

Transport Infrastructure Asset Management Plan



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1. EXECUTIVE SUMMARY

This Transport Infrastructure Asset Management Plan (TIAMP) details how the City intends to operate and maintain the transport infrastructure network to achieve the following strategic objectives:-

1. Ensure that the transport assets are maintained to a safe and functional standard including funding the required renewal demand to meet the expected intervention level.
2. Ensure that transport infrastructure is constructed, upgraded and maintained in accordance with the City's Transport Strategy 2019/20 and supports the State Government's initiatives to promote public transport and a range of transport options.
3. Ensure that the transport infrastructure service incorporates effective and efficient preventative and planned maintenance practices.

1.1 Current Services and Costs

The City of Wanneroo provides transport infrastructure to enable a safe and efficient transportation network which includes the following assets:

- Roads,
- Pathways,
- Carparks,
- Bus Shelters,
- City owned Street Lighting, and
- Bridges/Underpasses.

The categories, quantity and replacement cost of transport assets are summarised in Table 1:

Table 1: Current Transport Infrastructure Asset Portfolio (depreciable assets)

Transport Infrastructure Summary (as at 30/06/2019)			
Asset Category	Quantity	% of total	Replacement Value (\$)
Roads (length in km)	1,671	77.36	778,493,178
Pathways (length in km)	1,237	18.43	185,468,110
Car parks (no. of sites)	96	2.95	29,699,805
Bus Shelters (no.)	224	0.23	2,310,000
Special Street Lighting – City owned (no.)	104	0.03	294,900
Bridges – Underpasses (no.)	5	0.99	10,000,000
Total Transport Infrastructure		100	1,006,265,993

As at 30/06/2019, the City's transport Infrastructure assets have depreciable asset components with a current replacement value of **\$1,006** million with the corresponding written down value of **\$699** million.

The City's current 2019/20 budget allocation for transport infrastructure is:

- **\$9.9M** for maintenance and operations (**\$5.9M** for Western Power's Street Lighting tariff costs)
- **\$4.0M** for capital renewal.

The total planned renewal expenditure over the 20 year planning period (2019 to 2038) is **\$122.9M** with the renewal demand over the corresponding period estimated at **\$126M**. It is predicted that there will be a shortfall of \$4.0M at the end of the planning period which is manageable (refer to Figure 16, Section 8)

The City of Wanneroo is a high growth council and as such needs to balance the competing demands of funding new works for growth communities and renewal of existing assets reaching their end of life. The growth also provides challenges with the quantum of inherited assets from developments.

In the City's 2017 Community Scorecard Survey, the following Performance Index Scores were indicated by respondents, 54 for '*Building and maintaining local roads*', 47 for '*Traffic management on local roads*', 53 for '*Footpaths and cycleways*'. These figures indicate in line with the industry average (refer to section 4.2.1)

The values of the three key performance indicators of asset performance are; Asset Consumption Ratio (ACR) of 69% which indicates an adequate usable level of assets, Asset Sustainability Ratio (ASR) is currently estimated at 22%, which is very low due to the City's current mix of old and new assets and continued high growth, and Asset Renewal Funding Ratio (ARFR) is currently estimated at 92%. These ratios are discussed further in Section 8.2.

1.2 Recommendations

The City's transport assets are currently in good condition and the bulk of the capital renewal work associated with this asset group mainly relates to the renewal of the wearing surface of pavements. The road pavement base course layers are expected to have a long life provided the wearing surface is maintained over its life cycle and resealed at the appropriate intervention point.

The financial predictive modelling for the renewal of transport assets using current asset data and maintaining current good condition indicates that renewal funding of \$6,500,000 per annum (on average) will be needed over the next 20 years.

Based on the medium confidence level of current data (see Section 2.5), it is considered prudent

to try and keep funding levels at a level to meet the demand forecast.

The following are key actions identified to improve the City's asset management practices for transport infrastructure assets, to be implemented over the next 4 years:

- Acquisition of an AMIS to enable asset data to be stored in one corporate system with integration to other corporate systems, in particular the corporate Finance System. This will enable the accurate capture of expenditures against transport assets including maintenance costs. With more accurate and easily accessible data, the City is able to better analyse performance and predict the funding needs for this class of asset.
- Develop a Transport Asset Maintenance Management Plan (TAMMP) incorporating asset criticality and risk. This will define and formalise intervention levels for maintenance activities and associated costs.
- Improve the measurement of relevant service levels through the increased capture and analysis of relevant data.
- Develop a Transport Plan to support the City's Transport Strategy 2019/20.
- Address opportunities related to demand management.
- Investigate and document issues and benefits of upgrading the street lighting network (or portions thereof) to LED in conjunction with Western Power.
- Document the methodology to be used in determining the asset condition assessment cycle - what, when and how it is done.

2. INTRODUCTION

2.1 Background

Council provides services to the community and the majority of these services are provided through infrastructure assets. This Asset Management Plan (AMP) demonstrates responsive management of assets (and services provided from assets), compliance with regulatory requirements, and communicates the funding needed to provide the required levels-of-service over a 20 year planning period.

The City's Asset Management Policy requires the creation of AMPs for the different asset classes and this Transport Infrastructure Asset Management Plan (TIAMP) has been developed for transport infrastructure assets.

AMPs are developed for each asset class for the following purposes:

- Providing an appropriate level of service at a cost that is affordable to the community,
- Sustainable management of assets for the community,
- Providing input into the Long Term Financial Plan (LTFP),
- Document existing practices and identify opportunities for improvement,
- Meet legislative and reporting requirements,
- Support business cases and funding applications, and
- Support community and organisational needs.

This document is to be read in conjunction with the following City documents (refer to references in Section 10):

- Asset Management Policy (AS01 – 06/18)
- Asset Management Strategy 2018 – 2022
- Strategic Community Plan 2017/20 – 2026/2027
- Long Term Financial Plan 2019/20 – 2038/39
- Corporate Business Plan 2019/20 – 2022/23
- Transport Strategy 2019/20
- 2017 Community Scorecard

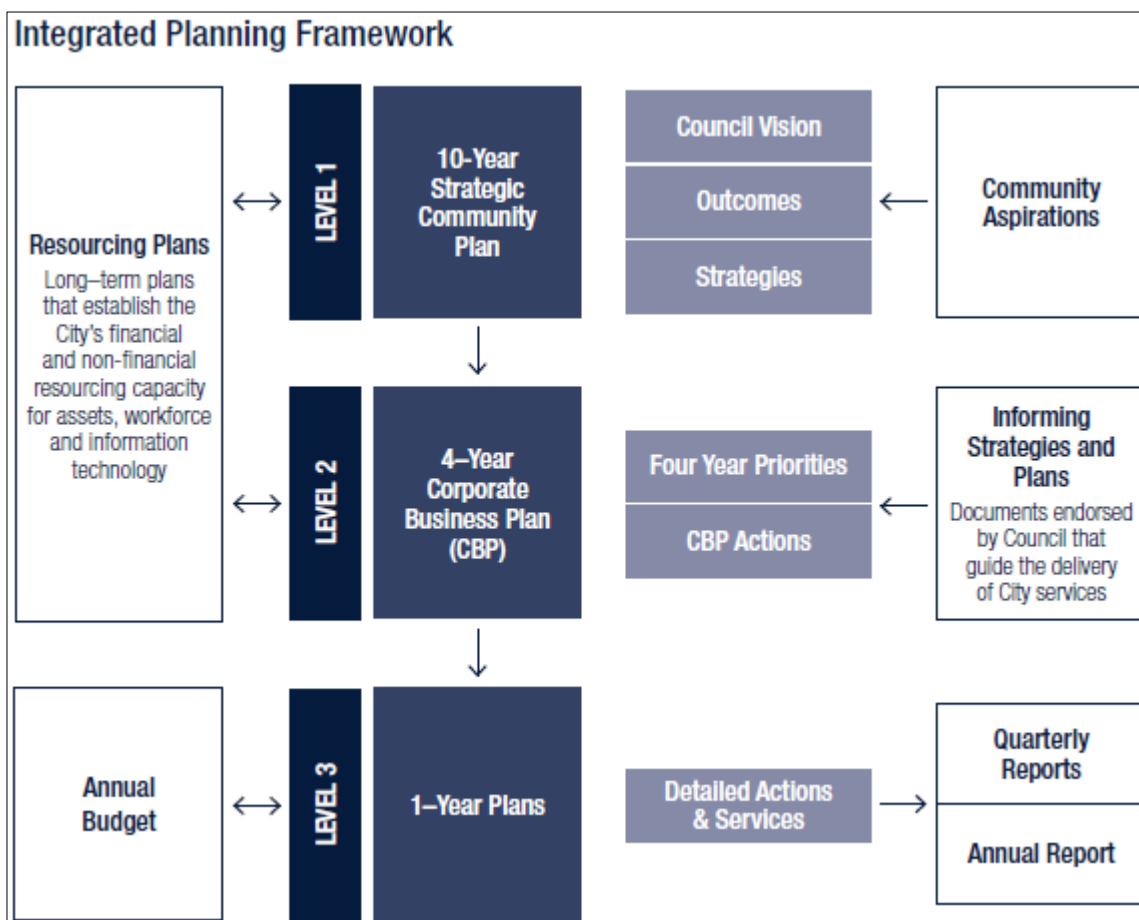
2.2 Alignment to Strategic Planning

This TIAMP is aligned with the following objectives and strategies (refer to Figure 1) from the City's Strategic Community Plan 2017/18 – 2026/27:

- Outcome 3.5 – Connected and Accessible City
 - Strategy 3.5.1 Deliver local transport infrastructure including roads, footpaths and cycle ways to improve accessibility
 - Strategy 3.5.2 Connect walking and cycling opportunities to key destinations and distinctive places
 - Strategy 3.5.3 Advocate for major integrated transport options close to communities
- Outcome 4.2 – Good Governance
 - Strategy 4.2.3 Ensure return on investment and well maintained assets through development and implementation of a strategic asset management framework

The City's aspirations as they relate to the Strategic Community Plan and this AMP are outlined in Appendix A.

Figure 1: Integrated Planning Framework



2.3 Asset Management Plan Framework

Key elements of this plan are

- **Levels of service** (Section 4) – specifies the services and levels of service to be provided by the City.
- **Life cycle management** (Section 5) – how the City will manage its existing and future assets to provide the required services.
- **Risk management** (Section 6) – how the City manages the risks associated with transport assets.
- **Future demand** (Section 7) – how this will impact on future service delivery and how this is to be met.
- **Financial summary** (Section 8) – what funds are required to provide the required services.
- **Improvements, Monitoring and Review** (Section 9) – how the plan will be monitored to ensure it is meeting the City's objectives and identify improvement opportunities in asset management practises within the organisation.

2.4 Scope

The transport infrastructure assets considered in this AMP are listed below:

- Roads – road pavement, surface seals and kerbing,
- Pathways – footpaths and cycleways (in situ concrete, asphalt/bitumen and brick paved paths),
- Bridges – road underpass culverts,
- Car parks – access roads and parking areas consisting of surface seal, pavement and kerbs including lighting, and
- Street Furniture – Special Ornamental City owned street lights and Bus Shelters.

It is noted that this AMP considers only depreciable assets and assets that have a finite life and incurs ongoing maintenance and recurring renewal/replacement costs. *Road Formation cost, for example, is only incurred at the initial construction and is not expected to deteriorate and does not require reconstruction when the road seal and/or pavement base course are replaced.*

Other transport related assets, such, as traffic signals, regulatory traffic signs and road markings are assets that fall under the care and control of Main Roads WA.

Other transport infrastructure assets yet to be included in this AMP, such as street signs (those not under the control and care of MRWA), guideposts, guardrails, street and directional signage will progressively be included in future revisions of this plan.

2.5 Data Systems and Data Confidence

The expenditure and valuations projections in this AMP are based on best available data. Currency and accuracy of data is critical to effective asset and financial management planning. Data confidence is classified on a 5 level scale rating (Ref IPWEA IIMM 2015 – Table 2.4.6 P2 | 71). The estimated confidence level for data and reliability of data used in this AMP is shown in Table 2.

Table 2: Data Confidence¹ Assessment for Data used in AM Plan

Data	Confidence Assessment	Comment
Demand Drivers	Highly reliable	Based on Australian Bureau of Statistics data
Growth projections	Highly reliable	Based on Australian Bureau of Statistics data
Population Age	Highly reliable	Based on Australian Bureau of Statistics data
Condition ratings	Reliable	
Asset values	Reliable	
Asset residual values	Reliable	Estimated using straight line depreciation. Reliant on useful life asset data.

In the absence of a dedicated Asset Management Information System (AMIS), the City currently utilises the following computer systems to manage its asset data:

- **RAMM (Road Assessment and Maintenance Management) – used for roads**

A database which stores road inventory and condition data. RAMM has the capability to analyse road condition data and model future capital renewal requirements and propose works programs.

- **MapInfo – used for roads, pathways, car parks, special street lighting, bus shelters and bridges (underpasses)**

A Geographical Information Systems (GIS) mapping software that is configured to enable the recording of the geographical location of the asset and also stores the attribute of the assets in tables.

- **Asset Renewal Funding Demand Modelling Tool – used for all asset classes**

This computing tool (developed in-house over several years) consists of a series of MS Excel spreadsheets that analyse asset data and uses simple built-in computations to model and predict the future deterioration of assets. The outputs of this tool provide a prediction for future asset renewal funding demand and budgetary requirements.

¹ Data confidence is classified as per rating in IPWEA’s IIMM 2015 – Table 2.4.6 P2 | 71. From a rating of ‘A’ – Highly reliable; ‘B’ - Reliable; ‘C’ – Uncertain; ‘D’ – Very Uncertain; and, ‘E’– Unknown.

This Renewal Modelling tool is loaded with the City's infrastructure asset inventory data together with assumptions and critical modelling parameters with the final computation and resultant output being used to inform the LTFP. The long term asset renewal demand predictions can be applied to all asset classes enabling comparisons to be made and also provides an overall view of all the City's asset classes for informed decision making.

The City is currently implementing an Enterprise Software Renewal Program (ESRP) which will include the acquisition of an Asset Management Information System (AMIS). It is intended that the City's assets data inventory will be migrated to the AMIS which will be linked with to the Finance Management Information System expenditure data and continue to be linked spatially in a GIS system.

2.6 Key Stakeholders

The table below shows the key stakeholders in the preparation and implementation of this AMP:

Table 3: Stakeholders

Stakeholders	Description and Level of Involvement
Ratepayer Groups and residents	Stakeholder consultation
Elected members	Stewardship and Asset Management Leadership. Endorsement of Asset Management Policy, AM Strategy, AM Plan. Adoption of the key AM principles and the approval of Capital Works Budgets that support good Asset Management principles.
Executive Leadership Team (ELT)	Provide strategic direction and leadership for asset management practices and decisions within the City. Responsible for the development of AM Policy, AM Strategy and AM Plans.
Assets Maintenance	Maintain the transport network to a safe standard including the determination of technical levels of service, monitoring performance measures and condition assessments.
Traffic Services	Ensure the transport network is managed to a safe standard and network connectivity provided as appropriate for its intended use including encouraging the use of alternative transport modes. Plan for improved pedestrian, cycling and vehicular traffic management treatments to existing transport network.
Infrastructure Capital Works	Design and construct transport infrastructure assets to required standards.
Strategic Asset Management Service Unit	Long term planning and management of transport assets, assets inventory, renewal demand modelling and long term renewal budget analysis. Author and review of this AMP.
Corporate Strategy and Performance Directorate	Long Term Strategic and Financial Planning incorporating Asset Management principles. Financial reporting of asset performance. Capital Works Program development and scheduling for transport infrastructure projects.

Stakeholders	Description and Level of Involvement
Planning and Sustainability Directorate	Plan for efficient transport networks and systems for vehicular, bicycle and pedestrian movements. Improve transport options and connections in future land subdivision developments. Review and approve engineering drawings and acceptance of transport assets constructed as part of subdivisional developments.
Community and Place Directorate	Provision of adequate car parking at various City facilities (i.e. community centres, libraries and sports facilities; aquatic centres, waste and recycling facilities). Ensure accessibility of facilities for all residents including older people and people living with disabilities through adequate provision of accessible pathways, pedestrian crossings and parking facilities.
State Government agencies (MRWA, Western Power and PTA)	<p>MRWA provides grants for the City to maintain and upgrade its road network.</p> <p>Western Power – Maintains the street lighting network</p> <p>PTA – Provides public transport services and jointly funds bus stop infrastructure for public transport.</p>
Federal Government (The Department of Infrastructure, Transport, Regional Development and Communications)	Provides grants to support the maintenance of the nation's local road infrastructure through the Roads to Recovery Program.

3. CURRENT STATUS OF ASSETS

The core asset data shown in this plan provides the baseline for growth and asset renewal demand predictions to be generated and is used to inform the City's annual budget and LTFFP development. This data is stored in HPE 20/389609. Until such time a major review of this plan is undertaken, this core data and asset performance predictions are updated annually as a new version of HPE 20/389609 to inform and update subsequent capital budgets and the LTFFP.

The dimension and replacement value of Transport Infrastructure (as at 30 June 2019) considered in this AMP are summarised in the tables below:

Table 4: Current Road Assets

ROAD NETWORK SUMMARY	
Road Hierarchy	Road Length (km)
Access Road	1,123
Local Distributor	338
District Distributor A	167
District Distributor B	43
Grand Total	1,671

Table 5: Road Component Asset Replacement Values

² Road Asset Component	Dimensions	Replacement Value (\$)
Road Pavement (m ²)	13,790,033	393,266,736
Road Seal (m ²)	10,203,748	204,555,952
Kerbing (m)	2,779,546	180,670,490
Total Road Assets		778,493,178

Table 6: Current Pathway Assets

Pathway Asset Component	Length (km)	Dimensions (m ²)	Replacement Value (\$)
Pathways – In-situ Concrete	1,179	2,252,595	177,954,992
Pathways – Asphalt/Bitumen	47	108,809	5,005,218
Pathways – Brick paving	12	31,349	2,507,900
Total Pathway Assets	1,237	2,392,753	185,468,110

² Note that renewal of road formation and earthworks component is not considered in this AMP as this component of the asset is not expected to deteriorate significantly over time and therefore this cost is unlikely to be incurred again. Roads within the City are built on well drained sandy soils whereby the earthworked subbase layer is unlikely to experience significant deterioration.

