depreciation (2021)	Fair Value (2021)	Depreciation Expense
Stormwater Pipes	\$175,013,502	\$47,819,939	\$127,193,564	\$1,483,801
Stormwater Pits	\$20,549,353	\$5,910,005	\$14,639,348	\$273,173
GPTs	\$8,989,820	\$4,850,512	\$4,139,308	\$196,083
<b>TOTAL</b>	<b>\$204,552,675</b>	<b>\$58,580,456</b>	<b>\$145,972,220</b>	<b>\$1,953,057</b>

The following table provides a summary of the quantities for each Stormwater Drainage and GPT Assets by type. The portfolio is dominated by Concrete, PVC and terracotta (Vitrified Clay) Pipes.

**Table 2A: Stormwater Drainage and GPT Assets – Typology – Pipes**

Pipe Type - Material	Length of Pipe Type (m)
Cast Iron	39
Unidentified Plastic	42
Brick	665
Composite brick/concrete	101
Concrete	89,374
Glass Reinforced Plastic	137

- 6 -

Pipe Type - Material	Length of Pipe Type (m)
Masonry - in regular courses	324
Polyethylene	78
Polypropylene	120
Polyvinyl chloride	2,086
Concrete box culvert	1,324
Sandstone Culvert	153
Steel	24
Vitrified clay	7,065
Other (state in Comments)	171
Not known	154
<b>Total</b>	<b>100,858</b>

**Table 2B: Stormwater Drainage and GPT Assets – Typology – Pits**

Pit Type	Count of Pit Type
BLIND PIT	4
CONVERTER	65
HEADWALL	24
INLET	10
JUNCTION BURRIED	204
JUNCTION SOLID LID	647
LETTER BOX	52
NODE (DROPPER NO PIT)	6
NODE (JUNCTION NO PIT)	225
ON GRADE EKI	21
ON GRADE GRATE	293
ON GRADE GRATE & EKI	1,900
OUTLET	66
SAG EKI	8
SAG GRATE	97
SAG GRATE & EKI	530
UNKNOWN PIT TYPE	1,774
<b>Total</b>	<b>5,926</b>

**Table 2C: Stormwater Drainage and GPT Assets – Typology – Gross Pollutant Traps**

Asset Category	No of Gross Pollutant Traps
GPTs	15
Litter Basket Structure	11
Litter Baskets	10
<b>TOTAL</b>	<b>25</b>

- 7 -

### Stormwater Drainage and GPT Assets – Future demand

For stormwater drainage the future upgrade/ new capital works program will be primarily based on the Catchment Study which is currently being undertaken. In addition, as part of each major renewal project, a detailed design is undertaken and improvements to the capacity of the of stormwater system made as required. A review of stormwater drainage projects completed in the last 3 financial years showed that a significant amount of new drainage was carried out during the process of renewing pipes in poor condition (based on improving capacity to a suitable standard). It should be noted that most of the renewal expenditure is actually upgrade work, for example, an existing 300mm diameter pipe replaced with a 450mm diameter pipe. To simplify calculations, it has been assumed that any upgrade work is considered to be renewal work on the basis that the upgraded pipe meets the modern equivalent standard.

For Gross Pollutant Traps the future Upgrades and capital works program will be primarily based on the recommendations of the *“Optimal Stormwater”* consultant’s report of 2016 and also will be informed by the outcomes of Councils Flood Study which is currently underway.

### Stormwater Drainage and GPT Assets – Levels of Customer Service

Service levels are defined service levels in two terms, customer levels of service and technical levels of service. These are supplemented by organisational measures.

**Customer Levels of Service** measure how the customer receives the service and whether value to the customer is provided.

Customer levels of service measures used in the asset management plan are:

- Quality**                      How good is the service ... *what is the condition or quality of the service?*
- Function**                    Is it suitable for its intended purpose .... *Is it the right service?*
- Capacity/Use**              Is the service over or under used ... *do we need more or less of these assets?*

The current and expected customer service levels are detailed in the table below.

**Table 3A: Stormwater Drainage and GPT Assets – Levels of Customer Service – Stormwater Drainage Assets**

Service Attribute	Expectation	Performance Measure Used	Current Performance	Desired Position in 10 Years
<b>Quality</b>	Stormwater Drainage Assets met the “End user / Community Needs”	Percentage of Stormwater Drainage Assets in ‘very good’, ‘good’ or ‘Fair’ (1, 2, 3) and percentage ‘poor’ or ‘very poor’ (4, 5) Condition.	89.5% of Stormwater Drainage Assets in ‘very good’, ‘good’ or ‘Fair’ (1, 2, 3) condition.  10.5% of Stormwater Drainage Assets in ‘poor’ or ‘very poor’ (4, 5) Condition.	Maintain – Condition 1-2-3  Improve and replace Condition 4-5

- 8 -

Service Attribute	Expectation	Performance Measure Used	Current Performance	Desired Position in 10 Years
<b>Function /Capacity and Use</b>	Amount of Stormwater Drainage Assets required is to be determined.  General current assumption is that the capacity of NSC Storm water and associated Assets is appropriate.	Number of additional Stormwater Drainage Assets Is to be determined by the completion of the Catchment Study currently underway. Key measurement is the number of flood affected houses/properties that will be identified across the LGA at the completion of Catchment Study (Flood Study)	Number of additional Stormwater Drainage Assets Is to be determined by the completion of the Catchment Study currently underway. Key measurement is the number of flood affected houses/properties that will be identified across the LGA at the completion of Catchment Study (Flood Study)	Improve – reduce the number of flood affected houses/properties

**Table 3B: Stormwater Drainage and GPT Assets – Levels of Customer Service – Gross Pollutant Traps**

Service Attribute	Expectation	Performance Measure Used	Current Performance	Desired Position in 10 Years.
<b>Quality</b>	Gross Pollutant Traps meet the “End user / Community Needs”	Percentage of GPT Devices that are currently suitable and fit for purpose and have been assessed as being in ‘very good’, ‘good’ or ‘fair’ condition (1, 2 and 3).  Percentage of the network is in ‘poor’ or ‘very poor’ (4, 5) Condition.	59.9% of GPT Devices (12 out of 26) are currently suitable and fit for purpose and have been assessed as being in ‘very good’, ‘good’ or ‘fair’ condition (1, 2 and 3).  40.1% (14 out of 26) of the network is in ‘poor’ or ‘very poor’ (4, 5) Condition.	Maintain and upgrade – Condition 1-2-3  Improve and replace Condition 4-5
<b>Function</b>	Gross Pollutant Traps(GPTs) – Capturing storm water pollution and debris from entering the Harbour.	Percentage of GPT Devices are currently Suitable	46% of GPT Devices Suitable (12 out of 26)	100% of GPT Devices Suitable
<b>Capacity and Use</b>	GPT systems and overall network capacity is appropriate.	Percentage of Catchment Area treated by a GPT	69% of catchment treated (Area treated = 753Ha, Total area = 1090Ha)	Target is for 90% of North Sydney’s catchment to be treated

#### Stormwater Drainage and GPT Assets – Levels of Technical Service

**Technical Levels of Service** - Supporting the customer service levels are operational or technical measures of performance. These technical measures relate to the allocation of resources to service activities to best achieve the desired customer outcomes and demonstrate effective performance.

Technical service measures are linked to the activities and annual budgets covering:

- Operations – the regular activities to provide services (e.g. cleaning and inspections, etc).
- Maintenance – the activities necessary to retain an asset as near as practicable to an appropriate service condition. Maintenance activities enable an asset to provide service for its planned life (e.g. Stormwater Drainage and GPT Assets repairs).
- Renewal – the activities that return the service capability of an asset up to that which it had originally (e.g. Stormwater pipe re-lining, section replacement and or minor upsizing of pipes and pits or associated assets in the network).
- Upgrade/New – the activities to provide a higher level of service (e.g. extending a pipeline or upgrading it to a superior material for another function – i.e. changing the pipeline or culvert to another material such as changing old terracotta lines to PVC or concrete. Creating new parts of the stormwater and drainage network where there previously was no network or requirement for Stormwater Drainage and GPT Assets (e.g. New developments).

Table 4A and 4B show the technical levels of service expected to be provided for Stormwater Drainage and GPT Assets. The 'Desired' position in the table documents the position being recommended in this AM Plan.

**Table 4A: Stormwater Drainage and GPT Assets – Technical Levels of Service – Stormwater Drainage Assets**

Service Attribute	Service Activity Objective	Activity Measure Process	Current Performance	Desired for Optimum Lifecycle Cost
<b>Operations</b>	Undertake network inspections to monitor condition. Proactive and Reactive inspection of pipe to monitor condition	Stormwater pipes CCTV'd to monitor condition	All reactive CCTV inspections undertaken as soon as practical. Additional proactive inspections also carried out.	All reactive CCTV inspections undertaken as soon as practical. Additional proactive inspections also carried out.
<b>Maintenance</b>	Reactive service Requests completed within adopted timeframes	Respond to complaints.	Minor repairs undertaken in accordance with Maintenance Management System	Minor repairs undertaken in accordance with Maintenance Management Delivery System.
<b>Renewal</b>	Maintain existing Pits & Pipes assets to a satisfactory condition	Percentage of Stormwater Drainage Assets in 'very good', 'good' or 'Fair' (1, 2, 3) and percentage 'poor' or 'very poor' (4, 5) Condition.	89.5% of Stormwater Drainage Assets in 'very good', 'good' or 'Fair' (1, 2, 3) condition.  10.5% of Stormwater Drainage Assets in 'poor' or 'very poor' (4, 5) Condition.	Maintain – Condition 1-2-3  Improve and replace Condition 4-5
<b>Upgrade/New</b>	Satisfactory provision of Stormwater Drainage and GPT Assets.	Number of additional Stormwater Drainage Assets to be determined by the completion of the Catchment	Number of additional Stormwater Drainage Assets to be determined by the completion of the Catchment Study currently underway.	Improve – reduce the number of flood affected houses/properties



- 10 -

Service Attribute	Service Activity Objective	Activity Measure Process	Current Performance	Desired for Optimum Lifecycle Cost
		Study currently underway. Key measurement is the number of flood affected houses/properties that will be identified across the LGA at the completion of Catchment Study (Flood Study)	Key measurement is the number of flood affected houses/properties that will be identified across the LGA at the completion of Catchment Study (Flood Study)	

**Table 4B: Stormwater Drainage and GPT Assets – Technical Levels of Service – Gross Pollutant Traps**

Service Attribute	Service Activity Objective	Activity Measure Process	Current Performance	Desired for Optimum Lifecycle Cost
<b>Operations</b>	GPTs are clean at optimised frequency to minimise litter bypass	Frequency of GPT Cleaning	GPTs are cleaned in accordance within their optimal schedules which may vary for each GPT.	GPTs are cleaned in accordance within their optimal schedules which may vary for each GPT.
<b>Maintenance</b>	Reactive service Requests completed within adopted timeframes	Respond to complaints.	Minor repairs undertaken in accordance with Maintenance Management System	Minor repairs undertaken in accordance with Maintenance Management Delivery System.
<b>Renewal/ Upgrade</b>	Maintain existing GPT assets to a satisfactory condition	Number of renewed/upgraded GPTs constructed	At least 1 GPT is renewed/upgraded annually.  It has been identified that 10 out of 26 GPTs of the current network requires to be De-commissioned and replaced with more efficient GPTs as per Consultants Report.	At least 1 GPT is renewed/upgraded annually
<b>New</b>	New GPTs to capture pollution in areas not currently treated	Number of new GPTs constructed	It has been identified that 4 new GPTs are required to capture pollution in areas not currently treated and this will take Council to within 85% of the	New GPTs are to be considered once existing GPTs have been upgraded.

Service Attribute	Service Activity Objective	Activity Measure Process	Current Performance	Desired for Optimum Lifecycle Cost
			catchment being treated. The target established is 90% of North Sydney's catchment should be treated.	

### Stormwater Drainage and GPT Assets - Condition

#### Stormwater Drainage Assets

The condition of Council's Stormwater Drainage Assets has been progressively surveyed using CCTV inspection contractors since 2006. This information is collated in a database using WINCAN Pipe Inspection Software. CCTV condition surveys are expensive due to the equipment and specialised contractors required. In addition this method of data collection often requires the organisation of Work Zones, RMS Road Occupancy Licences, and traffic control which adds to the cost of the survey. Detailed reactive and proactive CCTV condition surveys are carried out on approximately 4 to 8% of Council's pipe network each year.

The condition profile as shown in Table 6. It is based on the CCTV condition survey carried out in accordance with the WSAA Conduit Inspection Reporting Code. The graph also shows that the amount of pipes in condition "1" is relatively high. It is likely that some of these condition 1 pipes may be in condition 2 or even in condition 3. This could be due to a CCTV Operator not observing and recording very small defects such as hairline cracks. The reasons for not observing very small defects include inadequate equipment such as poor lighting, not using the correctly sized "camera tractor" or camera configuration to centre the camera in varying pipe sizes, or simply assuming that the pipe is generally in reasonable condition. Improved specifications and closer monitoring, as well as the increased use of high definition cameras, should overcome the issues of not observing minor defects. It should be noted that this does not impact on either the short or medium term capital works programs which are based on pipes which have been clearly identified as condition 5.

#### Gross Pollutant Traps

The condition of council's 26 GPTs and litter baskets was surveyed extensively in 2016 by consultants Optimal Storm water Pty Ltd. The performance of the GPTs is monitored regularly through Council's cleaning regime and any damage faults or repairs are reported through by Council's cleaning contractor to the Engineering and Property Services Division. Obsolescence has been factored into the condition of GPTs. Where a GPT has been deemed not fit for purpose, it has been deemed as being in very poor condition.

**Table 5: Stormwater Drainage and GPT Assets Survey Criteria**

Grade	Condition	Description
0	Not inspected	Yet to be condition assessed.
1	Very Good	Sound Stormwater Drainage and GPT Assets designed to current standards and well maintained with no defects. <b>No work required</b>
2	Good	As grade 1 but not designed to current standards or showing minor wear, tear and deterioration of capacity e.g. tree root intrusion, minor collapse and or undersize – with <i>minor</i> capacity and or blockage issues – has potential to block in large storm events, but no undermining of Stormwater Drainage and GPT Assets that would seriously compromise property or life. Needs to be reinspected in 2- 3 years. Deterioration has no significant impact on performance of the Stormwater Drainage and GPT Assets. <b>Only minor work required</b>
3	Fair	Stormwater Drainage and GPT Assets functionally sound, but capacity and function

- 12 -

Grade	Condition	Description
		affected by minor defects e.g. tree root intrusions, blockages from other sources, collapsed sections, undermining or washout of foundations to the line of is starting to become apparent – <i>moderate</i> capacity and or blockage issues – has a moderate potential to block in large storm events, but no significant undermining of Stormwater Drainage and GPT Assets that would seriously compromise property or life. <b>Some repair work and replacement of sections work required within 4 -10 years</b>
4	Poor	Stormwater Drainage and GPT Assets functioning but with problems due to significant defects e.g. Major tree root intrusions, major blockages from other sources , large % of line collapsed in sections, undermining or washout of foundations to the line of is major causing structural and performance issues with the line – <i>major</i> capacity and or blockage issues – has a major potential to block in large and or moderate storm events - undermining of Stormwater Drainage and GPT Assets is showing signs of failure that would that would lead to property damage and or seriously compromise public safety and or life., likely to cause significantly deteriorate within 1-2 years. <b>Significant replacement or rehabilitation needed within 2-4 years</b>
5	Very Poor	Stormwater Drainage and GPT Assets is not functioning and or has failed due to significant defects e.g. Major tree root intrusions, major blockages from other sources, more that 75% of line collapsed in sections, undermining or washout of foundations to the line has caused the line to fail / collapse – <i>major</i> capacity and or blockage issues – will block and not function in any storm event. Stormwater Drainage and GPT Assets have failed and would lead to property damage and or seriously compromise public safety and or life. Stormwater Drainage and GPT Assets has serious problems and has failed or are about to fail in the near future, causing unacceptable stability, appearance and public safety hazard. <b>Urgent replacement/ rehabilitation required</b>

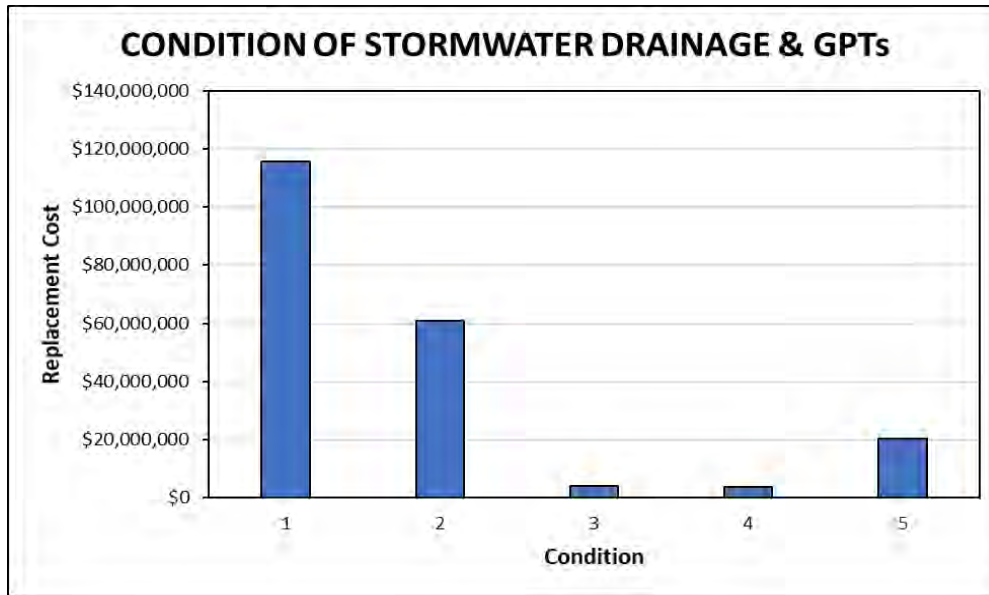
The table below shows the Replacement Cost for each of the condition scores. In practice and where funds permit Stormwater Drainage and GPT Assets in condition 3 are generally replaced at the same time as Stormwater Drainage and GPT Assets in condition 4 or 5 if they are adjacent, there are potential risks, and it is cost effective.

**Table 6: Stormwater Drainage and GPT Assets Survey Results**

CONDITION OF STORMWATER DRAINAGE & GPT ASSETS		
Condition	Replacement Cost	% Condition (based on known data and cost)
1 (Very Good)	\$115,736,683	56.6%
2 (Good)	\$60,703,463	29.7%
3 (Fair)	\$4,017,595	2.0%
4 (poor)	\$3,659,728	1.8%
5 (Very Poor)	\$20,435,208	10.0%
<b>Total</b>	<b>\$204,552,676</b>	<b>100.0%</b>

The following graph shows the condition rating of Council's overall Stormwater Drainage and GPT Assets over the entire network in terms of replacement cost.

- 13 -



#### Stormwater Drainage and GPT Assets – Review of Useful Lives

Council has adopted componentisation of stormwater pipes into pipe and conduit to allow for relining treatments, all other assets are simple single component items. Following is the useful life table from Australis's report.

Useful Lives of Stormwater Drainage and GPT Assets	
Asset (Sub)Category	Useful Life Range (years)
Pipes	70-100
Pits	80
Gross Pollutant Traps	50

Based on reviewed useful lives the total annual Depreciation is as follows:

Capital funding to maintain a renewal ratio of 1	
	Annual Depreciation
Stormwater Drainage and GPT Assets	\$1,953,057

A budget of \$1,953,057 is required on average over the long term to maintain the condition of Council's stormwater drainage and GPT network, noting that fluctuations in renewal requirements in the medium term.

#### Stormwater Drainage and GPT Assets – Funding Strategy

The Asset Renewal Funding Ratio is the most important indicator. It compares funding with depreciation. An Asset Renewal Funding Ratio of 1 or greater sustained over the long term indicates the optimal renewal and replacement of assets.

The forecast for Depreciation (or Long Term Average Annual Asset Consumption) is \$1,953,057. Therefore, an annual average capital renewal funding of \$1,953,057 (2021 dollars) will achieve an Asset Renewal Funding Ratio of 1.

The cost to fully replace assets in condition 4 and 5 as well as the cost to replace the condition 3 assets which will become condition 4 over the next 10 is \$25,629,326. This is an average annual cost of \$2,562,933 which is greater than the \$1,953,057 Depreciation Expense and is less than the average annual forecast budget of \$2,980,483. With further investigation and detailed design it is hoped that alternate and lesser cost solutions may be possible to maintain stormwater drainage and GPT assets at an optimal level.

Additional funds will be required to upgrade the existing Stormwater Drainage and GPT network in accordance with recommendations of the Flood Study which is due to be completed.

#### **Stormwater Drainage and GPT Assets – Capital Works**

Replacement of Stormwater Drainage and GPT Assets is assumed to be a capital works project.

The ranking criteria used to determine priority of identified renewal and replacement proposals is detailed in Table 7. A priority for action of 1 to 5 has been assigned to each Stormwater Drainage and GPT Assets requiring capital works as described following table.

