TRANSPORT INFRASTRUCTURE
ASSET MANAGEMENT PLAN

April 2025

City of Wanneroo

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1. EXECUTIVE SUMMARY

1.1 The Purpose of the Plan

Asset Management (AM) Plans details information about infrastructure assets with actions required to provide an agreed level of service and tactical requirements for the management of assets to deliver services to the community. They highlight the processes and systems used to manage the associated assets that services rely on and consider how current and future services to the community will be sustainably provided in the most cost-effective manner.

AM Plans developed in alignment with the City of Wanneroo's (the City's) AM Policy, AM Strategy and Strategic Community Plan (SCP) enables the City to improve its long term strategic management of infrastructure assets. They look into the current state of infrastructure assets and considers current and future requirements together with associated risks to inform the optimum lifecycle costs and management into the future. They aim to:

- determine an agreed level of service at a cost that is affordable to the community,
- determine the short, medium and long-term financial requirements for assets and to inform the City's Long Term Financial Plan (LTFP),
- document AM practises that ensure sustainable management of community assets and identify opportunities for improvement,
- ensure legislative and reporting requirements are met,
- support business cases and funding applications, and
- support community and organisational needs.

The AM Plans defines the services to be provided, how the services are provided and what funds are required over the 20 year planning period.

1.2 Asset Description

This Transport Infrastructure AM Plan (TIAMP) focuses on the City's approach to the management of its transport infrastructure assets and forms part of a suite of AM Plans for other asset categories namely, Stormwater Drainage, Buildings, Parks, Natural Areas and Coastal Infrastructure.

Transport assets contribute to the community through:

- facilitating the safe and efficient movement of people and goods within the City by both motorised and non-motorised transport modes,
- providing accessibility for the community to key activity areas and facilities.

The transport asset portfolio covered under this TIAMP has an estimated replacement cost of **$1.289 billion** and includes:

- Roads – road pavement, surface seals and kerbing,
- Pathways – footpaths and cycleways,
- Bridges – road underpass culverts,

- Car parks –surface seal, pavement, kerbs and lighting,
- Street Furniture – ornamental City owned streetlights and bus shelters, and
- Traffic Management Devices – roundabouts, speed humps and signage

The details of the transport portfolio are summarised in table below.

Transport Infrastructure portfolio (as at 30/06/2024)		
Asset Category	**Quantity**	**Replacement Cost ($)**
Roads (length in km)	1,746	964,713,000
Pathways (length in km)	1,446	295,400,000
Car parks (no. of sites)	105	20,900,000
Bus Shelters (no.)	274	5,906,000
Road and Pathway Lighting – City owned (no.)	213	817,000
Bridges – Underpasses (no.)	2	1,713,000
Total Transport Infrastructure		**1,289,499,000**

1.3 Levels of Service

The Technical Levels of Service governs much of the measures for transport infrastructure and are driven mainly by legislative and industry requirements. At this stage, intervention points and chosen treatment methods, are based upon:

- Available budget and resource allocations.
- Criticality of the asset and the level of risk exposure.
- Historical data on customer request and complaints.
- Frequency of maintenance requirements.
- General performance of the asset portfolio based on asset condition assessments.

Critical transport routes with a high traffic volumes and important connectors are identified and are treated with a higher level of service.

This plan, and future revisions, will inform the long-term financial planning to fund the future maintenance, renewal and upgrades necessary to meet the demand and levels of service.

1.4 Future Demand

The factors influencing future demand and the impacts they have on this category of assets include things such as population growth, regulations, changes in demographics, consumer transportation preferences and expectations, technological changes and economic factors.

These demands will be approached using a combination of managing existing assets, upgrading existing assets and providing new assets balancing priorities and funding to meet demand. Many of the new road and pathway assets have been constructed and ‘gifted’ to the

City through the land development process. This puts added pressures on the budget and resourcing requirements for the ongoing maintenance of these assets.

Ensuring these assets are constructed to a standard and quality that will last will be key to ensuring that the City is not unnecessary burdened with high maintenance and renewal costs associated with premature failure.

Other demand management practises include:

- Optimising assets - Efficiently using and maintaining existing assets to extend their lifespan and performance.
- Capacity Upgrades - Enhancing the capacity of current assets to meet increased demand.
- Non-Asset Solutions: Implementing policies or programs that reduce demand, such as promoting public transportation to reduce road congestion.

1.5 Lifecycle Management Plan

What does it Cost?