Table 7: Current Car Park Assets (excluding on street car parks)

Car park Asset Component	Dimensions	Replacement Value (\$)
Car Park Pavement (m2)	611,893	16,521,109
Car Park Seal (m2)	256,067	5,084,649
Car Park Kerbing (m)	99,250	6,451,247
Carpark Lighting (no.)	604	1,642,800
Total Car Park Assets		29,699,805

Table 8: Current Bridge/Underpass Assets

Bridge Asset Component	Dimensions	Replacement Value (\$)
Road Bridge – Underpasses (no.)	5 units	10,000,000
Total Bridge / Underpass Assets		10,000,000

Table 9: Current Street Furniture Assets

³Street Furniture Asset Component	Dimensions	Replacement Value (\$)
Bus Shelter - Concrete (no.)	52	624,000
Bus Shelter - Steel (no.)	136	1,632,000
Bus Shelter - Tin (no.)	36	54,000
Special Street Lighting (no.)	118	294,900
Total Street Furniture Assets		2,604,900

³ Note that other street furniture assets such as guideposts, guardrails, street and directional signage have not been considered in this AMP. These items are generally replaced as part of routine maintenance activities as required.

3.1 Age Profile

The age profile (represented by the total value of assets at the year of construction) of the City's road, pathway, car park and street furniture assets are shown below.

Figure 2: Age profile of road pavement

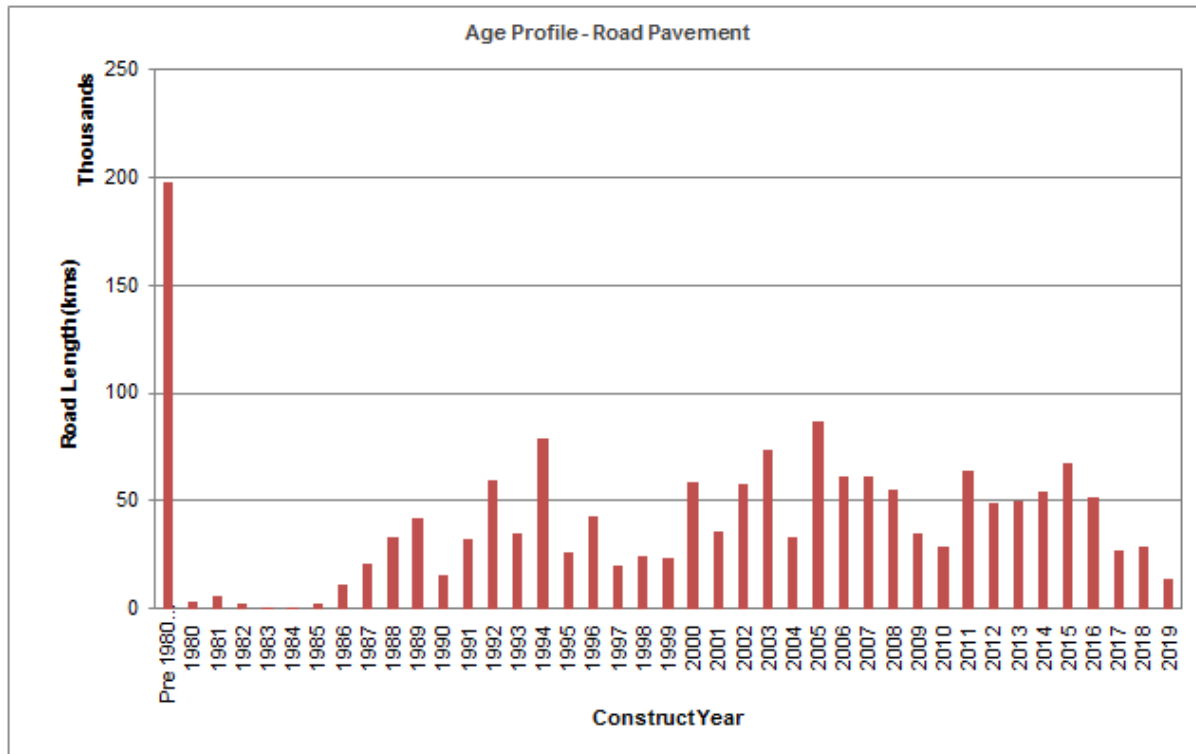
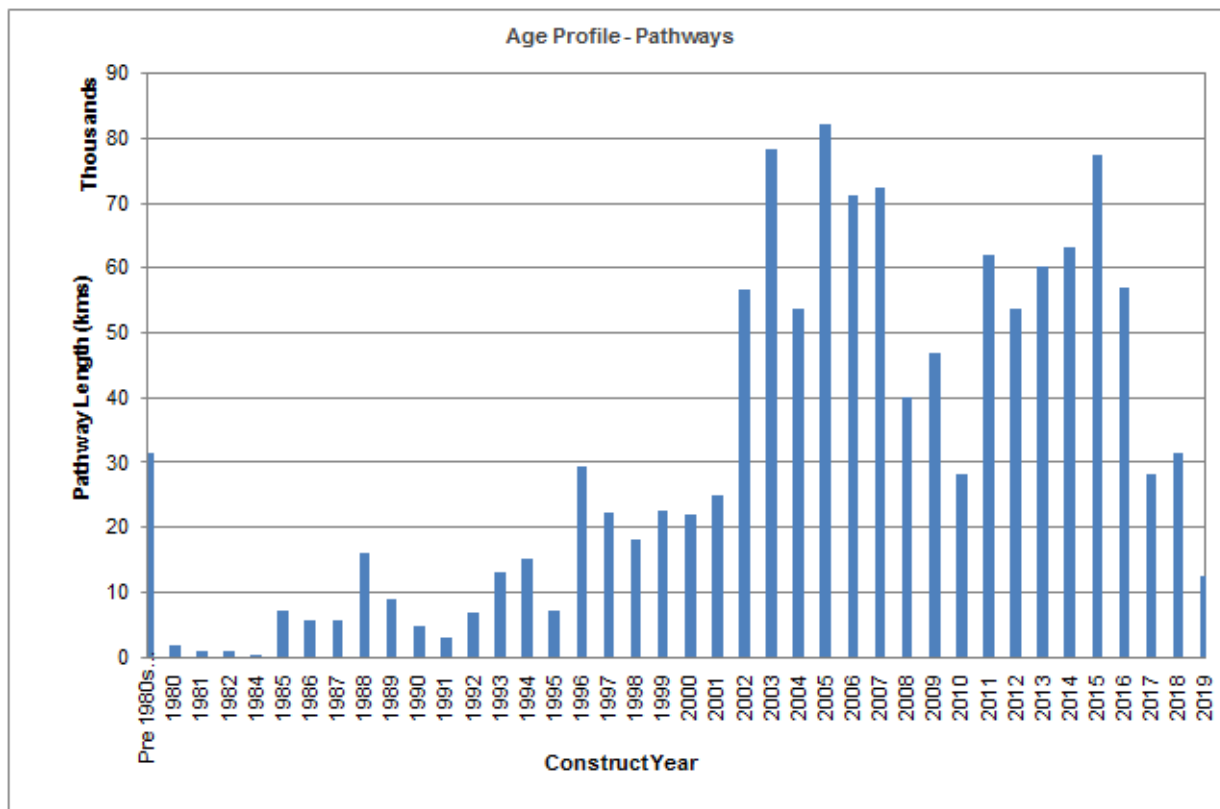


Figure 3: Age profile of pathways



The asset age profiles depicted above provide an indication of the growth experienced within the City of Wanneroo with relatively high rates of road assets being constructed since the late 1980s and the increasing demand for pathways since mid-1990s.

Figure 4: Age profile of car parks

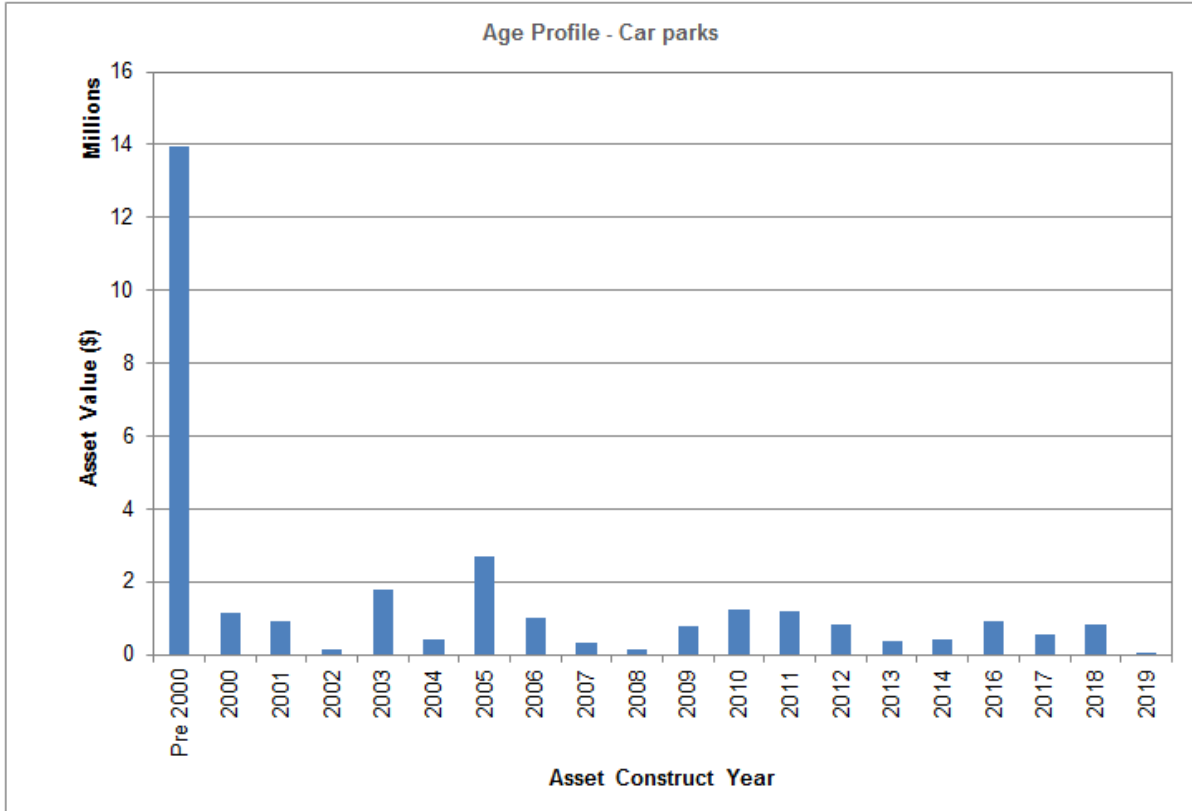
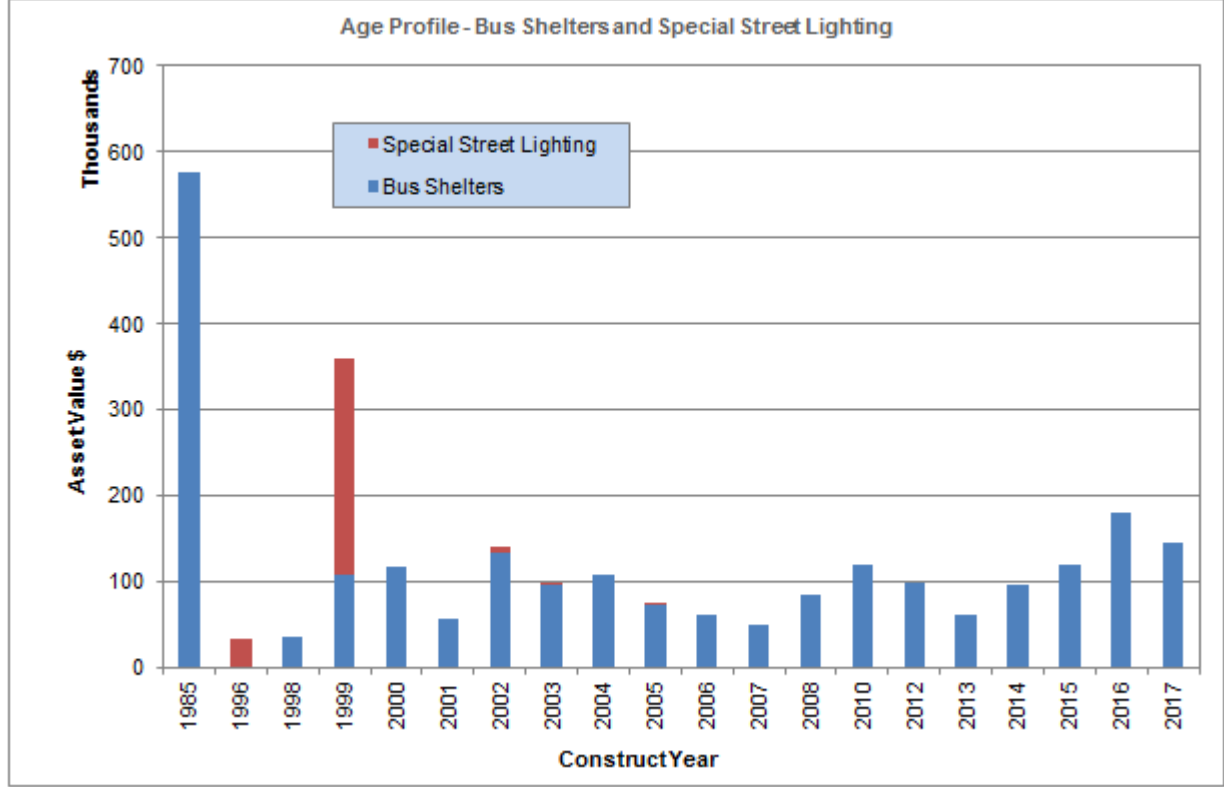


Figure 5: Age profile of Street furniture



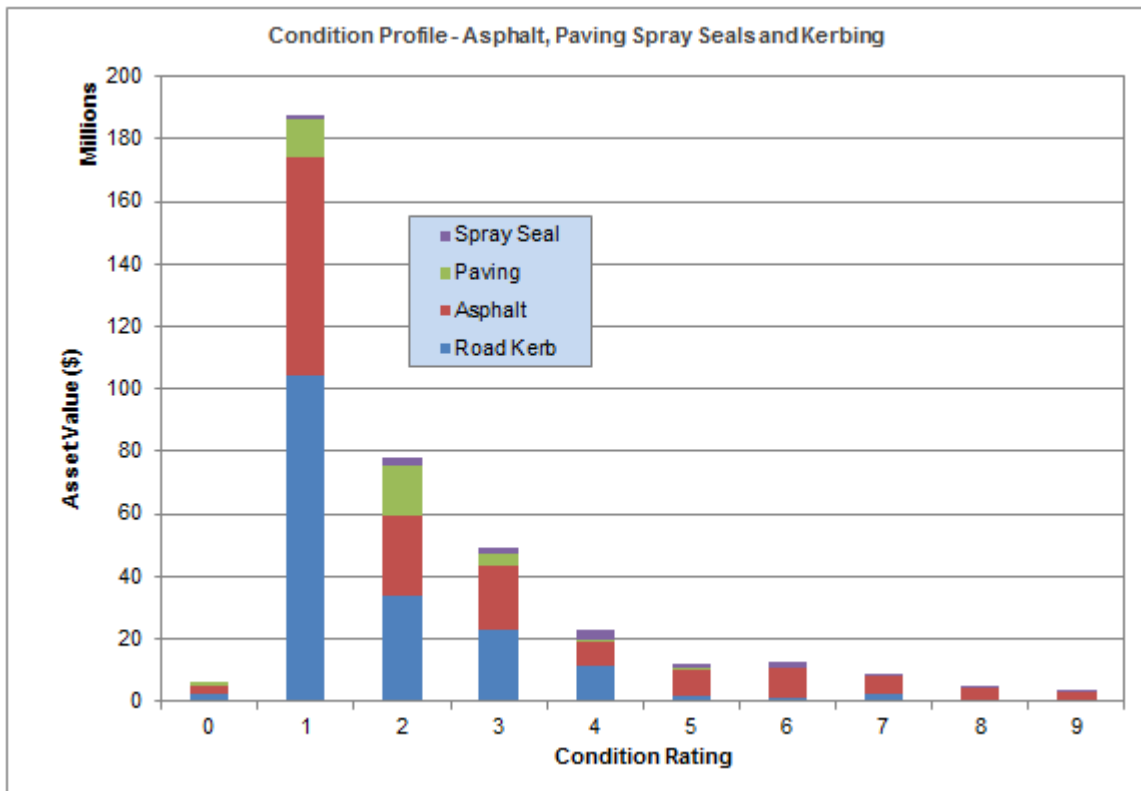
3.2 Condition Profile

The City currently undertakes visual condition audits on some of its critical transport assets on a periodic basis. These are undertaken to verify and/or determine the actual condition of the assets to ensure that renewals are only considered if they are deemed necessary. This data is also used to verify the asset useful life predicted for the asset components. The details of the periodic asset audits are shown in the table below:-