#### **Stormwater Drainage and GPT Assets – Managing the Risks**

There are risks associated with providing and maintaining Stormwater Drainage and GPT Assets. They are primarily as follows:

- Stormwater Drainage Assets in a poor or very poor condition, i.e. the Stormwater Drainage Asset has failed due to significant defects e.g. major tree root intrusions, major blockages from other sources, undermining or washout of foundations to the line that has caused the line to block or collapse. This may lead to property damage and or seriously compromise public safety and or life.
- Capacity of Stormwater Drainage Assets to cope with major flooding events.
- Gross Pollutant Trap Assets in a Poor or very Poor condition. IE the Gross Pollutant Trap Asset is not functioning and or has failed due to significant defects e.g. Corrosion – structural failure and or capacity issues. This will lead to Environmental pollution, possible property damage and or seriously compromise public safety and or life.

The following risk response table was used to identify those Stormwater Drainage and GPT Assets requiring action within the next 10 years.

**Table 7: Stormwater Drainage and GPT Assets – Risk Response Table**

Level of Risk		Category	Action Required	Time frame for repairs, upgrade or replacement
VH	Very High Risk	5	Immediate corrective action	1-10 Years
H	High Risk	4	Prioritised action required	4-10 Years
M	Medium Risk	3	Planned action required	10-20 Years
L	Low Risk	2	Manage by routine procedures	Inspections 5-10 years
New	No Risk	1	None	None

Consideration has been given to each Stormwater Drainage and GPT Asset as to whether to replace the asset or perform maintenance on it.

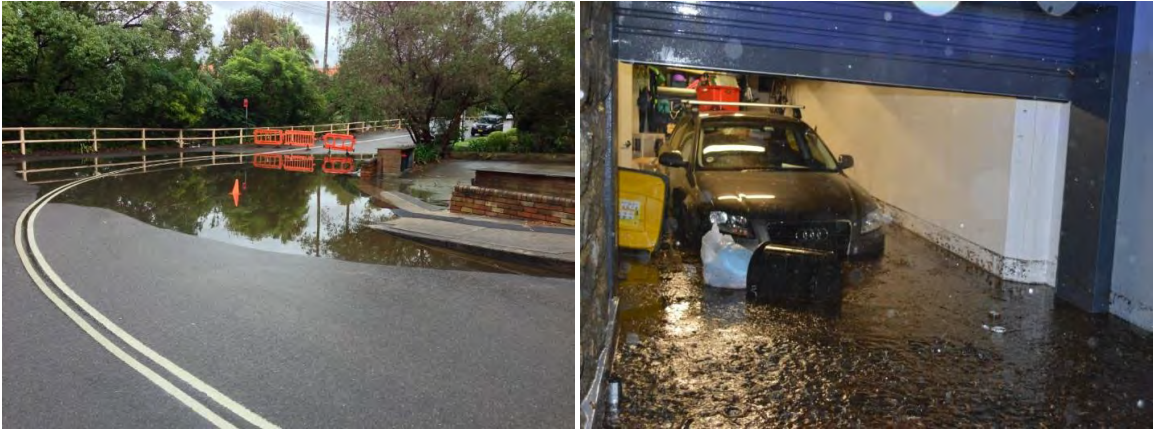
Stormwater Drainage and GPT Assets that have a **Very High or High** risk rating were considered to need replacement within the 1-10 year forecast period.



Stormwater Drainage and GPT Assets with a **Medium** risk rating were also considered needing replacement within the 10-20 year forecast period.



Stormwater Pipes in very poor condition – collapsed and blocked



Flooding Issues



Sinkholes created from collapsed pipes and washout from leaking pipes



Stormwater Pipes in very poor condition – collapsed and blocked

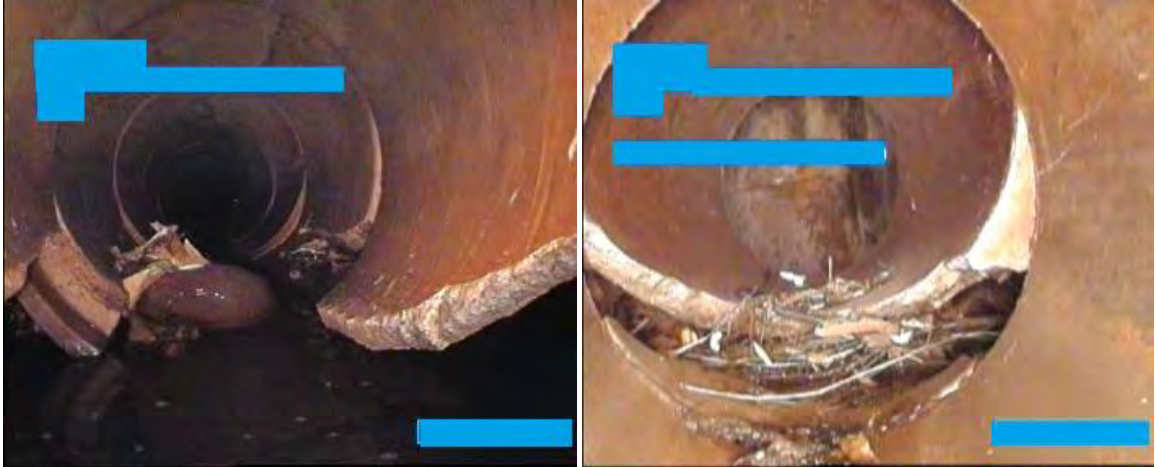


Stormwater Pipes in very poor condition – collapsed and blocked





Stormwater Pipes in very poor condition – Tree root infiltrations and blocked



Stormwater Pipes in very poor condition – collapsed



Lids are too heavy - The wood is starting to chip; they should be replaced. Lifting points rusted or broken off





Difficult access to a lot of pits



Corrosion and structural damage to a number of pits

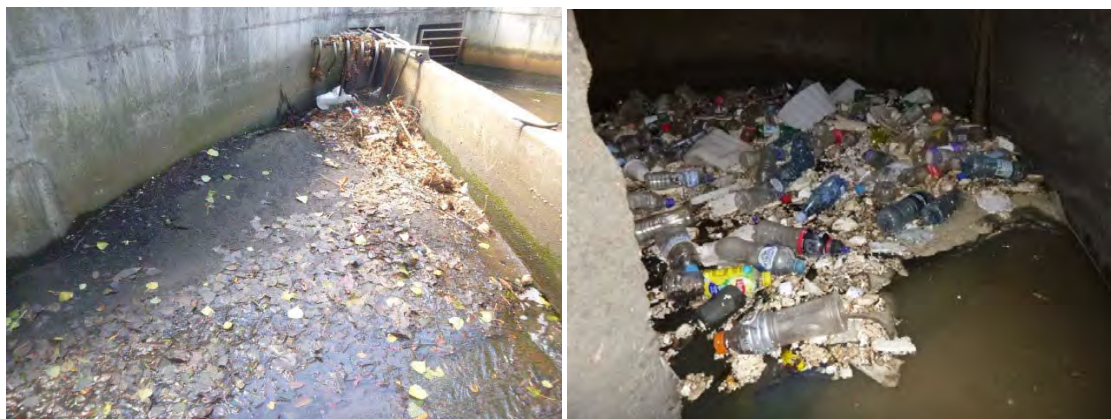


The floatables flap was jammed open due to a broken hinge and pollution trapped in it stopping it closing.



Trashracks is bent over and there is a lot of rust. Exclusion bars are rusting – lifting points are rusting due to the corrosive environment

- 19 -



Sediment and trash build up in front of the weir and in pits generally – low capacity.

Council will endeavour to manage these risks within available funding by prioritising stormwater drainage and GPT asset renewal works based on the ongoing condition survey being carried out by Council's contractors which began in 2006 and the GPT Audit Report by consultants Optimal Stormwater.

**Table 8: Stormwater Drainage and GPT Assets – Capital renewal Priorities based on Condition and Risk Rating**

Risk Matrix - Stormwater Drainage and GPT Assets (Condition and Risk Rating)					
Likelihood of Stormwater Drainage and GPT Assets failing (L)	Stormwater Drainage and GPT Assets length pipe (m)/ (Number of GPTs)				
	Road Hierarchy	Lane	Local Road	Collector	State/ Regional Road
	Park Hierarchy	Local	District	Regional	
	Pipe Size	0-375	>375-600	>600-900	>900
	Priority	d	c	b	a
Condition 1 – Very Good (56.6%)	5	4,507	16,158 (3)	14,242 (1)	7,233
Condition 2 - Good (29.7%)	4	987 (4)	22,171	8,450 (1)	8,573 (1)
Condition 3 – Fair (2.0%)	3	39 (2)	1,090 (1)	401 (1)	430 (1)
Condition 4 – Poor (1.8%)	2	163 (3)	762 (2)	763	273
Condition 5 – Very Poor (10.0%)	1	1,117	5,674 (4)	3,465	1,504 (1)

(Note: Also Refer to Table 6)

**Note:** This table is based on data in the current register.

**Note:** Factors which are used to determine the risk category include 'Road Hierarchy', 'Park Hierarchy' and 'Pipe Size'. The most critical factor is used to determine the priority.

**Note:** It has been assumed that the condition of pits corresponds to the that of the adjacent pipe, as pits are generally replaced at the same time as the adjacent pipe.

It should be noted that Stormwater Drainage and GPT Assets may also be replaced based on other criteria including:

- Streetscape and Public Domain Upgrades
- Kerb and gutter upgrades
- Building Developments (DA Conditions)
- Stormwater Drainage and GPT Assets replaced in association with other projects such as Park and or Streetscape upgrades and associated projects.



**Stormwater Drainage and GPT Assets – Maintenance**

Routine maintenance is the regular on-going work that is necessary to keep assets operating, including instances where portions of the asset fail and need immediate repair to make the asset operational again, e.g. Patch lining, cleaning, minor repairs.

Maintenance includes all actions necessary for retaining an asset as near as practicable to an appropriate service condition including regular ongoing day-to-day work necessary to keep assets operating.

Current maintenance expenditure levels are considered to be adequate to meet projected service levels.

Over the longer term future operations and maintenance expenditure is forecast to increase as the asset stock increases. The following table summarises the prioritised capital and maintenance works.

**Stormwater Drainage and GPT Assets – Prioritised Expenditure Forecast****Table 9A: Stormwater Drainage Assets – Prioritised Expenditure Forecast – 10 years FY2023-FY2032**

Year		Priority	Capital Costs	Maintenance Costs	Total Costs
1	2022/23	1b – 1d	\$2,475,000	\$478,074	\$2,953,074
2	2023/24	1b – 1c	\$3,096,802	\$478,074	\$3,574,876
3	2024/25	1a – 1c	\$2,570,000	\$478,074	\$3,048,074
4-10	2025/32	1a – 1c	\$17,990,000	\$3,346,518	\$21,336,518
<b>Grand Total</b>			<b>\$26,131,802</b>	<b>\$4,780,740</b>	<b>\$30,912,542</b>

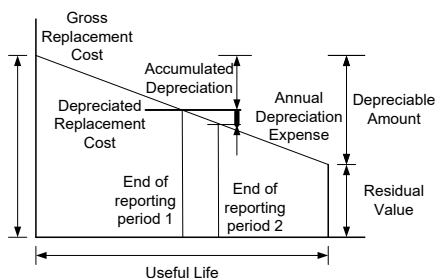
**Table 9B: GPT Assets – Prioritised Expenditure Forecast – 10 years FY2023-FY2032**

Year		Priority	Capital Costs	Maintenance Costs	Total Costs
1	2022/23	1a – 1c	\$873,025	\$298,423	\$1,171,448
2	2023/24	1c	\$800,000	\$298,423	\$1,098,423
3	2024/25	1c	\$250,000	\$298,423	\$548,423
4-10	2025/32	1c – 2c	\$1,750,000	\$2,088,964	\$3,838,964
Works Identified	2025/32	2c	\$904,191		\$904,191
<b>Grand Total</b>			<b>\$4,577,216</b>	<b>\$2,984,234</b>	<b>\$7,561,449</b>

In summary the current value of Stormwater Drainage and GPT Assets is detailed in the table below.

**Table 10: Stormwater Drainage and GPT Assets – Valuation**

Asset Category	Replacement Value (2021)	Accumulated Depreciation (2021)	Fair Value (2021)	Depreciation Expense
Stormwater Pipes	\$175,013,502	\$47,819,939	\$127,193,564	\$1,483,801
Stormwater Pits	\$20,549,353	\$5,910,005	\$14,639,348	\$273,173
GPTs	\$8,989,820	\$4,850,512	\$4,139,308	\$196,083
<b>TOTAL</b>	<b>\$204,552,675</b>	<b>\$58,580,456</b>	<b>\$145,972,220</b>	<b>\$1,953,057</b>



**Stormwater Drainage and GPT Assets – Valuation Forecast**

Asset values for Stormwater Drainage and GPT Assets are forecast to increase as additional assets are added to the asset stock. Additional assets will generally add to the operations and maintenance needs in the longer term, as well as the need for future renewal. Additional assets will also add to future depreciation forecasts. It is also forecast that additional assets are expected to be added to the asset stock from new construction and acquisition by Council or from assets constructed by land developers or other assets donated to Council.

**Stormwater Drainage and GPT Assets – Key Assumptions – Financial Forecasts**

Key assumptions made in this asset management plan are listed in the Table 11 below.

**Table:11 Key Assumptions made in AM Plan and Risks of Change**

Key Assumptions	Risks of Change to Assumptions
Use of detailed CCTV condition data to determine the remaining life of assets greater than 30 years.	Low risk
Assumptions of assets of unknown condition	Medium risk

**Stormwater Drainage and GPT Assets – Creation / Acquisition / Upgrade Program**

New works are those that create a new asset that did not previously exist. New Stormwater Drainage assets are likely to be identified from the following sources:

1. Additional pits and pipes associated with renewal projects to improve capacity identified from detailed designs.
2. Past flooding issues
3. Flood Study
4. Additional GPTs as identified in the Optimal Stormwater Consultants reports and built by Council as part of the Capital Works Program.

**Stormwater Drainage and GPT Assets – Disposal Plan**

No Stormwater Drainage Assets have been identified for disposal.

One Gross Pollutant Trap has been identified for disposal.

**Stormwater Drainage and GPT Assets – Forecast reliability and confidence**

The estimated confidence level and reliability of data used in this AMP is considered to be reliable as the data is based on a Councils ongoing CCTV network inspections. Each of Councils 26 x GPTs are inspected on average monthly when they are cleaned.

**Stormwater Drainage and GPT Assets – Improvement Plan**

The improvement plan is shown in the table below.

- 22 -

Task No	Task	Responsibility	Resources Required	Timeline
1	Continue to collect detailed (expensive) CCTV condition data.	EPS	Staff Time as well as additional Recurrent budget	Ongoing
2	Record actual costs of all works to improve unit rates.	EPS/Finance	Staff Time	Ongoing
3	Continue Flood Study Process. This will quantify the extent of upgrade/new capital work required.	EPS	Staff Time / funding	Subject to State Gov't funding

#### **Stormwater Drainage and GPT Assets – Monitoring and Review Procedures**

This Asset Management Plan will be reviewed during annual budget planning processes and amended to show any material changes in service levels and/or resources available to provide those services as a result of budget decisions.

The Asset Management Plan has a life of 4 years and is due for complete revision and updating within 1 year of each Council election.

#### **Stormwater Drainage and GPT Assets – Renewal and Replacement Program**

Renewal and replacement expenditure is major work which does not increase the asset's design capacity but restores, rehabilitates, replaces or renews an existing asset to its original service potential. Work over and above restoring an asset to original service potential is considered to be an upgrade/expansion or new work expenditure resulting in additional future operations and maintenance costs.

Stormwater Drainage Assets requiring renewal/replacement have been identified by the ongoing Stormwater Drainage and GPT Assets Condition Audit which began in 2006.

Gross Pollutant Trap Assets requiring renewal/replacement have been identified by the Gross Pollutant Trap audit Report completed by consultants Optimal Stormwater in 2016 and reported to Council in July 2016.

#### **Stormwater Drainage and GPT Assets – Funding Scenarios**

The Long Term Financial Plan includes three scenarios, all of which maintain current services levels but propose differing levels of capital expenditure on the renewal of Council's ageing infrastructure assets.

In summary:

- Pessimistic Scenario - This Scenario results in a decline in operating results and deficits in the later years.
- Optimistic Scenario - This Scenario results in improvements in operating results for the life of the plan.
- Planned Scenario - This Scenario results modest surplus operating results for the life of the plan.

**Table 12A: Funding Scenarios Stormwater Drainage Assets – North Sydney Councils 10 Year Plan**

Scenario	Capital Funding Level Required Per Annum	10 Year Plan \$ Total
Scenario 1.	\$2,613,180/year	<b>\$26,131,802</b>
Scenario 2.	\$2,613,180/year	<b>\$26,131,802</b>
Scenario 3.	\$2,613,180/year	<b>\$26,131,802</b>

**Note:** These Scenarios are based on the 10-year Long Term Financial Plan.

**Table 12B: Funding Scenarios Gross Pollutant Trap Assets – North Sydney Councils 10 Year Plan**

Scenario	Capital Funding Level Required Per Annum	10 Year Plan \$ Total
Scenario 1.	\$367,303/year	<b>\$3,673,025</b>
Scenario 2.	\$367,303/year	<b>\$3,673,025</b>
Scenario 3.	\$367,303/year	<b>\$3,673,025</b>

**Note:** These Scenarios are based on the 10-year Long Term Financial Plan.

#### **Stormwater Drainage and GPT Assets – Service and Risk Tradeoffs**

The decisions made in adopting this AM Plan are based on the objective to achieve the optimum benefits from the available resources.

#### **Service trade-off**

If this funding Scenario is adopted, then the Level of Service will be maintained.

#### **Risk trade-off**

If this funding Scenario is not adopted, then there is increased risk of failures. These include:

- Stormwater pipe collapse due to being in poor condition or due to structural collapse. The risk increases depending on the location of the collapsed pipe. Pipes can fail under roads due to excessive loading or condition resulting in a large void suddenly opening up within the roadway.
- Excessive overland flow and flooding due to either blocked pipes or pipes and pits that are under capacity.
- Gross Pollutant Traps Assets are not functioning and or has failed due to significant defects e.g., Major blockages from other sources, more that 75% of the GPT is not functioning collapsed in sections– major capacity and or blockage issues – will block and not function in any storm event.

#### **Stormwater Drainage and GPT Assets – Renewal and Replacement Program – FY2023-FY2032 (10 Year Plan)**

Council's projected 10 year Capital Renewal Program is shown in the Tables below. It is based on the funding required to replace Stormwater Drainage and GPT Assets in accordance with the ongoing condition survey being carried out by Council's contractors as well as the GPT Upgrade Report by consultants Optimal Stormwater 2018.

It should be noted that Stormwater Drainage and GPT Assets may also be replaced based on other criteria including:

- Streetscape and Public Domain Upgrades

- 24 -

- Kerb and gutter upgrades
- Building Developments (DA Conditions)
- Stormwater Drainage and GPT Assets replaced in association with other projects such as Park and or Streetscape upgrades and associated Projects.

Project priorities may also be subject to change due to accelerated deterioration, sudden failure or finalization of detailed designs and project costings.

**Table 13: Stormwater Drainage Assets – Renewal and Replacement Program**

**Priority Projects 2022/23 (Year 1)**

Year	Priority	Location	Risk Rating / Category	Condition	Capital Cost
2022/23	1c	Willoughby St and Elamang Ave	Very High (5)	Very Poor	\$600,000
2022/23	1b	Amherst Street – stage 1	Very High (5)	Very Poor	\$500,000
2022/23	1b	Carter St at Cairo	Very High (5)	Very Poor	\$300,000
2022/23	1d	Alexander Lane	Very High (5)	Very Poor	\$300,000
2022/23		Pipe Relining Program	Very High (5)	Very Poor	\$575,075
2022/23		Critical Inlet Program	Very High (5)	Very Poor	\$50,000
2022/23		Drainage Design	Very High (5)	Very Poor	\$120,000
2022/23		Contingency			\$29,925
<b>Total</b>					<b>\$2,475,000</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

**Table 14: Stormwater Drainage Assets – Renewal and Replacement Program**

**Priority Projects 2023/24 (Year 2)**

Year	Priority	Location	Risk Rating / Category	Condition	Capital Cost
2023/24	1b	Amherst Street – stage 2	Very High (5)	Very Poor	\$500,000
2023/24	1c	Angelo Street	Very High (5)	Very Poor	\$1,000,000
2023/24	1b	Young Street	Very High (5)	Very Poor	\$300,000
2023/24	1b	Bennelong Road	Very High (5)	Very Poor	\$300,000
2023/24	1b	Hazelbank – Stage 1	Very High (5)	Very Poor	\$200,000
2023/24		Pipe Relining Program			\$575,075
2023/24		Critical Inlet Program			\$50,000
2023/24		Drainage Design			\$120,000
2023/24		Contingency			\$51,727
<b>Total</b>					<b>\$3,096,802</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.