The forecast lifecycle costs necessary to provide the services covered by this AM Plan includes operation, maintenance, renewal and acquisition of assets. Although the AM Plan and LTFP may be prepared for a 20-years planning period, the accuracy of the predictions outside of the first 5 year would be less accurate.

Based on the City's current AM practise, the forecast lifecycle costs necessary to provide the services covered by this TIAMP are:

Lifecycle Activity & Costs	Financial Year (FY)				
	2026	2027	2028	2029	2030
Maintenance	$10.610M	$10.928M	$11.256M	$11.594M	$11.941M
Planned renewals	$ 5.621M	$ 4.673M	$ 5.266M	$ 5.507M	$ 6.296M
Planned upgrades & acquisitions	$25.494M	$52.890M	$39.824M	$34.928M	$21.881M
Total	**$41.725M**	**$68.491M**	**$56.346M**	**$52.029M**	**$40.118M**

Note that a large portion of the maintenance budget is attributed to Western Power's street lighting tariffs which is in the order of $7M per annum.

1.6 Financial Summary

What we will do

It is considered that, based on the current maintenance practises, the budget allocation and trends are adequate to meet the minimum service levels, which may be less than or equal to current service levels. Detailed maintenance budgeting will be evaluated in future revisions of this plan to determine more accurate operating and maintenance cost. This will be critical when more and more areas within the City develops.

Current Services and Costs

As at 30/06/2024, the City's transport Infrastructure assets with a current replacement value of $1.289B, has a written down value of $928M and an expected annual depreciation rate of $19.35M.

Based on renewal model forecast, the renewal demand for transport assets over the next ten (10) years is $ 62.42M. This is based on intervention levels set at a combination of 7 and 8 depending on the asset type. In previous years, the modelling was based on interventions level of 8 and 9. The City has made a commitment to gradually increase its renewal funding in the LTFP to target earlier invention levels. The latest LTFP currently has allocated a total of $64.97M over the same period which means the City plans to fund 100% of the required renewals over the next 10 years.

The City will continue to:

- inspect and maintain the transport assets to ensure they are safe and functional within the current levels of service.
- prioritise renewals, upgrades and expansions, and
- undertake regular asset condition assessments and review the useful lives and replacement costs of assets to validate the renewal modelling outputs that inform the LTFP.

What we cannot do

The funding allocation in the planned budget is considered insufficient to continue providing existing services at current levels for the planning period. Although there is an increased effort to budget for preventative maintenance activities, there are still a large majority of maintenance activities that are reactive in nature. It is necessary to provide sufficient funding in the long-term to achieve,

- more proactive measures to improve community satisfaction with transport assets,
- improved safety to user of the transport network, and
- improved the overall condition of assets.

Managing the Risks

The present budget levels are sufficient to continue to manage risks in the medium term. The City's present funding and resource allocations is considered insufficient should the City strive to undertake a more proactive approach to maintenance and renewal planning. The City will continue to struggle to meet the expected levels of service particularly with the continued high growth experienced at the City. The main service consequences are:

- Response timeframes for undertaking maintenance activities will increase impacting on traffic safety and community health.
- Reduced maintenance frequency and inadequate renewal funding leading to deteriorating asset conditions and increased repair costs in the long term.

- Delayed upgrades and expansions of transport infrastructure, potentially causing congestion, reduced service levels and increasing community dissatisfaction.

The City will endeavour to manage these risks within available resourcing and funding.

1.7 Asset Management Planning Practices

The systems to manage assets include:

- Financial System: Oracle, and
- Asset System: QGIS and Assetic

Assets requiring renewal/replacement are identified from the remaining useful life in the asset register and are inspected to validate and confirm their condition. The Asset Register was used to forecast the renewal life cycle costs for the TIAMP. Future renewal modelling forecasts will be undertaken using Assetic's Predictor Module.

The figures presented in this AM Plan is based on data with a confidence rating of 'C' which is a medium level of confidence.

1.8 Monitoring and Improvement Program

The City's transport assets are currently in good condition. The majority of capital renewal works primarily focus on renewing the wearing surface (mainly asphalt) of road pavements. The underlying road pavement base course layers are anticipated to have a long lifespan, provided that the wearing surface is properly maintained throughout its lifecycle and resealed at the appropriate intervention points.