Table 10: Assets inspection cycles

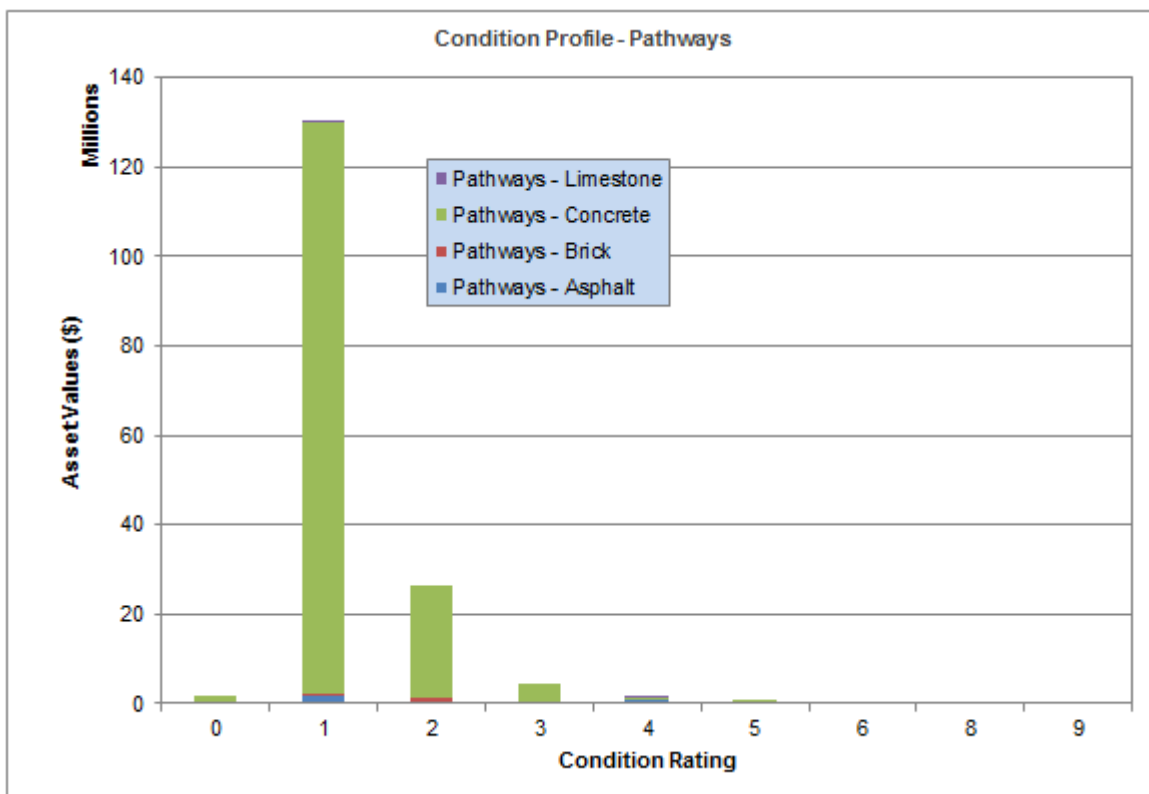
Asset type	Inspection cycle (years)	Comments
Roads	3	High Speed Data survey for arterial and local distributors every 5 years (<i>Improvement ref 6</i>)
Pathways	3	Inspected at the same time as roads
Carparks including lighting	3	
Bus shelters	1 – 2	
Special Street Lighting	1 – 2	
Underpasses	7	Inspected by MRWA (<i>Improvement ref 9</i>)

Figure 6: Condition profile of asphalt, spray seal, paving and kerbing



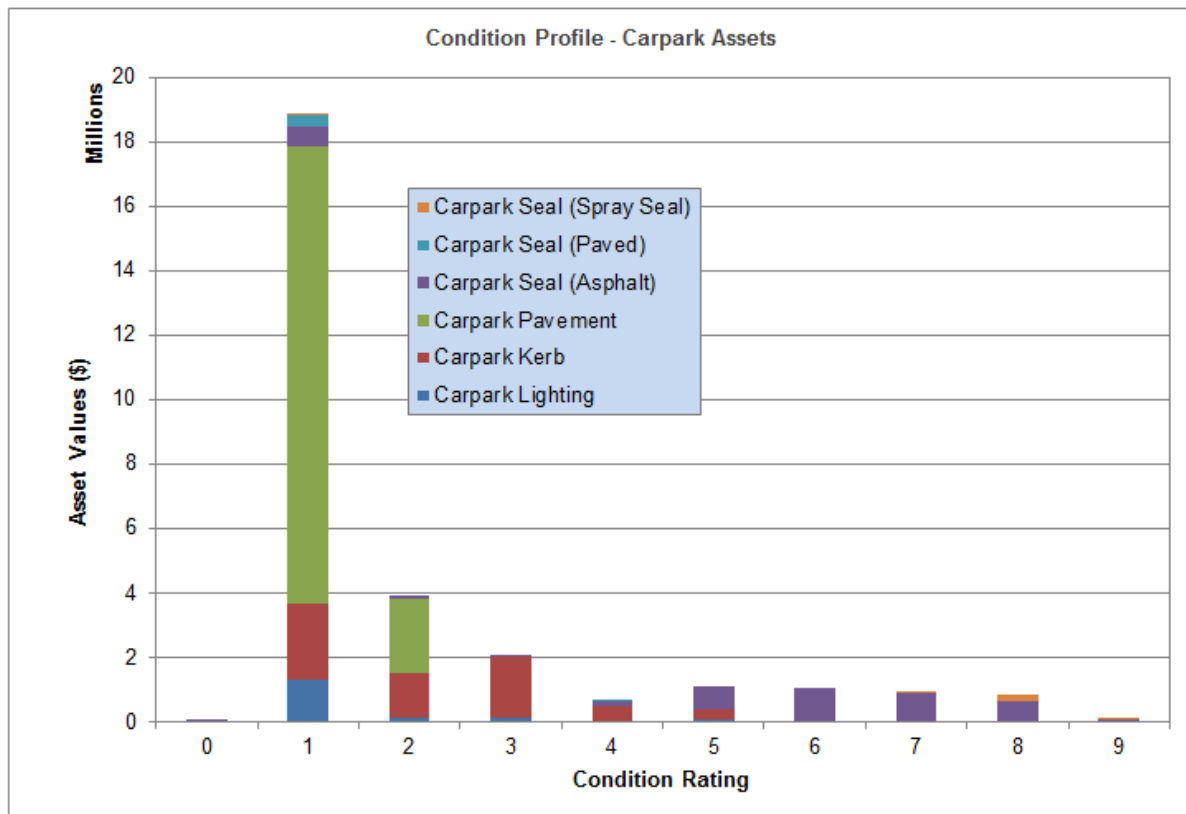
Note: Condition rating of road seals are based on visual inspections. A combination of visual inspections where available and age are used for kerbing.

Figure 7: Condition profile of pathways



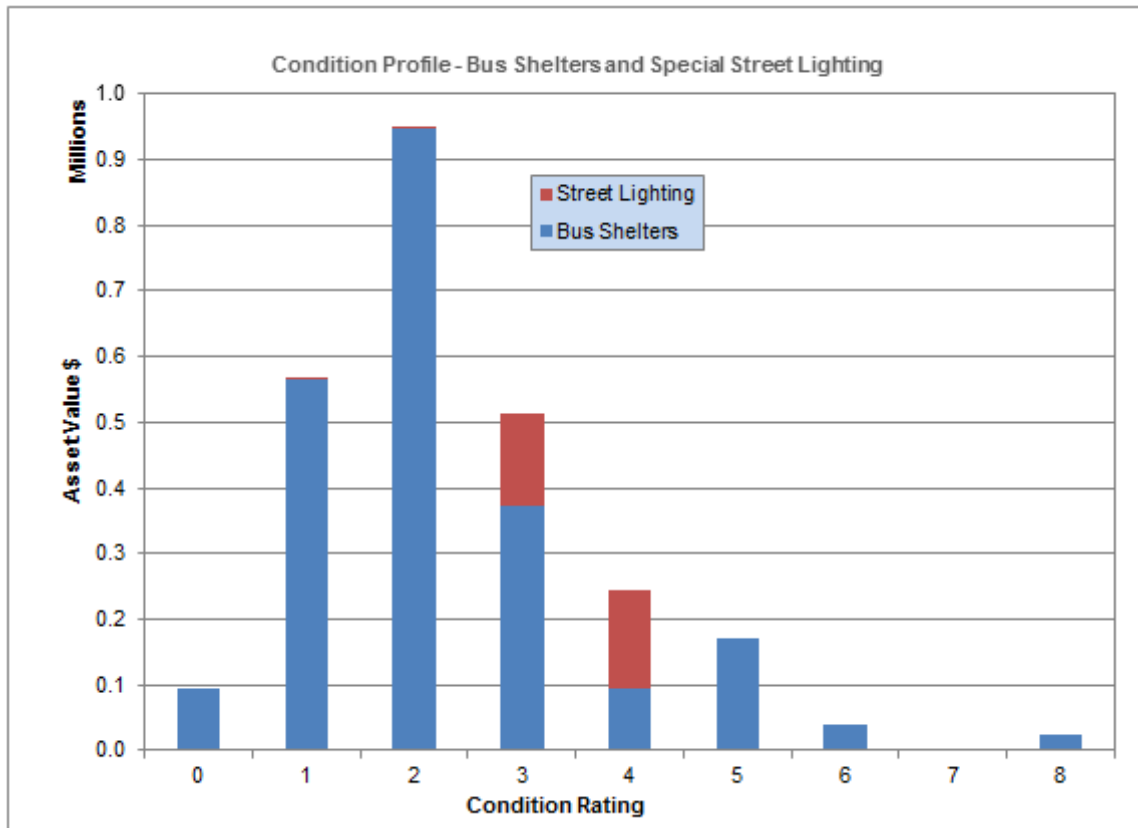
Note: Condition rating of pathways is based on age

Figure 8: Condition profile of Carparks



Note: Condition rating of carpark seals are based on the visual inspections while the pavement base course are based on age using their year of construction.

Figure 9: Condition profile of bus shelters and Special Street Lighting



3.3 Conclusions and Recommendations

The City’s ongoing inspection and conditioning of its transport assets is key to informing future renewals and predicting the age and condition profiles of the different components in the transport asset portfolio.

- The bulk of asphalt seals are in Condition 1 (excellent condition). The City expects to address roads seals with condition 7 and worse in the next 10 years.
- The renewal demand for road asphalt seals (with an anticipated useful life of 25 to 30 years) is expected to be fairly uniform over the next 10 years as depicted in Figure 16 within Section 8 (20 Year Planned Expenditure for Transport Assets).
- Concrete pathways are expected to last over 70 years and it is not expected that there will be any significant impact on demand for renewals in the short to medium term. Asphalt or bitumen pathways that were built in the late 1980s to early 1990s, will start to require attention. The number of asphalt pathways however is low and is not expected to significantly impact on the overall renewal funding requirement. However, it is noted that the number of asphalt pathways will increase further as the City progressively implements new or upgrade red-asphalt pathway projects detailed in the Wanneroo Cycle Plan which will need to be addressed over time.

- The renewal funding demand for car parks is not dissimilar to that of asphalt pathways with the magnitude of its renewal demand at this stage not being significant and is also not expected to severely impact on the overall renewal funding requirement in the short to medium term.
- The City currently has five bridge/underpasses which are in very good condition. The type of road bridge assets within the City are box culverts that have been built as underpasses for pedestrian access crossing under major roads. These structures are costly to build and if not designed properly in an open area can potentially encourage anti-social behaviours at these sites. It is unlikely that the City will consider building anymore in future as this style of underpasses are no longer favoured.
The expected useful life of these underpass assets are over 90 years and their renewals will not be required in the short or medium term.
- There currently is no immediate concern with renewal funding for bus shelters. The City monitors the condition of these shelters annually to ensure that these structures remain in a safe state. The City now installs mild steel type bus shelters which are of a much higher standard. There is currently no planned program to phase out the old the old bus shelters. These will continue to be maintained.
- There are currently no immediate concerns with renewal funding for City owned Street Lighting although the City will investigate upgrading the streetlights on Dundobar Road and Wanneroo Road to LED with a smart controls.

4. LEVELS OF SERVICE

A key objective of this AMP is to identify the current level of service provided by the Transport assets. The level of service currently in practice will be used:

- To inform customers of the level of service they can expect.
- To develop asset management strategies to meet or continue to meet these levels of service.
- As a measure of the effectiveness of the City's asset management practices and the performance of this plan.
- To identify the costs and benefits of the services offered.
- To enable the City and customers to discuss and assess the suitability, affordability and equality of the existing service level and to determine the impact of increasing or decreasing this level in future.

Service levels are defined in terms of customer levels of service and technical levels of service. *Community Levels of Service* relate to how the community perceives the service in terms of safety, quality, quantity, reliability, responsiveness, cost/efficiency and legislative compliance.

Supporting the community service levels are operational or technical measures of performance. These technical measures, referred to as *Technical Levels of Service*, relate to the allocation of resources to service activities that Council undertakes to best achieve the desired community outcomes and demonstrate effective organisational performance.

Current transport infrastructure maintenance activities have been based on statutory powers and duties contained in legislation, and precedents developed over time as a result of claims and legal proceedings. The adopted levels of service for Transport Assets are as shown below. These standards reflect current industry standards and include:

- Legislative Requirements (Section 4.1): Standards, Regulations, Acts and Council Local Laws that impact the way assets are managed.
- Community Levels of Service (Section 4.2): Defines specific levels of service which customers desire and the organisation aims to achieve.
- Technical Levels of Service (Section 4.3): Current minimum levels of service based on technical grounds and current local government industry practice.

4.1 Legislative Requirements

The City has to meet a number of legislative requirements including Australian and State legislation and regulations. These include:

Table 11: Legislative Requirements

Legislation	Requirement
Local Government Act 1995 and associated regulations	Sets out role, purpose, responsibilities and legal powers of local governments including the requirement for the preparation of a long term financial plan supported by asset management plans for sustainable service delivery.
Road Traffic Act 1974	Maintain unhindered access to road reserves and associated Transport infrastructure assets.
Emergency Management Act 2005	Provide for functional response to community public emergencies.
Occupational, Safety and Health Act 1984 and Regulations	Sets out roles and responsibilities to secure health, safety and welfare of pedestrians and road users.
Environmental Protection Act 1986 and Regulations 2004 & Environmental Protection and Biodiversity Conservation Act 1999	Sets out legislative requirements associated with the clearing of native vegetation and the protection of species and habitat associated with any clearing. Minimise impact on the environment as a result of infrastructure works.
Australian Standards	Duty of care to ensure minimum established industry standards are met.
Disability Discrimination Act 1992	Provides protection against discrimination based on disability, in this case in carpark and pathway facilities.
Aboriginal Heritage Act 1972 and Heritage Act of WA 1990	Minimise impact on heritage site as a result of infrastructure works.

4.2 Community Levels of Service

The City's current community levels of service are detailed in the table below.

Table 12: Community Levels of Service

Key Performance Measure	Level of Service	Performance Measure Process	Performance Target
Quality/ Condition	Roads are well maintained. Roads are in a safe condition.	Customer complaints about roads.	< 120 pa
	Uniformity, walkability and rideability (for cyclists).	Community perception survey	> 70% satisfaction
	Surface uniformity and accessibility within car parks.	Customer complaints	< 20 pa
Function	- Traffic management		
	- Traffic management - Pathway accessibility	Community perception survey	>60% satisfaction
		Customer complaints	<300 pa
	- Pathway accessibility - Accessibility within car parking areas - Availability of car parking facilities	Community perception survey	> 70% satisfaction
		Customer complaints	<75 pa
Sufficient pathways to points of interests and recreational use	Customer complaints	< 20 pa	
Quantity	Adequacy of car parking at City facilities	Community perception survey	> 70% satisfaction

The performance measure against each of the above levels of service is included in Appendix F.

4.2.1 Customer Research and Expectations

The City conducts a Community Perception Survey generally every 2-3 years, which began in 2002/2003, to determine the following:-

- Overall satisfaction with the City;
- Perceived importance and satisfaction with services and facilities; and,
- Performance strengths, weaknesses and gaps.

The Community Perception Surveys undertaken in 2010, 2012, 2014 and 2017 make specific reference to transport assets. Services are rated by respondents on a five point scale known as

the Performance Index Score (PIS). It should be noted that the performance index score is different to the percentage satisfaction target as stated in table 12.

The 2017 results of the Performance Index Score, in comparison to the previous year surveys, remained positive as summarised in Table 13 below:

Table 13: Performance Index Scores

Community Perception Surveys	2010	2012	2014	2017	2020	Industry Average
Building and maintaining local roads	57	56	58	54	58	53
Management of traffic on local roads	50	49	54	47	54	56
Access to public transport	54	55	59	55	N/A	-
Footpaths and cycleways	58	56	61	53	55	53

The complete document can be found at HPE 20/130511.

- Building and maintaining roads – 54 overall satisfaction, which is consistent with previous year results. Performance is slightly above industry average of 52.
- Traffic management on local roads - 47 overall satisfaction, although showing a slight drop is consistent with surveys conducted in previous years. Performance is slightly below the industry average of 53.
- Access to public transport - 55 overall satisfaction, which is fairly consistent with past year results. Performance is slightly below industry average of 63.
- Footpaths and Principal Shared Paths – 53 overall satisfaction, which is in line with previous year results. Performance is on par with industry average of 52.

4.3 Technical Levels of Service

Technical levels of service measures are linked to annual budgets covering:

- Operations and maintenance – the activities necessary to retain an asset as near as practicable to an appropriate level of service (e.g. road patching, unsealed road grading, and structure repairs). This also includes electricity tariffs paid to Western Power for the provision of street lights.
- Renewal – the activities that return the service capability of an asset up to that which it had originally (e.g. frequency and cost of road resurfacing and pavement reconstruction). An asset is renewed when maintenance is no longer able to meet the required level of service.
- Upgrade/New – the activities to provide a higher level-of-service (e.g. widening a road, sealing an unsealed road), meet a higher demand.

The different types of technical levels of service used are described in Table 14 below.