**Table 15: Stormwater Drainage Assets – Renewal and Replacement Program****Priority Projects 2024/25 (Year 3)**

Year	Priority	Location	Risk Rating / Category	Condition	Capital Cost
2024/25	1b	Hazelbank – Stage 2	Very High (5)	Very Poor	\$300,000
2024/25	1c	Balfour Street	Very High (5)	Very Poor	\$300,000
2024/25	1a	Kurraba at Wycombe	Very High (5)	Very Poor	\$300,000
2024/25	1b	West Street	Very High (5)	Very Poor	\$400,000
2024/25	1c	Dumbarton + GPT	Very High (5)	Very Poor	\$300,000
2024/25		Pipe Relining Program			\$575,075
2024/25		Critical Inlet Program			\$50,000
2024/25		Drainage Design			\$120,000
2024/25		Contingency			\$224,925
<b>Total</b>					<b>\$3,048,074</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

**Table 16: Stormwater Drainage Assets – Renewal and Replacement Program****Priority Projects 2025/32 (Year 4-10)**

Year	Priority	Location	Risk Rating / Category	Condition	Capital Cost
2025/32	1b	Hazelbank – Stage 3	Very High (5)	Very Poor	\$300,000
2025/32	1c	Kurraba Wharf Steps	Very High (5)	Very Poor	\$500,000
2025/32	1a	Berry And Miller Street	Very High (5)	Very Poor	\$1,000,000
2025/32	1a	Miller St And Pine St	Very High (5)	Very Poor	\$500,000
2025/32	1a	# Brennan Park, Wollstonecraft	Very High (5)	Very Poor	\$26,068
2025/32	1a	Bannerman St, Cremorne	Very High (5)	Very Poor	\$38,256
2025/32	1a	Belgrave St, Cremorne	Very High (5)	Very Poor	\$59,613
2025/32	1a	Carlow St, North Sydney	Very High (5)	Very Poor	\$5,556
2025/32	1a	Carlyle St, Wollstonecraft	Very High (5)	Very Poor	\$7,341
2025/32	1a	Chandos St, Crows Nest	Very High (5)	Very Poor	\$147,417
2025/32	1a	Chandos St, St Leonards	Very High (5)	Very Poor	\$206,880
2025/32	1a	Christie St, St Leonards	Very High (5)	Very Poor	\$15,508
2025/32	1a	Clark Rd, Neutral Bay	Very High (5)	Very Poor	\$20,636
2025/32	1a	Clark Rd, North Sydney	Very High (5)	Very Poor	\$50,599
2025/32	1a	Colindia Ave, Neutral Bay	Very High (5)	Very Poor	\$37,063
2025/32	1a	Cranbrook Ave, Cremorne	Very High (5)	Very Poor	\$9,563
2025/32	1a	Cremorne Rd, Cremorne Point	Very High (5)	Very Poor	\$20,378
2025/32	1a	Gerard St, Cremorne	Very High (5)	Very Poor	\$112,369
2025/32	1a	Gerard St, Cremorne, Cremorne	Very High (5)	Very Poor	\$87,014
2025/32	1a	Grasmere La, Cremorne	Very High (5)	Very Poor	\$8,210
2025/32	1a	Grasmere Rd, Cremorne	Very High (5)	Very Poor	\$5,180
2025/32	1a	Hume St, Wollstonecraft	Very High (5)	Very Poor	\$12,149
2025/32	1a	Kurraba Rd, Neutral Bay	Very High (5)	Very Poor	\$133,494
2025/32	1a	Lavender Cres, Lavender Bay	Very High (5)	Very Poor	\$5,437

- 26 -

Year	Priority	Location	Risk Rating / Category	Condition	Capital Cost
2025/32	1a	Lithgow St, St Leonards	Very High (5)	Very Poor	\$53,742
2025/32	1a	Macpherson St, Cremorne	Very High (5)	Very Poor	\$6,274
2025/32	1a	Miller St, North Sydney	Very High (5)	Very Poor	\$461,795
2025/32	1a	Milson Rd, Cremorne Point	Very High (5)	Very Poor	\$37,865
2025/32	1a	Munro St, McMahons Point	Very High (5)	Very Poor	\$97,199
2025/32	1a	Parraween St, Cremorne	Very High (5)	Very Poor	\$18,418
2025/32	1a	Rangers Rd, Cremorne	Very High (5)	Very Poor	\$134,095
2025/32	1a	River Rd, Wollstonecraft	Very High (5)	Very Poor	\$21,213
2025/32	1a	River Rd, Wollstonecraft	Very High (5)	Very Poor	\$88,527
2025/32	1a	Rocklands La, Wollstonecraft	Very High (5)	Very Poor	\$107,216
2025/32	1a	Russell St, Wollstonecraft	Very High (5)	Very Poor	\$60,460
2025/32	1a	Shellcove Rd, Neutral Bay	Very High (5)	Very Poor	\$10,553
2025/32	1a	Wilona Ave, North Sydney	Very High (5)	Very Poor	\$74,085
2025/32	1a	Wycombe Rd, Neutral Bay	Very High (5)	Very Poor	\$21,116
2025/32	1b	Private Property, North Sydney	Very High (5)	Very Poor	\$14,557
2025/32	1b	# Bradfield Park, Kirribilli	Very High (5)	Very Poor	\$27,705
2025/32	1b	# Brightmore Reserve, Cremorne	Very High (5)	Very Poor	\$346,276
2025/32	1b	# Brightmore Reserve, Neutral Bay	Very High (5)	Very Poor	\$528,661
2025/32	1b	# Grasmere Reserve, Cremorne	Very High (5)	Very Poor	\$344,182
2025/32	1b	# Primrose Park, Cremorne	Very High (5)	Very Poor	\$97,263
2025/32	1b	# St Leonards Park, North Sydney	Very High (5)	Very Poor	\$263,940
2025/32	1b	Albany St, Crows Nest	Very High (5)	Very Poor	\$65,488
2025/32	1b	Albany St, St Leonards	Very High (5)	Very Poor	\$113,270
2025/32	1b	Alexander St, Crows Nest	Very High (5)	Very Poor	\$91,280
2025/32	1b	Alfred St North, Neutral Bay	Very High (5)	Very Poor	\$163,449
2025/32	1b	Alfred St Nth, Neutral Bay	Very High (5)	Very Poor	\$2,841
2025/32	1b	Alfred Street North, Neutral Bay	Very High (5)	Very Poor	\$170,515
2025/32	1b	Amherst St, Cammeray	Very High (5)	Very Poor	\$397,507
2025/32	1b	Amherst Street, Cammeray	Very High (5)	Very Poor	\$180,041
2025/32	1b	Amherst Street, Cammeray	Very High (5)	Very Poor	\$118,932
2025/32	1b	Anderson St, Neutral Bay	Very High (5)	Very Poor	\$3,228
2025/32	1b	Arthur St, Lavender Bay	Very High (5)	Very Poor	\$23,510
2025/32	1b	Atchison St, Crows Nest	Very High (5)	Very Poor	\$47,784
2025/32	1b	Balls Head Rd, Waverton	Very High (5)	Very Poor	\$12,514
2025/32	1b	Bay Rd, North Sydney	Very High (5)	Very Poor	\$315,000
2025/32	1b	Bay Rd, Waverton	Very High (5)	Very Poor	\$31,456
2025/32	1b	Belgrave St, Cremorne	Very High (5)	Very Poor	\$134,725
2025/32	1b	Bellevue St, Cammeray	Very High (5)	Very Poor	\$87,712
2025/32	1b	Belmont To Newlands Footway, Wollstonecraft	Very High (5)	Very Poor	\$15,015
2025/32	1b	Ben Boyd Rd, Neutral Bay	Very High (5)	Very Poor	\$14,641
2025/32	1b	Benelong Rd, Cremorne	Very High (5)	Very Poor	\$93,923
2025/32	1b	Bent St, Neutral Bay	Very High (5)	Very Poor	\$137,533
2025/32	1b	Blues Point Rd, McMahons Point	Very High (5)	Very Poor	\$215,634

- 27 -

Year	Priority	Location	Risk Rating / Category	Condition	Capital Cost
2025/32	1b	Blues Point Rd, North Sydney	Very High (5)	Very Poor	\$52,882
2025/32	1b	Bridge End, Wollstonecraft	Very High (5)	Very Poor	\$28,634
2025/32	1b	Brothers Avenue, Cammeray	Very High (5)	Very Poor	\$120,672
2025/32	1b	Broughton St, Kirribilli	Very High (5)	Very Poor	\$12,753
2025/32	1b	Broughton St, Kirribilli	Very High (5)	Very Poor	\$36,531
2025/32	1b	Cairo St, Cammeray	Very High (5)	Very Poor	\$3,862
2025/32	1b	Carr St, Waverton	Very High (5)	Very Poor	\$143,974
2025/32	1b	Carter St, Cammeray, Cammeray	Very High (5)	Very Poor	\$7,866
2025/32	1b	Clark Road, Kirribilli	Very High (5)	Very Poor	\$19,331
2025/32	1b	Cremorne Rd, Cremorne Point	Very High (5)	Very Poor	\$32,490
2025/32	1b	Cremorne Reserve, Cremorne Point	Very High (5)	Very Poor	\$82,277
2025/32	1b	Cremorne To Reserve Footway, Cremorne Point	Very High (5)	Very Poor	\$20,622
2025/32	1b	Crows Nest Rd, Waverton	Very High (5)	Very Poor	\$74,708
2025/32	1b	Crows Nest Rd, Wollstonecraft	Very High (5)	Very Poor	\$35,781
2025/32	1b	Doris St, North Sydney	Very High (5)	Very Poor	\$5,835
2025/32	1b	Earle St, Cremorne	Very High (5)	Very Poor	\$26,347
2025/32	1b	Ernest La, Crows Nest	Very High (5)	Very Poor	\$6,703
2025/32	1b	Ernest St, Crows Nest	Very High (5)	Very Poor	\$22,066
2025/32	1b	Gerard Lane, Cremorne	Very High (5)	Very Poor	\$4,572
2025/32	1b	Gerard St, Cremorne	Very High (5)	Very Poor	\$29,055
2025/32	1b	Grafton St, Cremorne	Very High (5)	Very Poor	\$26,520
2025/32	1b	Grasmere La, Cremorne	Very High (5)	Very Poor	\$7,553
2025/32	1b	Grasmere Rd, Cremorne	Very High (5)	Very Poor	\$7,014
2025/32	1b	Grosvenor St, Neutral Bay	Very High (5)	Very Poor	\$68,675
2025/32	1b	Harriott La, Waverton	Very High (5)	Very Poor	\$8,824
2025/32	1b	Harriott St, Waverton	Very High (5)	Very Poor	\$38,127
2025/32	1b	Hayes St, Neutral Bay	Very High (5)	Very Poor	\$221,582
2025/32	1b	Henry Lawson Ave, McMahons Point	Very High (5)	Very Poor	\$11,390
2025/32	1b	Hodgson Ave, Cremorne Point	Very High (5)	Very Poor	\$44,574
2025/32	1b	Holdsworth St, Neutral Bay	Very High (5)	Very Poor	\$54,374
2025/32	1b	Ivy St, Wollstonecraft	Very High (5)	Very Poor	\$25,927
2025/32	1b	Lavender St, Lavender Bay	Very High (5)	Very Poor	\$60,408
2025/32	1b	Lavender St, North Sydney	Very High (5)	Very Poor	\$4,033
2025/32	1b	Lindsay St, Neutral Bay	Very High (5)	Very Poor	\$29,525
2025/32	1b	Lower Bent St, Neutral Bay	Very High (5)	Very Poor	\$264,699
2025/32	1b	Macpherson St, Cremorne	Very High (5)	Very Poor	\$18,895
2025/32	1b	McClaren St, North Sydney	Very High (5)	Very Poor	\$39,425
2025/32	1b	Miller St, Cammeray	Very High (5)	Very Poor	\$140,560
2025/32	1b	Miller St, North Sydney, North Sydney	Very High (5)	Very Poor	\$57,501
2025/32	1b	Milson Rd, Cremorne Point	Very High (5)	Very Poor	\$253,466
2025/32	1b	Morton St, Wollstonecraft	Very High (5)	Very Poor	\$249,461
2025/32	1b	Mount St, North Sydney	Very High (5)	Very Poor	\$18,901
2025/32	1b	Murdoch St, Cremorne	Very High (5)	Very Poor	\$21,350

- 28 -

Year	Priority	Location	Risk Rating / Category	Condition	Capital Cost
2025/32	1b	Newlands St, Wollstonecraft	Very High (5)	Very Poor	\$10,819
2025/32	1b	Nook Ave, Neutral Bay	Very High (5)	Very Poor	\$15,925
2025/32	1b	Olympic Dr, Kirribilli	Very High (5)	Very Poor	\$3,508
2025/32	1b	Olympic Dr, Milsons Point	Very High (5)	Very Poor	\$56,372
2025/32	1b	Parraween St, Cremorne	Very High (5)	Very Poor	\$37,545
2025/32	1b	Powell St, Cremorne	Very High (5)	Very Poor	\$7,378
2025/32	1b	Raleigh St, Cammeray	Very High (5)	Very Poor	\$9,571
2025/32	1b	Rocklands Rd, Wollstonecraft	Very High (5)	Very Poor	\$57,110
2025/32	1b	Russell St, Wollstonecraft	Very High (5)	Very Poor	\$17,589
2025/32	1b	Shirley Rd, Wollstonecraft	Very High (5)	Very Poor	\$42,193
2025/32	1b	Spencer Rd, Cremorne	Very High (5)	Very Poor	\$43,740
2025/32	1b	Spring St, North Sydney	Very High (5)	Very Poor	\$15,957
2025/32	1b	Union St, Mcmahons Point	Very High (5)	Very Poor	\$599,165
2025/32	1b	Waiwera St, Lavender Bay	Very High (5)	Very Poor	\$10,259
2025/32	1b	Walker St, North Sydney, North Sydney	Very High (5)	Very Poor	\$73,261
2025/32		Pipe Relining Program			\$4,025,525
2025/32		Critical Inlet Program			\$350,000
2025/32		Drainage Design			\$840,000
2025/32		Contingency			\$774,467
<b>Total</b>					<b>\$17,990,000</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

**Table 17: Gross Pollutant Trap Assets – Renewal and Replacement Program**

**Priority Projects 2022/23 (Year 1)**

Replace Year	Priority	Location	Risk Rating / Category	Condition	Capital Cost
2022/23	1c	Willoughby Street	Very High (5)	Very Poor	\$573,025
2022/23	1a	Blues Point Road	Very High (5)	Very Poor	\$300,000
<b>Total</b>					<b>\$873,025</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

**Table 18: Gross Pollutant Trap Assets – Renewal and Replacement Program**

**Priority Projects 2023/24 (Year 2)**

Replace Year	Priority	Location	Risk Rating / Category	Condition	Capital Cost
2023/24	1c	Honda Road	Very High (5)	Very Poor	\$800,000
<b>Total</b>					<b>\$800,000</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

- 29 -

**Table 19: Gross Pollutant Trap Assets – Renewal and Replacement Program****Priority Projects 2024/25 (Year 3)**

Replace Year	Priority	Location	Risk Rating / Category	Condition	Capital Cost
2024/25	1c	Waverton Park - West	Very High (5)	Very Poor	\$250,000
<b>Total</b>					<b>\$250,000</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

**Table 20: Gross Pollutant Trap Assets – Renewal and Replacement Program****Priority Projects 2025/32 (Year 4-10)**

Replace Year	Priority	Location	Risk Rating / Category	Condition	Capital Cost
2025/32	1c	Ryries Parade	Very High (5)	Very Poor	\$400,000
2025/32	2b	Balls Head Road	High (4)	Poor	\$300,000
2025/32	2b	Walker Street	High (4)	Poor	\$750,000
2025/32	2c	Dumbarton Street/Munro Street	High (4)	Poor	\$300,000
<b>Total</b>					<b>\$1,750,000</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

**Table 21: Gross Pollutant Trap Assets – Renewal and Replacement Program****Works Identified 2025/32 (Year 4-10)**

Replace Year	Priority	Location	Risk Rating / Category	Condition	Capital Cost
2025/32	2c	Peel Street	High (4)	Poor	\$400,000
2025/32	2c	Holbrook Ave	High (4)	Poor	\$504,191
<b>Total</b>					<b>\$904,191</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.



Stormwater Drainage Assets – Renewal Program

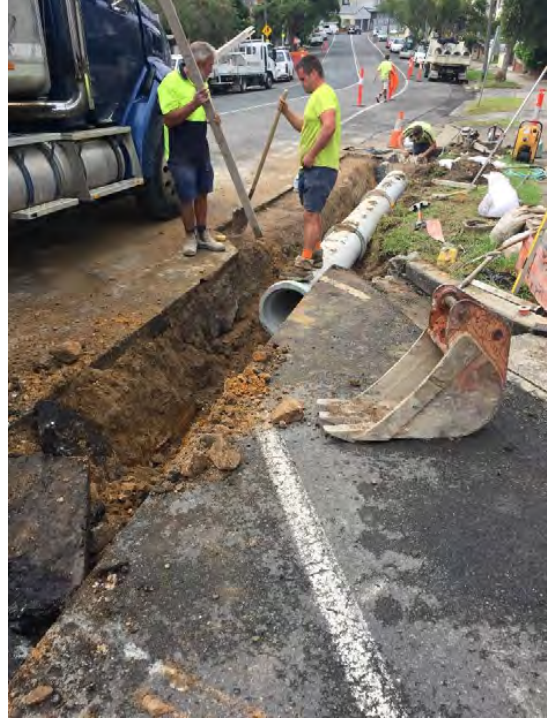


Pit and Pipe replacement at Bob Gordon Reserve, Lavender Bay.



Pit and Pipe replacement at Carabella Street, Kirribilli.





Pit and Pipe replacement at Echo Street, Cammeray, (LEFT), and at Carter Street, Cammeray (RIGHT)



Pit and Pipe replacement at Abbott Street, Cammeray (LEFT), and at Montpellier Street, Neutral Bay (RIGHT).





Pit and Pipe replacement at Milson Road, Cremorne Point.



Pit and Pipe replacement at Carlyle Lane, Wollstonecraft.



**Gross Pollutant Traps Assets – Renewal Program**



Replacement of GPT at Little Young St, Cremorne.



Replacement of GPT at Little Young St, Cremorne.



Replacement of GPT at Little Young St, Cremorne.





Replacement of GPT Lids at Elamang Avenue, Neutral Bay.



Replacement of GPT Lids at Elamang Avenue, Neutral Bay.



### **Stormwater Drainage and GPT Assets – Performance Measures**

The effectiveness of the asset management plan can be measured in the following ways:

- The degree to which the required projected expenditures identified in this asset management plan are incorporated into the long term financial plan,
- The degree to which 1-5 year detailed works programs, budgets, business plans and corporate structures take into account the 'global' works program trends provided by the asset management plan,
- The degree to which the existing and projected service levels and service consequences (what we cannot do), risks and residual risks are incorporated into the Strategic Plan and associated plans,
- The Asset Renewal Funding Ratio achieving the target of 1.0.

### **Stormwater Drainage and GPT Assets – References**

- GPT Audit Report by Optimal Stormwater
- IPWEA, 2015 Practice Note 5 Stormwater Drainage, Institute of Public Works Engineering Australasia, Sydney
- IPWEA, 2006, 'International Infrastructure Management Manual', Institute of Public Works Engineering Australasia, Sydney, [www.ipwea.org/IIMM](http://www.ipwea.org/IIMM)
- IPWEA, 2008, 'NAMS.PLUS Asset Management', Institute of Public Works Engineering Australasia, Sydney, [www.ipwea.org/namsplus](http://www.ipwea.org/namsplus).
- IPWEA, 2015, 2nd edn., 'Australian Infrastructure Financial Management Manual', Institute of Public Works Engineering Australasia, Sydney, [www.ipwea.org/AIFMM](http://www.ipwea.org/AIFMM).
- IPWEA, 2015, 3rd edn., 'International Infrastructure Management Manual', Institute of Public Works Engineering Australasia, Sydney, [www.ipwea.org/IIMM](http://www.ipwea.org/IIMM)
- IPWEA, 2012 LTFP Practice Note 6 PN Long Term Financial Plan, Institute of Public Works Engineering Australasia, Sydney

## APPENDICES

### Appendix A: Maintenance Management System Drainage Pits and Kerb & Guttering

Inspection areas have been defined in accordance with the identified key factors of:

- Volume of pedestrian traffic, eg. transport hubs; retail/commercial areas; schools and hospitals.
- Use by people over 50 years old.

Inspection frequencies are based on these areas as defined by the reference maps and the resources currently available to undertake the inspections.

**Red** – 2 times per year;                      **Blue** – Annual;                      **Other** – Once every 2 years;

The results of inspections will be downloaded into the MMDS database. There are 5 categories in which a defect may be placed. Not all categories may be applicable to every inspection area and/or type of asset:

<b>Cat 5</b>		Will be <b>made safe</b> no later than 2 working days after allocation of defect to work crew. Defect may then be re-categorised as Cat 4 or Cat 3.
<b>Cat 4</b>		Will be repaired no later than 10 working days after allocation of defect to work crew.
<b>Cat 3</b>		Will be placed on Zone Maintenance Program. This program operates on an 8 week cycle, however, depending on workload and reactive maintenance requests, Cat 3 defects may miss a cycle or more before repairs are able to be undertaken.
<b>Cat 2</b>		Deferred maintenance. Could also have aesthetic issues such as gum, stains, services mark-up, etc. May be addressed if close-by to Cat 4 or Cat 3 defect that is being repaired. Otherwise will be re-inspected on next area inspection.
<b>Cat 1</b>		As new. Surface displaying no defects.