The next key steps resulting from this AM Plan to improve AM practices are:

- audit the asset register regularly to ensure accuracy of the information
- improve the measurement of relevant service levels through the increased capture and analysis of relevant data and customers desired level of service.
- develop a Transport Plan to support the City's Transport Strategy.
- 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 is what, when and how it is done.
- plan and determine the costing associated with a more proactive approach to maintenance of transport asset, i.e. scheduled preventative maintenance practices.

2. INTRODUCTION

2.1 Background

Asset Management (AM) Plans support the AM Policy in alignment with the City of Wanneroo's (the City) AM framework which is detailed in the City's AM Strategy. AM Plans detail the levels of service and tactical requirements for the management of assets to deliver services to the community. These plans define the services to be provided, how they are provided and what funds are required over the 20-year planning period and linking these to the City's Long-Term Financial Plan (LTFP).

This Transport Infrastructure AM Plan (TIAMP) focuses on the City's approach to the management of its transport infrastructure assets and forms part of a suite of AM Plans for other asset categories namely, Stormwater Drainage, Buildings, Parks, Natural Areas and Coastal Infrastructure. The TIAMP provides information on the state of transport infrastructure assets, processes and systems used to manage the associated assets that services rely on and consider how current and future services to the community will be safely and sustainably provided in the most cost-effective manner. In delivering the service, risks are identified and managed so that a balance is achieved between achieving the desired performance of the asset, against the cost of providing the service.

Information contained in this plan is current as of 30 June 2024. The assets covered under this TIAMP are shown below. The total replacement value of these asset is estimated at **$1.289 billion** and made up of the assets listed in Table 1.

Table 1: Transport Infrastructure portfolio (as at 30/06/2024) used in AM Plan

Asset Category	Quantity	Replacement Cost ($)
Roads (length in km)	1,746	964,713,000
Pathways (length in km)	1,446	295,400,000
Car parks (no. of sites)	105	20,900,000
Bus Shelters (no.)	274	5,906,000
Road and Pathway Lighting – City owned (no.)	213	817,000
Bridges – Underpasses (no.)	2	1,713,000
Total Transport Infrastructure		**1,289,499,000**

The TIAMP has been developed in conjunction with other City planning documents. These include (refer to Section 9 for additional reference documents):

- AM Policy
- AM Strategy 2024-2030

- Strategic Community Plan (SCP) 2021-2031
- Corporate Business Plan (CBP) 2023/24–2026/27

2.2 Goals and Objectives of Asset Ownership

The goal of the TIAMP is to document the measures currently taken by the City, or which need to be improved upon to ensure transport assets:

- provides for a range of services for both motorised and non-motorised transport modes including accessibility, parking, and public transit, ensuring efficient and safe movement for all users.
- provide accessibility for the community to key activity areas and facilities.

The objectives of the AM Plan are:

- To document the defined levels of service and performance monitoring schedules,
- To manage the impact of growth and future demand through demand management and infrastructure investment,
- To take a lifecycle approach to developing cost-effective management strategies for the long-term that meet the defined levels of service,
- To determine appropriate asset management practices to manage the provision of the services ensuring at a minimum legislative and reporting requirements are met,
- To identify, assess and appropriately control associated risks,
- To identify required and affordable forecast costs and link these to the City's LTFP, and
- To monitor performance and identify areas of improvements to ensure objectives are met with the aim to continually increase AM maturity.

2.3 Key Stakeholders

Table 2 shows the key stakeholders in the preparation and implementation of this AM Plan:

Table 2: Key Stakeholders in the AM Plan

Key Stakeholder	Role in Asset Management Plan
Ratepayer Groups and residents	• Represent needs of community/shareholders • May include Stakeholder consultation • Allocate resources to meet planning objectives in providing services while managing risks, • Ensure service sustainable.
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.

Key Stakeholder	Role in Asset Management Plan
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 (ICW)	• Design and construct transport infrastructure assets to required standards.
Asset Planning	• 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.
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 centers, libraries and sports facilities; aquatic centers, 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.

Key Stakeholder	Role in Asset Management Plan
State Government Agencies (MRWA, WP and PTA)	• Main Roads Western Australia (MRWA) provides grants for the City to maintain and upgrade its road network. • Western Power (WP) – Maintains the street lighting network • Public Transport Authority (PTA) – Provides public transportation services and jointly funds bus stop infrastructure for public transport.
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. LEVELS OF SERVICE

The City has recently completed a Wanneroo Liveability Survey whereby the results of the survey have yet to be analysed to inform this AM Plan. These will be considered in future revisions of this plan. The levels of service and performance measures identified in the TIAMP have been based on past community engagement surveys, together with inputs and feedback from Resident Groups, Advisory Groups and Elected Members. Other factors that heavily influence the level of service determinations are:

- service risks, Industry best practice and consequences to meet legislative and safety requirements,
- strategic objectives,
- the availability of resources and financial constraints, and.
- customer expectations of the quality of service, balanced against the price they are willing and able to pay.