Table 14: Technical Measures

Service Criteria	Technical measures
Quality/ Condition	Smoothness of roads, pathways and car parks. Accessibility, comfort, uniformity or evenness of surfaces.
Function	Adequacy of road widths and standards for traffic volumes and speed measured and road hierarchy. Adequacy of pathway widths and standards for all usage types. Adequacy of car parking areas to support the use of the City's facilities. Adequacy and accessibility of bus shelters facilities to public transport.
Quantity	Good connectivity of the road and path network. Provision of adequate car parking bays at facilities and bus shelters for public transport patrons.
Safety	Number of injury accidents associated with transport assets

Table 15: Current Technical Service Levels

Key Performance Measure	Level of Service	Performance Measure Process	Performance Target
Quality/ Condition	Assets renewed at the end of their useful life.	Road Condition survey.	Whole of network survey completed once in every 3 years and prioritise for renewal.
		Pathway Condition survey	Whole of network survey completed once in every 3 years and prioritised for renewal.
		Car park Condition survey	Whole of network survey completed once in every 3 years and prioritised for renewal.
Function & Quantity	Provision of cyclist route networks throughout the City in accordance with the Wanneroo Cycle Plan	Implement actions as per recommendations of the Wanneroo Cycle Plan.	Listing and completion of projects in accordance with the Wanneroo Cycle Plan in the CWP.
	Provision of car parking areas to	Provision of adequate car parking bays in accordance	90% of the City's facilities are provided with car parking

Key Performance Measure	Level of Service	Performance Measure Process	Performance Target
	support the City's facilities.	with minimum development guidelines.	facilities to the required provision.
Safety	Safe accessible transport network	Reported Fatal, Hospital and Medical (Casualty) crashes	Annual reduction in Fatal, Hospital and Medical (Casualty) crash numbers
	Defects not exceeding thresholds defined in the Engineering Maintenance Intervention Levels ²	Routine safety inspection undertaken annually by maintenance staff.	Defects are investigated and responded to within allocated timeframes in 90% of cases.
	Response times to defects not exceeding thresholds defined in the Engineering Maintenance Intervention Levels ²	Time to respond to routine safety inspection undertaken annually by maintenance staff.	Defects are investigated and responded to within allocated timeframes in 90% of cases

The performance against these levels of service is detailed in Appendix F. Some of the service levels are not currently measured and the measuring of these has been added to the improvement plan (*Improvement ref 2*).

4.4 Asset Levels of Services Consultation Results

The City conducts community level of service consultation through the Community Perception Survey as outlined above. No formal consultation is completed regarding technical levels of service. The technical levels of service have evolved around safety and as a direct result of statutory powers and duties contained in legislation, and precedents developed over time as a result of claims and legal proceedings.

4.5 Conclusions and Recommendations

Although the data required to monitor and report on the City's specific performance in some areas is not currently available, it is considered that the current levels of service for transport infrastructure assets are satisfactory and changes to these are unlikely to be required in the short term. Nevertheless, steps must be taken to measure current performance against the targets set in the table in Appendix F to enable definitive reporting of the City's overall performance (*Improvement ref 2*).

5. LIFE CYCLE MANAGEMENT

The lifecycle management plan details how the City plans to manage and operate the assets at the established levels of service while optimising life cycle costs.

Transport infrastructure assets are either gifted by the developers in new subdivisions or built/upgraded by the City to improve parts of the City's transport network that are performing below target levels of service and to develop the transport network to meet any future demand requirements. These assets are operated and maintained by the City throughout their useful life and their performance and condition are monitored to ensure that they deliver a satisfactory service to the community at an appropriate cost.

Figure 10: Asset Life Cycle (Source: IPWEA, 2015)



A summary of various activities undertaken during the life of transport assets are detailed below. The parameters used in the estimation of life-cycle costs such as useful life, deterioration factors, intervention condition are shown in Appendix B.

The ability to meet the defined levels of service is determined, in part, by how these assets are managed through their useful life. When assets do not perform as required, they are maintained, renewed, upgraded or disposed of. The recurrent maintenance works, the capital works of renewals and upgrades, and the one-off creations and disposal work form part of the activities required to provide a satisfactory level of service.

5.1 Creation/Acquisition/Upgrades

As a growth council, a significant amount of new transport assets such as roads and pathways, are gifted annually through subdivision developments. An allowance is made to account for this growth as part of the development of the LTFP and the long term asset renewal demand modelling predictions.

The City's construction program also contributes to the acquisition of new and upgrading of transport assets. This is driven by plans such as (refer to references in Section 10):

- 'Perth to Peel@3.5million: The Transport network'
- Perth Transport Plan for 3.5 Million
- City's Place Framework
- City's Transport Strategy 2019/20
- City of Wanneroo Cycle Plan (2018/19 - 2021/22)
- Local and District Structure Plans

The City has a program of works for road and pathway extensions, upgrades and the provision of traffic treatment improvements within the road network. These aim to improve parts of the City's road network performing below target levels of service and to develop the road network to meet any future demand requirements. Increased traffic volumes from growth and increased accident statistics primarily drive this demand. Upgraded assets are also added from road dualling projects, shoulder widening and intersection upgrades.

In addition, according to the North-West sub-region network as identified in the '*Perth to Peel@3.5million: The Transport network*', new assets in future is expected from the following:

- Extension of the Mitchell Freeway to Romeo Road
- Whiteman-Yanchep Highway (a new north-south primary distributor road)
- Re-alignment of Neaves Rd and Flynn Dr (to align with the Whiteman-Yanchep Highway)
- Draft East Wanneroo District Structure Plan 2019
- Yanchep-Two Rocks regional road network

The provision of new car parking assets are driven by increased demands at existing City facilities such as high use parks, reserves and community centres. Construction of carparks at new facilities are considered as part of the design for the new facilities.

The provision of new bus shelters and upgrades to existing concrete bus shelters are driven by the increased demand for improved public transport services with subsidised grant funding from the Public Transport Authority (PTA). The location of these is driven by PTA requirements.

The construction of new street lighting in subdivisions are funded by land developers as part of their subdivision and provided in accordance with Western Power requirements and standards.

Street lighting is generally fully owned and maintained by Western Power and the City pays an annual tariff for the provision of this service to its roadways. The City has the option to construct special purpose/ornamental street lighting for specific areas of interest. In these instances, the City is fully responsible for the operational, maintenance and replacement costs.

The use of the special street lights (generally installed with banner poles) have been limited to the following three locations:-

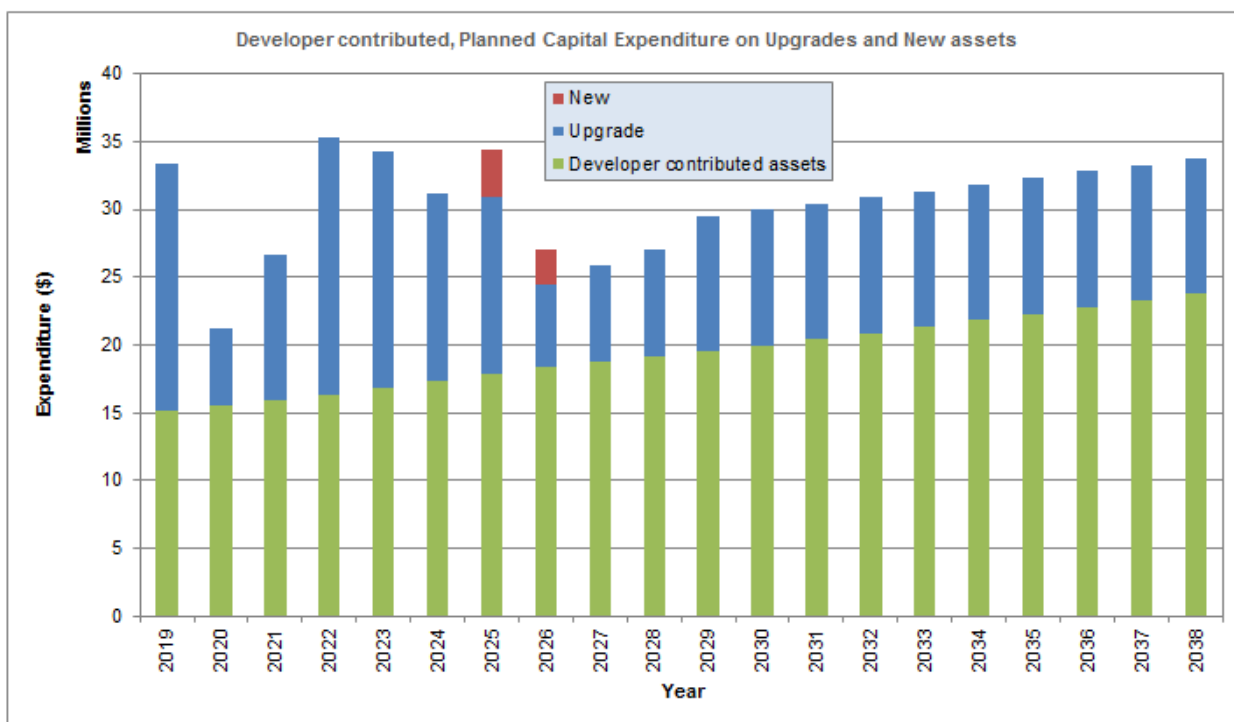
- ❖ Wanneroo Road, Wanneroo Town Centre – located in the central road median between Dundobar Road and Crisafulli Avenue.
- ❖ Rocca Way, Wanneroo Town Centre
- ❖ Dundobar Road, Wanneroo – located in the median between Wanneroo Road and Civic Drive.
- ❖ Ocean Keys Boulevard, Clarkson – located along Ocean Keys Boulevard between Marmion Avenue and Key Largo Drive.

Since 2018, Western Power has added the use of LED technology to its range of street lighting standard options, based on its recognised operational cost saving benefits. Accordingly, this requirement for the use of LED lighting is now enforced in all new subdivision within the City including wherever practical within City's own Capital Works projects. This will have cost benefits to the City in the long term with the corresponding savings in annual tariffs.

For existing street lighting, it will be beneficial for the City to consider negotiating with Western Power to progressively upgrade the street lighting network to LED as a large area of the existing lighting network is substandard (*Improvement ref 5*).

Figure 11 shows the anticipated growth and planned expenditure on new and upgrade of assets over the next 20 years for all transport assets across the three transport sub programs.

Figure 11: Developer contributed, Planned Capital Expenditure on Upgrades and New Assets



From 2029 onwards, placeholder projects have been included (based on average historical expenditure) as details of future projects have not yet been fully determined. Details of proposed creation/acquisition and upgrade works are provided in the Transport Assets – Capital Sub Program in Appendix E.

5.2 Operations and Maintenance Planning

Operations and maintenance is the regular on-going work that is necessary to keep assets at an acceptable level of service, including instances where portions of the asset fail and need immediate repair to make the asset operational again. Maintenance includes reactive, planned and cyclic maintenance work activities.

Assessment and prioritisation of reactive maintenance is undertaken by the City’s Assets Maintenance team using experience and judgement. The City has many maintenance tasks and activities that are associated with the maintenance of transport assets. A large proportion of these procedures are well documented. However, integration of these activities with a dedicated system is currently lacking.

In order to meet the requirements of ISO 9000 and ISO 55000 standards, these processes and procedures will need to be clearly documented and integrated with an Asset Management Information System (AMIS). The City has commenced the identification and mapping of

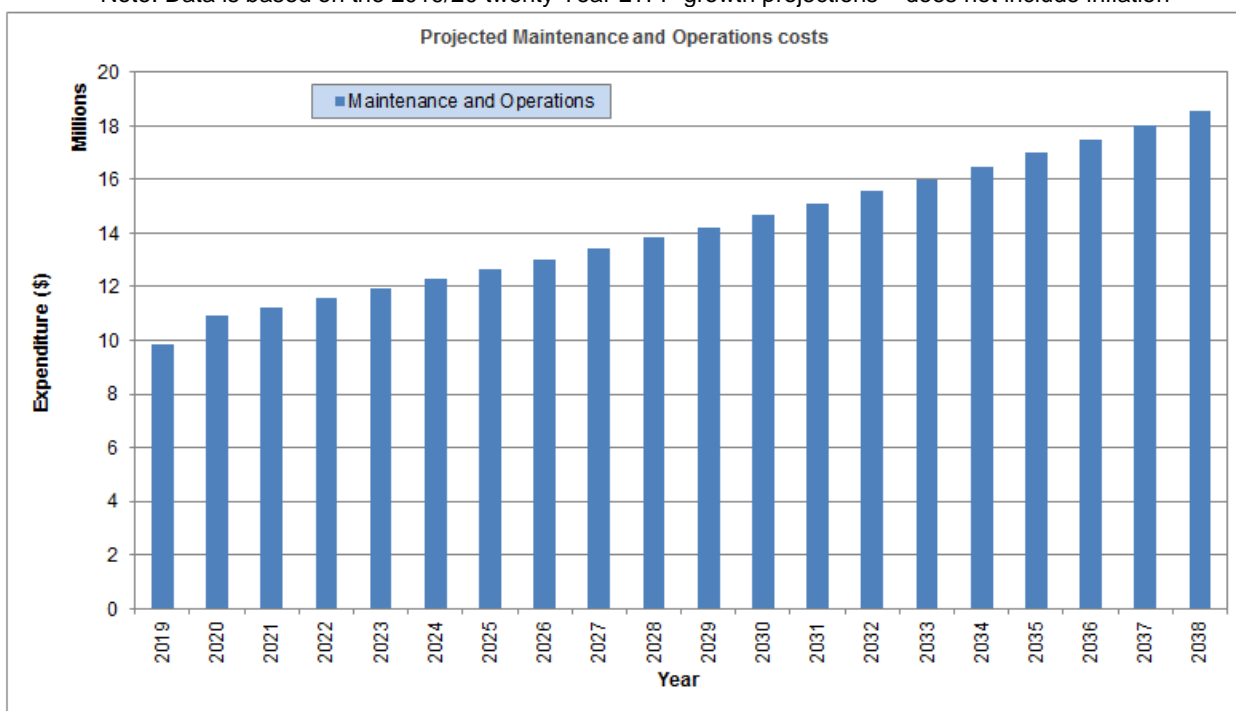
maintenance activities and their relationship to the other asset management activities. The work being undertaken includes defining and storing the associated procedures with PROMAP software

In support of this AMP, a Transport Asset Maintenance Management Plan will need to be developed for transport assets detailing the maintenance activities that are required to meet the agreed levels of service (*Improvement ref 3*). This Plan will include documenting the process and procedures, determining the resources required and the estimated cost to maintain the transport asset stock.

Using 2019/20 maintenance expenditures as the baseline/reference level, future operational and maintenance expenditure are forecasted as shown in Figure 12.

Figure 12: Planned 20 Year Operations and Maintenance Expenditure

Note: Data is based on the 2019/20 twenty Year LTFP growth projections – does not include inflation



Note that all costs are shown are in current 2019 dollar values. The costs shown include Western Power tariff charges but do not include works on the road reserve land, such as tree pruning, watering and verge maintenance as these costs are not currently separated.

The current maintenance expenditure level is considered inadequate to meet some of the required service levels such as response times. Shortage in maintenance funding continues to be investigated and is to be evaluated in conjunction with the development of the Maintenance Management Plan. The results of this work will inform future revisions of this AMP.

The current LTFP makes an allowance of a 3% increase in the annual operations and maintenance budget to trend in line with the increased value of the asset stock resulting from growth.

Deferred maintenance, i.e. works that are identified for maintenance and unable to be funded are to be included in the risk assessment process in the infrastructure risk management plan. These will be determined as part of the development of the Transport Asset Maintenance Management Plan (*Improvement ref 3*). There is currently no deferred maintenance works identified for consideration.

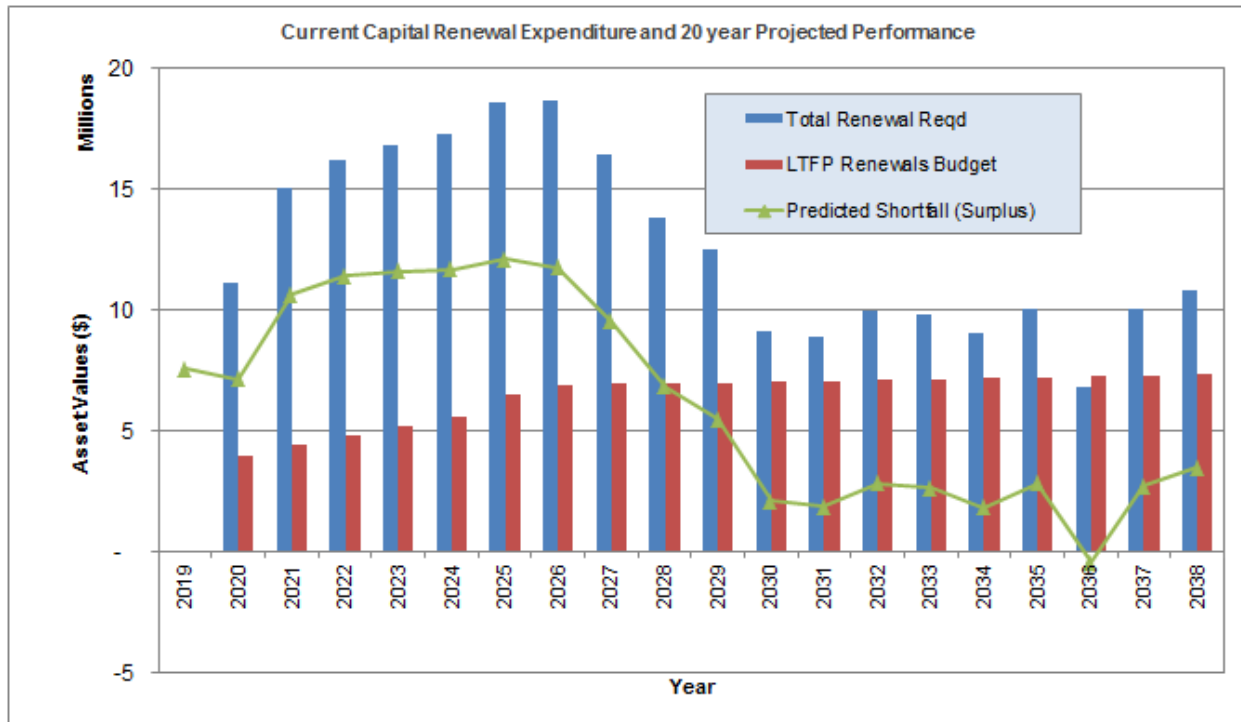
Improvements in the capture of maintenance expenditures and linking these to service levels is required to enable more accurate transport asset maintenance expenditure forecasts to be determined. The AMIS which is currently being procured will assist to address this shortcoming (*Improvement ref 1*).

