



NORTH SYDNEY COUNCIL
ASSET MANAGEMENT PLAN
RETAINING WALLS 2022-2032

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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
TOTAL	\$72,240,321	\$42,165,643	\$30,074,678	\$734,818

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.

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
Grand Total	801	\$72,240,321	21,986	32,217

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
Quality	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
Function	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
Capacity and Use	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

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
Operations	Undertake network inspections to monitor condition	Network inspections to monitor condition	Network inspected in 2018	Network inspected every 5 years
Maintenance	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.
Renewal	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
Upgrade	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
New	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.

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. No work required
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. Only minor work required
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. Some work required
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. Some replacement or rehabilitation needed within 1 year
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. Urgent replacement/ rehabilitation required

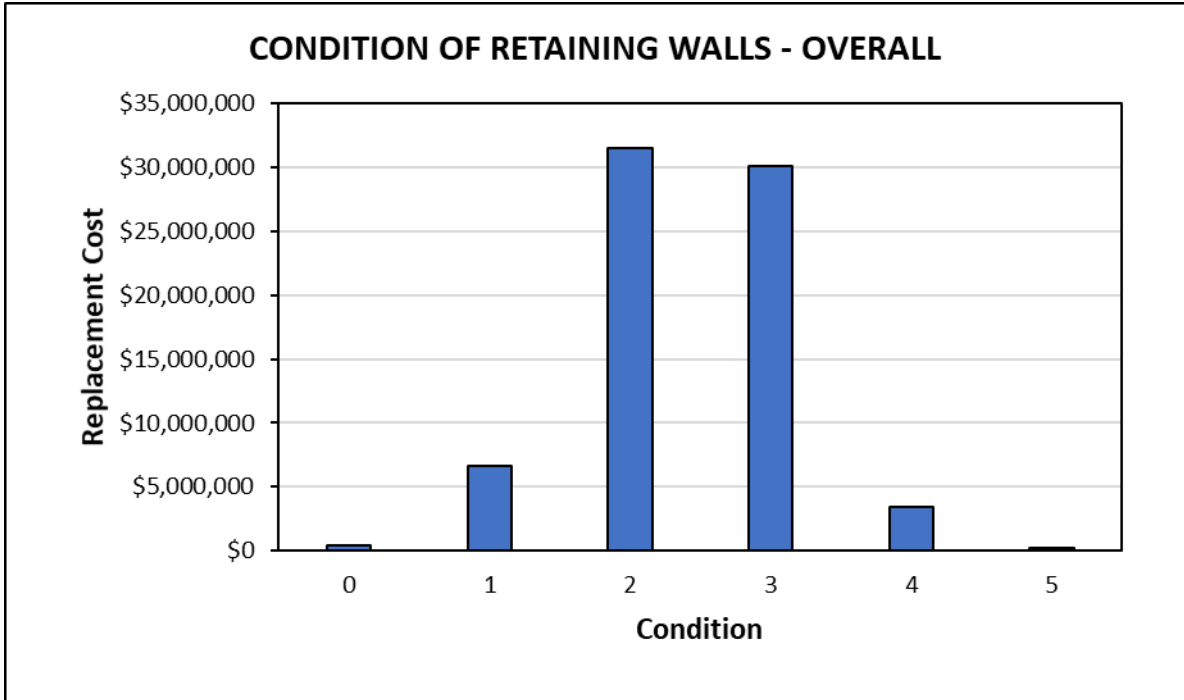
The Table below shows the Replacement Cost for each of the condition scores (score 0 indicates areas not surveyed due to access issues. In practice and where funds permit retaining wall sections in condition 3 are generally replaced at the same time as retaining wall sections in condition 4 or 5 if they 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%
Total	\$72,240,321	100.0%

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.



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.