### Intervention Matrix

KERB + GUTTER	RED	BLUE	OTHER
MISSING/DAMAGED/LOOSE	28	24	21
> 50mm/GRATE NOT BICYCLE SAFE	23	19	16
25mm – 50mm/GRATE BLOCKED	20	16	13
10mm – 25mm	18	14	11
AESTHETIC	12	8	5
AS NEW	10	6	3

**Scoring example:** 28 = High Use Area score 10 and Defect of Missing or Loose score 18

The focus of inspections will be the kerb section and unobstructed gutter sections. It is noted that the gutter section may be obstructed and not visible due to parked vehicles during inspection. Inspectors are not expected to get down on their hands and knees to look for defects. The kerb and guttering includes all drainage kerb inlets, convertor outlets, gutter grates or access pit lids in gutter. Driveway crossings shall be listed as **private** when selecting the owner of the asset.

- 37 -


NORTH SYDNEY COUNCIL - GUIDE FOR KERB + GUTTER DEFECT RATING		
AN EXPLANATION OF THE DEFECT INSPECTION SYSTEM		
AREA OF INSPECTION		SCORE
<b>RED</b>	HIGH PEDESTRIAN TRAFFIC AREAS WITH SIGNIFICANT USAGE BY PEDESTRIANS OVER 50 YEARS OLD  INSPECTIONS - 2 PER YEAR	<b>10</b>
<b>BLUE</b>	HIGH PEDESTRIAN TRAFFIC AREAS WITH MODERATE USAGE BY PEDESTRIANS OVER 50 YEARS OLD or MEDIUM PEDESTRIAN TRAFFIC AREAS WITH SIGNIFICANT USAGE BY PEDESTRIANS OVER 50 YEARS OLD  INSPECTIONS - ANNUAL	<b>6</b>
<b>WHITE</b>	ALL OTHER AREAS IN LGA EXCLUDING PARKS; RESERVES and PLAZAS  INSPECTION - EVERY 2 YEARS  NOTE: IN THESE AREAS ONLY DEFECTS GREATER THAN ABOUT 10mm WILL HAVE DETAILS RECORDED.	<b>3</b>
KERB + GUTTER TYPE		
CONCRETE	SANDSTONE	
GRANITE	OTHER	
DRIVEWAY CROSSING - STANDARD or GUTTER BRIDGE	LETTERBOX or OTHER PIT TYPE	
KERB INLET or CONVERTOR OUTLET	GUTTER GRATE or PIT LID IN GUTTER	
DEFECT – MAY BE HEIGHT or WIDTH		
SECTION MISSING, BADLY DAMAGED or LOOSE UNDER FOOT		<b>18</b>
GREATER THAN ABOUT 50mm – MAY BE HEIGHT or WIDTH		<b>13</b>
GUTTER GRATE NOT BICYCLE SAFE/DAMAGED		<b>13</b>
BETWEEN ABOUT 25mm AND ABOUT 50mm – MAY BE HEIGHT or WIDTH		<b>10</b>
GUTTER GRATE BLOCKED - LEAF LITTER, DEBRIS or OTHER ITEM eg. POLLUTION CONTROLS		<b>10</b>
BETWEEN ABOUT 10mm AND ABOUT 25mm – MAY BE HEIGHT or WIDTH		<b>8</b>
AESTHETIC ISSUES - GUM, STAINS, SERVICES MARK-UP, etc		<b>2</b>
NO DEFECT - IF THIS IS SELECTED A PHOTO MUST BE TAKEN OF THE INSPECTED ITEM or PSID		<b>0</b>
HAZARD TYPE		
TRIP - LIFTING/DROPPING OF SECTION TO ADJACENT SECTION	UNEVEN SURFACE - CHIPPED or ERODED SURFACE	
CRACKING - DEFECT NOT AT CONSTRUCTION JOINT	MISSING - SECTION OF KERB MISSING EG. OVER DRAIN PIPE	
BROKEN/OUT OF ALIGNMENT- LOOSE UNDER FOOT	SERVICE ACCESS COVER - LOOSE/LIFTED/DROPPED	
OTHER ASPECTS		
AREA HAS OBSTRUCTIONS DUE TO TREE ROOTS or OTHER VEGETATION	PRESENCE OF PARTICULAR ASPECT/S NOTED PRIOR TO DEPARTURE FROM PSID. REFERRED TO RELEVANT NSC SECTION VIA EMAIL	
AREA HAS EDGE SCOUR (DROP OFF ALONG EDGE OF VERGE/TREE SITE) > 50MM		
AREA HAS PLANTING, GRASS and/or WEED GROWTH OVERGROWING KERB		





# NORTH SYDNEY COUNCIL ASSET MANAGEMENT PLAN STREET FURNITURE 2022-2032



<b>Document Control</b>		<b>Asset Management Plan</b>				
Document ID : NSC AMP Roads 2023 Street Furniture						
<b>Rev No</b>	<b>Date</b>	<b>Revision Details</b>	<b>Author</b>	<b>Reviewer</b>	<b>Approver</b>	
1	09/05/2022	First Draft	IM	JVH/DM	DM	



## Table of Contents

Executive Summary .....	4
Street Furniture – Future Demand .....	5
Street Furniture – Levels of Customer Service .....	5
Street Furniture – Levels of Technical Service .....	6
Street Furniture – Condition .....	7
Street Furniture – Review of Useful Lives .....	8
Street Furniture – Funding Strategy .....	9
Street Furniture – Capital works .....	9
Street Furniture – Managing the Risks .....	10
Street Furniture – Maintenance .....	12
Street Furniture – Prioritised Expenditure Forecast .....	13
Street Furniture – Valuation Forecast .....	13
Street Furniture – Key Assumptions – Financial Forecasts .....	13
Street Furniture – Creation / Acquisition / Upgrade Program .....	14
Street Furniture – Disposal Plan .....	14
Street Furniture – Forecast reliability and confidence .....	14
Street Furniture – Improvement Plan .....	14
Street Furniture – Monitoring and Review Procedures .....	14
Street Furniture – Renewal and Replacement Program .....	14
Street Furniture – Funding Scenarios .....	15
Street Furniture – Service and Risk Tradeoffs .....	15
Service trade-off .....	15
Risk trade-off .....	15
Street Furniture – Renewal and Replacement Program – FY2023-FY2032 (10 Year Plan) .....	15
Priority Projects 2022/23 (Year 1) .....	16
Priority Projects 2023/24 (Year 2) .....	16
Priority Projects 2024/25 (Year 3) .....	17
Priority Projects 2025/32 (Year 4-10) .....	18
Street Furniture – Performance Measures .....	29
Street Furniture – References .....	29
APPENDICES .....	30
Appendix A: Maintenance Management System Street Furniture .....	30

## Street Furniture

### Executive Summary

Located across the North Sydney Council LGA is approximately 955 individual items of Street Furniture. These primarily consist of Bike Racks, Bins, Planter Boxes, Seats, Signs, Tree guards and Walls. In 2019 a condition audit of Street Furniture within North Sydney Council was carried out. This data was used as the basis for the 2019 Street Furniture Asset Management Plan.

In 2014, North Sydney Council adopted a new Public Domain Style Manual which outlined a new suite of street furniture elements. Council has been progressively replacing the old style streetscape furniture elements with the adopted new style of furniture which is being rolled out in the North Sydney CBD, Village centres, Parks & Open Spaces and other local residential areas in the North Sydney LGA.

Overall some 98.1% of the portfolio is in good to average condition (1-3) with some 1.9% in poor to very poor condition (4-5).

A Risk rating was assigned to each Street Furniture asset. Overall 98.1% of the portfolio has a low to medium risk rating and 1.9% has a high to very high risk rating.

The total Replacement Value of the portfolio is \$3,338,827.

**Table 1: Street Furniture – Summary Table**

Asset Category	Qty	Replacement Value (2021)	Accumulated Depreciation (2021)	Fair Value (2021)	Depreciation Expense
Street Furniture	955	\$3,338,827	\$936,484	\$2,402,342	\$156,096

The following table provides a summary of the quantities and replacement values for each Street Furniture type.

**Table 2: Street Furniture - Typology**

Street Furniture Types	Quantity	Replacement Cost
Backflow Device	2	\$6,415
Bike Rack	160	\$290,194
Bin	80	\$330,593
Bubbler	4	\$35,055
Fire Hydrant	5	\$8,326
Flag Pole	19	\$49,715
Information Board	6	\$11,921
Planter Box	147	\$562,181
Plaque	17	\$14,428
Power Outlet	2	\$805
Seat	360	\$1,419,242
Shade Sail	2	\$1,770
Shade Structure	2	\$1,682

- 5 -

Street Furniture Types	Quantity	Replacement Cost
Shelter	1	\$28,518
Sign	35	\$20,081
Table	9	\$12,764
Tap	11	\$4,640
Tree Guard	47	\$148,629
Wall	46	\$391,867
<b>Grand Total</b>	<b>955</b>	<b>\$3,338,827</b>

### Street Furniture – Future Demand

Drivers affecting demand for Street Furniture include things such as population change, regulation changes – new development, community expectations (Public Safety), technological changes, economic factors and environmental factors.

### Street Furniture – Levels of Customer Service

Service levels are defined service levels in two terms, customer levels of service and technical levels of service. These are supplemented by organisational measures.

**Customer Levels of Service** measure how the customer receives the service and whether value to the customer is provided.

Customer levels of service measures used in the asset management plan are:

**Quality** How good is the service ... *what is the condition or quality of the service?*

**Function** Is it suitable for its intended purpose .... *Is it the right service?*

**Capacity/Use** Is the service over or under used ... *do we need more or less of these assets?*

The current and expected customer service levels are detailed in the Table below.

**Table 3: Street Furniture – Levels of Customer Service**

Service Attribute	Expectation	Performance Measure Used	Current Performance	Desired Position in 10 Years.
<b>Quality</b>	Street Furniture assets are well maintained.	Percentage of Street Furniture in 'very good', 'good' or 'Fair' (1, 2, 3) condition and Percentage 'poor' or 'very poor' (4, 5) Condition.	98.1% of Street Furniture in 'very good', 'good' or 'Fair' (1, 2, 3) condition.  1.9% of Street Furniture assets in poor/very poor (4, 5) Condition.	Maintain – Condition 1-2-3  Improve and replace Condition 4-5
<b>Function</b>	Upgrade Street Furniture assets in accordance with Public Domain Style Manual.	Number of Street Furniture assets constructed in accordance with Public Domain Style Manual.	Number of Street Furniture assets constructed in accordance with Public Domain Style Manual to be determined.	Improve

- 6 -

Service Attribute	Expectation	Performance Measure Used	Current Performance	Desired Position in 10 Years.
Capacity and Use	Number of Street Furniture assets required is appropriate.	Number of additional Street Furniture assets required.	New Street Furniture assets are constructed as part of Streetscape projects.	New Street Furniture assets to be constructed as part of future Streetscape projects.

#### Street Furniture – Levels of Technical Service

**Technical Levels of Service** - Supporting the customer service levels are operational or technical measures of performance. These technical measures relate to the allocation of resources to service activities to best achieve the desired customer outcomes and demonstrate effective performance.

Technical service measures are linked to the activities and annual budgets covering:

- Operations – the regular activities to provide services (e.g., cleansing, inspections, etc).
- Maintenance – the activities necessary to retain an asset as near as practicable to an appropriate service condition. Maintenance activities enable an asset to provide service for its planned life (e.g., Street Furniture repair – patching, minor works),
- Renewal – the activities that return the service capability of an asset up to that which it had originally (e.g. Street Furniture replacement and or Street Furniture component replacement),
- Upgrade/New – the activities to provide a higher level of service (e.g. additional Street Furniture).

Table 4 shows the technical levels of service expected to be provided for Street Furniture assets. The 'Desired' position in the table documents the position being recommended in this AM Plan.

**Table 4: Street Furniture – Technical Levels of Service**

Service Attribute	Service Activity Objective	Activity Measure Process	Current Performance	Desired for Optimum Lifecycle Cost
<b>Operations</b>	Undertake network inspections to monitor condition	Network inspections to monitor condition	Network inspected in 2019	Network inspected every 5 years
<b>Maintenance</b>	Reactive service Requests completed in a timely manner or made safe.	Respond to complaints.	Minor repairs undertaken in accordance with Maintenance Management System	Minor repairs undertaken in accordance with Maintenance Management Delivery System.
<b>Renewal</b>	Maintain existing assets to a satisfactory condition	Percentage of Street Furniture in 'very good', 'good' or 'Fair' (1, 2, 3) condition and Percentage 'poor' or 'very poor' (4, 5) Condition.	98.1% of Street Furniture assets in 'very good', 'good' or 'Fair' (1, 2, 3) condition.  1.9% of Street Furniture assets in poor/very poor (4, 5)	Improve or replace

- 7 -

Service Attribute	Service Activity Objective	Activity Measure Process	Current Performance	Desired for Optimum Lifecycle Cost
			Condition.	
<b>Upgrade</b>	Upgrade Street Furniture assets in accordance with Public Domain Style Manual.	Number of Street Furniture assets constructed in accordance with Public Domain Style Manual.	Number of Street Furniture assets constructed in accordance with Public Domain Style Manual to be determined.	Improve
<b>New</b>	Satisfactory provision of Street Furniture assets.	Number of additional Street Furniture assets required.	New Street Furniture assets are constructed as part of Streetscape projects.	New Street Furniture assets to be constructed as part of future Streetscape projects.

### Street Furniture – Condition

The condition of Council's Street Furniture network was surveyed in 2019 by Consultants, Rapid Map Services Pty Ltd in conjunction with Asset & Facilities Management Consulting Pty Ltd. The following condition criteria was used.

**Table 5: Street Furniture Condition Survey Criteria**

Grade	Condition	Description
1	Very Good	Sound - constructed to current standards, well maintained with no defects. with no defects. Meets council's current Public Domain Style Manual standards. <b>No work required</b>
2	Good	As grade 1 but not constructed to current standards or showing minor wear, tear and deterioration. E.g. weathering of timber, staining of fastenings but no decay of timber or corrosion of steel. Deterioration has no significant impact on safety & appearance of the street furniture. <b>Only minor work required</b>
3	Fair	Street furniture functionally sound, but appearance affected by minor defects e.g. vandalism, slight decay of timber, and mild corrosion of fastenings. Deterioration beginning to affect the stability, functionality or appearance of the street furniture or does not meet council's current Public Domain Style Manual. <b>Some work required</b>
4	Poor	Street furniture functioning but with problems due to significant defects e.g. rotting/ splitting of timber, corrosion, loosening of fastenings, causing a marked deterioration in stability, functionality or appearance or does not meet council's current Public Domain Style Manual. <b>Some replacement or rehabilitation needed within 1 year</b>
5	Very Poor	Street furniture has serious problems and has failed or are about to fail in the near future, causing unacceptable deterioration in stability, safety and appearance. <b>Urgent replacement/ rehabilitation required</b>

*As per IPWEA Condition Assessment & Asset Performance Guidelines Practice Note 10.1 2014 Parks Asset Management*



- 8 -

The Table below shows the Replacement Cost for each of the condition scores. In practice and where funds permit Street Furniture assets in condition 3 are generally replaced at the same time as Street Furniture assets in condition 4 or 5 if they are adjacent if there are potential risks and if it is cost effective.

**Table 6: Street Furniture Condition Survey Results - Overall**

CONDITION OF STREET FURNITURE – ENTIRE NETWORK			
Condition	Length (m)	Replacement Cost	% Condition (based on cost)
1 (Very Good)	277	\$1,427,132	42.8%
2 (Good)	483	\$1,317,050	39.4%
3 (Fair)	172	\$531,567	15.9%
4 (poor)	20	\$55,647	1.7%
5 (Very Poor)	3	\$7,431	0.2%
<b>Total</b>	<b>955</b>	<b>\$3,338,827</b>	<b>100.0%</b>

The Graph below shows the condition of Street Furniture assets over the entire network in terms of replacement cost.



#### Street Furniture – Review of Useful Lives

The useful lives of all types of Street Furniture assets were reviewed by Australis Pty Ltd and are shown in the following Table.

Street Furniture Type	Useful Life (Years)
Backflow Device	15
Bike Rack	15
Bin	15
Bubbler	15
Fire Hydrant	50
Flag Pole	35
Information Board	15

- 9 -

Street Furniture Type	Useful Life (Years)
Planter Box	50
Plaque	15
Power Outlet	15
Seat	15
Shade Structure	15
Shelter	50
Sign	15
Table	15
Tap	15
Tree Guard	15
Wall - Brick	90
Wall - Concrete	90
Wall - Concrete, Brick	90
Wall - Metal	90
Wall - Stone	90
Wall - Timber	90

Based on reviewed useful lives the total annual Depreciation is as follows:

Capital funding to maintain a renewal ratio of 1	
	Annual Depreciation
Street Furniture	\$156,096

A budget of \$156,096 is required on average over the long term to maintain the condition of Council's Street Furniture network, noting that fluctuations in renewal requirements in the medium term.

#### Street Furniture – Funding Strategy

The Asset Renewal Funding Ratio is the most important indicator. It compares funding with depreciation. An Asset Renewal Funding Ratio of 1 or greater sustained over the long term indicates the optimal renewal and replacement of assets.

The forecast for Depreciation (or Long Term Average Annual Asset Consumption) is \$156,096. Therefore, an annual average capital renewal funding of \$156,096 (2021 dollars) will achieve an Asset Renewal Funding Ratio of 1.

The cost to fully replace assets identified by Consultants, Rapid Map Services Pty Ltd in condition 4 and 5 as well as the cost to replace the condition 3 assets which will become condition 4 over the next 10 is \$594,645. This is an average annual cost of \$59,465 which is less than the \$156,096 Depreciation Expense and is also less than the average annual forecast budget of \$75,000. With further investigation and detailed design it is hoped that alternate and lesser cost solutions may be possible to maintain Street Furniture assets at an optimal level.

#### Street Furniture – Capital works

Replacement of Street Furniture assets is assumed to be a capital works project.

- 10 -

The ranking criteria used to determine priority of identified renewal and replacement proposals is detailed in Table 7. A priority for action of 1 to 5 has been assigned to each Street Furniture asset requiring capital works as described in the following table.

#### Street Furniture – Managing the Risks

There are risks associated with providing and maintaining Street Furniture assets are primarily as follows:

- Sudden failure of Street Furniture assets. For example damage due to vehicular impact causing property damage, public safety hazards, or injury.

The following risk response table was used to identify those Street Furniture assets requiring action within the next 10 years.

**Table 7: Street Furniture – Risk Response Table**

Level of Risk		Category	Action Required	Time frame for repairs, upgrade or replacement (subject to funding)
VH	Very High Risk	5	Immediate corrective action	1 Year
H	High Risk	4	Prioritised action required	1-2 Years
M	Medium Risk	3	Planned action required	2-10 Years
L	Low Risk	2	Manage by routine procedures	Inspections 1-2 years
New	No Risk	1	None	None

Consideration has been given to each Street Furniture asset whether to replace the Street Furniture or perform maintenance on it.

Segments that have a **Very High or High** risk rating were considered to need replacement within the 1-2 year forecast period.

Segments with a **Medium** risk rating were also considered needing replacement within the 2-10 year forecast period.

Examples of failed and failing Street Furniture in the North Sydney LGA



**Note:** The old style of Street Furniture depicted in these photographs is being progressively replaced by the new style of Street Furniture adopted by Council in the 2014 Public Domain Style Manual.

Council will endeavour to manage these risks within available funding by prioritising Street Furniture renewal works based on the Street Furniture Condition Audit prepared by Consultants, Rapid Map Services Pty Ltd.

**Table 8: Street Furniture – Capital renewal Priorities based on Condition and Risk Rating**

Risk Matrix - Street Furniture (Condition and Risk Rating)					
Likelihood of Street Furniture failing (L) Refer to Table 5. Condition Criteria	Street Furniture (No. of Street Furniture assets)				
	Road Hierarchy	Lane	Local Road	Collector	State/ Regional Road
	Footpath Hierarchy	Category 3	Category 2	Category 1	
	Priority	d	c	b	a
Condition 1 – Very Good (42.8%)	5	28	47	190	150
Condition 2 - Good (39.4%)	4	23	60	238	147
Condition 3 – Fair (15.9%)	3	12	27	78	39
Condition 4 – Poor (1.7%)	2	3	2	6	2
Condition 5 – Very Poor (0.2%)	1	0	1	2	0

**(Note: Also Refer to Table 6)**

**Note:** This table is based on data in the current register.

**Note:** Capital works are proposed for those Street Furniture assets identified in “*Very Poor*”, “*Poor*” and “*Fair*” condition.

**Note:** Factors which are used to determine the priority include ‘Footpath Hierarchy’ and ‘Road Hierarchy’. The most critical factor is used to determine the priority.

It should be noted that Street Furniture assets may also be replaced based on other criteria including:

- Damage
- Streetscape projects

#### **Street Furniture – Maintenance**

Routine maintenance is the regular on-going work that is necessary to keep assets operating, including instances where portions of the asset fail and need immediate repair to make the asset operational again, e.g. repairs, painting.

Maintenance includes all actions necessary for retaining an asset as near as practicable to an appropriate service condition including regular ongoing day-to-day work necessary to keep assets operating.

Current maintenance expenditure levels are considered to be adequate to meet projected service levels.

Over the longer term future operations and maintenance expenditure is forecast to be steady as the asset stock is not forecast to increase. The following table summarises the prioritised capital works.



