



NORTH SYDNEY COUNCIL

ASSET MANAGEMENT PLAN

TRAFFIC FACILITIES

2022-2032



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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
TOTAL	1,163	\$13,033,967	\$3,152,092	\$9,881,874	\$168,936

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 ²)	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
Grand Total	1,163	4,880	25,533	\$13,033,967

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.

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
TOTAL	11.6	11.6	11.6

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.

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
Quality	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
Function	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
Capacity and Use	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),

- 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
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 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
Upgrade/New	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.	
		No work required	
		Cracking	No cracks or only occasional fine surface cracks.
		Misalignment due to uplift/ settlement/ rotation	Nil

Condition Rating			
Grade	Condition	Description	
		Chipping/ Spalling	Nil
		Ponding	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. Only minor work required	
		Cracking	Isolated fine cracking at intervals.
		Misalignment due to uplift/ settlement/ rotation	Isolated misalignment up to 5mm.
		Chipping/ Spalling	Minor cosmetic chipping only. No impact on performance.
		Ponding	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. Some work required	
		Cracking	Block cracking typically 3 to 5mm width. Up to 20% of length.
		Misalignment due to uplift/ settlement/ rotation	Misalignments of 5 to 15mm with up to 30% of length affected.
		Chipping/ Spalling	Isolated chipping, max 30mm diameter. Average 5m apart.
		Ponding	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. Some replacement or rehabilitation needed within 1 year	
		Cracking	Block cracking over 5mm width but still intact. Generally, over 20% to 50% of section affected.
		Misalignment due to uplift/ settlement/ rotation	Misalignments 15 to 50mm width over 50% of length affected. Water infiltration to pavement.
		Chipping/ Spalling	Chipping and spalling with some water infiltration evident. No more than 50% of section affected.
		Ponding	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. Urgent replacement/ rehabilitation required	
		Cracking	Block cracking, displacement and sections missing. Water infiltrating pavement. Generally, over more than 50% of the section affected.
		Misalignment due to uplift/ settlement/	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.

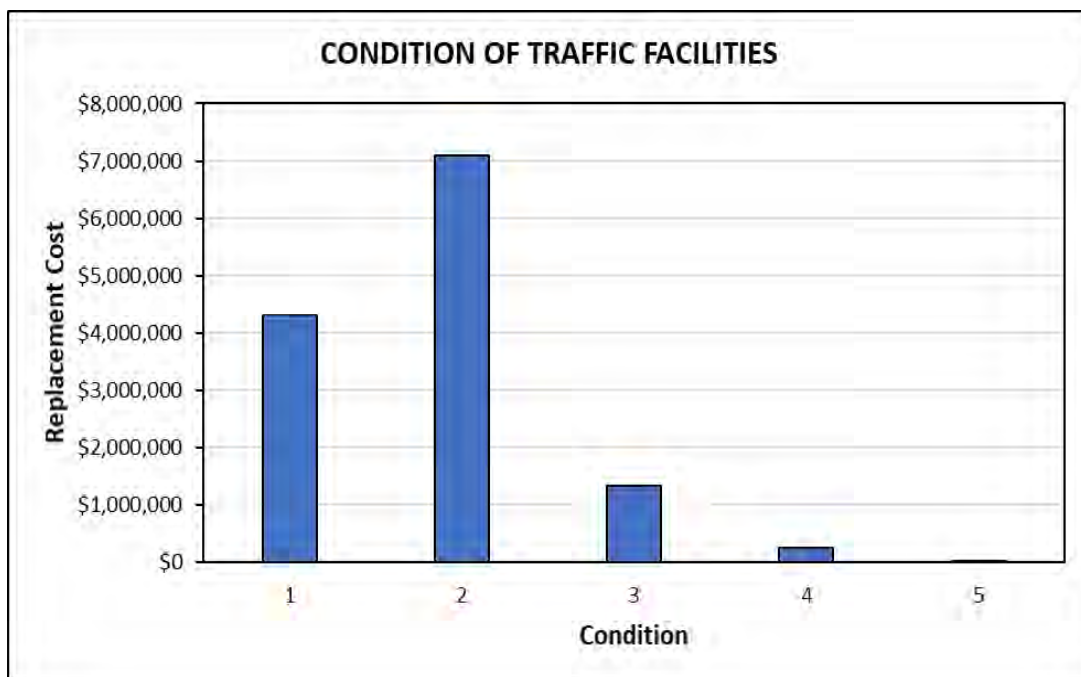
As per IPWEA Condition Assessment & Asset Performance Guidelines Practice Note 2 v2 2014 Kerb and Channel