5.3 Renewal

The City has a transport asset renewal program with annual allocations in the long term Capital Works Program to progressively renew or replace transport assets that have reached the end of their useful life. At present, deteriorating surface condition of roads, pathways and car parks primarily drives the renewal needs of the transport asset group.

The long term renewal demand requirement is derived from predictions made using available condition data and expected useful life of assets (refer Appendix B). Figure 13 shows the predicted annual renewal demand and the forecasted renewal funding allocation in the LTFP. The figure shows the resultant impact on the unfunded renewal requirement at the end of each financial year from the current renewal funding allocation in the LTFP. It should be noted that the LTFP beyond Year 7 may understate the value of New and Upgraded assets that will be inherited from developers, and as such may understate the Renewals demand from year 35 onwards. This will need to be further analysed into the future.

Figure 13: Predicted 20 Year Asset Renewal Demand and Funding



Instead of funding the spikes in renewal demand, the City’s plan is to progressively increase its renewal funding over the long term to address the shortfall. Renewals will be prioritised and wherever possible any assets that reach intervention levels will be maintained at a safe condition until such time funding availability catches up.

The annual asset renewal program is developed and prioritised based on the following criteria:

- the overall age and condition of the assets and its components,
- the ongoing maintenance demand,
- works being aligned where possible by location or locality (to take advantage of cost efficiencies through economies of scale). This will also have the effect of minimising inconvenience to residents in the area. This may result in an asset being renewed slightly before or after expiration of useful life, and
- community requests and concerns.

Renewal funding allocations are expended on a priority basis based on the condition of each asset. The assets identified for renewal in the following year’s budget are re-inspected to verify the accuracy of their remaining useful life estimate and to confirm if the assets are in fact due for renewal or if they can continue to provide adequate service prior to renewal.

Details of annual renewals projects are contained in the Transport Assets – Capital Sub Programs provided in Appendix E. The useful lives of each of the transport asset components, deterioration rate factors and the corresponding intervention condition level (which is an agreed trigger point at

which a renewal of the asset component will be required) used in the renewal prediction model and evaluations are as shown in Appendix B.

5.4 Disposal

Disposal requirements are assessed on an individual case-by-case basis. Replacement of Bus Shelters mainly drives the disposal requirements of this asset group, as the existing shelters are disposed of. There is currently no plan developed for the disposal of assets. An item has been added to the improvement plan (*Improvement ref 8*) to interrogate the database to determine a list of programed disposals.

In some instances, arterial roads (with a high traffic volume), warrant reclassification as a State Road and are potentially transferred to MRWA as a State administered road. Negotiations have progressed to the transfer to MRWA, the section of Ocean Reef Road (between the City of Joondalup boundary and Gnangara Road) and Gnangara Road (between Ocean Reef Road and the City of Swan boundary) on 1 July 2020. These road sections are scheduled to be removed from the City's asset register accordingly.

5.5 Standards and Specification

The standards and guidelines used in building, maintaining and renewing transport assets are listed below:

- Local Government Guidelines for Subdivisional Development (IPWEA, 2016).
- Austroads guides
- The City's Guidelines and Standard Drawings.
- MRWA Traffic Management for Works on Roads – Code of Practice
- Occupational Safety and Health Act 1984 (the OSH Act) and the Occupational Safety and Health Regulations 1996 (the OSH regulations)
- Australian Standards

6. RISK MANAGEMENT

An assessment of risks associated with service delivery from transport infrastructure assets has identified critical risks to the City in accordance with the City's Risk Assessment Criteria Matrix. The risks are summarised in Appendix H.

The risk assessment process identified the following:-

- credible risks,
- the likelihood of the risk event occurring,
- the consequences should the event occur,
- developing a risk rating,
- evaluating the risk, and
- developing a risk treatment plan for non-acceptable risks.

Critical risks identified in this plan, being those assessed as 'High' - items prioritised for corrective action. Other risks identified in this plan include those assessed as 'Moderate' - items requiring moderate corrective action and 'Low' – items requiring performance monitoring or corrective actions with a low priority rating subject to available resources.

6.1 Asset Criticality

Critical Assets

Critical assets are those assets which have a high consequence of failure but not necessarily a high likelihood of failure. By identifying critical assets and critical failure modes, organisations can target inspection activities, maintenance plans and capital expenditure plans at the appropriate time and level of importance. A list of critical transport assets are included in Appendix G.

Operations and maintenances activities target critical assets to prevent failure and maintain service levels. Critical assets failure modes and required operations and maintenance activities are detailed in Table 16.

Table 16: Critical Assets and Service Level Objectives

Critical Assets	Critical Failure Mode	Operations & Maintenance Activities
Underpasses	Collapse and partial collapse	Regular inspections to identify potential issues, maintenance or renewal work if required
Arterial Roads	Collapse or partial collapse	Arterial roads are inspected once per year.

7. FUTURE DEMAND

7.1 Demand Drivers

Drivers affecting demand include population change, changes in demographics, seasonal factors, vehicle ownership rates, consumer preferences and expectations, technological changes, economic factors, agricultural practices, environmental awareness, etc.

Demand for new services with respect to transport infrastructure will be in the form of requests associated with:-

- Local area traffic management schemes,
- District Distributor Road upgrades and extensions,
- Pedestrian and cycle path network expansion and upgrades,
- Addressing road safety issues and Blackspot accident sites, and
- Improved accessibility to public transport associated with pathway connections and the provision of bus shelters.
- New or existing facilities that require new or additional car parking areas.

7.2 Demand Management Plan

The City will need to ensure that the factors associated with future demand are considered in the planning and determination of the LTFP. Accordingly the City has prepared a Transport Strategy 2019/20 which is an over-arching document to develop a sustainable transport future. In addition, the City has strong liaison with the Public Transport Authority (PTA) and other State Government Agencies to improve the transport network in the City.

The present position and projections for demand drivers that may impact future service delivery and utilisation of assets including a Demand Management Summary are shown in Table 17.

Table 17: Demand Drivers, Projections and Impact on Services

Demand Drivers	Present Position	Projection	Impact on Services	Demand Management Plan
Population growth	206,860 (2020)*	348,880 (2041)*	Additional road traffic and heavy vehicle movements results in increased maintenance costs and decreased design life, along with demand for additional roads related infrastructure.	Continue to source non-Council funding e.g. from developer contributions or State/Federal Governments to reduce the impact of associated road infrastructure costs on local rate payers.
			Population increases, combined with above average percentages of children 0-18 years and elderly residents (over 65 year olds) will increase demand for pathways, particularly shared-use paths that are mobility scooter compatible.	Continue to source non-Council funding to reduce the impact of associated pathways infrastructure costs on local rate payers.
			Increased car traffic will reduce the safety of on-road cycling and walking, further increasing demand for additional pathways and traffic calming measures.	Continue to source non-Council funding to reduce the impact of associated pathways infrastructure costs on local rate payers.
			Increased population will increase demand for car parking spaces, particularly within town CBD areas.	
			Associated future subdivision development will result in additional new assets being handed over to Council from developers	

Demand Drivers	Present Position	Projection	Impact on Services	Demand Management Plan
Global change towards more sustainable living	1,237km of pathways	Increased pathways	Additional demand for pathways and cycleways is likely to be generated through increased acceptance of the environmental, financial, health and social benefits to walking and cycling.	Council to adapt to global changes towards sustainable living, and continuing to pursue funding grants for additional pathways infrastructure
Increased focus on accessibility	Pathways, carparks, bus shelters, pedestrian crossings – currently moderate level of consideration	Improved application of access considerations	Demand for wider pathways, improved pedestrian crossings, improved parking accessibility at new facilities	City to adapt towards improved design standards for accessibility

*Appendix D contains the latest population growth information.

Table 18: Demand Management Plan Summary

Service Impact	Demand Management Plan
Reduce reliance on the private motor vehicle for transportation	<ul style="list-style-type: none"> • Promote public transport around residential & commercial areas. • Improve connectivity and accessibility to the public transport system • Jointly fund the provision of bus shelters in alliance with PTA. • Identify and develop a program to upgrade existing pathways on major pedestrian connectivity networks to dual use standards. • Develop/improve/extend cycling and shared pathway network, connectivity, routes and facilities in accordance the City’s Cycle Plan (2018/19 – 2021/22). • Ensure that design of subdivisions complements the use of public transport.
Increased traffic volumes on road network due to population growth	<p>Tactically undertake upgrades to existing major routes to cope with anticipated increase in traffic loading. Ensure allocation of funding in the 20 year LTFP for the creation of new assets and upgrade of existing assets. Anticipated projects include:</p> <ul style="list-style-type: none"> • Lukin Drive dual carriageway upgrade – Marmion Avenue to Connolly Drive. • Pinjar Road dual carriageway upgrade – Joondalup Drive to Flynn Drive. • Joondalup Drive dual carriageway upgrade – Tumbleweed Drive to Old Yanchep Road. • Flynn Drive – Wanneroo Road to Old Yanchep Road
Expansion of Industrial and commercial areas of Neerabup Industrial Estate, Yanchep Industrial Estate, Wangara/Landsdale Industrial Area	<p>Tactically undertake upgrades to existing major routes to support growth in industrial areas. Ensure allocation of funding in the 20 year LTFP for the creation of new assets and upgrade of existing assets. Anticipated project required include:</p> <ul style="list-style-type: none"> • Flynn Drive road upgrade - Mather Drive to Old Yanchep Road. • Gnangara Road upgrade – Wanneroo Road to Mirrabooka Ave. <p>Upgrading of existing roads in the Neerabup Industrial Estate and Yanchep Industrial Estate to urban standards.</p> <p>Encourage and monitor heavy vehicles routes to ensure they utilise state controlled roads ensuring the industrial areas have access to major roads.</p> <p>Entry restriction for lower class roads to maintain life cycle costs.</p> <p>Support alternative delivery and access arrangement for local business activities.</p>
Increased traffic volumes on road network due to population growth as part of the East	<p>Undertake upgrades to existing major routes to cope with the anticipated increase in traffic volumes and allocate funds in the 20 year LTFP for the creation of new assets and upgrade of existing assets. Anticipated projects include:</p> <ul style="list-style-type: none"> • Lenore Road dual carriageway upgrade – Kemp Street to High Road.

Service Impact	Demand Management Plan
Wanneroo Structure Plan	<ul style="list-style-type: none"> • Franklin Road upgrade – High Street to Caporn Street. • Caporn Street upgrade – Pinjar Road to Franklin Road. • Pinjar Road dual carriageway upgrade – Joondalup Drive to Flynn Drive.
Impact of increased traffic volumes on major intersections and potential speeding on local roads in residential areas	<ul style="list-style-type: none"> • Introduce new or modified traffic control systems at congested intersections. • Undertake local area traffic management schemes to address speeding on local roads in accordance with the City’s Local Area Traffic Management Policy (LATMP). • Provision of annual funding to address local traffic management schemes. • Ensure traffic management and potential speeding issues are addressed early as part of the subdivisional planning process for the area.
Impact of urban growth on existing rural roads	<p>Tactically undertake upgrades to existing rural standard roads impacted on as a result of urban development. Ensure allocation of funding in the 20 year LTFP for the upgrading of rural roads as detailed below:-</p> <ul style="list-style-type: none"> • Badgerup Road – Ocean Reef Road to Trichet Road/Hawkins Road. • Sydney Road – Ocean Reef Road to Ross Street. • Rousset Road extension – Lakeview Street to Coogee Road. • Trichet Road – Franklin Road to Hawkins Road
Increase in asset stock as a result of growth and expansion	<ul style="list-style-type: none"> • Increase maintenance budget to cope with transport network expansion associated with the East Wanneroo Structure Plan and sub-divisional development across the City. • Ensure adequate capital asset renewal funding is available in the LTFP. • Upgrading of car park facilities to accommodate increase in demand particularly at sporting venues. • Additional assets from the incremental development of the North-West sub-region network as identified in the ‘Perth and Peel@3.5million: The Transport Network’.

The City also continues to advocate for projects that aim to reduce travel time such as the extension of the Mitchell Freeway north.

It is intended to develop a Transport Plan (*Improvement ref 4*) for the City as the next level of detail of the Transport Strategy. Whilst the Strategy is intended to be a broad high-level strategic document, its eight principles will be progressed in the future through a more detailed Transport Plan. This plan will outline key actions and measures to implement the Strategy.

Project details are provided in the respective Roads, Traffic Treatments and Paths & Trails Capital Works Sub-Programs.

8. FINANCIAL SUMMARY

This section contains the current financial requirements resulting from all the information presented in the previous sections of this AMP. The financial projections will be updated as further information becomes available.

8.1 Fair Value

The value of depreciable transport infrastructure as at 30 June 2019 is summarised below. Assets have been valued at brownfield rates. Revaluations for financial purposes are conducted once every 3 years. Depreciated Replacement Costs are calculated using straight line depreciation methods.

Table 19: Transport assets depreciable values

Transport Asset Component	Replacement Cost (\$)	Current Replacement Cost (Depreciated Replacement Cost) (\$)	Predicted Depreciation Expense 2019/20
Road – Pavement	393,266,736	294,367,045	4,228,454
Road – Seal	204,555,952	114,037,966	6,834,357
Road – Kerb	180,670,490	125,154,448	3,271,988
Pathway Assets	185,468,110	137,322,476	2,758,594
Carpark Assets	29,699,806	19,063,771	535,535
Street Furniture	2,604,900	1,511,142	51,968
Bridge Structures	10,000,000	7,400,000	100,000
Grand Total	1,006,265,993	698,856,850	17,780,898

8.2 Key Performance Indicators

The key asset performance indicators for the transport asset class are shown in Table 19 below.

Table 20: Asset Ratios as at 30 June 2019

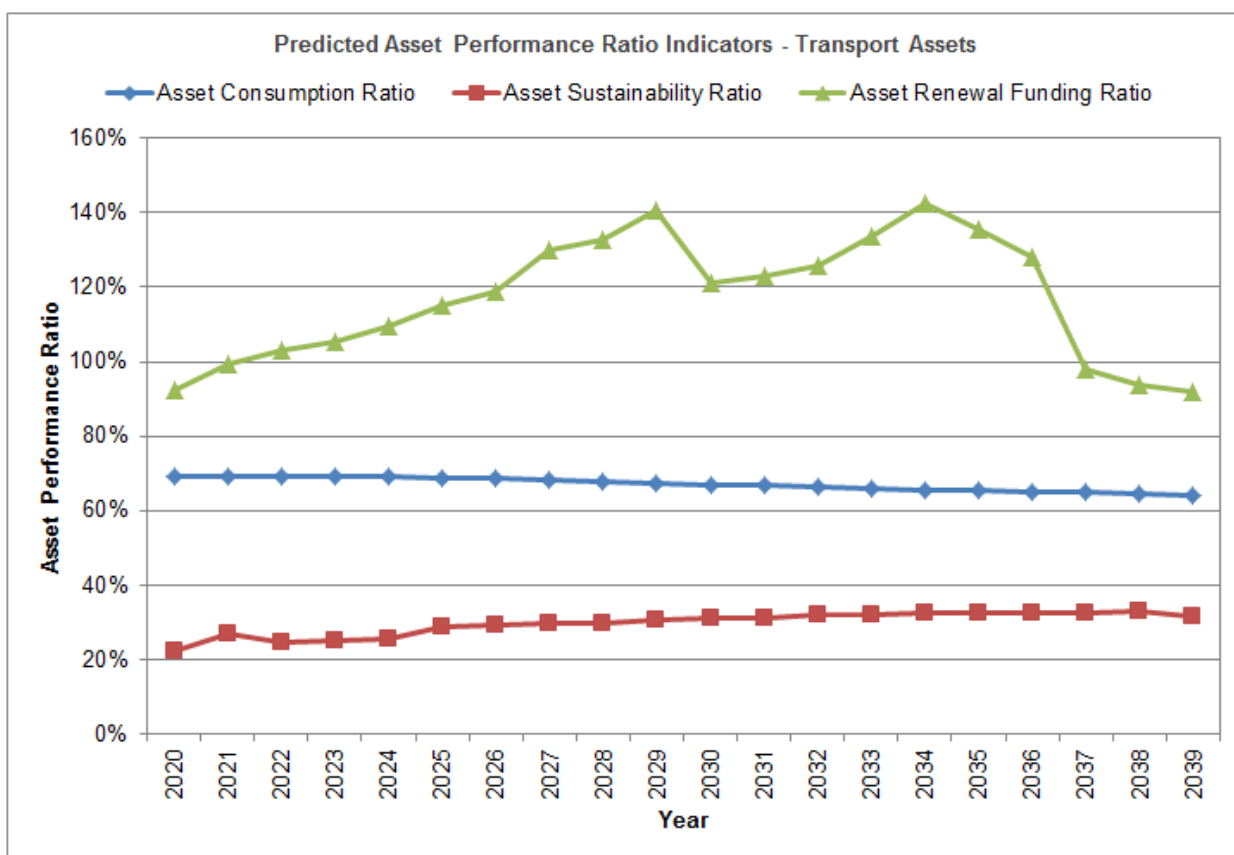
Key Performance Indicator	Measure	Ratio
Asset Consumption Ratio (ACR)	$\frac{\text{Depreciated Replacement Cost}}{\text{Replacement Cost}}$	69.4%
Asset Sustainability Ratio (ASR)	$\frac{\text{Capex on Renewal \& Replacement}}{\text{Depreciation Expense}}$	22.4%
Asset Renewal Funding Ratio (ARFR)	$\frac{\text{Net Present Value (NPV) of Planned Capital Expenditure on Renewals}}{\text{NPV of required capital expenditure on renewal over a ten year period}}$	92.4%

On their own, the ratios do not provide very useful output. However, when the ratios are measured over a period of time, they provide valuable information for the City to understand how well the current financial plan is meeting its long term renewal demand obligations.