**Street Furniture – Prioritised Expenditure Forecast**

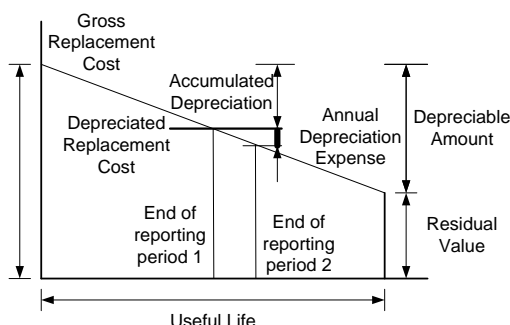
**Table 9: Street Furniture – Prioritised Expenditure Forecast – 10 years FY2023-FY2032**

Year		Priority	Capital Costs	Maintenance Costs	Total Costs
1	2022/23	1b to 2c	\$75,000	\$16,320	\$91,320
2	2023/24	2c to 3a	\$75,000	\$16,320	\$91,320
3	2024/25	3a	\$75,000	\$16,320	\$91,320
4-10	2025/32	3a to 3b	\$525,000	\$114,240	\$639,240
		<b>Grand Total</b>	<b>\$750,000</b>	<b>\$163,200</b>	<b>\$913,200</b>

In summary the current value of Street Furniture assets is detailed in the Table below.

**Table 10: Street Furniture – Valuation**

Asset Category	Qty	Replacement Value (2021)	Accumulated Depreciation (2021)	Fair Value (2021)	Depreciation Expense
Street Furniture	955	\$3,338,827	\$936,484	\$2,402,342	\$156,096



**Street Furniture – Valuation Forecast**

Asset values (Street Furniture) are forecast to increase slowly. It is forecast that some additional assets are expected to be added to the asset stock from new construction and acquisition of assets constructed by land developers or other assets donated to Council.

**Street Furniture – Key Assumptions – Financial Forecasts**

Key assumptions made in this asset management plan for Street Furniture are:

**Table: 11. Key Assumptions made in AM Plan and Risks of Change**

Key Assumptions	Risks of Change to Assumptions
Useful Lives of Street Furniture	Low risk
Rate of deterioration	Low risk

- 14 -

**Street Furniture – Creation / Acquisition / Upgrade Program**

New works are those that create a new asset that did not previously exist, or works which will upgrade or improve an existing asset beyond its existing capacity. They may result from growth, social or environmental needs. Assets may also be acquired at no cost. No new assets are currently identified.

**Street Furniture – Disposal Plan**

No Street Furniture Assets have been identified for disposal.

**Street Furniture – Forecast reliability and confidence**

The estimated confidence level and reliability of data used in this AMP is considered to be reliable as the data is based on a detailed condition report on Street Furniture.

**Street Furniture – Improvement Plan**

The improvement plan is shown in the table below.

Task No	Task	Responsibility	Resources Required	Timeline
1	Research the Useful Life of Street Furniture	EPS	Staff Time	2024

**Street Furniture – Monitoring and Review Procedures**

This Asset Management Plan will be reviewed during annual budget planning processes and amended to show any material changes in service levels and/or resources available to provide those services as a result of budget decisions.

The Asset Management Plan has a life of 4 years and is due for complete revision and updating within 1 year of each Council election.

**Street Furniture – Renewal and Replacement Program**

Renewal and replacement expenditure is major work which does not increase the asset's design capacity but restores, rehabilitates, replaces or renews an existing asset to its original service potential. Work over and above restoring an asset to original service potential is considered to be an upgrade/expansion or new work expenditure resulting in additional future operations and maintenance costs.

Street Furniture assets requiring renewal/replacement have been identified by the Street Furniture Condition Audit completed by Consultants, Rapid Map Services Pty Ltd in conjunction with Asset & Facilities Management Consulting Pty Ltd, in 2019.

### Street Furniture – Funding Scenarios

The Long Term Financial Plan includes three scenarios, all of which maintain current services levels but propose differing levels of capital expenditure on the renewal of Council's ageing infrastructure assets.

In summary:

- Pessimistic Scenario - This Scenario results in a decline in operating results and deficits in the later years.
- Optimistic Scenario - This Scenario results in improvements in operating results for the life of the plan.
- Planned Scenario - This Scenario results modest surplus operating results for the life of the plan.

**Table 12: Funding Scenarios – Street Furniture – North Sydney Councils 10 Year Plan**

Scenario	Capital Funding Level required per annum	10 Year Plan \$ Total
Scenario 1.	\$75,000/year	<b>\$750,000</b>
Scenario 2.	\$75,000/year	<b>\$750,000</b>
Scenario 3.	\$75,000/year	<b>\$750,000</b>

**Note:** These Scenarios are based on the 10-year Long Term Financial Plan.

### Street Furniture – Service and Risk Tradeoffs

The decisions made in adopting this AM Plan are based on the objective to achieve the optimum benefits from the available resources.

#### Service trade-off

If this funding Scenario is adopted, then the Level of Service will be maintained.

#### Risk trade-off

If this funding Scenario is adopted, then there is less risk of Street Furniture failures.

### Street Furniture – Renewal and Replacement Program – FY2023-FY2032 (10 Year Plan)

Council's projected 10 year Capital Renewal Program is shown in the Tables below. It is based on the funding required to replace Street Furniture assets identified by the Street Furniture Condition Audit completed by Consultants, Rapid Map Services Pty Ltd in conjunction with Asset & Facilities Management Consulting Pty Ltd, in 2019.

It should be noted that Street Furniture assets may also be replaced based on other criteria including:

- Damage
- Streetscape projects

Project priorities may also be subject to change due to accelerated deterioration, sudden failure or finalization of detailed designs and project costings.

**Table13: Street Furniture – Renewal and Replacement Program**

**Priority Projects 2022/23 (Year 1)**

Replace Year	Priority	Location	Risk Rating / Category	Condition	Cost Estimate
2022/23	1b	SF0260 - Wall - Brick - Spring St, North Sydney	Very High (5)	Very Poor	\$11,054
2022/23	1b	SF0910 - Tap - Bay Rd, Waverton	Very High (5)	Very Poor	\$765
2022/23	1c	SF0358 - Wall - Concrete, Brick - Donnelly Rd (Westbound), Crows Nest	Very High (5)	Very Poor	\$3,428
2022/23	2a	SF0138 - Bin - Blue St, North Sydney	High (4)	Poor	\$7,491
2022/23	2a	SF0475 - Planter Box - Falcon St, Crows Nest	High (4)	Poor	\$2,203
2022/23	2b	SF0109 - Tree Guard - Blues Point Rd, North Sydney	High (4)	Poor	\$5,732
2022/23	2b	SF0248 - Tree Guard - Little Spring St, North Sydney	High (4)	Poor	\$5,732
2022/23	2b	SF0660 - Seat - Cammeray Rd, Cammeray	High (4)	Poor	\$7,067
2022/23	2b	SF0754 - Seat - Ennis Rd, Milsons Point	High (4)	Poor	\$7,067
2022/23	2b	SF0772 - Table - Ennis Rd, Kirribilli	High (4)	Poor	\$5,304
2022/23	2b	SF0786 - Seat - Lavender St, McMahons Point	High (4)	Poor	\$7,067
2022/23	2c	SF0412 - Seat - Lithgow St, Wollstonecraft	High (4)	Poor	\$7,067
2022/23		Contingency			\$5,023
<b>TOTAL</b>					<b>\$75,000</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

**Table 14: Street Furniture – Renewal and Replacement Program**

**Priority Projects 2023/24 (Year 2)**

Replace Year	Priority	Location	Risk Rating / Category	Condition	Cost Estimate
2023/24	2c	SF0489 - Bike Rack - Lytton St, Cammeray	High (4)	Poor	\$3,288
2023/24	2c	SF0794 - Sign - East Crescent St, McMahons Point	High (4)	Poor	\$1,380
2023/24	2c	SF0848 - Seat - Shellcove Rd, Cremorne	High (4)	Poor	\$7,067
2023/24	2c	SF0901 - Seat - King St, Wollstonecraft	High (4)	Poor	\$7,067
2023/24	2d	SF0098 - Seat - Queens Ave, McMahons Point	High (4)	Poor	\$7,067
2023/24	2d	SF0316 - Bike Rack - Angelo St, North Sydney	High (4)	Poor	\$3,288
2023/24	2d	SF0726 - Sign - Shellcove To Wharf Footway, Kurraba Point	High (4)	Poor	\$1,380
2023/24	3a	SF0039 - Seat - Miller St, Cammeray	Medium (3)	Fair	\$7,067
2023/24	3a	SF0140 - Plaque - Pacific Hwy, North Sydney	Medium (3)	Fair	\$2,040

- 17 -

Replace Year	Priority	Location	Risk Rating / Category	Condition	Cost Estimate
2023/24	3a	SF0157 - Bike Rack - Miller St, North Sydney	Medium (3)	Fair	\$3,288
2023/24	3a	SF0164 - Bike Rack - Miller St, North Sydney	Medium (3)	Fair	\$3,288
2023/24	3a	SF0168 - Bike Rack - Miller St, North Sydney	Medium (3)	Fair	\$3,288
2023/24	3a	SF0171 - Bike Rack - Pacific Hwy, North Sydney	Medium (3)	Fair	\$3,288
2023/24	3a	SF0189 - Seat - Pacific Hwy, North Sydney	Medium (3)	Fair	\$7,067
2023/24	3a	SF0294 - Seat - Miller St, North Sydney	Medium (3)	Fair	\$7,067
2023/24	3a	SF0335 - Tree Guard - Miller St, Cammeray	Medium (3)	Fair	\$5,732
2023/24		Contingency			\$2,338
<b>TOTAL</b>					<b>\$75,000</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

**Table 15: Street Furniture – Renewal and Replacement Program**

**Priority Projects 2024/25 (Year 3)**

Replace Year	Priority	Location	Risk Rating / Category	Condition	Cost Estimate
2024/25	3a	SF0473 - Planter Box - Falcon St, Crows Nest	Medium (3)	Fair	\$459
2024/25	3a	SF0474 - Planter Box - Falcon St, Crows Nest	Medium (3)	Fair	\$2,295
2024/25	3a	SF0476 - Planter Box - Falcon St, Crows Nest	Medium (3)	Fair	\$459
2024/25	3a	SF0478 - Seat - Falcon St, Crows Nest	Medium (3)	Fair	\$7,067
2024/25	3a	SF0480 - Seat - Falcon St, North Sydney	Medium (3)	Fair	\$7,067
2024/25	3a	SF0485 - Seat - Miller St, North Sydney	Medium (3)	Fair	\$7,067
2024/25	3a	SF0487 - Sign - Ernest St, Cammeray	Medium (3)	Fair	\$1,380
2024/25	3a	SF0493 - Seat - Falcon St, Crows Nest	Medium (3)	Fair	\$7,067
2024/25	3a	SF0512 - Seat - Falcon St, Crows Nest	Medium (3)	Fair	\$7,067
2024/25	3a	SF0564 - Plaque - Pacific Hwy, Crows Nest	Medium (3)	Fair	\$2,040
2024/25	3a	SF0565 - Planter Box - Pacific Hwy, Crows Nest	Medium (3)	Fair	\$2,754
2024/25	3a	SF0567 - Planter Box - Pacific Hwy, Crows Nest	Medium (3)	Fair	\$551
2024/25	3a	SF0592 - Bin - Falcon St, Neutral Bay	Medium (3)	Fair	\$7,491
2024/25	3a	SF0798 - Seat - Spofforth St (Northbound), Cremorne	Medium (3)	Fair	\$7,067
2024/25	3a	SF0803 - Planter Box - Military Rd, Cremorne	Medium (3)	Fair	\$1,102
2024/25	3a	SF0805 - Planter Box - Military Rd, Cremorne	Medium (3)	Fair	\$1,102
2024/25	3a	SF0816 - Seat - Murdoch St, Cremorne	Medium (3)	Fair	\$7,067
2024/25		Contingency			\$5,898
<b>TOTAL</b>					<b>\$75,000</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.



**Table 16: Street Furniture – Renewal and Replacement Program****Priority Projects 2025/32 (Year 4-10)**

Replace Year	Priority	Location	Risk Rating / Category	Condition	Cost Estimate
2025/32	3a	SF0182 - Shade Structure - Arthur St, North Sydney	Medium (3)	Fair	\$168,504
2025/32	3a	SF0849 - Seat - Murdoch St, Cremorne	Medium (3)	Fair	\$7,067
2025/32	3a	SF0855 - Planter Box - Military Rd, Cremorne	Medium (3)	Fair	\$1,102
2025/32	3a	SF0860 - Planter Box - Military Rd, Cremorne	Medium (3)	Fair	\$1,102
2025/32	3a	SF0863 - Planter Box - Military Rd, Cremorne	Medium (3)	Fair	\$1,102
2025/32	3a	SF0871 - Planter Box - Military Rd, Cremorne	Medium (3)	Fair	\$1,102
2025/32	3a	SF0874 - Planter Box - Military Rd, Cremorne	Medium (3)	Fair	\$1,102
2025/32	3a	SF0875 - Planter Box - Military Rd, Cremorne	Medium (3)	Fair	\$1,102
2025/32	3a	SF0887 - Planter Box - Military Rd, Cremorne	Medium (3)	Fair	\$1,102
2025/32	3a	SF0888 - Planter Box - Military Rd, Cremorne	Medium (3)	Fair	\$1,102
2025/32	3a	SF0891 - Planter Box - Military Rd, Cremorne	Medium (3)	Fair	\$1,102
2025/32	3a	SF0892 - Bin - Military Rd, Cremorne	Medium (3)	Fair	\$7,491
2025/32	3a	SF0945 - Seat - Pacific Hwy, Crows Nest	Medium (3)	Fair	\$7,067
2025/32	3b	SF0051 - Seat - Bay Rd, Waverton	Medium (3)	Fair	\$7,067
2025/32	3b	SF0087 - Seat - Bay Rd, Waverton	Medium (3)	Fair	\$7,067
2025/32	3b	SF0090 - Seat - Bay Rd, Waverton	Medium (3)	Fair	\$7,067
2025/32	3b	SF0093 - Seat - Bay Rd, Waverton	Medium (3)	Fair	\$7,067
2025/32	3b	SF0110 - Seat - Blues Point Rd, North Sydney	Medium (3)	Fair	\$7,067
2025/32	3b	SF0111 - Tree Guard - Blues Point Rd, North Sydney	Medium (3)	Fair	\$5,732
2025/32	3b	SF0163 - Seat - Blues Point Rd, North Sydney	Medium (3)	Fair	\$7,067
2025/32	3b	SF0246 - Tree Guard - Denison St, North Sydney	Medium (3)	Fair	\$5,732
2025/32	3b	SF0247 - Tree Guard - Little Spring St, North Sydney	Medium (3)	Fair	\$5,732
2025/32	3b	SF0261 - Table - Spring St, North Sydney	Medium (3)	Fair	\$5,304
2025/32	3b	SF0262 - Seat - Spring St, North Sydney	Medium (3)	Fair	\$7,067
2025/32	3b	SF0309 - Seat - Ridge St, North Sydney	Medium (3)	Fair	\$7,067
2025/32	3b	SF0310 - Seat - Ridge St, North Sydney	Medium (3)	Fair	\$7,067
2025/32	3b	SF0311 - Seat - McLaren St, North Sydney	Medium (3)	Fair	\$7,067

- 19 -

Replace Year	Priority	Location	Risk Rating / Category	Condition	Cost Estimate
2025/32	3b	SF0353 - Seat - Amherst St, Cammeray	Medium (3)	Fair	\$7,067
2025/32	3b	SF0379 - Planter Box - Willoughby Rd, Crows Nest	Medium (3)	Fair	\$1,652
2025/32	3b	SF0381 - Planter Box - Willoughby Rd, Crows Nest	Medium (3)	Fair	\$1,652
2025/32	3b	SF0384 - Planter Box - Willoughby Rd, Crows Nest	Medium (3)	Fair	\$7,619
2025/32	3b	SF0385 - Planter Box - Willoughby Rd, Crows Nest	Medium (3)	Fair	\$3,029
2025/32	3b	SF0386 - Planter Box - Willoughby Rd, Crows Nest	Medium (3)	Fair	\$1,469
2025/32	3b	SF0391 - Planter Box - Willoughby Rd, Crows Nest	Medium (3)	Fair	\$2,570
2025/32	3b	SF0392 - Planter Box - Willoughby Rd, Crows Nest	Medium (3)	Fair	\$1,652
2025/32	3b	SF0399 - Planter Box - Willoughby Rd, Crows Nest	Medium (3)	Fair	\$5,233
2025/32	3b	SF0400 - Planter Box - Willoughby Rd, Crows Nest	Medium (3)	Fair	\$3,029
2025/32	3b	SF0408 - Planter Box - Clarke St, Crows Nest	Medium (3)	Fair	\$1,652
2025/32	3b	SF0436 - Planter Box - Willoughby Rd, Crows Nest	Medium (3)	Fair	\$1,652
2025/32	3b	SF0438 - Planter Box - Willoughby Rd, Crows Nest	Medium (3)	Fair	\$1,652
2025/32	3b	SF0440 - Planter Box - Willoughby Rd, Crows Nest	Medium (3)	Fair	\$5,233
2025/32	3b	SF0445 - Planter Box - Holtermann St, Crows Nest	Medium (3)	Fair	\$8,078
2025/32	3b	SF0505 - Planter Box - Willoughby Rd, Crows Nest	Medium (3)	Fair	\$1,102
2025/32	3b	SF0520 - Bin - Willoughby Rd, Crows Nest	Medium (3)	Fair	\$7,491
2025/32	3b	SF0521 - Planter Box - Willoughby Rd, Crows Nest	Medium (3)	Fair	\$1,561
2025/32	3b	SF0522 - Planter Box - Willoughby Rd, Crows Nest	Medium (3)	Fair	\$13,036
2025/32	3b	SF0523 - Planter Box - Willoughby Rd, Crows Nest	Medium (3)	Fair	\$5,692
2025/32	3b	SF0524 - Planter Box - Willoughby Rd, Crows Nest	Medium (3)	Fair	\$1,561
2025/32	3b	SF0533 - Planter Box - Willoughby Rd, Crows Nest	Medium (3)	Fair	\$1,652
2025/32	3b	SF0534 - Planter Box - Willoughby Rd, Crows Nest	Medium (3)	Fair	\$6,059
2025/32	3b	SF0535 - Planter Box - Willoughby Rd, Crows Nest	Medium (3)	Fair	\$3,213
2025/32	3b	SF0536 - Planter Box - Willoughby Rd, Crows Nest	Medium (3)	Fair	\$1,652

- 20 -

Replace Year	Priority	Location	Risk Rating / Category	Condition	Cost Estimate
2025/32	3b	SF0539 - Planter Box - Willoughby Rd, Crows Nest	Medium (3)	Fair	\$2,570
2025/32	3b	SF0540 - Planter Box - Willoughby Rd, Crows Nest	Medium (3)	Fair	\$1,928
2025/32	3b	SF0566 - Planter Box - Willoughby Rd, Crows Nest	Medium (3)	Fair	\$551
2025/32	3b	SF0584 - Planter Box - Willoughby Rd, Crows Nest	Medium (3)	Fair	\$1,928
2025/32	3b	SF0593 - Seat - Ben Boyd Rd, Neutral Bay	Medium (3)	Fair	\$7,067
2025/32	3b	SF0594 - Seat - Ben Boyd Rd, Neutral Bay	Medium (3)	Fair	\$7,067
2025/32	3b	SF0595 - Seat - Ben Boyd Rd, Neutral Bay	Medium (3)	Fair	\$7,067
2025/32	3b	SF0598 - Seat - Ben Boyd Rd, Neutral Bay	Medium (3)	Fair	\$7,067
2025/32	3b	SF0624 - Seat - Park Ave, Cremorne	Medium (3)	Fair	\$7,067
2025/32	3b	SF0625 - Seat - Young St, Neutral Bay	Medium (3)	Fair	\$7,067
2025/32	3b	SF0642 - Table - Waters Rd, Neutral Bay	Medium (3)	Fair	\$5,304
2025/32	3b	SF0651 - Wall - Concrete - Waters Rd, Neutral Bay	Medium (3)	Fair	\$6,616
2025/32	3b	SF0654 - Seat - Grosvenor La, Neutral Bay	Medium (3)	Fair	\$7,067
2025/32	3b	SF0701 - Seat - Murdoch St, Cremorne Point	Medium (3)	Fair	\$7,067
2025/32	3b	SF0709 - Tap - Milson Rd, Cremorne Point	Medium (3)	Fair	\$765
2025/32	3b	SF0711 - Plaque - Milson Rd, Cremorne Point	Medium (3)	Fair	\$2,040
2025/32	3b	SF0713 - Seat - Milson Rd, Cremorne Point	Medium (3)	Fair	\$7,067
2025/32	3b	SF0716 - Seat - Ben Boyd Rd, Neutral Bay	Medium (3)	Fair	\$7,067
2025/32	3b	SF0733 - Seat - Olympic Dr, Milsons Point	Medium (3)	Fair	\$7,067
2025/32	3b	SF0736 - Bike Rack - Olympic Dr, Milsons Point	Medium (3)	Fair	\$3,288
2025/32	3b	SF0743 - Sign - Alfred St South, Milsons Point	Medium (3)	Fair	\$1,380
2025/32	3b	SF0744 - Information Board - Burton St, Milsons Point	Medium (3)	Fair	\$3,662
2025/32	3b	SF0761 - Seat - Ennis Rd, Milsons Point	Medium (3)	Fair	\$7,067
2025/32	3b	SF0771 - Seat - Ennis Rd, Kirribilli	Medium (3)	Fair	\$7,067
2025/32	3b	SF0774 - Seat - Ennis Rd, Kirribilli	Medium (3)	Fair	\$7,067
2025/32		Contingency			\$6,555
				<b>TOTAL</b>	<b>\$525,000</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