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)
Total	1,151	\$13,033,967	100.00%	Total

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^2	70
Kerb Island (Paved Infill)	m^2	70
Kerb Island (Tree)	m^2	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^2	70
Splitter Island (Paved Infill)	m^2	70
Threshold (Flush)	m^2	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



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

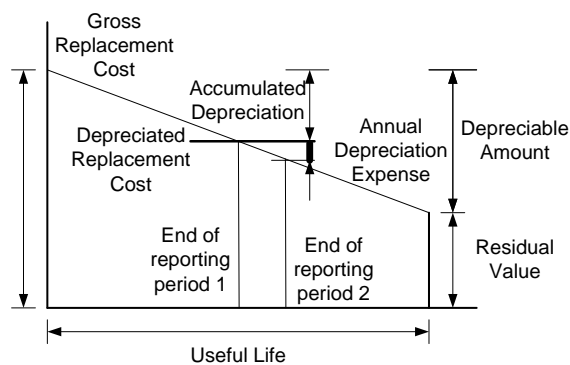
Table 9: Traffic Facilities – Prioritised Expenditure Forecast – 10 years FY2023-FY2032

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
Grand Total			\$13,501,738	\$0	\$13,501,738

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
TOTAL	1,163	\$13,033,967	\$3,152,092	\$9,881,874	\$168,936



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	\$12,450,000
Scenario 2.	\$1,245,000/year	\$12,450,000
Scenario 3.	\$1,245,000/year	\$12,450,000

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 it 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
Total						\$1,350,000

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
Total						\$1,350,000

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
Total						\$1,350,000

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
					Total	\$8,400,000

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)

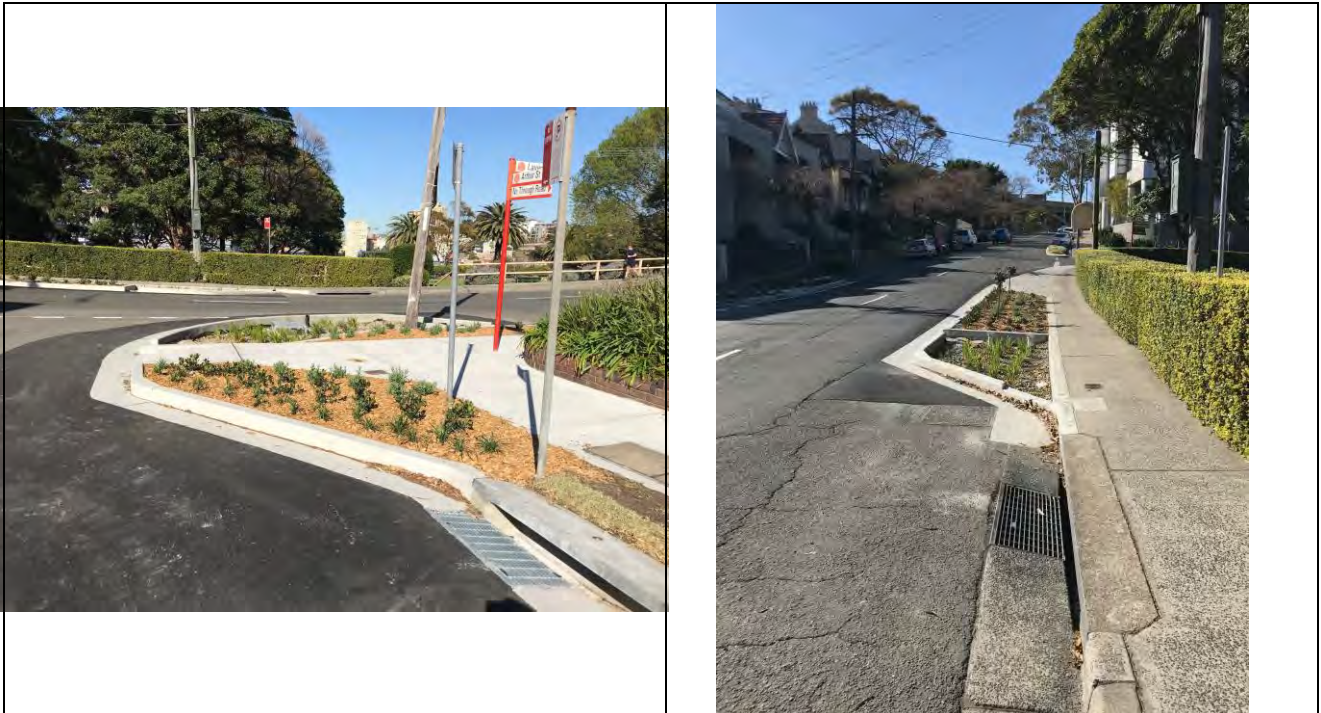
Replace Year	Priority	Traffic Facility ID	Location	Risk Rating / Category	Condition	Capital Cost
2025/32	1b	TF1036	Carr St, Waverton - Kerb Island (Tree)	Very High (5)	Very Poor	\$1,169
2025/32	1b	TF0652	Olympic Dr, Kirribilli - Splitter Island (Landscaped Infill)	Very High (5)	Very Poor	\$31,052
2025/32	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