The levels of service defined in this section will be used to:

- Clarify the level of service that the community should expect.
- Identify works required to meet these levels of service.
- Enable Council and the community to discuss and assess the suitability, affordability and the quality of the existing service level and to determine the impact of increasing or decreasing this level in future.

A key objective of this AMP is to identify the current level of service provided by the transport asset portfolio. 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.
- To measure 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 equitable of the existing service level and to determine the impact of increasing or decreasing this level in future.

3.1 Strategic and Corporate Goals

The TIAMP is aligned with the goals and priorities of the City's SCP as shown in Table 3:

Table 3: Alignment to Strategic Community Plan Goals

Goal	Priority	How Goal and Objectives are addressed in the AM Plan
1. An inclusive and accessible city with places and spaces that embrace all	1.3. Facilities and activities for all	Asset renewal identities opportunities for replacement assets to be inclusive and accessible. Installation of new or asset upgrades consider elements of accessibility in the planning process. E.g. Bus Shelter and bus stops, pathways and carparks.
5. A well-planned, safe and resilient City that is easy to travel around and provides a connection between people and places	5.1. Develop to meet current need and future growth 5.3. Manage and maintain assets	Monitor traffic volume changes and bus stop patronage to enable the planning for future needs. Plan for key transport routes to meet growth. Plan for new asset provisions or upgrades to meet the growth of the City. Undertake a program for condition monitoring and inspection activities to assess asset performance. Continuously review and improvement of the quality of AM practices and updating this AM Plan. Providing a defined level of service, monitoring performance and implementing initiatives to improve efficiency and effectiveness.
	5.4 People can move around easily	Monitor traffic volume changes and bus stop patronage to enable the planning and construction to meet demand for upgrades. Undertake traffic management studies and traffic management treatment to manage safe traffic movements.
6. A future focused City that advocates, engages and partners to progress the priorities of the community	6.2. Actively seek to engage 6.4. Understand our stakeholders and their needs	Internal communication across Directorates to ensure that assets, be that new or replacement are to a standard of compliance whilst also meeting the needs of the community. Conduct community and key stakeholder engagement during the planning and implementation of new, upgrade and renewal projects.
7. A well-governed and managed City that makes informed decisions, provides strong community leadership and valued customer focused services	7.1. Clear direction and decision making 7.2: Responsibly and ethically managed	Complete asset inspections and assessments to inform the development of new, upgrade and renewal coastal and marine projects within the City's LTFP. Effective management of assets through their lifecycle to ensure long-term, sustainable outcomes to provide for current and future communities. The development of AM Policy, AM Strategy and AM Plans to drive AM maturity to improve AM practises ensuring clear understanding of roles and accountabilities. Develop and apply asset management principles to support the management and maintenance of infrastructure assets. Maintain an accurate asset database and the provision of asset performance data to enable informed decision making.

3.2 Legislative Requirements and Industry Standards

The City has to meet many legislative requirements, Standards, Regulations, Acts and City Local Laws that impact the way assets are managed. These include Federal and State legislation and City Policies and By-Laws. These are shown in the **Error! Reference source not found.**.

Table 4: Legislative Requirements and Industry Standards

Legislation	Requirement
Local Government Act 1995	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.

3.3 Customer values

Service levels are defined in three (3) ways, customer values, customer levels of service and technical levels of service.

Customer Values indicate:

- what aspects of the service is important to the customer,
- whether they see value in what is currently provided and
- the likely trend over time based on the current budget provision

The results from the recent Wanneroo Liveability Survey which has yet to be analysed to inform this AM Plan will be used to populate Table 5.

Table 5: Customer Values and Satisfaction Survey Levels

Customer Values	Customer Satisfaction Measure	Current Feedback	Expected Trend Based on Planned Budget
Assets are fit for purpose	Not available	Performance not currently measured	Not available
Satisfaction with coastal and marine assets	Not available	Performance not currently measured	Not available

3.4 Customer Levels of Service

Customer Levels of Service are considered in terms of:

- Condition: How good is the service. What is the condition or quality of the service?
- Function: Is it suitable for its intended purpose. Is it the right service?
- Capacity/Use: Is the service over or under used. Do we need more or less?