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

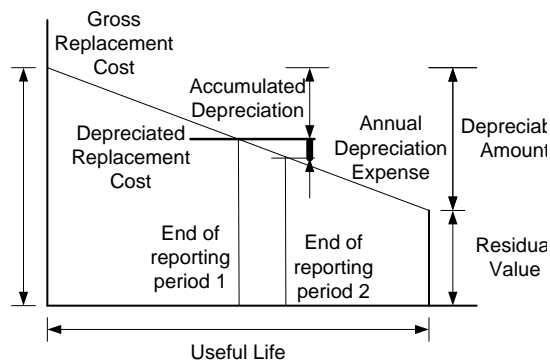
Table 9: Retaining Walls – Prioritised Expenditure Forecast – 10 years FY2023-FY2032

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
		Grand Total	\$20,974,241	\$341,701	\$21,315,942

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
TOTAL	\$72,240,321	\$42,165,643	\$30,074,678	\$734,818



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	\$14,040,000
Scenario 2.	\$1,404,000/year	\$14,040,000
Scenario 3.	\$1,404,000/year	\$14,040,000

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
TOTAL					\$1,440,000

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
TOTAL					\$1,400,000

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

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
TOTAL					\$1,400,000

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

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

Replace Year	Priority	Location	Risk Rating / Category	Condition	Cost Estimate
2025/32		Designs			\$299,974
TOTAL					\$9,800,000

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
TOTAL					\$1,825,525

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					
TOTAL					\$0

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					
TOTAL					\$0

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					
TOTAL					\$0

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					
TOTAL					\$0

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

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

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 - Smoothery 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

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

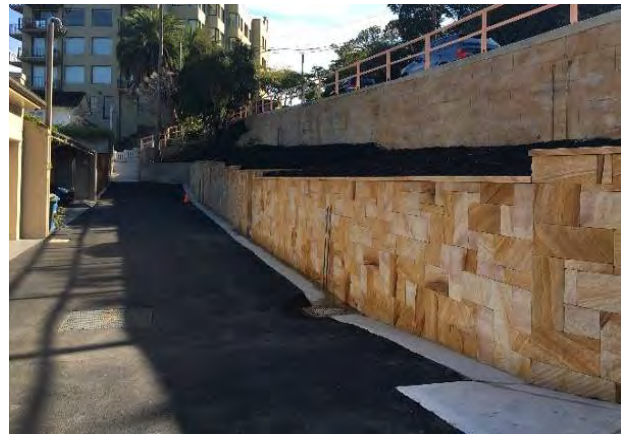
Replace Year	Priority	Location	Risk Rating / Category	Condition	Cost Estimate
2025/32	2d	10501 - Ben Boyd Road Park, Neutral Bay	High (4)	Poor	\$6,600
2025/32	2d	10502 - Ben Boyd Road Park, Neutral Bay	High (4)	Poor	\$10,010
2025/32	2d	10517 - Winslow Street Road Closure, Kirribilli	High (4)	Poor	\$2,420
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
TOTAL					\$5,108,716

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



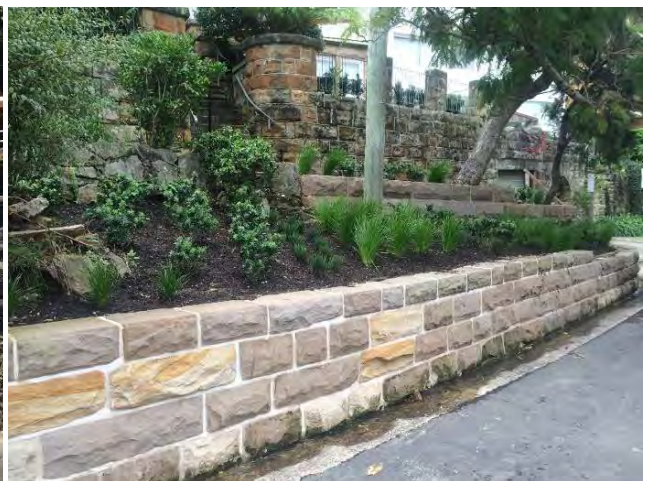
Middlemiss Street, North Sydney



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.
- IPWEA, 2006, 'International Infrastructure Management Manual', Institute of Public Works Engineering Australasia, Sydney, www.ipwea.org/IIMM
- IPWEA, 2008, 'NAMS.PLUS Asset Management', Institute of Public Works Engineering Australasia, Sydney, www.ipwea.org/namsplus.
- IPWEA, 2015, 2nd edn., 'Australian Infrastructure Financial Management Manual', Institute of Public Works Engineering Australasia, Sydney, www.ipwea.org/AIFMM.
- IPWEA, 2015, 3rd edn., 'International Infrastructure Management Manual', Institute of Public Works Engineering Australasia, Sydney, www.ipwea.org/IIMM
- IPWEA, 2012 LTFP Practice Note 6 PN Long Term Financial Plan, Institute of Public Works Engineering Australasia, Sydney