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

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
Total						\$1,051,738

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



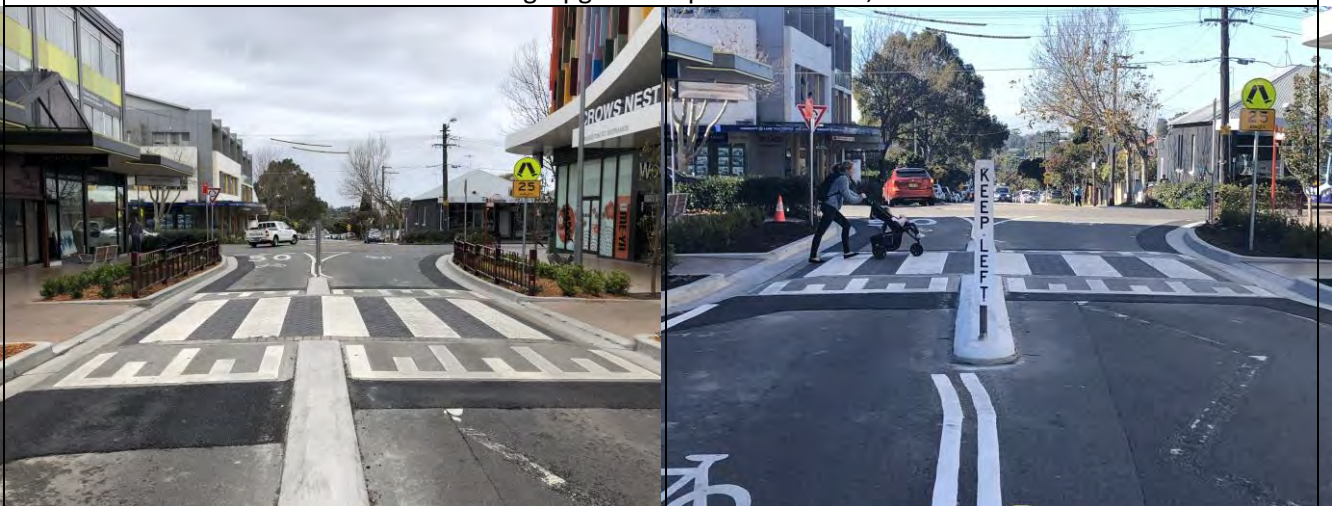
Pedestrian Crossing – Anzac Avenue, Cammeray



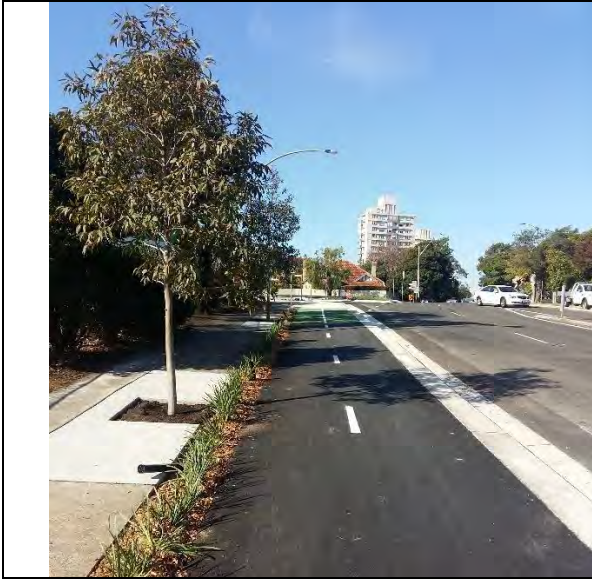
Pedestrian crossing improvements – McLaren Street and Church Street, North Sydney



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



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
- 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

APPENDICES

Appendix A: Maintenance Management System

MAINTENANCE MANAGEMENT SYSTEM (MMS)

Defect Management Inspection – Kerb & 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.

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

Intervention Matrix – K&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_Schemes

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