Street Furniture Renewal Program



Bike rack and Planter Boxes – Ernest Place, Crows Nest





Ernest Plaza Stage 3









Seats – North Sydney CBD



Seats – Burlington St, Crows Nest



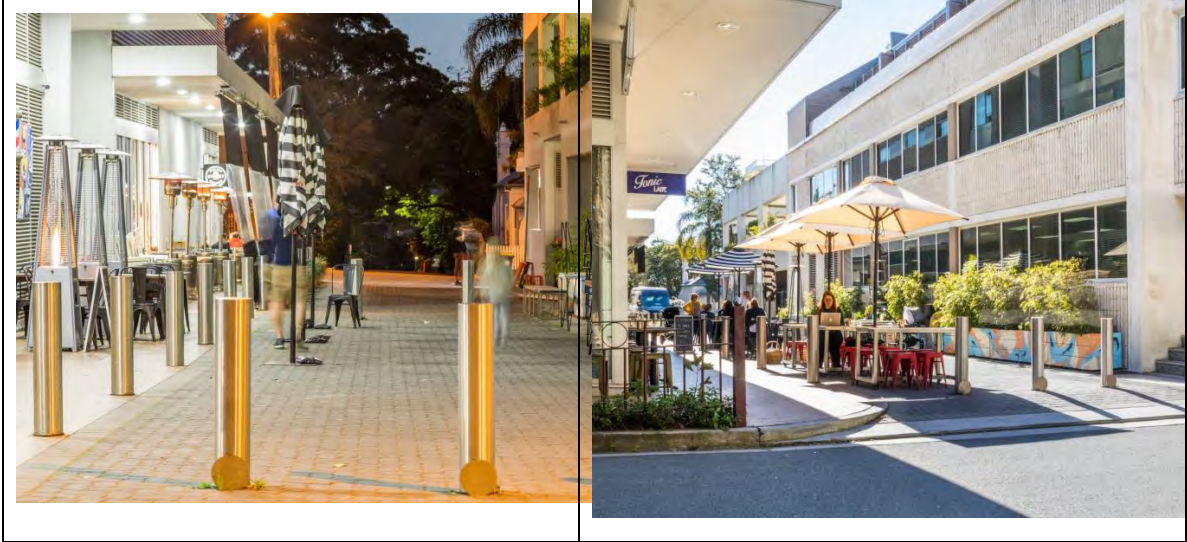


Bins – North Sydney CBD





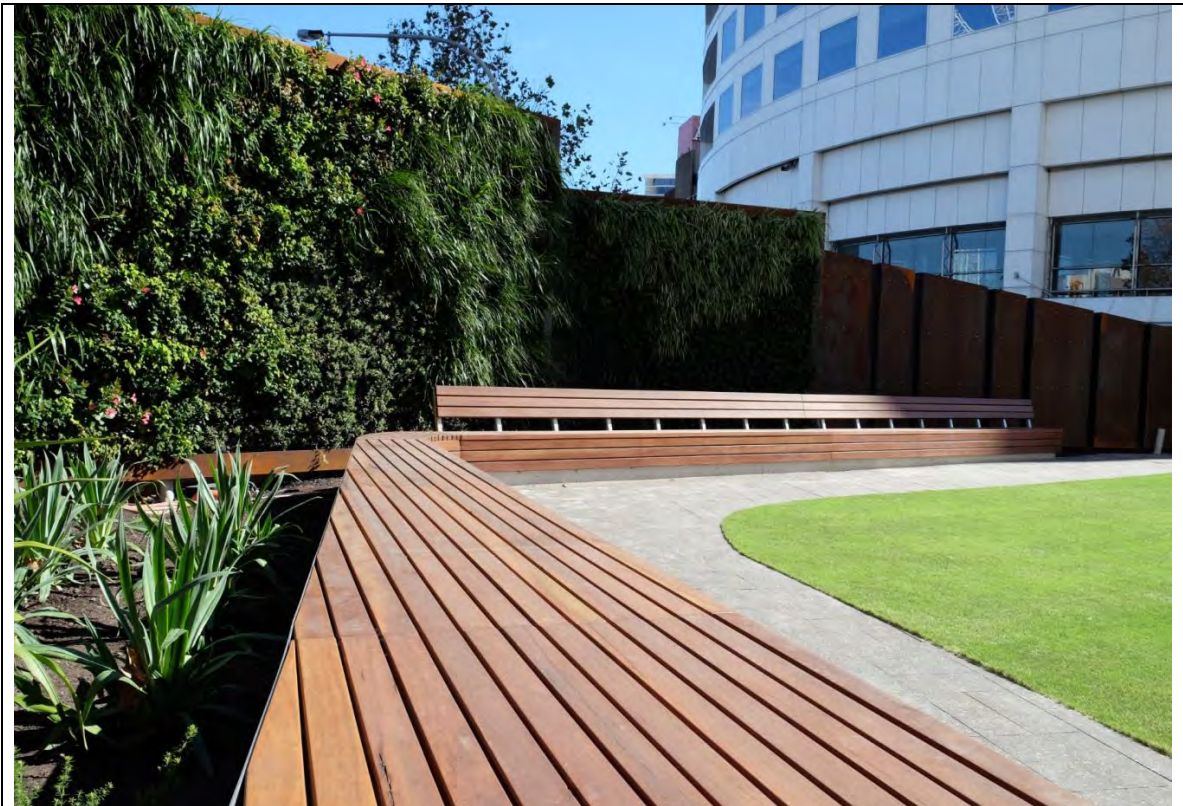
Bike racks – North Sydney CBD







Young Lane, Neutral Bay



Mitchell Street Plaza Redevelopment





Pacific Highway – Crows Nest

**Street Furniture – Performance Measures**

The effectiveness of the asset management plan can be measured in the following ways:

- The degree to which the required projected expenditures identified in this asset management plan are incorporated into the long term financial plan,
- The degree to which 1-5 year detailed works programs, budgets, business plans and corporate structures take into account the 'global' works program trends provided by the asset management plan,
- The degree to which the existing and projected service levels and service consequences (what we cannot do), risks and residual risks are incorporated into the Strategic Plan and associated plans,
- The Asset Renewal Funding Ratio achieving the target of 1.0.

**Street Furniture – References**

- Street Furniture Data Collection & Condition Survey Audit by Consultants, Rapid Map Services Pty Ltd in conjunction with Asset & Facilities Management Consulting Pty Ltd.
- 2014, North Sydney Council Public Domain Style Manual
- IPWEA, 2006, 'International Infrastructure Management Manual', Institute of Public Works Engineering Australasia, Sydney, [www.ipwea.org/IIMM](http://www.ipwea.org/IIMM)
- IPWEA, 2008, 'NAMS.PLUS Asset Management', Institute of Public Works Engineering Australasia, Sydney, [www.ipwea.org/namsplus](http://www.ipwea.org/namsplus).
- IPWEA, 2015, 2nd edn., 'Australian Infrastructure Financial Management Manual', Institute of Public Works Engineering Australasia, Sydney, [www.ipwea.org/AIFMM](http://www.ipwea.org/AIFMM).
- IPWEA, 2015, 3rd edn., 'International Infrastructure Management Manual', Institute of Public Works Engineering Australasia, Sydney, [www.ipwea.org/IIMM](http://www.ipwea.org/IIMM)
- IPWEA, 2012 LTFP Practice Note 6 PN Long Term Financial Plan, Institute of Public Works Engineering Australasia, Sydney

## APPENDICES

## Appendix A: Maintenance Management System Street Furniture

**MAINTENANCE MANAGEMENT SYSTEM (MMS)****Defect Management Inspection – Street Furniture**

Inspection areas have been defined in accordance with their usage – high (**red**), medium (**blue**) or low (**white**)

Inspection frequencies are based on these areas as defined by the reference maps and the resources currently available to undertake the inspections. The results of inspections are downloaded into the MMDS database.

**Red** – 2 times per year

**Blue** – Once each year

**White** – Once every 2 years

There are 5 categories in which a defect may be placed.

<b>Cat 5</b>		Will be completed or <b>made safe</b> no later than 2 working days after allocation of defect to work crew. If made safe defect will then be re-categorised as Cat 4 or Cat 3.
<b>Cat 4</b>		Will be repaired no later than 10 working days after allocation of defect to work crew.
<b>Cat 3</b>		Will be repaired no later than 40 working days after allocation of defect to work crew.
<b>Cat 2</b>		Will be repaired no later than 160 working days after allocation of defect to work crew.
<b>Cat 1</b>		As new. Surface displaying no defects. May have aesthetic issues such as gum, stains, services mark-up, etc.

**Intervention Matrix – Street Furniture**

DEFECT	SEVERITY	RISK ADJUSTED FOR PEDESTRIAN VOLUME AND AGE		
		WHITE	BLUE	RED
MINOR DEFECTS ONLY WITH FADED PAINT or GRAFFITI		LOW	LOW	LOW
REQUIRES MAINTENANCE TO RETURN TO ACCEPTABLE LEVEL OF SERVICE; TYPICALLY MINOR EVIDENCE OF WOOD ROT, UNSTABLE MOVEMENT OF ITEM; PRESENCE OF RUST, DIRTY	Slight	MEDIUM	HIGH	HIGH
SECTIONS REQUIRE REPLACEMENT OR SIGNIFICANT RENEWAL; EVIDENCE OF WOOD ROT; ITEM MOVING WITH EASE	Moderate	HIGH	HIGH	VERY HIGH
BROKEN BEYOND REPAIR; HAS MISSING SECTIONS; VERY UNSTABLE	Extreme	HIGH	VERY HIGH	VERY HIGH

**NOTES:**

- Appearance defects (gum, stains, surface marks etc) are not safety issues. Response time TBA. Record in "Category" as "A".
- Red** areas are where failure is most disruptive and expensive to the community/users and/or high traffic (both pedestrian and vehicular) flows, eg. retail/commercial areas; schools; hospitals; plazas.
- Blue** areas have medium traffic flows, eg. streets leading to retail/commercial areas; schools; hospitals; plazas.
- White** areas have low traffic flows, eg. typical residential street.
- Street furniture – seat with backrest; seat bench only; table + seats or benches; rubbish bin; bike holding rail; drinking fountain or bottle refiller; notice board.






# NORTH SYDNEY COUNCIL ASSET MANAGEMENT PLAN

## TRAFFIC FACILITIES 2022-2032



<b>Document Control</b>		<b>Asset Management Plan</b>				
Document ID : NSC AMP Roads 2023 Traffic Facilities						
Rev No	Date	Revision Details	Author	Reviewer	Approver	
1	26/11/2018	First Draft	IM	JVH		
1	26/11/2018	Second Draft	MK	MK/DM	DM	



## Table of Contents

Traffic Facilities .....	4
Executive Summary .....	4
Traffic Facilities – Cycleways .....	5
Traffic Facilities – Future Demand .....	6
Traffic Facilities – Levels of Customer Service .....	7
Traffic Facilities – Levels of Technical Service .....	7
Traffic Facilities condition.....	8
Traffic Facilities – Review of Useful Lives .....	11
Traffic Facilities – Funding Strategy.....	12
Traffic Facilities – Capital works .....	12
Traffic Facilities – Managing the Risks.....	12
Traffic Facilities – Maintenance.....	16
Traffic Facilities – Prioritised Expenditure Forecast .....	16
Traffic Facilities – Valuation Forecast.....	17
Traffic Facilities – Key Assumptions – Financial Forecasts .....	17
Traffic Facilities – Creation / Acquisition / Upgrade Program .....	17
Traffic Facilities – Disposal Plan.....	17
Traffic Facilities – Forecast reliability and confidence.....	17
Traffic Facilities – Improvement Plan .....	17
Traffic Facilities – Monitoring and Review Procedures .....	17
Traffic Facilities – Renewal and Replacement Program .....	18
Traffic Facilities – Funding Scenarios.....	18
Traffic Facilities – Service and Risk Tradeoffs .....	18
Service trade-off.....	18
Risk trade-off .....	18
Traffic Facilities – Renewal and Replacement Program – FY2023-FY2032 (10 Year Plan) .....	18
Priority Projects 2022/23 (Year 1) .....	19
Priority Projects 2023/24 (Year 2) .....	19
Priority Projects 2024/25 (Year 3) .....	19
Priority Projects 2025/32 (Year 4-10).....	20
Works Identified – Years 2025 - 32 (Years 4 - 10).....	20
Traffic Facilities – Performance Measures .....	26
Traffic Facilities – References .....	26
APPENDICES.....	27
Appendix A: Maintenance Management System .....	27
Appendix B: Traffic and Parking Schemes – Local Area Traffic Management (LATM) Action Plans ..	29
Appendix C: The North Sydney Integrated Cycling Strategy .....	30

## Traffic Facilities

### Executive Summary

Located across the North Sydney Council LGA is approximately 1,163 individual Traffic Facility types and installations. These assets are designed, constructed and maintained to ensure that the road network in the North Sydney LGA is safe for pedestrians, cyclists and all other road users. These Traffic Facility assets are designed in accordance with relevant 'Austroads' standards and Council's Public Domain Style Manual.

In 2018 Rapid Map Services consultants conducted a Traffic Facilities condition audit for North Sydney Council. The objectives were to conduct a detailed inventory data collection, accurately map each Traffic Facility and assess each Traffic Facility in detail for condition and defects.

Each Traffic Facility was attributed with a type, border material and infill material where applicable.

Type:

- Kerb islands were the most common traffic facility found, accounting for 467 (40.2%).
- Other common traffic facility types included 157 Pedestrian Refuges (13.5%) and 162 Thresholds (13.9%).
- Also inspected were Footpath continuations, Medians, Pedestrian Refuge Islands, Rain Gardens, Roundabouts, Separated Cycleways, Speed Cushions, Speed Humps, Splitter Islands and Traffic Domes.

A condition score was assigned to each traffic facility.

Overall, some 87.5% by replacement cost of the portfolio is in very good to good condition (1-2). 10.3% is in fair condition (3) and 2.2% is in poor to very poor condition (4-5).

The total Replacement Value of the portfolio is \$13,033,967 as at June 30 2021. The values are shown in the Table below.

**Table 1: Traffic Facilities – Summary Table.**

Asset Category	Number of Traffic Facilities	Replacement Value (2021)	Accumulated Depreciation (2021)	Fair Value (2021)	Depreciation Expense
Traffic Facilities	1,163	\$13,033,967	\$3,152,092	\$9,881,874	\$168,936
<b>TOTAL</b>	<b>1,163</b>	<b>\$13,033,967</b>	<b>\$3,152,092</b>	<b>\$9,881,874</b>	<b>\$168,936</b>

The following table provides a summary of the quantities and replacement values for each Traffic Facility type.

**Table 2: Traffic Facilities - Typology**

Traffic Facility Type	Count	Length (m)	Area (m <sup>2</sup> )	Replacement Cost
Footpath Continuation	57	0	1,173	\$681,525
Kerb Island (Landscaped Infill)	192	0	2,745	\$259,860
Kerb Island (Paved Infill)	149	0	665	\$267,518
Kerb Island (Tree)	126	0	382	\$36,189
Median (Landscaped Infill)	5	280	478	\$38,397
Median (Paved Infill)	102	3,307	2,995	\$1,591,396
Pedestrian Refuge Island	157	5	429	\$817,528
Rain Garden	5	0	112	\$265,154
Roundabout (Landscaped Infill)	15	0	1,087	\$128,682
Roundabout (Paved Infill)	10	0	344	\$138,320
Separated Cycleway	16	1,287	2,740	\$1,890,057
Speed Cushion	9	0	49	\$68,877
Speed Hump	53	0	1,243	\$405,608
Splitter Island (Landscaped Infill)	21	0	1,394	\$164,926
Splitter Island (Paved Infill)	81	2	1,017	\$409,117
Threshold (Flush)	45	0	1,589	\$824,267
Threshold (Raised)	117	0	7,091	\$5,046,546
Traffic Dome	3	0	0	\$0
<b>Grand Total</b>	<b>1,163</b>	<b>4,880</b>	<b>25,533</b>	<b>\$13,033,967</b>

#### Traffic Facilities – Cycleways

Community demand for improved cycling facilities is identified in across a number of Council Policies. The Community Strategic Plan 2018-2028 ('CSP') sets a vision that by 2028 *"the way people move around North Sydney will have improved. North Sydney has integrated transport system that make it easy to get to and around the local government area. North Sydney has a wide choice of transport. People can cycle, walk, take public transport or drive a vehicle"*. The CSP also identifies that cycling will be a well-used part of the transport system. The *North Sydney Transport Strategy* provides further detail for North Sydney's transport future and makes the commitment that cycling will be the second highest priority of all transport modes.

The [North Sydney Integrated Cycling Strategy](#) ('Cycling Strategy') adopted by Council in 2014 includes the following goals for cycling:

- Deliver an accessible, safe and connected cycle network by 2020
- Make cycling an attractive choice for short trips within the LGA
- Increase and diversify participation in cycling (people of all ages and abilities will view cycling as a safe, everyday transport option)

The Cycling Strategy proposes a range of significant infrastructure works which aim to facilitate significant growth in cycling as a transport mode for people of all ages and abilities. The infrastructure proposed is far more substantial than proposed or carried out previously by Council. In the past investment in cycling comprised almost exclusively of signage and road line-marking. In contrast, the Cycling Strategy (and later the North Sydney Transport Strategy) propose the construction of fully separated paths through busy areas and other significant traffic calming and public domain works on local road designated as cycling "Priority Routes", so that cycling is safe and accessible for a broad range of community members. The Priority Routes comprise at least 12km of new network to be constructed. The breakdown of fully separated bike path vs on-road treatments is being determined in the detailed design for each priority route.

- 6 -

The Cycling Strategy also identifies a secondary or local route network. Infrastructure needs on these routes vary, with some sections proposed as line-marking and others needing site specific civil works to improve safety or accessibility for cyclists.

A number of different infrastructure types are used on Cycle Routes as described below;

- **Bi-Directional Separated Cycle Paths** - Bi-directional paths combine the cycle path for both directions together on one side of the street.
- **Unidirectional Paths** - Unidirectional paths provide access on the either side of the street in the same direction as adjacent lanes.
- **On-road Dedicated Bike Lane** - On-road dedicated lanes are sections of the road line marked for exclusive use by bicycles. While these assets will be part covered by the Road Pavement Asset Management Plan, given that the condition assessment criteria differs for cycling relative to motor vehicles, on-road dedicated lanes are also considered in this plan.
- **Mixed Traffic Cycle Routes** - Mixed Traffic Routes are those where people riding share space with general traffic. While these assets will be part covered by the Road Pavement Asset Management Plan, given that the condition assessment criteria differs for cycling relative to motor vehicles, roads designated as cycle routes are also considered in this plan.
- **Share User Path** - Share User paths permit use by people walking and cycling. These paths fall under the area considered in the Footpaths Asset Management Plan and therefore are not further considered in this plan.

The following Table shows the lengths and types of the existing cycleways in the North Sydney LGA.

Cycleways Type	Council Responsibility - Length (km)	RMS Responsibility - Length (km)	Total Length (km)
Bicycle Path (Separated)	1.9	0.3	2.2
Bicycle Path (on-road)	3.9	0.8	4.7
Shared Path	4.8	2.1	6.9
Quietway (low volumes and speeds less than 30k/hr)	1.0	0.6	1.6
<b>TOTAL</b>	<b>11.6</b>	<b>11.6</b>	<b>11.6</b>

#### Traffic Facilities – Future Demand

Drivers affecting demand for traffic facilities include things such as population growth, regulation changes – new development, community expectations (Public Safety), technological changes, economic factors and environmental factors.

As part of the [North Sydney Integrated Traffic and Parking Strategy \(2015\)](#), Council has adopted [Local Area Traffic Management \(LATM\) Action Plans](#). The LATM implementation procedure adopts a methodology that takes into consideration an area wide traffic management scheme and allows the community's high priority traffic projects to be ranked according to a number of criteria, including safety, traffic volume, speeds, pedestrian and cycling volumes, surrounding land uses, and alignment with the Community Strategic Plan.

The Action Plans form the basis of a works program to be implemented by Council going forward. The Action Plans are also updated and reviewed on an ongoing basis to ensure they are relevant and up-to-date. Projects are planned on an annual basis subject to the priorities within the Action Plans, availability of funding and community consultation.

- 7 -

### Traffic Facilities – Levels of Customer Service

Service levels are defined service levels in two terms, customer levels of service and technical levels of service. These are supplemented by organisational measures.

**Customer Levels of Service** measure how the customer receives the service and whether value to the customer is provided.