In Table 6 under each of the service measures types (Condition, Function, Capacity/Use) there is a summary of the performance measure being used, the current performance, and the expected performance based on the current budget allocation.

Table 6: Customer Levels of Service Measures

Type of Measure	Community Level of Service	Performance Measure	Current Performance	Expected Trend Based on Planned Budget
Condition	All assets to be in good visual and structural condition.	Assets designed and constructed to a high standard. Asset are inspected regularly, maintenance requirements identified, rectified promptly and completed to a high quality and safety standard Community consulted with respect to the levels of service standards.	Critical transport infrastructure are identified and inspected with set frequencies, maintenance requirements scheduled and actioned accordingly to a high quality and safety standard. Other assets are attended to on a reactive basis within agreed timeframes. Structural condition assessments of critical assets are conducted regularly or as required. Components renewed as required within current resourcing limitations. Where maintenance is considered no longer viable, these assets are listed and	For asset attended to on a reactive basis, improve resourcing to target a more proactive preventative maintenance regime and cleaning frequency. Increase renewal budget allocations and resourcing to target earlier intervention condition of assets before they reach poor to very poor levels. Increase inspection frequencies for improved evidenced based renewal planning for the first 3 to 5 years of the

Type of Measure	Community Level of Service	Performance Measure	Current Performance	Expected Trend Based on Planned Budget
			prioritised for renewal in Capital Works Program. Apart from the application of Traffic Treatments and installation of bs shelters, community and users are generally not consulted with this category of asset.	budget planning process. Community and users engaged and consulted with respect to the levels of service standards through the AM Plans
Function	Assets are fit for purpose, provides for the intended function and operates as expected.	Assets are designed and constructed to high standards in accordance with the City's design standards or recognised industry standards Assets are planned and located in alignment with the City's policies and guidelines with consideration to the City's SCP goals. Community and users input considered in service requirements.	Design and construction of assets are in accordance with design standards and/or well-established industry standards with the use of appropriate materials in coastal environments. There is no functional rating system currently in place. Assessment on functionality of the assets is based historical knowledge and professional judgement of the asset. Community consulted in accordance with the City's Community Engagement Policy	Extend condition assessment of assets from just physical condition of the assets to include functionality and capacity criteria. Increased community and user involvement with asset renewals and determining current functionality needs of transport assets.
Capacity	Assets can meet current and future demand	Availability of appropriate infrastructure to meet community expectations in distributed locations. Regular review of City planning documents to address the provision of asset and services to improve capacity to meet growth. Early planning to address community and users needs – timely provision of community facilities.	Renewal of assets are upgraded where deemed required with considerations to cater for increased capacity or functionality requirements such as accessibility requirements, optimum standards or meet modern equivalent standards. Planning for new and increasing the asset portfolio are based on community request and assessed on need in accordance with the City's AM Policy.	Improved planning for new asset provisions – Development of management plans, master plans based on growth trends. Inclusion of budget allocations for future assets upgrades and new provisions in the LTFP. Improved long term planning for new and upgrades of transport assets with scheduled timeframes and budget planning in the LTFP with consideration to growth in East Wanneroo.

3.5 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 streetlights.
- 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 is 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.

Table 7 describes the different types of technical levels of service used and Table 8 describes the current levels of service in practice.

Table 7: 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 8: 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.

Key Performance Measure	Level of Service	Performance Measure Process	Performance Target
		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 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
	Defects not exceeding thresholds defined in the Engineering Maintenance Intervention Levels	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	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

Note that some of the service levels in the table are not currently measured and the measuring of these has been added to the improvement plan.

4. FUTURE DEMAND

4.1 Demand Drivers

Drivers affecting demand include things such as population change, regulations, changes in demographics, vehicle ownership rates and EV vehicles, consumer preferences and expectations, technological changes, economic factors, climate change, 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.

4.2 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 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.

Demand for new services will be managed through a combination of managing existing assets, upgrading of existing assets and providing new assets to meet future demand requirements.

Demand management practices include non-asset solutions, insuring against risks and managing failures. Where there a demand for infrastructure is known and supported, a project is listed in the 20-year Capital Works Program and LTFP for budget consideration. Pre-planning activities are undertaken to establish the feasibility and approval requirements of the project prior to consultation and budget approval for delivery.