It is considered that the City's results are not unusual for a City with high growth (represented by high upgrade and expansion expenditures) and a major proportion of its assets in the early stages of their life (particularly with long life road pavements) coupled with new gifted assets from land development.

Figure 14 below details the long term performance of these ratios, using the current 2019/20 budget and the 2019/20 draft LTFP, measured against the asset renewal demand predictions.

Figure 14: Predicted Asset Performance Ratios as a result of the current LTFP



The **ACR** is estimated at 69.4% in 2019/20 due to a large stock of assets being relatively new. This ratio is likely to remain within the 60% – 70% range due to a high level of new transport assets gifted to the City through land development.

The **ASR** is estimated at 22.4% in 2019/20 with projected ratios ranging from 24% to 34% over the 20 year planning period. The Department of Local Government, Sport and Cultural Industries (DLGSCI) explains that a ratio of 100% indicates that asset stock is being replaced at a sustainable level but also recognises this figure may be 50% or less when asset portfolios are young. With the City's current mix of old and new assets and continued high growth, the ASR figure is expected to

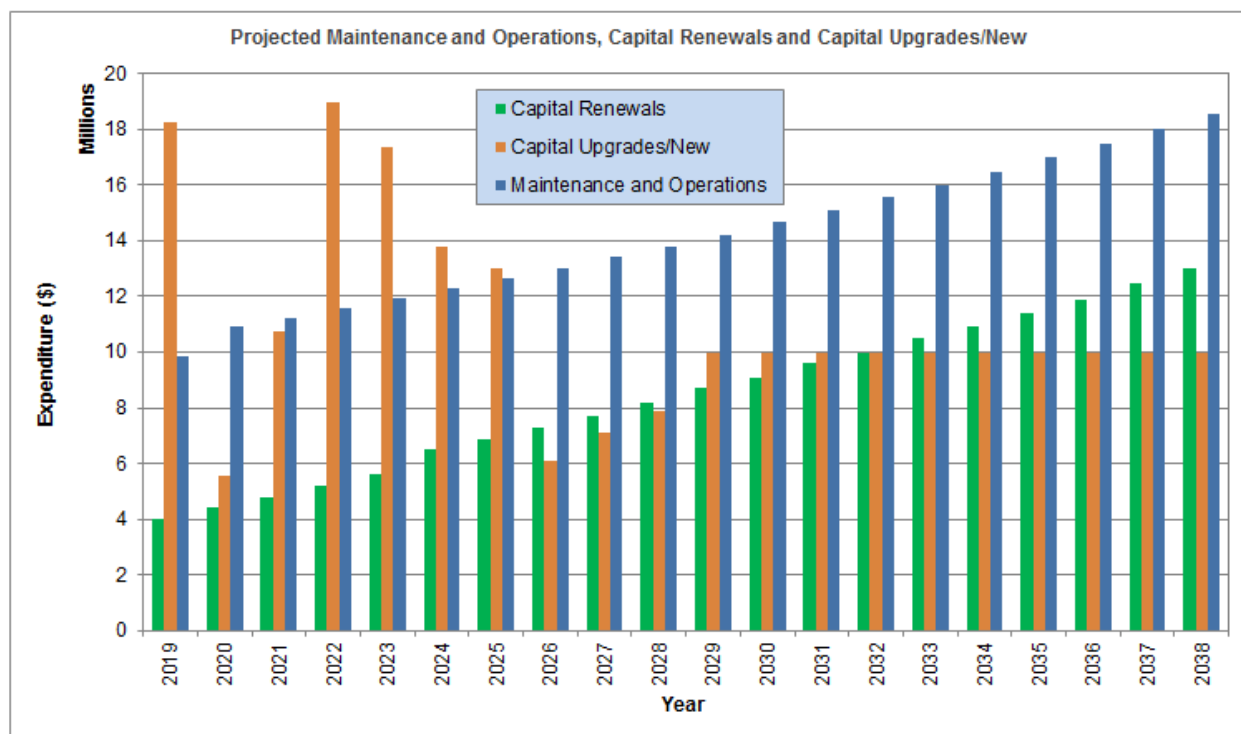
remain low. As growth declines and the asset stock ages, this ratio is expected to increase to values equivalent to fully established Local Governments.

The **ARFR** is estimated at 92.4% in 2019/20 and shows a steady rise until 2029 when it peaks at 140.7. This suggests that adequate funds are being allowed for in the LTFP to meet the increase in asset renewal demand. This ratio will vary from year by year, potentially creating different short term and long term renewal funding needs

8.3 Current Funding Levels

The financial expenditure projections for transport assets are shown in Figure 15 below.

Figure 15: 20 Year Planned Expenditure for Transport Assets



The predicted 20 year maintenance and operations cost figures are expected to increase as the cost to maintain existing assets increases. These costs are also inclusive of an estimated 3% annual increase to allow for growth and material costs.

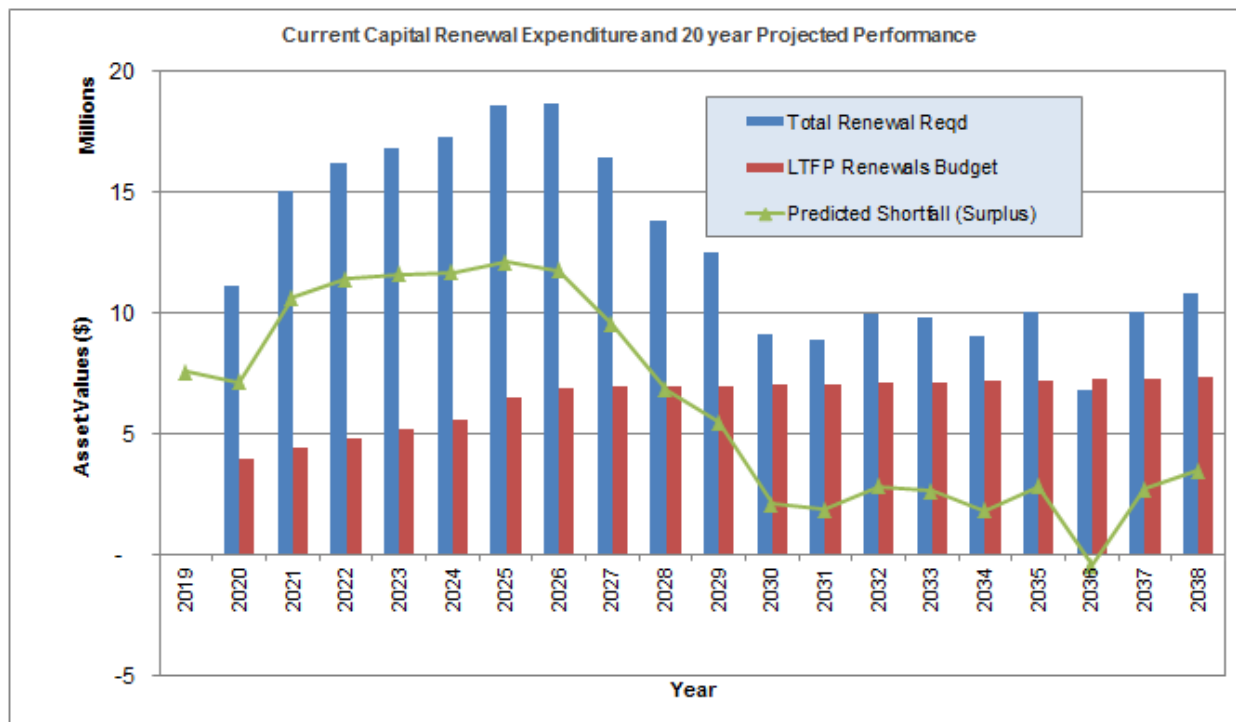
The capital cost for upgrades and new assets shows high figures between 2019 and 2025. These increased costs are for identified major road dualling projects to cater for increasing traffic volumes on the City’s network. From 2029 onwards as details of future projects are not yet known, placeholder projects have been included with predicted annual expenditures based on the average of historical expenditure trends. These figures will be updated as more information about future projects becomes available.

The funding strategy associated with capital asset renewal is further discussed in the next section.

8.4 Funding Gap Analysis

The predicted impact of the current renewal expenditure in the LTFP is depicted in Figure 16 including the predicted magnitude of resultant unfunded renewals in future years.

Figure 16: Current Capital Renewal Expenditure and 20 year Projected Performance



Instead of funding the spikes in renewal demand, the City's plan is to progressively increase its renewal funding over the long term to address the shortfall. Renewals will be prioritised and wherever possible, assets that reach intervention levels will be maintained at a safe condition until such time funding availability catches up.

Based on the current predicted deterioration patterns, the magnitude of unfunded renewals is predicted to surpass \$7.0M from 2020 onwards and peak to 12M in 2025 before starting to fall from 2026 onwards.

It is anticipated that there will be significant increases in the renewal demand requirement after the first 20 years (i.e. after year 2038) due to the ongoing aging of the transportation network.

The City will closely monitor the impact of future demands every year to ensure that appropriate renewal funding strategies are put in place to meet the growing predicted renewal demand and ensure that the magnitude of any funding shortfall continues to be kept at manageable levels.

Renewal funding allocations will be expended on a priority basis based on the condition of each asset as outlined in Section 5, Life Cycle.

8.5 Funding Sources

Current funding sources available for transport assets include:

- The City's rates,
- Depreciation (collected through rates),
- Grants - Metropolitan Regional Road Group, Roads to Recovery and Better Regions Funding Program,
- Developer Contributions - through Town Planning Schemes,
- Loans, and;
- Reserves.

8.6 Conclusions and Recommendations

The impact of the deferral of renewals and the ability of transport assets to still provide the required level of service will continue to be assessed. Although the deferral of some renewal works may not impact significantly on the short-term operation of the assets, repeated deferral is likely to create a liability in the longer term. These will be monitored regularly for risk with appropriate maintenance measures put in place.

9. IMPROVEMENTS, MONITORING AND REVIEW

9.1 Performance Monitoring

The effectiveness of the AMP can be measured in the following ways:

- The degree to which the identified cash flow predictions are incorporated into the LTFP and Strategic Community Plan (SCP).
- The degree to which the 1 to 5 year detailed works programs, budgets, business plans and organisational structures take into account the overall works program trends provided within this plan.
- Delivery of better services as a result of improved efficiencies in the management of assets.
- Reporting results against the Department of Local Government's Integrated Planning Framework and using this information to better inform decision making.
- Achieving the intended outcomes of the improvement plan.

9.2 Improvement Plan

The asset management improvement plan generated from this AMP is shown in Table 20. Comments have been added on the City's progress since the initial Roads and Pathways AMP adopted in 2010.

9.3 Review Procedures

This plan has a life of four years whereby a comprehensive review will be undertaken following this period and will be endorsed by the Asset Management Steering Group.

It is intended that this AMP is a live document which is relevant and integral to the daily asset management activities at the City. To ensure the plan remains useful and relevant, the following process of monitoring and review activities will be undertaken subject to availability of resources:

- Review the plan annually to reflect changes to work programs, outcomes of service level reviews and incorporate new knowledge resulting from the AM improvement program;
- Quality assurance audits of AM information to ensure the integrity and cost effectiveness of data collected;
- Benchmarking with comparable councils – maintain performance of Asset Management practices in comparison to other Local Governments.

The annual and LTFP projections for transport infrastructure assets detailed in this plan have intentionally been included in the Appendices. This is to allow for these individual sections of the Appendices to be updated individually (without affecting the core AM practices of the Plan) on an annual basis and extracted to inform the long term planning for this class of asset. Until such time a full review of this Plan is undertaken, the core data included in this plan is located in HPE 20/389609 and will be updated as new versions annually to inform the LTFP.

Table 21: Improvement Plan

AM – Assets Maintenance, LD – Land Development, SAM – Strategic Asset Management, ICW – Infrastructure Capital Works, CIS - Customer & Information Services, TS – Traffic Services

Task No	Task	Responsibility	Resources Required	Proposed Completion date	Progress Comment
1.	Acquisition of an AMIS to enable asset data to be stored in a corporate system.	CIS & Assets including SAM	Internal	2020/21	This is being progressed as part of the Enterprise Software Renewal Program.
2.	Improve the measurement of relevant service levels through the increased capture and analysis of relevant data.	CIS via new CRM system	Internal	2022/23	Extracting data from categorized CRM's for analysis has proven to be difficult. 2019 update: The City is in the process of acquiring a new system for CRM's as part of the Enterprise Software Renewal Program.
3.	Define and formalise intervention levels for maintenance activities on transport infrastructure assets	AM	Internal	2020/21	Assets Maintenance plans to develop a Transport Infrastructure Maintenance Management Plan in 2020/21.
4.	Develop a Transport Plan to support the Transport Strategy 2019/20	TS	Internal	Pending resourcing	Not started
5.	Investigate and document issues and benefits of upgrading of the lighting network (or portions thereof) to LED in conjunction with Western Power.	TS, LD and SAM	Internal Western Power	Pending resourcing	In progress, the suburb of Wanneroo has been investigated and the draft report (refer to HPE 20/292688) shows significant upgrades (approx. \$3 million) are required.

Task No	Task	Responsibility	Resources Required	Proposed Completion date	Progress Comment
6	Formalise the condition rating cycle to a 3 years and document the methodology to be used in determining what is done when and how it is done. Undertake high-speed data (HSD) survey of arterial road network every 5 years to collect data on roughness, rutting, texture, location data and imagery data (every 10 meters).	SAM and EM	Internal	2020/21	In progress
7	Develop a process and procedural documentation to support the AM system for transport assets. Establish ownership and accountabilities – ISO55000	SAM, TS, EM, LD & ICW	Internal	2021/22	Not started
8	Develop a program for disposal of assets	SAM, TS & EM	Internal	2021/22	Not started
9	Formalise an agreement with MRWA for the inspection of the City's underpasses	SAM & EM	Internal	2020/21	In progress

10. REFERENCES

Council Asset Management Related Documents

- Asset Management Policy (HPE #16/106984)
https://www.wanneroo.wa.gov.au/downloads/file/80/asset_management_policy
- Asset Management Strategy (HPE #16/279441)
https://www.wanneroo.wa.gov.au/downloads/file/3254/asset_management_strategy_-_2018
- Corporate Business Plan (CBP) (HPE #19/377777)
https://www.wanneroo.wa.gov.au/downloads/file/2643/corporate_business_plan_201718_-_202021
- Long Term Financial Plan (LTFP) (HPE#18/512338)
https://www.wanneroo.wa.gov.au/downloads/file/3265/long_term_financial_plan_201920%E2%80%93203839
- Strategic Community Plan (SCP) (HPE #17/361793)
<https://www.wanneroo.wa.gov.au/strategiccommunityplan>
- Local Area Traffic Management Policy (06/01/2020) (HPE #16/83026(v2))
<https://intranet.wanneroo.wa.gov.au/documents/82/local-area-traffic-management-policy>
- Public Guidance Signage In Road Reserves Policy (HPE #19/97166)
<https://intranet.wanneroo.wa.gov.au/documents/85/public-guidance-signage-in-road-reserves-policy>
- Roadside Memorials Policy (HPE #13/22783v3)
<https://intranet.wanneroo.wa.gov.au/documents/87/roadside-memorials-policy>
- Roadworks Excavation within Road Reserves Policy (HPE #18/488322)
<https://intranet.wanneroo.wa.gov.au/documents/88/roadworks-excavation-within-road-reserves-policy>
- Bus Stop Infrastructure Policy (HPE #16/191696)
<https://intranet.wanneroo.wa.gov.au/documents/1444/bus-stop-infrastructure-policy>
- Verge Treatments - Protective Devices Policy (HPE #12/68459[v3])
<https://intranet.wanneroo.wa.gov.au/documents/90/verge-treatments-protective-devices-policy>
- Street Tree Policy (HPE #18/550071)
<https://intranet.wanneroo.wa.gov.au/documents/89/street-tree-policy>

Council Planning Documents

- City of Wanneroo Transport Strategy 2019/20 (HPE #19/365476)
http://www.wanneroo.wa.gov.au/downloads/file/3447/transport_strategy
- City of Wanneroo Cycle Plan (2018/19 - 2021/22) Dec 2018 (HPE #18/511133)
- City of Wanneroo, Disability Access and Inclusion Plan 2016-2019 (DAIP) (HPE 15/555335)
- Community Satisfaction Survey 2017 - City of Wanneroo
- Population Forecast - City of Wanneroo Community Profile (.id population experts website - <http://profile.id.com.au/wanneroo/population>)

Asset Management Guidance

- 'Practice Note 1: Footpaths & Cycleways', IPWEA – v2 2014.
- 'Practice Note 11: Street Lighting', IPWEA – 2014.
- 'Practice Note 2: Kerb & Channel (Gutter)', IPWEA – v2 2014.
- 'Practice Note 6: Long Term Financial Planning', IPWEA – 2012.
- IPWEA, 2015, 'Australian Infrastructure Financial Management Manual', Institute of Public Works Engineering Australia – 2nd Edition, 2015.
- IPWEA, 2015, 'International Infrastructure Management Manual', Institute of Public Works Engineering Australia - 5th Edition 2015.