Customer levels of service measures used in the asset management plan are:

**Quality** How good is the service ... *what is the condition or quality of the service?*

**Function** Is it suitable for its intended purpose .... *Is it the right service?*

**Capacity/Use** Is the service over or under used ... *do we need more or less of these assets?*

The current and expected customer service levels are detailed in the table below.

**Table 3: Traffic Facilities – Levels of Customer Service**

Service Attribute	Expectation	Performance Measure Used	Current Performance	Desired Position in 10 Years
<b>Quality</b>	Traffic Facility assets are well maintained.	Percentage of Traffic Facility assets in 'very good', 'good' or 'fair' (1, 2, 3) and Percentage of Traffic Facility Assets in 'poor' or 'very poor' (4, 5) Condition.	97.8% (by area) of Traffic Facility assets in 'very good', 'good' or 'fair' (1, 2, 3) condition.  2.2% (by area) of Traffic Facility assets in 'poor' or 'very poor' (4, 5) Condition.	Maintain – Condition 1-2-3  Improve and replace Condition 4-5
<b>Function</b>	Traffic Facility assets are designed to current standards.	Traffic Facilities are reviewed by the Traffic Committee.	Traffic Facilities are reviewed by the Traffic Committee.	Improve
<b>Capacity and Use</b>	Satisfactory provision of Traffic Facility assets.	Appropriate Number of additional Traffic Facility assets required.	Traffic Facilities are reviewed by the Traffic Committee.	Improve

### Traffic Facilities – Levels of Technical Service

**Technical Levels of Service** - Supporting the customer service levels are operational or technical measures of performance. These technical measures relate to the allocation of resources to service activities to best achieve the desired customer outcomes and demonstrate effective performance.

Technical service measures are linked to the activities and annual budgets covering:

- Operations – the regular activities to provide services (e.g. cleaning, inspections, etc).
- Maintenance – the activities necessary to retain an asset as near as practicable to an appropriate service condition. Maintenance activities enable an asset to provide service for its planned life (e.g. Traffic Facilities repair – patching, minor works),
- Renewal – the activities that return the service capability of an asset up to that which it had originally (e.g. Traffic Facilities replacement and or Traffic Facilities component replacement),



- 8 -

- Upgrade/New – the activities to provide a higher level of service (e.g. increasing the number of Traffic Facilities).

Table 4 shows the technical levels of service expected to be provided for Traffic Facility assets. The 'Desired' position in the table documents the position being recommended in this AM Plan.

**Table 4: Traffic Facilities – Technical Levels of Service**

Service Attribute	Service Activity Objective	Activity Measure Process	Current Performance	Desired for Optimum Lifecycle Cost
<b>Operations</b>	Undertake network inspections to monitor condition	Network inspections to monitor condition	Network inspected in 2018	Network inspected every 5 years
<b>Maintenance</b>	Reactive service Requests completed in a timely manner or made safe.	Respond to complaints.	Minor repairs undertaken in accordance with Maintenance Management System	Minor repairs undertaken in accordance with Maintenance Management Delivery System.
<b>Renewal</b>	Maintain existing assets to a satisfactory condition	Percentage of Traffic Percentage of Traffic Facilities in poor/very poor (4, 5) Condition.	2.2% of Traffic Facility assets in poor/very poor (4, 5) Condition.	Improve or replace
<b>Upgrade/New</b>	Satisfactory provision of Traffic Facility assets.	Appropriate Number of additional Traffic Facility assets required.	Traffic Facilities are reviewed by the Traffic Committee.	Improve

#### Traffic Facilities condition

The condition of Council's Traffic Facilities were surveyed in 2018 by Consultants, Rapid Map Services Pty Ltd in conjunction with Asset & Facilities Management Consulting Pty Ltd.

**Table 5: Traffic Facilities Condition Survey Criteria**

Condition Rating			
Grade	Condition	Description	
1	Very Good	As new, no need for intervention. Low risk to public safety. <b>No work required</b>	
		<b>Cracking</b>	No cracks or only occasional fine surface cracks.
		<b>Misalignment due to uplift/ settlement/ rotation</b>	Nil

- 9 -

Condition Rating			
Grade	Condition	Description	
		<b>Chipping/ Spalling</b>	Nil
		<b>Ponding</b>	Nil
2	Good	Some signs of wear and tear. No immediate intervention required. Note for review at next inspection. Low to Medium risk to public safety. <b>Only minor work required</b>	
		<b>Cracking</b>	Isolated fine cracking at intervals.
		<b>Misalignment due to uplift/ settlement/ rotation</b>	Isolated misalignment up to 5mm.
		<b>Chipping/ Spalling</b>	Minor cosmetic chipping only. No impact on performance.
		<b>Ponding</b>	Minor ponding in channel only.
3	Fair	Some isolated defects. Generally able to be addressed through routine/ scheduled maintenance. Medium to High risk to public safety and amenity. <b>Some work required</b>	
		<b>Cracking</b>	Block cracking typically 3 to 5mm width. Up to 20% of length.
		<b>Misalignment due to uplift/ settlement/ rotation</b>	Misalignments of 5 to 15mm with up to 30% of length affected.
		<b>Chipping/ Spalling</b>	Isolated chipping, max 30mm diameter. Average 5m apart.
		<b>Ponding</b>	More significant ponding up to 10mm deep but confined to channel. Now more than 30% affected.
4	Poor	Extensive wear and tear. Requiring replacement of sections. High to Very High risk to public safety and amenity. <b>Some replacement or rehabilitation needed within 1 year</b>	
		<b>Cracking</b>	Block cracking over 5mm width but still intact. Generally, over 20% to 50% of section affected.
		<b>Misalignment due to uplift/ settlement/ rotation</b>	Misalignments 15 to 50mm width over 50% of length affected. Water infiltration to pavement.
		<b>Chipping/ Spalling</b>	Chipping and spalling with some water infiltration evident. No more than 50% of section affected.
		<b>Ponding</b>	Ponding up to 30mm deeps encroaching onto pavement and isolated pavement damage. No more than 30% of section affected.
5	Very Poor	Significant defects in terms of severity and extent. Requires full length replacement. High to Very High risk to public safety and, pavement and amenity. <b>Urgent replacement/ rehabilitation required</b>	
		<b>Cracking</b>	Block cracking, displacement and sections missing. Water infiltrating pavement. Generally, over more than 50% of the section affected.
		<b>Misalignment due to uplift/ settlement/</b>	Misalignments over 50mm and over 50% of the section affected. Water infiltration to pavement.

Condition Rating			
Grade	Condition	Description	
		rotation	
		Chipping/Spalling	Major spalling of sections. Water infiltration common. Over 50% of the length affected.
		Ponding	Ponding over 30mm deep significantly encroaching onto pavement. Infiltration evident over 30% of length. Significant impact on adjoining pavement.

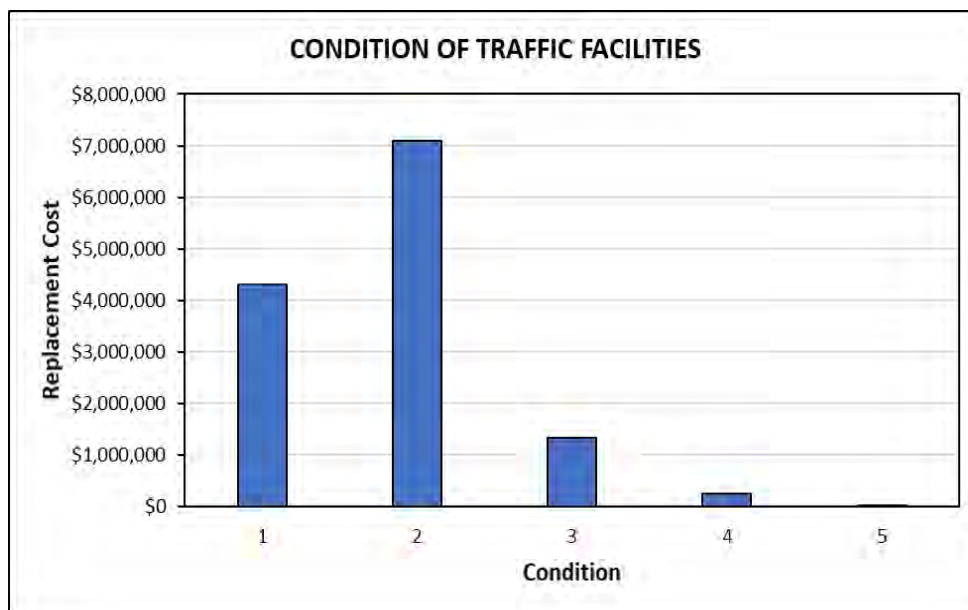
As per IPWEA Condition Assessment & Asset Performance Guidelines Practice Note 2 v2 2014 Kerb and Channel

The Table below shows the Replacement Cost for each of the condition scores (score 0 indicates areas not surveyed). In practice and where funds permit Traffic Facilities in condition 3 are generally replaced at the same time as Traffic Facilities in condition 4 or 5 if they are adjacent, there are potential risks, and it is cost effective.

Table 6: Traffic Facilities Condition Survey Results - Overall

CONDITION OF TRAFFIC FACILITIES – ENTIRE NETWORK				
Condition	Length (m)	Area (sqm)	Replacement Cost	% Condition (based on cost)
1 (Very Good)	143	\$4,306,133	33.00%	1 (Very Good)
2 (Good)	782	\$7,100,090	54.50%	2 (Good)
3 (Fair)	167	\$1,344,014	10.30%	3 (Fair)
4 (poor)	49	\$262,526	2.00%	4 (poor)
5 (Very Poor)	10	\$21,205	0.20%	5 (Very Poor)
<b>Total</b>	<b>1,151</b>	<b>\$13,033,967</b>	<b>100.00%</b>	<b>Total</b>

The Graph below shows the condition of Traffic Facility assets over the entire network in terms of replacement cost.



**Traffic Facilities – Review of Useful Lives**

The Table below shows the ranges of Useful Lives from the IPWEA 2017 Practice Note – “Useful Life of Infrastructure” from detailed studies in South Australia, Tasmania, as well as an IPWEA Workshop.

	South Aust. Tonkin Rpt			IPWEA Workshop		Tasmania Audit Office	
	Min	Max	Avg	Min	Max	Min	Max
Upright Concrete Kerbs	55	100	74	55	100	50	80
Median Concrete Kerbs	40	100	70				
Valley Drain Concrete Kerbs	55	100	72				

The useful lives of all types of Traffic Facility assets were reviewed by Australis Pty Ltd and are shown in the following Table.

Traffic Facility Type	Units	Reviewed Useful Life (years)
Footpath Continuation	Each	70
Kerb Island (Landscaped Infill)	m <sup>2</sup>	70
Kerb Island (Paved Infill)	m <sup>2</sup>	70
Kerb Island (Tree)	m <sup>2</sup>	70
Median (Landscaped Infill)	m	70
Median (Paved Infill)	m	70
Pedestrian Refuge	Each	70
Rain Garden	Each	70
Roundabout (Landscaped Infill)	Each	70
Roundabout (Paved Infill)	Each	70
Separated Cycleway	m	70
Speed Cushion	Each	70
Speed Hump	Each	70
Splitter Island (Landscaped Infill)	m <sup>2</sup>	70
Splitter Island (Paved Infill)	m <sup>2</sup>	70
Threshold (Flush)	m <sup>2</sup>	70
Threshold (Raised)	Each	70
Traffic Dome	Each	70

Based on reviewed useful lives the total annual Depreciation is as follows:

Capital funding to maintain a renewal ratio of 1	
	Annual Depreciation
Traffic Facilities	\$168,936

A budget of \$168,936 is required on average over the long term to maintain the condition of Council’s Traffic Facilities network, noting that fluctuations in renewal requirements in the medium term.

### Traffic Facilities – Funding Strategy

The Asset Renewal Funding Ratio is the most important indicator. It compares funding with depreciation. An Asset Renewal Funding Ratio of 1 or greater sustained over the long term indicates the optimal renewal and replacement of assets.

The forecast for the 2021 Depreciation (or Long Term Average Annual Asset Consumption) is \$168,936. Therefore, an annual average capital renewal funding of \$168,936 (2021 dollars) will achieve an Asset Renewal Funding Ratio of 1.

The cost to fully replace assets identified by Consultants, Rapid Map Services Pty Ltd in condition 4 and 5 as well as the cost to replace the condition 3 assets which will become condition 4 over the next 10 is \$1,051,738. This is an average annual cost of \$105,174 which is less than the \$168,936 Depreciation Expense.

### Traffic Facilities – Capital works

Replacement of Traffic Facilities sections is assumed to be a Capital works project.

The ranking criteria used to determine priority of identified renewal and replacement proposals is detailed in Table 7. A priority for action of 1 to 5 has been assigned to each Traffic Facility asset requiring capital works as described in the following table.

### Traffic Facilities – Managing the Risks

There are risks associated with providing and maintaining Traffic Facility assets. They are primarily as follows:

- Traffic Facilities in poor condition – causing possible trip hazard – public safety hazards, injury.

The following risk response table was used to identify those Traffic Facility assets requiring action within the next 10 years.

**Table 7: Traffic Facilities – Risk Response Table**

Level of Risk		Condition	Action Required	Time frame for repairs, upgrade or replacement
VH	Very High Risk	5	Immediate corrective action	1-2 Years
H	High Risk	4	Prioritised action required	1-2 Years
M	Medium Risk	3	Planned action required	4-10 Years
L	Low Risk	2	Manage by routine procedures	Inspections 1-2 years
New	No Risk	1	None	None

Consideration has been given to each Traffic Facility assets regarding whether to replace the asset or perform maintenance on it.

Traffic Facilities that have a **Very High or High** risk rating were considered to need replacement within the 1-2 year forecast period.

Traffic Facilities with a **Medium** risk rating were also considered needing replacement within the 4-10 year forecast period.





Examples of failed and failing Traffic Facilities in the North Sydney LGA



Examples of failed Traffic Facilities in the North Sydney LGA



Examples of failed Traffic Facilities in the North Sydney LGA



- 15 -



Examples of failed Traffic Facilities in the North Sydney LGA

**Table 8: Traffic Facilities – Capital renewal Priorities based on Condition and Risk Rating**

Risk Matrix - Traffic Facilities (Condition and Risk Rating)					
Likelihood of Traffic Facilities failing (L) Refer to Table 5 Condition Criteria	Traffic Facilities (No of Traffic Facilities)				
	Road Hierarchy	Lane	Local Road	Collector	State/ Regional Road
	Park Hierarchy	Local	District	Regional	
	Footpath Hierarchy	Category 3	Category 2	Category 1	
	Priority	d	c	b	a
Condition 1 – Very Good (33.0%)	5	1	4	5	0
Condition 2 - Good (54.5%)	4	6	16	26	1
Condition 3 – Fair (10.3%)	3	11	53	84	20
Condition 4 – Poor (2.0%)	2	72	276	370	68
Condition 5 – Very Poor (0.2%)	1	30	33	83	4

**(Note: Also Refer to Table 6)**

**Note:** This table is based on data in the current register.

**Note:** Capital works is proposed for those Traffic Facilities identified in “Very Poor” and “Poor” condition.

**Note:** Factors which are used to determine the priority include ‘Road Hierarchy’, ‘Park Hierarchy’ and ‘Footpath Hierarchy’. The most critical factor is used to determine the priority.

It should be noted that Traffic Facilities may also be replaced based on other criteria including:

- Damage

- Restorations
- Traffic Facilities replaced in association with other projects such as kerb and gutter or drainage works
- Streetscape projects

**Traffic Facilities – Maintenance**

Routine maintenance is the regular on-going work that is necessary to keep assets operating, including instances where portions of the asset fail and need immediate repair to make the asset operational again, e.g. minor repairs.

Maintenance includes all actions necessary for retaining an asset as near as practicable to an appropriate service condition including regular ongoing day-to-day work necessary to keep assets operating.

Current maintenance expenditure levels are considered to be inadequate to meet projected service levels.

Over the longer term future operations and maintenance expenditure is forecast to increase as the asset stock is forecast to increase. The following table summarises the prioritised capital works.

**Traffic Facilities – Prioritised Expenditure Forecast**

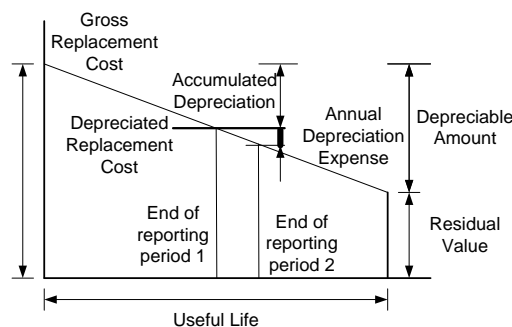
**Table 9: Traffic Facilities – Prioritised Expenditure Forecast – 10 years FY2023-FY2032**

Year		Priority	Capital Costs	Maintenance Costs	Total Cost
1	2022/23	Based on adopted Plans	\$1,350,000	\$0	\$1,350,000
2	2023/24	Based on adopted Plans	\$1,350,000	\$0	\$1,350,000
3	2024/25	Based on adopted Plans	\$1,350,000	\$0	\$1,350,000
4-10	2025/32	Based on adopted Plans	\$8,400,000	\$0	\$8,400,000
Works Identified	2025/32	1b to 2d	\$1,051,738	\$0	\$1,051,738
<b>Grand Total</b>			<b>\$13,501,738</b>	<b>\$0</b>	<b>\$13,501,738</b>

In summary the value of Traffic Facility assets in the table below.

**Table 10: Traffic Facilities – Valuation**

Asset Category	Number of Traffic Facilities	Replacement Value (2021)	Accumulated Depreciation (2021)	Fair Value (2021)	Depreciation Expense
Traffic Facilities	1,163	\$13,033,967	\$3,152,092	\$9,881,874	\$168,936
<b>TOTAL</b>	<b>1,163</b>	<b>\$13,033,967</b>	<b>\$3,152,092</b>	<b>\$9,881,874</b>	<b>\$168,936</b>



**Traffic Facilities – Valuation Forecast**

Asset values (Traffic Facilities) are forecast to increase. It is forecast that additional assets are expected to be added to the asset stock from new construction by Council or from assets constructed by land developers or other assets donated to Council.

**Traffic Facilities – Key Assumptions – Financial Forecasts**

Key assumptions made in this asset management plan for Traffic Facilities are:

**Table 11: Key Assumptions made in AM Plan and Risks of Change**

Key Assumptions	Risks of Change to Assumptions
Useful Lives of Traffic Facilities	Low risk
Rate of deterioration	Low risk

**Traffic Facilities – Creation / Acquisition / Upgrade Program**

New works are those that create a new asset that did not previously exist, or works which will upgrade or improve an existing asset beyond its existing capacity. They may result from growth, social or environmental needs. Assets may also be acquired at no cost. New assets are identified via the Traffic Committee.

**Traffic Facilities – Disposal Plan**

No Traffic Facility assets have been identified for disposal.

**Traffic Facilities – Forecast reliability and confidence**

The estimated confidence level and reliability of data used in this AMP is considered to be reliable as the data is based on a detailed condition report on Traffic Facilities.

**Traffic Facilities – Improvement Plan**

The improvement plan is shown in the table below.

Task No	Task	Responsibility	Resources Required	Timeline
1	Research the Useful Life of Traffic Facilities	EPS	Staff Time	2024

**Traffic Facilities – Monitoring and Review Procedures**

This Asset Management Plan will be reviewed during annual budget planning processes and amended to show any material changes in service levels and/or resources available to provide those services as a result of budget decisions.

The Asset Management Plan has a life of 4 years and is due for complete revision and updating within 1 year of each Council election.



### Traffic Facilities – Renewal and Replacement Program

Renewal and replacement expenditure is major work which does not increase the asset's design capacity but restores, rehabilitates, replaces or renews an existing asset to its original service potential. Work over and above restoring an asset to original service potential is considered to be an upgrade/expansion or new work expenditure resulting in additional future operations and maintenance costs.

Traffic Facility assets requiring renewal/replacement have been identified by the North Sydney Council Traffic Facilities Condition Audit completed by Consultants, Rapid Map Services Pty Ltd in conjunction with Asset & Facilities Management Consulting Pty Ltd, in 2018.

### Traffic Facilities – Funding Scenarios

The Long Term Financial Plan includes three scenarios, all of which maintain current services levels but propose differing levels of capital expenditure on the renewal of Council's ageing infrastructure assets.

In summary:

- Pessimistic Scenario - This Scenario results in a decline in operating results and deficits in the later years.
- Optimistic Scenario - This Scenario results in improvements in operating results for the life of the plan.
- Planned Scenario - This Scenario results modest surplus operating results for the life of the plan.

**Table 12: Funding Scenarios – Traffic Facilities – North Sydney Councils 10 Year Plan**

Scenario	Capital Funding Level Required Per Annum	10 Year Plan \$ Total
Scenario 1.	\$1,245,000/year	<b>\$12,450,000</b>
Scenario 2.	\$1,245,000/year	<b>\$12,450,000</b>
Scenario 3.	\$1,245,000/year	<b>\$12,450,000</b>

**Note:** These Scenarios are based on the 10-year Long Term Financial Plan.

### Traffic Facilities – Service and Risk Tradeoffs

The decisions made in adopting this AM Plan are based on the objective to achieve the optimum benefits from the available resources.

#### Service trade-off

If this funding Scenario is adopted, then the Level of Service will be maintained.

#### Risk trade-off

If funding Scenario 3 is adopted, then there is less risk of Traffic Facility failures.

### Traffic Facilities – Renewal and Replacement Program – FY2023-FY2032 (10 Year Plan)

Council's projected 10 year Capital Renewal Program is shown in the Tables below. It is based on the funding required to replace Traffic Facility assets identified by the North Sydney Council Traffic Facilities Condition Audit completed by Consultants, Rapid Map Services Pty Ltd in conjunction with Asset & Facilities Management Consulting Pty Ltd, in 2018.

It should be noted that Traffic Facilities sections may also be replaced based on other criteria including:

- Damage
- Restorations
- Traffic Facilities replaced in association with other projects such as road or drainage works
- Streetscape projects

Project priorities may also be subject to change due to accelerated deterioration, sudden failure or finalization of detailed designs and project costings.

**Table 13: Traffic Facilities – Renewal and Replacement Program**

**Priority Projects 2022/23 (Year 1)**

Replace Year	Priority	Traffic Facility ID	Location	Risk Rating / Category	Condition	Capital Cost
2022/23	Bike Facilities Projects to be established - Based on adopted Plans					\$300,000
2022/23	Pedestrian Crossing Lighting Program Projects to be established - Based on adopted Plans					\$50,000
2022/23	Traffic facilities Projects to be established - Based on adopted Plans					\$1,000,000
<b>Total</b>						<b>\$1,350,000</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

**Table 14: Traffic Facilities – Renewal and Replacement Program**

**Priority Projects 2023/24 (Year 2)**

Replace Year	Priority	Traffic Facility ID	Location	Risk Rating / Category	Condition	Capital Cost
2023/24	Bike Facilities Projects to be established - Based on adopted Plans					\$300,000
2023/24	Pedestrian Crossing Lighting Program Projects to be established - Based on adopted Plans					\$50,000
2023/24	Traffic facilities Projects to be established - Based on adopted Plans					\$1,000,000
<b>Total</b>						<b>\$1,350,000</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

Program may change due to priorities based on adopted plans.

**Table 15: Traffic Facilities – Renewal and Replacement Program**

**Priority Projects 2024/25 (Year 3)**

Replace Year	Priority	Traffic Facility ID	Location	Risk Rating / Category	Condition	Capital Cost
2024/25	Bike Facilities Projects to be established - Based on adopted Plans					\$300,000
2024/25	Pedestrian Crossing Lighting Program Projects to be established - Based on adopted Plans					\$50,000
2024/25	Traffic facilities Projects to be established - Based on adopted Plans					\$1,000,000
<b>Total</b>						<b>\$1,350,000</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

**Table 16: Traffic Facilities – Renewal and Replacement Program****Priority Projects 2025/32 (Year 4-10)**

Replace Year	Priority	Traffic Facility ID	Location	Risk Rating / Category	Condition	Capital Cost
2025/32			Bike Facilities Projects to be established - Based on adopted Plans			\$1,050,000
2025/32			Pedestrian Crossing Lighting Program Projects to be established - Based on adopted Plans			\$350,000
2025/32			Traffic facilities Projects to be established - Based on adopted Plans			\$7,000,000
<b>Total</b>						<b>\$8,400,000</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.

**Table 17: Traffic Facilities – Renewal and Replacement Program****Works Identified – Years 2025 - 32 (Years 4 - 10)**

Replace Year	Priority	Traffic Facility ID	Location	Risk Rating / Category	Condition	Capital Cost
2025/32	1b	TF1036	Carr St, Waverton - Kerb Island (Tree)	Very High (5)	Very Poor	\$1,169
2025/32	1b	TF0652	Olympic Dr, Kirribilli - Splitter Island (Landscaped Infill)	Very High (5)	Very Poor	\$31,052
2025/32	1b	TF0519	Shirley Rd, Wollstonecraft - Kerb Island (Tree)	Very High (5)	Very Poor	\$761
2025/32	1b	TF0146	Earle St, Cremorne - Kerb Island (Landscaped Infill)	Very High (5)	Very Poor	\$4,064
2025/32	1b	TF0063	Bellevue St, Cammeray - Kerb Island (Tree)	Very High (5)	Very Poor	\$558
2025/32	1c	TF1003	Hazelbank Rd, Wollstonecraft - Kerb Island (Tree)	Very High (5)	Very Poor	\$509
2025/32	1c	TF0592	Hazelbank Rd, Wollstonecraft - Kerb Island (Tree)	Very High (5)	Very Poor	\$1,332
2025/32	1c	TF0571	Hazelbank Rd, Wollstonecraft - Kerb Island (Tree)	Very High (5)	Very Poor	\$521
2025/32	1c	TF0567	Hazelbank Rd, Wollstonecraft - Kerb Island (Tree)	Very High (5)	Very Poor	\$257
2025/32	1d	TF1025	Oak St, North Sydney - Kerb Island (Tree)	Very High (5)	Very Poor	\$937
2025/32	2a	TF0700	High St, North Sydney - Median (Paved Infill)	High (4)	Poor	\$434,659
2025/32	2b	TF1095	Bay Rd, North Sydney - Kerb Island (Paved Infill)	High (4)	Poor	\$13,763
2025/32	2b	TF1086	Balls Head Dr, Waverton - Speed Hump	High (4)	Poor	\$31,162
2025/32	2b	TF1077	Balls Head Dr, Waverton - Kerb Island (Landscaped Infill)	High (4)	Poor	\$4,210
2025/32	2b	TF1064	Bay Rd, Waverton - Kerb Island (Landscaped Infill)	High (4)	Poor	\$660
2025/32	2b	TF1034	Carr St, Waverton - Kerb Island	High (4)	Poor	\$1,869

- 21 -

Replace Year	Priority	Traffic Facility ID	Location	Risk Rating / Category	Condition	Capital Cost
			(Tree)			
2025/32	2b	TF0840	Lavender St, Milsons Point - Kerb Island (Paved Infill)	High (4)	Poor	\$6,161
2025/32	2b	TF0737	Wycombe Rd, Neutral Bay - Kerb Island (Tree)	High (4)	Poor	\$155
2025/32	2b	TF0679	Ennis Rd, Milsons Point - Speed Hump	High (4)	Poor	\$31,162
2025/32	2b	TF0573	Rocklands Rd, Wollstonecraft - Kerb Island (Paved Infill)	High (4)	Poor	\$10,322
2025/32	2b	TF0566	Morton St, Wollstonecraft - Kerb Island (Paved Infill)	High (4)	Poor	\$16,532
2025/32	2b	TF0492	Newlands St, Wollstonecraft - Median (Paved Infill)	High (4)	Poor	\$40,173
2025/32	2b	TF0331	Parraween St, Cremorne - Kerb Island (Landscaped Infill)	High (4)	Poor	\$4,679
2025/32	2b	TF0309	Grasmere Rd, Cremorne - Pedestrian Refuge Island	High (4)	Poor	\$21,202
2025/32	2b	TF0275	Grosvenor St, Neutral Bay - Kerb Island (Landscaped Infill)	High (4)	Poor	\$1,995
2025/32	2b	TF0255	Grosvenor St, Neutral Bay - Kerb Island (Landscaped Infill)	High (4)	Poor	\$6,144
2025/32	2b	TF0245	Park Ave, Cremorne - Splitter Island (Paved Infill)	High (4)	Poor	\$45,711
2025/32	2b	TF0220	Grasmere Rd, Cremorne - Pedestrian Refuge Island	High (4)	Poor	\$21,202
2025/32	2b	TF0165	Bellevue St, Cammeray - Kerb Island (Tree)	High (4)	Poor	\$558
2025/32	2b	TF0152	Park Ave, Cammeray - Kerb Island (Landscaped Infill)	High (4)	Poor	\$4,605
2025/32	2b	TF0148	Earle St, Cremorne - Pedestrian Refuge Island	High (4)	Poor	\$21,202
2025/32	2b	TF0130	Park Ave, Cammeray - Kerb Island (Landscaped Infill)	High (4)	Poor	\$5,684
2025/32	2b	TF0118	Cammeray Rd, Cammeray - Kerb Island (Landscaped Infill)	High (4)	Poor	\$5,517
2025/32	2b	TF0120	Cammeray Rd, Cammeray - Kerb Island (Landscaped Infill)	High (4)	Poor	\$4,980
2025/32	2b	TF0067	Bellevue St, Cammeray - Kerb Island (Tree)	High (4)	Poor	\$2,191
2025/32	2b	TF0032	Bellevue St, Cammeray - Kerb Island (Tree)	High (4)	Poor	\$594
2025/32	2b	TF0034	Bellevue St, Cammeray - Kerb Island (Tree)	High (4)	Poor	\$794
2025/32	2c	TF0102	Tunks Park, Cammeray - Speed Hump	High (4)	Poor	\$31,162
2025/32	2c	TF0162	Primrose Park, Cremorne - Splitter Island (Landscaped	High (4)	Poor	\$15,665

- 22 -

Replace Year	Priority	Traffic Facility ID	Location	Risk Rating / Category	Condition	Capital Cost
			Infill)			
2025/32	2c	TF1046	King St, Waverton - Kerb Island (Landscaped Infill)	High (4)	Poor	\$761
2025/32	2c	TF1007	Hazelbank Rd, Wollstonecraft - Kerb Island (Tree)	High (4)	Poor	\$546
2025/32	2c	TF1008	Hazelbank Rd, Wollstonecraft - Kerb Island (Tree)	High (4)	Poor	\$546
2025/32	2c	TF0655	Peel St, Kirribilli - Kerb Island (Tree)	High (4)	Poor	\$1,279
2025/32	2c	TF0486	Belmont Ave, Wollstonecraft - Splitter Island (Paved Infill)	High (4)	Poor	\$32,803
2025/32	2c	TF0311	Parraween St, Cremorne - Kerb Island (Landscaped Infill)	High (4)	Poor	\$4,605
2025/32	2c	TF0184	Illiliwa St, Cremorne - Kerb Island (Tree)	High (4)	Poor	\$537
2025/32	2c	TF0185	Illiliwa St, Cremorne - Kerb Island (Tree)	High (4)	Poor	\$537
2025/32	2c	TF0186	Illiliwa St, Cremorne - Kerb Island (Tree)	High (4)	Poor	\$537
2025/32	2c	TF0187	Illiliwa St, Cremorne - Kerb Island (Tree)	High (4)	Poor	\$537
2025/32	2c	TF0188	Illiliwa St, Cremorne - Kerb Island (Tree)	High (4)	Poor	\$533
2025/32	2c	TF0104	Carter St, Cammeray - Kerb Island (Landscaped Infill)	High (4)	Poor	\$3,168
2025/32	2c	TF0088	Pine St, Cammeray - Splitter Island (Landscaped Infill)	High (4)	Poor	\$11,682
2025/32	2c	TF0039	Bellevue St, Cammeray - Kerb Island (Tree)	High (4)	Poor	\$664
2025/32	2d	TF1026	Oak St, North Sydney - Kerb Island (Tree)	High (4)	Poor	\$733
2025/32	2d	TF0963	Wyagdon St, Neutral Bay - Splitter Island (Paved Infill)	High (4)	Poor	\$47,613
2025/32	2d	TF0662	Winslow La, Kirribilli - Kerb Island (Tree)	High (4)	Poor	\$599
2025/32	2d	TF0475	Albany La, Crows Nest - Threshold (Flush)	High (4)	Poor	\$39,041
2025/32	2d	TF0297	Young La, Cremorne - Footpath Continuation	High (4)	Poor	\$47,979
2025/32	2d	TF0018	Unnamed Lane, Cammeray - Speed Hump	High (4)	Poor	\$31,162
<b>Total</b>						<b>\$1,051,738</b>

**Note:** These Cost estimates do not include inflation / building escalations costs which can vary between 3-8% each year.



Traffic Facilities Renewal Program



Rain Gardens – Lavender Street and Arthur Street, Milsons Point



Pedestrian Crossing – Anzac Avenue, Cammeray

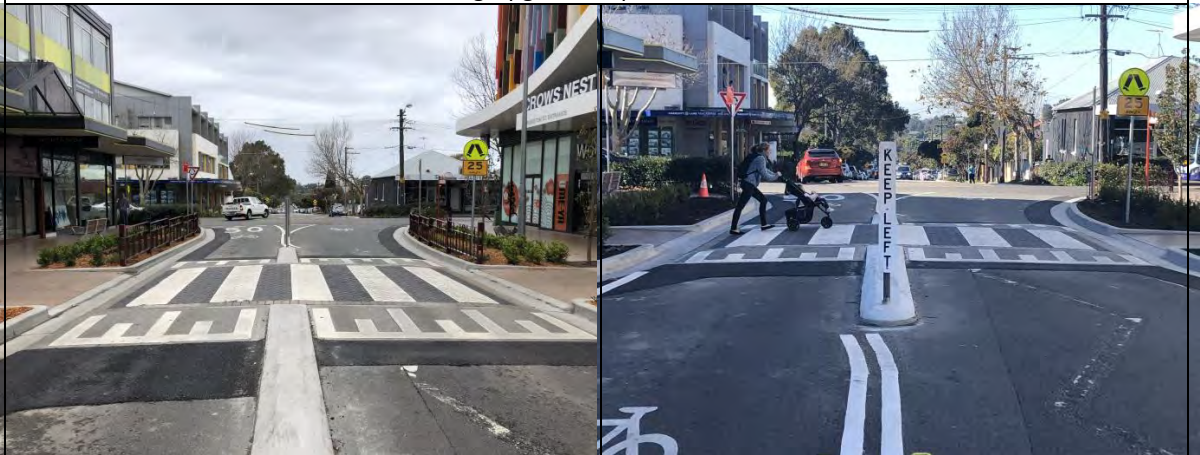




Pedestrian crossing improvements – McLaren Street and Church Street, North Sydney

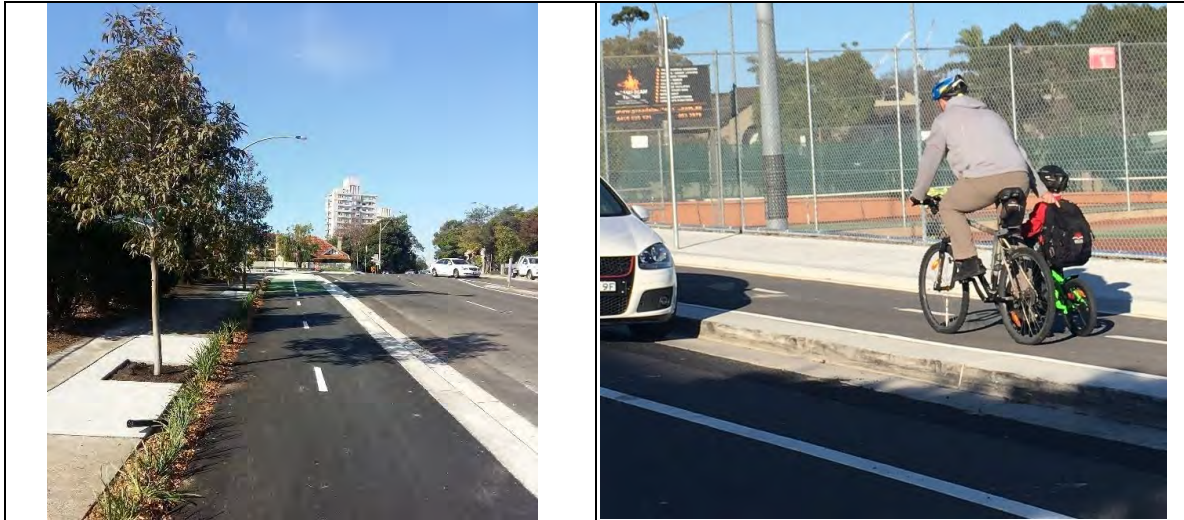


Pedestrian Crossing Upgrade – Spofforth Street, Cremorne



Pedestrian Crossing Upgrade – Burlington Street, Crows Nest





Bi-directional separated cycle path on Ernest Street/Park Avenue



Unidirectional bike path in Oxley Street, Crows Nest

On-road dedicated cycle lane in Huntington Lane, Crows Nest

- 26 -



#### Traffic Facilities – Performance Measures

The effectiveness of the asset management plan can be measured in the following ways:

- The degree to which the required projected expenditures identified in this asset management plan are incorporated into the long term financial plan,
- The degree to which 1-5 year detailed works programs, budgets, business plans and corporate structures take into account the 'global' works program trends provided by the asset management plan,
- The degree to which the existing and projected service levels and service consequences (what we cannot do), risks and residual risks are incorporated into the Strategic Plan and associated plans,
- The Asset Renewal Funding Ratio achieving the target of 1.0.

#### Traffic Facilities – References

- Traffic Facilities Data Collection & Condition Survey Audit by Consultants, Rapid Map Services Pty Ltd in conjunction with Asset & Facilities Management Consulting Pty Ltd.
- IPWEA, 2006, 'International Infrastructure Management Manual', Institute of Public Works Engineering Australasia, Sydney, [www.ipwea.org/IIMM](http://www.ipwea.org/IIMM)
- IPWEA, 2008, 'NAMS.PLUS Asset Management', Institute of Public Works Engineering Australasia, Sydney, [www.ipwea.org/namsplus](http://www.ipwea.org/namsplus).
- IPWEA, 2015, 2nd edn., 'Australian Infrastructure Financial Management Manual', Institute of Public Works Engineering Australasia, Sydney, [www.ipwea.org/AIFMM](http://www.ipwea.org/AIFMM).
- IPWEA, 2015, 3rd edn., 'International Infrastructure Management Manual', Institute of Public Works Engineering Australasia, Sydney, [www.ipwea.org/IIMM](http://www.ipwea.org/IIMM)
- IPWEA, 2012 LTFP Practice Note 6 PN Long Term Financial Plan, Institute of Public Works Engineering Australasia, Sydney

## APPENDICES

## Appendix A: Maintenance Management System

## MAINTENANCE MANAGEMENT SYSTEM (MMS)

## Defect Management Inspection – Kerb &amp; Guttering and Drainage Pits

Inspection areas have been defined in accordance with their usage – high (**red**), medium (**blue**) or low (**white**)

Inspection frequencies are based on these areas as defined by the reference maps and the resources currently available to undertake the inspections. The results of inspections are downloaded into the MMDS database.

**Red** – 2 times per year

**Blue** – Once each year

**White** – Once every 2 years

There are 5 categories in which a defect may be placed.

<b>Cat 5</b>		Will be completed or <b>made safe</b> no later than 2 working days after allocation of defect to work crew. If made safe defect will then be re-categorised as Cat 4 or Cat 3.
<b>Cat 4</b>		Will be repaired no later than 10 working days after allocation of defect to work crew.
<b>Cat 3</b>		Will be repaired no later than 40 working days after allocation of defect to work crew.
<b>Cat 2</b>		Will be repaired no later than 160 working days after allocation of defect to work crew.
<b>Cat 1</b>		As new. Surface displaying no defects. May have aesthetic issues such as gum, stains, services mark-up, etc.



## Intervention Matrix – K&amp;G and Drainage Pits

DISPLACEMENT (mm)	DISTORTION (mm) > 1 in 5 GRADE	DRAINAGE PIT DEFECT	SEVERITY	RISK ADJUSTED FOR PEDESTRIAN VOLUME AND AGE		
				WHITE	BLUE	RED
< 10	< 20			LOW	LOW	LOW
10 to 25	20 to 50	GRATE BLOCKED	Slight	MEDIUM	HIGH	HIGH
25 to 50	50 to 100	GRATE NOT BICYCLE SAFE	Moderate	HIGH	HIGH	VERY HIGH
> 50	> 100	GRATE or LID MISSING DAMAGED OR LOOSE	Extreme	HIGH	VERY HIGH	VERY HIGH

**NOTES:**

1. Appearance defects (gum, stains, surface marks etc) are not safety issues. Response time TBA. Record in "Category" as "A".
2. Displacement may be height or width.
3. Distortion is uneven or undulating surface with gradient > 1 in 5.
4. **Red** areas have high pedestrian traffic and high usage by older pedestrians.
5. **Blue** areas have medium pedestrian traffic.
6. **White** areas have low pedestrian traffic.

The focus of inspections is the kerb section and unobstructed gutter sections. It is noted that the gutter section may be obstructed and not visible due to parked vehicles during inspection. Inspectors are not expected to get down on their hands and knees to look for defects.

The kerb and guttering includes all drainage kerb inlets, convertor outlets, gutter grates or access pit lids in gutter. Driveway crossings will be listed as private when selecting the owner of the asset.

**Appendix B: Traffic and Parking Schemes – Local Area Traffic Management (LATM) Action Plans**

The Local Area Traffic Management (LATM) Action Plans and Reports can be found using the below website link;

[https://www.northsydney.nsw.gov.au/Transport\\_Parking/Transport\\_Strategy/North\\_Sydney\\_Traffic\\_Parking\\_Scheme](https://www.northsydney.nsw.gov.au/Transport_Parking/Transport_Strategy/North_Sydney_Traffic_Parking_Scheme)  
[s](#)

**Appendix C: The North Sydney Integrated Cycling Strategy**

The North Sydney Integrated Cycling Strategy can be found using the below website link;

[https://www.northsydney.nsw.gov.au/Transport\\_Parking/Cycling/Cycleway\\_Upgrades](https://www.northsydney.nsw.gov.au/Transport_Parking/Cycling/Cycleway_Upgrades)