Others

- City of Wanneroo Risk Assessment Criteria Matrix (HPE #19/216037).
- Australian Accounting Standards Board – publications and standards.
- Australian Standards AS ISO 55001 Asset Management System Guidelines 2014.
- Catalyse Pty Ltd, July 2017. 2017 Community Scorecard: City of Wanneroo.
http://www.wanneroo.wa.gov.au/downloads/file/2607/community_satisfaction_survey_2017
- Government of Western Australia, Towards Zero Road Safety Strategy 2008 – 2020,
<http://www.ors.wa.gov.au/Towards-Zero.aspx>
- Guidelines for Determining and Assigning Responsibility for Roads in Western Australia – MRWA (Updated August 2011).
<http://www.mainroads.wa.gov.au/UnderstandingRoads/Facts/Pages/Facts.aspx#classification>
- Integrated Planning and Reporting Framework and Guidelines – Government of Western Australia, Department of Local Government September 2016.
- Liveable Neighbourhoods Planning Document – WA Planning Commission (WAPC).
- Part 1 Policy For Classification, Proclamation And Transfer of Western Australian Roads
- Part 2 Administrative Classification Assessment Criteria
- Western Australian Planning Commission, Perth to Peel@3.5million: The Transport Network, March 2018.
- State Road Funds to Local Government Agreement:
<https://www.mainroads.wa.gov.au/globalassets/technical-commercial/local-government-funding/state-road-funds-to-local-government-agreement-2018-19-to-2022-23.pdf>

11. GLOSSARY OF TERMS AND ABBREVIATIONS

Definitions: The following terms are used in this AMP.

“Assets” are future economic benefits controlled by the City as a result of a past transaction or event whereby:

- Its value can be measured reliably, and;
- Its value must exceed a stated materiality threshold being \$5,000 or form part of a network asset group, and;
- It must be probable that future economic benefits of the asset will eventuate (i.e. the asset acquired supports the delivery of Council services to the community in line with its objectives).

ISO 55000 defines an **‘Asset’** as an item, thing or entity that has potential or actual value to the organisation

“Asset Management” refers to the combination of management, financial, economic, engineering and other practices applied to assets from their planning, acquisition, operation, maintenance, replacement and disposal, to ensure that the assets meet the priorities of the Strategic Community Plan with the objective of providing the required level of service in the most cost-effective manner.

ISO 55000 defines an **‘Asset Management’** as the coordinated activity of an organisation to realise value from assets

“AM Plan” (Asset Management Plan or AMP) refers to documented information that specifies the long term plan, activities, program, time scales and resources applied to specific individual major, critical assets or a grouping of assets to provide a defined level of service over the lifecycle of the asset. An AMP covering a grouping of assets (or asset classes) is referred also as an **Asset Class Plan**.

“Asset Class Plan” or **‘ACP’** refers to an AM Plan that covers a class of assets, grouping of assets or a network of assets as opposed to a specific individual major or critical asset.

“AM Information System” or **‘AMIS’** refers to a dedicated AM Computer Software program and associated systems to support effective and efficient data management that is integrated with other key property and finance management software systems of the organisation.

“AM Strategy” means a strategy or approach for asset management.

“Council” means the elected council (comprising Councillors) of the City.

“Depreciation” is a systematic charge that recognises the wearing out or consumption of the non-current asset over its useful life.

“Infrastructure” comprises the asset sub-classes defined in section 5 of the AMS and Guidelines issued by the Department of Local Government.

“Level of Service” describes the outputs or objectives of the activity the City intends to deliver to the customer. Service levels usually relate to quality, quantity, reliability, responsiveness, statutory functional requirements, environment, acceptability and cost.

“Life Cycle” means the phases of activities that an asset goes through, including planning, design, construction, acquisition, operation, maintenance, rehabilitation and disposal.

“Maintenance” means regular ongoing day-to-day work necessary to keep an asset operating to achieve its optimum life expectancy.

“Maintenance Management Plan” refers to documented information that specifies the lifecycle activities and processes that are required on a day to day, periodical or annual basis to ensure the safe and intended function of the assets is maintained.

“Operations” means the regular activities to provide public health, safety and amenity and to enable the assets to function e.g. road sweeping, grass mowing, and cleaning, street lighting and graffiti removal.

“Renewal” means works to upgrade an asset, refurbish an asset or the replacement of part(s) of an asset to ensure continuing equivalent capacity or performance capability.

“Replacement” means the complete replacement of an asset that has reached the end of its life, to provide a similar or agreed alternative, level of service.

“Replacement Cost” means the cost of replacing an existing asset with an identical new asset.

“Risk” means probability and consequence of an event that could impact on the Council’s ability to meet its corporate objectives.

“Strategic Community Plan” is documented information that specifies how organisational objectives in the SCP are to be converted into AM objectives, the approach for developing AMPs, and the role of the AMS in supporting the achievement of the AM objectives.

“Stakeholders” are those people/sectors of the community that have an interest or reliance upon an asset and who may be affected by changes in the level of service of an asset.

“Upgrade” means enhancing an existing asset to provide higher level of service.

“Whole of Life Cost” refers to the total cost of an asset throughout its life cycle.

Abbreviations

ACP – Asset Class Plan

AM – Asset Management

AMP – Asset Management Plan

AM Policy – Asset Management Policy

AM Strategy – Asset Management Strategy

AM Framework – Asset Management Framework

AMS – Asset Management System

AMIS – Asset Management Information System

AMSG – Asset Management Steering Group

DLGSCI – Department of Local Government, Sport and Cultural Industries

GIS – Geographical Information System

IIMM – International Infrastructure Management Manual

IPR – Integrated Planning Framework

IPWEA – Institute of Public Works Engineering Australia

LTFP – Long Term Financial Plan

MMS – Maintenance Management Plan

WALGA – West Australian Local Government Association

APPENDIX A: CITY'S ASPIRATIONS

ASPIRATION 1: Society - Healthy, safe, vibrant and connected communities		
Objective	Strategies	How Objectives are addressed in AM Plan
1.1 - Healthy and Active people	1.1.1 Create opportunities that encourage people to be active and healthy	<p>Undertake prompt repairs and maintenance of damaged transport assets and optimise serviceability and usability of the transport network.</p> <p>Implement a range of traffic, cycling and pedestrian safety initiatives, including addressing accident blackspots and traffic trouble spots and to improve the standard of the road and pathway network and user behaviour.</p> <p>Undertake regular pathway inspections of high pedestrian trafficked areas like the Wanneroo Town centre, near schools, shopping centres and near neighbourhood centres.</p>
ASPIRATION 3: Environment - A healthy and sustainable natural and built environment.		
Objective	Strategies	How Objectives are addressed in AM Plan
3.5 – Connected and Accessible City	<p>3.5.1 Deliver local transport infrastructure including roads, footpaths and cycle ways to improve accessibility</p> <p>3.5.2 Connect walking and cycling opportunities to key destinations and distinctive places</p> <p>3.5.3 Advocate for major integrated transport options close to communities</p>	<p>Continue to implement a road and pathway network to maximise neighbourhood connectivity and support a range of transport options in both existing areas and future land development.</p> <p>Undertake transport analysis on a neighbourhood district basis to determine future infrastructure needs.</p> <p>Provision of adequate funding towards road and pathway expansion needs as a result of growth including seeking alternative funding sources like government grants and developer contributions in order to achieve this.</p> <p>Provision of infrastructure in support and promoting public transport services and alternative transport options.</p> <p>Provide adequate funding and resources for maintenance and renewal of existing transport network of assets.</p>

ASPIRATION 4: Civic Leadership - Working with others to ensure the best use of our resources.		
Objective	Strategies	How Objectives are addressed in AM Plan
4.2 – Good Governance	<p>4.2.1 Provide transparent and accountable governance and leadership</p> <p>4.2.2 Provide responsible resource and planning management which recognises our significant future growth</p> <p>4.2.3 Ensure return on investment and well maintained assets through development and implementation of a strategic asset management framework</p>	<p>Develop and apply asset management principles to support the management and maintenance of infrastructure assets.</p> <p>Maintain an accurate asset database and the provision of asset performance data to enable informed decisions making.</p> <p>Implement a program for condition monitoring and inspection activities to assess asset performance.</p> <p>Continuous review and improvement of the quality of AM practices and updating this AM Plan.</p> <p>Incorporate opportunity for regular stakeholder feedback through targeted KPI's</p> <p>Providing a defined level of service, monitoring performance and implementing initiatives to improve efficiency and effectiveness.</p> <p>Ongoing stakeholder consultation to establish and confirm service standards.</p> <p>Analyse and identify long term asset renewal demand in support of long term financial planning.</p> <p>Ensure services are delivered at the right price and quality.</p> <p>Seek and maximise alternative funding opportunities, such as grants, for the provision, maintenance and operating of transport infrastructure assets.</p>

APPENDIX B: LIFECYCLE COST PARAMETERS

Road Asset Component	Unit	Unit Rate (\$)	Deterioration Factor, N	Intervention Condition	Asset Economic Life (years)	Asset Useful Life
Road Pavement (High Traffic)	m2	33.8	1.8	7	85	75
Road Pavement (Low Traffic)	m2	29.4	1.8	8	100	94
Road Seal - Asphalt (High Traffic)	m2	19.7	1.8	7	25	22
Road Seal - Asphalt (Low Traffic)	m2	17.1	1.8	8	30	28
Road Seal - Paved (High Traffic)	m2	71	1.5	7	40	33
Road Seal - Paved (Low Traffic)	m2	61.8	1.5	8	40	36
Road Seal - Spray Seal (High Traffic)	m2	15.8	1.8	7	18	15
Road Seal - Spray Seal (Low Traffic)	m2	9.9	1.8	8	20	18
Road Kerb	m	70	1.5	8	55	50
Car park Pavement (Sealed)	m2	29.4	1.8	9	85	83
Car park Seal (Asphalt)	m2	19.7	1.5	9	25	24
Car park Seal (Paved)	m2	60	1.5	9	40	38
Car park Seal (Spray Seal)	m2	15.8	1.5	9	18	17
Car park kerbing	m	70	1.8	9	50	49
Car park Lighting	each	1840	1.5	9	33	31
Pathways (Concrete)	m2	62.1	1.8	8	70	66
Pathways (Asphalt/Bitumen)	m2	42	1.8	8	30	28
Pathways (Brick)	m2	58.9	1.8	8	50	47
Pathways (Limestone)	m2	17	1	8	25	20
Road Bridge (Underpass)	each	2,000,000	2	8	100	96
Bus Shelters (Concrete)	each	6,000	1.5	9	50	48
Bus Shelters (Steel)	each	10,000	1.5	9	50	48
Bus Shelters (Tin)	each	500	1.5	9	30	29
Bus Shelters (Adshel)	each	10,000	1.5	9	50	48
Bus Shelters (COW)	each	10,000	1.5	9	50	48
Bus Shelters (PTA)	each	10,000	1.5	9	50	48
Street Lighting	each	1,820	1.5	8	33	30

APPENDIX C: GENERIC DESCRIPTION OF ASSET CONDITION RATINGS

Condition Rating	Generic Description of asset condition
0	A new asset or an asset recently rehabilitated back to new condition.
1	A near new asset with no visible signs of deterioration often moved to condition 1 based upon the time since construction rather than observed condition decline.
2	An asset in excellent overall condition. There would be only very slight condition decline but it would be obvious that the asset was no longer in new condition.
3	An asset in very good overall condition but with some early stages of deterioration evident, but the deterioration still minor in nature and causing no serviceability problems.
4	An asset in good overall condition but with some obvious deterioration evident, serviceability would be impaired very slightly.
5	An asset in fair overall condition deterioration in condition would be obvious and there would be some serviceability loss.
6	An asset in Fair to poor overall condition. The condition deterioration would be quite obvious. Asset serviceability would now be affected and maintenance cost would be rising.
7	An asset in poor overall condition deterioration would be quite severe and would be starting to limit the serviceability of the asset. Maintenance cost would be high
8	An asset in very poor overall condition with serviceability now being heavily impacted upon by the poor condition. Maintenance cost would be very high and the asset would at a point where it needed to be rehabilitated.
9	An asset in extremely poor condition with severe serviceability problems and needing rehabilitation immediately. Could also be a risk to remain in service
10	An asset that has failed which is no longer serviceable and should not remain in service. There would be an extreme risk in leaving the asset in service.

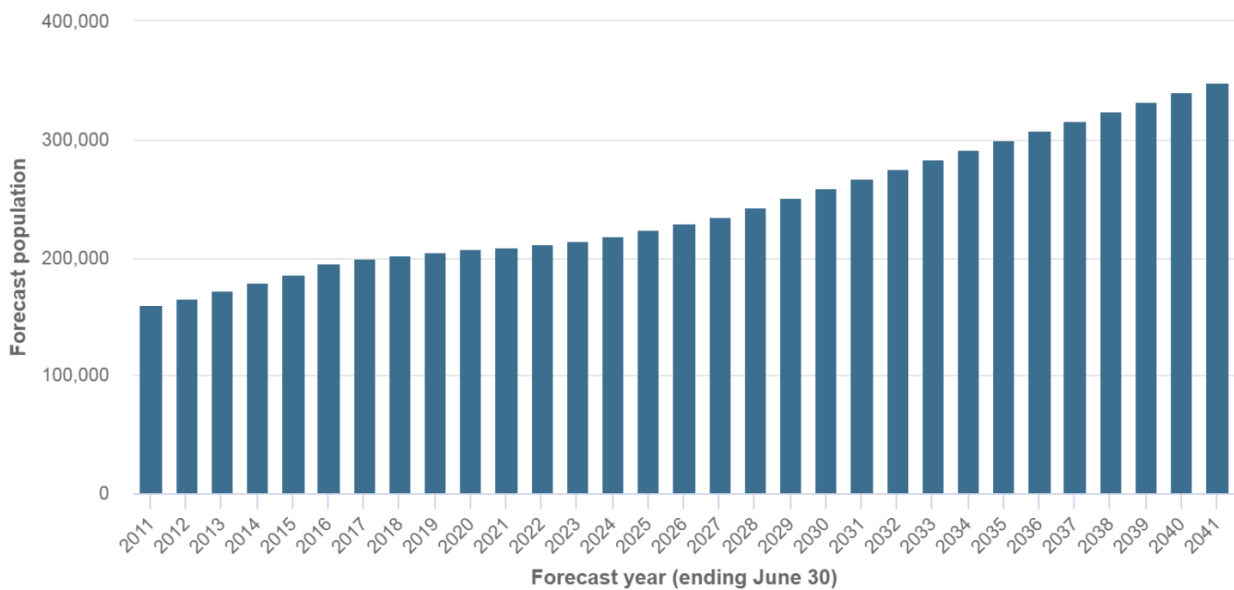
APPENDIX D: POPULATION FORECASTS/DEMOGRAPHIC

The City's demographic information and analysis is provided by .id are based on results from the 2020, 2016, 2011, 2006, 2001, 1996 and 1991 Australian Bureau of Statistics Censuses of Population and Housing (<https://forecast.id.com.au/wanneroo>).

Population forecast to 2041

Forecast population

City of Wanneroo



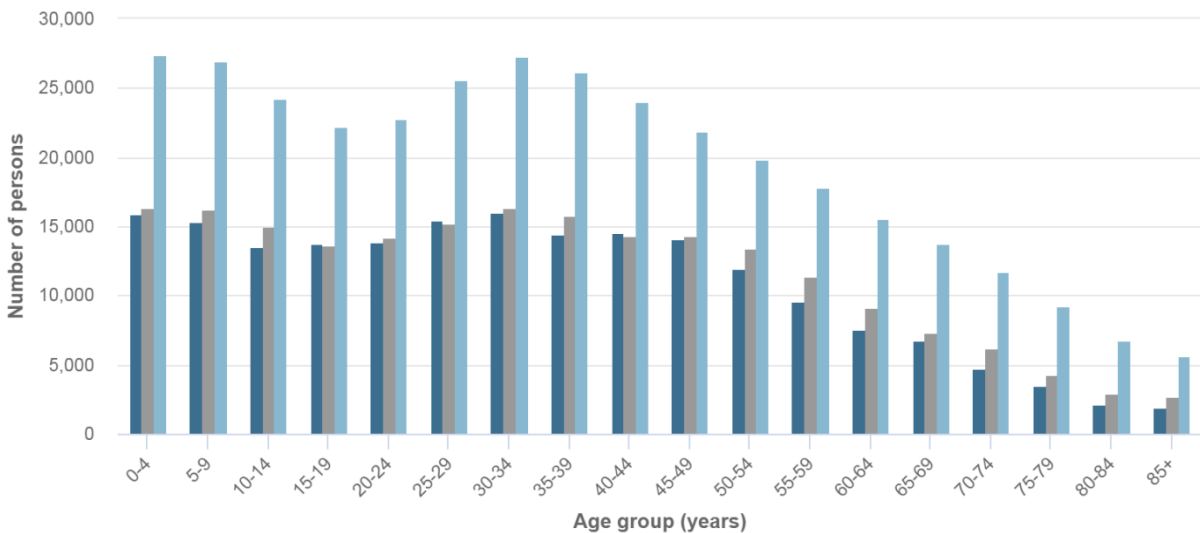
Population and household forecasts, 2016 to 2041, prepared by .id, May 2020.



Forecast age structure - 5 year age groups

City of Wanneroo - Total persons

2016 2021 2041



Population and household forecasts, 2016 to 2041, prepared by .id the population experts, May 2020.



APPENDIX E: TRANSPORT ASSETS – CAPITAL SUBPROGRAMS

(Figures reported in '000)

E.1: Roads (Renewal projects shown in blue font)

Project No	Asset Location	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	2032/33	2033/34	2034/35	2035/36	2036/37	2037/38	2038/39
PR-1087	Recurring Program, Renew Transport Infrastructure Assets	2,829	2,355	3,675	3,875	4,475	5,375	5,775	6,175	6,575	7,075	6,700	7,100	7,600	8,000	8,500	8,900	9,400	9,900	10,500	11,000
PR-2616	Neerabup Industrial Area (Existing Estate)	250	920	450																	
PR-2797	Connolly Drive	3,163	487																		
PR-3098	Hepburn Avenue	1,200																			
PR-4098	Pinjar Road	4,200																			
PR-4099	Old Yanchep Road	10																			
PR-4140	Marmion Avenue	9,300	1,000																		
PR-4203	Prindiville Drive	1,171																			
PR-4225	Recurring Program, Design of Road Infrastructure and Streetscape Upgrades	150	100	100	100	100	100	100	100	100	100	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
PR-2409	Yanchep Industrial Area		500	500	200																
PR-2774	MRRG Road Rehabilitation Program		1,125	1,125	1,125	1,125	1,125	1,125	1,125	1,125	1,125	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
PR-2794	East Wanneroo Town Planning Scheme Cell 1		155				105														
PR-2805	Flynn Drive		500	1,027	1,027	1,027															
PR-3018	Hartman Drive		2,100																		
PR-4229	East Wanneroo Town Planning Scheme Cell 7		22	235																	
PR-4230	East Wanneroo Town Planning Scheme Cell 8		22	235																	
PR-RD904	Franklin/Rousset Road/Caporn St Intersection		675																		
PR-2368	Gnangara Road			300			4,000	3,876													
PR-2602	Gnangara Road			100	6,322	6,322															
PR-2615	Safari Place and Bailey Road			340																	
PR-2776	Orchid Road and Trandos Road			100	3,850																
PR-2785	MRRG Road Improvement Program			6,000	3,000	3,000	3,000	1,000	1,000	1,000	1,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
PR-2788	Romeo Road - Wanneroo Road to Mitchell Freeway			700	1,000																

Project No	Asset Location	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	2032/33	2033/34	2034/35	2035/36	2036/37	2037/38	2038/39
PR-2813	Spence Road			102																	
PR-4216	East Wanneroo Town Planning Scheme Cell 3			100	853	853															
PR-4227	East Wanneroo Town Planning Scheme Cell 4			50	490		496														
PR-4231	East Wanneroo Town Planning Scheme Cell 2			205	1,790	2,070	105														
PR-RD902	Kiro Street			145																	
PR-RD903	Rowley Place			78																	
PR-2814	Dunstan Road				400																
PR-2817	Recurring Program, Upgrade Rural Roads				150	1,000	1,000	1,000	1,000	1,000	1,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
PR-2808	Planning Scheme Road - Arterial Road Upgrades					3,000	3,000	3,000	3,000	3,000	3,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
PR-2782	Badgerup Road - Ashby Street to Ross Street						900	1,400													
PR-2806	Old Yanchep Road - Flynn Drive to Pederick Road						100	1,650													
PR-RD990	Upgrade Roads - Placeholder						1,000	1,000	1,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
PR-1494	Flynn Drive Neerabup - Construct Road							3,600	2,650												
PR-2780	Sydney Road										775										
PR-2778	Franklin Road																				
PR-4205	Marangaroo Drive																				

E.2: Pathways & Trails Capital Works Program

Project No	Asset Location	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	2032/33	2033/34	2034/35	2035/36	2036/37	2037/38	2038/39
PR-2078	Recurring Program, New Pathways - Grant And Scheme Funded	20																			
PR-2495	Yanchep Lagoon Pathways and Trails	12																			
PR-2707	Recurring Program, New Minor Pathways And End Of Trip Facilities	120	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150
PR-2749	Recurring Program, New Footpaths	650	672	886	772	950	950	950	950	950	950	950	950	950	950	950	950	950	950	950	950
PR-4175	Burns Beach to Mindarie Coastal Dual Use Path	10																			
PR-4180	Alexander Drive	70	806	806																	
PR-PT901	Yanchep Lagoon Pathways		266	266	230	230	200														

E.3: Traffic Treatments

Project No	Asset Location	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	2032/33	2033/34	2034/35	2035/36	2036/37	2037/38	2038/39
PR-2656	Recurring Program, Upgrade Traffic Management - Minor Works	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
PR-2829	Rangeview Road	150																			
PR-2865	Recurring Program, Upgrade Street Lighting	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	300	100	100	100
PR-2902	Koondoola Avenue	220																			
PR-3097	Kingsway	145																			
PR-4159	Gnangara Road / Alexander Drive	36																			
PR-4184	Ocean Reef Road / Hartman Drive / Lenore Road	160																			
PR-4185	Beach Road / Blackmore Avenue	125																			
PR-4186	Marmion Avenue / Belleville Gardens	50																			
PR-4209	Joondalup Drive / Joseph Banks Boulevard / Tumbleweed Drive	510																			
PR-TT901	Highclere Boulevard		30	400																	
PR-TT902	Kingsbridge Boulevard		30	400																	
PR-TT911	Kingsbridge Boulevard / Camborne Parkway / Shelford Boulevard		50																		
PR-TT912	Beach Road / Alexander Drive		100																		
PR-TT913	Lukin Drive / Bradman Drive		240																		
PR-TT999	Recurring Program, Blackspots		1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
PR-2891	La Salle Road			50																	
PR-2912	Rothesay Heights / Abbeville Circle			200																	
PR-TT19	Ocean Reef Road			50	200																
PR-2906	Picton Terrace				65																
PR-2918	Stockholm Road				200																
PR-TT20	Frederick Street				150																
PR-TT21	Belleville Gardens				100																
PR-2881	Blaxland Avenue					55															
PR-2897	Fenchurch Street					100															
PR-2898	Bellport Parade					115															
PR-2901	Belgrade Road					140															
PR-2903	The Avenue					80															
PR-2907	Kinsale Drive					100															
PR-2922	Various Locations					40	475														
PR-TT22	Lacey Road					225															
PR-2904	Goldsworthy Entrance						80														
PR-2905	Karimba Street							50													
PR-3033	Cabernet Loop							200													
PR-TT23	Azelia Street							250													
PR-2883	Quarkum Street								110												
PR-2885	Nyunda Drive								40												
PR-2911	Cromwell Road								50												
PR-TT15	Shiraz Bvd								250												

Project No	Asset Location	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	2032/33	2033/34	2034/35	2035/36	2036/37	2037/38	2038/39
PR-TT914	Mornington Drive								280												
PR-2909	Addison Gardens									100,000											
PR-2913	Addington Way									100											
PR-2915	Swanley Street									30											
PR-2886	Banderra Street											60									
PR-2888	Bellport Park												80								
PR-2880	Hastings Street														55						
PR-2889	High Road														50						
PR-2895	Josephine Way														100						
PR-2920	Dellamarta Road															200					
PR-2892	Belvoir Parkway																	25			
PR-2896	Koman Way																	35			
PR-2908	Buckingham Drive																	200			
PR-2917	East Road (Shopping Centre)																	50			
PR-2986	Clarkson Avenue																	50	160		
PR-TT917	Montrose Avenue																	15	150		
PR-2894	Greenpark Road																		40		
PR-2899	Whitsunday Avenue																		100		
PR-2887	Ashley Rd (Watkins Lp to Pinjar Rd)																			220	
PR-2916	Waldburg Drive																			100	
PR-TT18	East Road																			150	
PR-TT14	Kirkstall Drive																				200
PR-TT915	Burt Street																				150
PR-TT916	Brooklyn Avenue																				150
		1,546	1,600	2,250	1,865	2,005	1,705	1,650	1,880	1,380	1,150	1,210	1,230	1,150	1,355	1,350	1,150	1,725	1,600	1,620	1,650

APPENDIX F: LEVEL OF SERVICE PERFORMANCE

Community Levels of Service

Key Performance Measure	Level of Service	Performance Measure Process	Performance Target	Current Performance
<i>COMMUNITY LEVELS OF SERVICE</i>				
Quality/ Condition	Roads are well maintained. Roads are in a safe condition.	Customer complaints about roads.	< 120 pa	#156 ¹
	Uniformity, walkability and rideability (for cyclists).	Community perception survey	> 70% satisfaction	75% ²
	Surface uniformity and accessibility within car parks.	Customer complaints	< 20 a pa	#
Function	Meets user requirements for:			
	- Traffic management	Community perception survey	>60% satisfaction	68% ²
		Customer complaints	<300 pa	#344 ³
	- Pathway accessibility	Community perception survey	> 70% satisfaction	79% ²
		Customer complaints	<75 pa	#94 ³
- Accessibility within car parking areas - Availability of car parking facilities	Customer complaints	< 20 a pa	#	
Quantity	Sufficient pathways to points of interests and recreational use	Community perception survey	> 70% satisfaction	79% ²
	Adequacy of car parking at City facilities	Customer complaints	< 20 a pa	#

Note:

The data required to monitor and report on the City's specific performance in some areas is not currently available. Improved collection of this data has been listed as a required improvement outcome for this plan. (*Improvement ref 2*)

1. Based on CRM Statistics from Traffic Services for the 2019 calendar year, (HPE 20/235424). This includes all CRMs under the category of 'Roads', as safety is not separated out.
2. This score is the sum of (Excellent + Good + okay) from the 2020 Community Scorecard results.
3. Based on CRM Statistics from Traffic Services for the 2019 calendar year (HPE 20/235424).

Technical Levels of Service

Key Performance Measure	Level of Service	Performance Measure Process	Performance Target	Current Performance
<i>TECHNICAL LEVELS OF SERVICE</i>				
Quality/ Condition	Assets renewed at the end of their useful life.	Road Condition survey.	Whole of network survey completed once in every 3 years and prioritise for renewal. (note there is an improvement action to increase this to 5 yearly.)	Meeting target.
		Pathway Condition survey	Whole of network survey completed once in every 3 years and prioritised for renewal.	Meeting target.
		Car park Condition survey.	Whole of network survey completed once in every 3 years and prioritised for renewal.	Meeting target.
Function & Quantity	Provision of cyclist route networks throughout the City in accordance with the Wanneroo Cycle Plan	Implement actions as per recommendations of the Wanneroo Cycle Plan.	Listing and completion of projects in accordance with the Wanneroo Cycle Plan in the CWP.	In progress, ongoing
	Provision of car parking areas to support the City's facilities.	Provision of adequate car parking bays in accordance with minimum development guidelines.	90% of the City's facilities are provided with car parking facilities to the required provision.	#
Safety	Safe accessible transport network	Reported Fatal, Hospital and Medical (Casualty) crashes	Annual reduction in Fatal, Hospital and Medical (Casualty) crash numbers	5,690 (2015 – 2019)
	Defects not exceeding thresholds defined in the Engineering Maintenance Intervention Levels ²	Routine safety inspection undertaken annually by maintenance staff.	90% of safety inspections are completed once per annum	In progress, ongoing

Key Performance Measure	Level of Service	Performance Measure Process	Performance Target	Current Performance
	Response times to defects not exceeding thresholds defined in the Engineering Maintenance Intervention Levels ²	Time to respond to routine safety inspection undertaken annually by maintenance staff.	Defects are investigated and responded to within allocated timeframes in 90% of cases	In progress, ongoing
	Safety inspections are carried out at least once a year	Record of inspections	Annual inspections	Meeting target

Note:

The data required to monitor and report on the City's specific performance in some areas is not currently available. Improved collection of this data has been listed as a required improvement outcome for this plan. ([Improvement ref 2](#))

1. This score is the sum of (Excellent + Good + okay) from Figure 12 in Section 4.1.

2. Refer HPE 19/234182 for details.

APPENDIX G: LIST OF HIGH RISK ASSETS

ASSET NAME	HIERARCHY/TYPE
Alexander Drive – north bound (Beach Road to Gnangara Road)	Distributor A
Beach Road – eastbound (Wanneroo Rd to Alexander Drive)	Distributor A
Breakwater Drive	Distributor B
Connolly Drive (City of Joondalup boundary to Lukin Drive)	Distributor A
Flynn Drive	Distributor B
Girrawheen Avenue	Distributor B
Gnangara Road (Wanneroo Road to Ocean Reef/Sydney Road)	Distributor A
Hartman Drive	Distributor A
Hepburn Avenue	Distributor A
Hester Avenue	Distributor A
Joondalup Drive	Distributor A
Lenore Road	Distributor B
Lisford Avenue	Distributor B
Lukin Drive	Distributor A
Marangaroo Drive	Distributor A
Marmion Avenue (City of Joondalup boundary to Yanchep Beach Road)	Distributor A
Mirrabooka Avenue (Beach Road to Gnangara Road)	Distributor A
Neaves Road (Pinjar Road to City of Swan boundary)	Distributor A
Neerabup Road	Distributor A
Old Yanchep Road (Joondalup Drive to Yanchep National Park)	Distributor B
Pinjar Road	Distributor A
Two Rocks Road	Distributor B
Yanchep Beach Road	Distributor B
Marmion Avenue Pedestrian Underpass SLK 2.35 (Mindarie)	Underpass
Marmion Avenue Pedestrian Underpass SLK 3.94 (Mindarie)	Underpass
Hester Avenue Pedestrian Underpass (Clarkson)	Underpass
Joondalup Drive Pedestrian Underpass (Carramar)	Underpass
Marmion Avenue Pedestrian Underpass SLK 20.00 (Yanchep)	Underpass

APPENDIX H: TRANSPORT ASSET RISKS AND TREATMENT PLANS

(Extreme, High, Moderate, Low)

Asset at Risk	Risk	Consequence	Likelihood	Risk Rating	Risk Treatment Plan	ECA
Pavement Basecourse (sealed roads and sealed carparks)	Cracks in the surface wearing course allowing moisture penetration to the basecourse causing accelerated deterioration.	Low	Unlikely	Low	Schedule routine road inspections as part of preventative maintenance programs and undertake crack sealing program as per asset inspection regime.	Satisfactory
Pavement Basecourse (Unkerbed Sealed Roads and carparks)	Edge breaks on unkerbed roads – accelerated seal and shoulder damage and increased exposure to erosion, moisture penetration and undermining of pavement. Risk of injury to motorists	Low	Unlikely	Low	Schedule routine road inspections as part of preventative maintenance programs as per asset inspection regime and undertake shoulder repairs as part of routine maintenance works as per agreed levels of service. If the damage is extensive, list for consideration as part of the Capital Works Program.	Satisfactory
Pavement Basecourse (Sealed Roads and carparks)	Severe rutting and deformation causing accelerated damage to surface seal and pavement. Poor riding quality initially and over time uneven surface could be hazardous to traffic.	Low	Unlikely	Low	Schedule routine road inspections as part of preventative maintenance programs as per asset inspection regime. Monitor deterioration and program pavement reconstruction on a priority basis.	Satisfactory
Pavement Basecourse & Surface Seal (sealed roads and sealed carparks)	Potholes appearing in the surface wearing course allowing moisture penetration into the basecourse causing accelerated pavement failure. Risk of injury to motorists	Minor	Moderate	Moderate	Schedule routine road inspections as part of preventative maintenance programs as per asset inspection regime and undertake immediate pothole repairs as per agreed levels of service.	Satisfactory
Road Network (Sub-standard road alignment)	Increased potential for vehicle accidents due to poor design configuration (i.e. at intersections, blind curves and crests)	Moderate	Unlikely	Moderate	Identify problem sites through the Blackspot improvement program. Assess and undertake road improvement programs (e.g. Traffic Treatments Program and Blackspot Program). Ensure road networks are designed and constructed to meet Austroads standards	Satisfactory

Asset at Risk	Risk	Consequence	Likelihood	Risk Rating	Risk Treatment Plan	ECA
Road Network (Loss of access)	Loss of access to the network due to bush fires, fallen trees or flooding	Moderate	Unlikely	Moderate	Ensure road networks are designed and constructed to meet Austroads standards	Satisfactory
Kerbing	Cracked & misaligned kerb – hazard to pedestrians and motorists. Accelerated deterioration to adjacent kerbing and pavements.	Low	Unlikely	Low	Schedule routine road inspections as part of preventative maintenance programs as per asset inspection regime; undertake repairs to damaged kerb sections as per agreed levels of service. Replace kerbing in poor condition as part of Transport Assets Renewal Program.	Satisfactory
Pathways (Asphalt)	Edge breaks and erosion, potholes, cracking can occur - potent trip hazards. Also can accelerate deterioration of asphalt surface.	Low	Likely	Low	Schedule routine pathways inspections (more regular inspections of pathways that are highly trafficked) as part of preventative maintenance programs and undertake repairs to damaged sections of pathways. Undertake pathways renewal.	Satisfactory
Pathways (Concrete and Brickpaving)	Trip hazards or unevenness caused from broken/cracked pavement, loose material or tree root damage.	Low	Likely	Low	Schedule routine inspections of pathways (regular inspections of highly trafficked pathways) as part of preventative maintenance programs and undertake repairs to damaged sections of pathways. Undertake pathways renewal.	Satisfactory
Bridges (Culvert Underpasses)	Failure generally slow and progressive in nature. Left unchecked, there is potential of continued gradual failure of bridge structure/ components causing damage to the infrastructure that sits above (road and pathway) and eventually resulting in catastrophic failure.	Moderate	Rare	Low	Regular inspections will prevent catastrophic failure. The City uses the expertise of MRWA (free of charge every three years) to assist with the condition inspections of bridge structures.	Satisfactory

Asset at Risk	Risk	Consequence	Likelihood	Risk Rating	Risk Treatment Plan	ECA
Bus Shelters (old standard concrete shelter)	Compromised structural integrity of old standard concrete bus shelters that have been relocated - potential risk of collapse of parts of the structure if not inspected regularly for safety.	Minor	Rare	Low	Progressively phase out the old concrete standard bus shelters and replace with new standards on a priority basis. Undertake regular inspections of the old standard shelters to ensure that they remain in a safe condition. Decommission immediately bus shelters that are in an unsafe condition. Minimise relocation of these structures.	Satisfactory
Special Street lighting owned by the City	Progressive deterioration of pole/components - if left unchecked could result in collapse of pole due to progressive fatigue failure/rusting at the base. Deterioration of luminaire attachment causing fitting to fail. Potential hazard to pedestrians and motorists.	Minor	Rare	Low	Regular inspections will assist detection of failing components. Additional specialised detection measures will be required to assess any internal rusting of components. Replace components if deemed unsafe.	Satisfactory
Special Street lighting owned by the City (loss of power)	Power failure due to network outage	Minor	Rare	Low	Report power outages to Western Power as soon as possible.	Satisfactory
All assets	Inaccurate information in the asset register (attributes, conditions, etc.) may cause financial shock to the organisation	Minor	Rare	Low	Review recent records and update asset register with works undertaken. Change any information found to be inaccurate. Put systems into place so that renewal data is entered into the system appropriately.	Satisfactory