The present position and projections for demand drivers that may impact future service delivery and utilisation of assets are documented in Table 9 and a Demand Management Summary shown in Table 10.

Table 9: Demand Drivers, Projections and Impact on Services

Demand Drivers	Present Position	Projection	Impact on Services	Demand Management Plan
Population growth	243,013 (2025)	437,016 (2046)	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	1,445km 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

Table 10: Demand Management Plan Summary

Service Impact	Demand Management Plan
Reduce reliance on the private motor vehicle for transportation.	• 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 • Ensure that design of subdivisions complement the use of public transport.
Increased traffic volumes on road network due to population growth	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: • Joondalup Drive dual carriageway upgrade – Tumbleweed Dr to Old Yanchep Rd.

Service Impact	Demand Management Plan
Expansion of Industrial and commercial areas of Neerabup Industrial Estate, Yanchep Industrial Estate, Wangara/Landsdale Industrial Area	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: • Flynn Drive road upgrade - Mather Drive to Old Yanchep Road. • Old Yanchep Road upgrade - Trandos Road to Wattle Avenue. • Gnangara Road upgrade – Wanneroo Road to Mirrabooka Ave. Upgrading of existing roads in the Neerabup Industrial Estate and Yanchep Industrial Estate to urban standards. Encourage and monitor heavy vehicles routes to ensure they utilise state controlled roads ensuring the industrial areas have access to major roads. Entry restriction for lower class roads to maintain life cycle costs. Support alternative delivery and access arrangement for local business activities.
Increased traffic volumes on road network due to population growth as part of the East Wanneroo Structure Plan	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: • Lenore Road dual carriageway upgrade – Kemp Street to High Road. • Franklin Road road upgrade – High Street to Caporn Street. • Caporn Street road upgrade – Pinjar Road to Franklin Road. • Pinjar Rd dual carriageway upgrade – Joondalup Drive to Flynn Dr.
Impact of increased traffic volumes on major intersections and potential speeding on local roads in residential areas.	• 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.	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:- • 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.	• 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.

Service Impact	Demand Management Plan
	• 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'.

New roads and pathways required to meet growth in new residential developments will be acquired from land developers through the land subdivision and development process. All plans submitted by developers in new subdivisions vetted by the City to ensure they meet the City's standard and specifications.

Acquiring new assets from land developers will commit Council to fund ongoing operations, maintenance costs and eventual replacement. It is critical that the City captures the data associated with these assets in asset registers to enable future financial planning for their eventual renewal.

5. LIFECYCLE MANAGEMENT PLAN

The lifecycle management plan details how the City plans to manage and operate the assets at the levels of service detailed in Section 3 while managing life cycle costs.

5.1 Background Data

The dimension and replacement value of Transport Infrastructure (as at 30 June 2024) considered in this AMP are summarised in the tables below:

Table 11: Current Road Assets

ROAD NETWORK SUMMARY	
Road Hierarchy	**Road Length (km)**
Access Road	1,315
Local Distributor	256
District Distributor A	111
District Distributor B	13
Regional Distributor	51
Grand Total	**1,746**

Table 12: Road Component Asset Replacement Values

Road Asset Component	Dimensions	Replacement Value ($)
Road Pavement (m2)	14,175,155	372,355,707
Road Seal (m2)	12,018,568	306,426,408
Kerbing (m)	3,040,843	285,930,467
Total Road Assets		**964,712,582**

Table 13: Current Pathway Assets

Pathway Asset Component	Length (km)	Dimensions (m^2)	Replacement Value ($)
Pathways – In-situ Concrete	1,297	2,488,905	279,155,535
Pathways – Asphalt/Bitumen	69	174,622	8,186,265
Pathways – Brick paving	11	31,029	3,206,797
Pathway – Composite	0.2	552	33,511
Pathway – Limestone	69	215,083	4,817,850
Total Pathway Assets	**1,446**	**2,910,189**	**295,399,958**

Table 14: Current Car Park Assets (excluding on street car parks)

Car park Asset Component	Dimensions	Replacement Value ($)
Car Park Pavement (m2)	373,544	9,122,412
Car Park Seal (m2)	339,586	8,077,488
Car Park Kerbing (m)	51,097	1,741,121
Carpark Lighting (no.)	556	1,958,800
Total Car Park Assets		**20,899,821**

Table 15: Current Bridge/Underpass Assets

Bridge Asset Component	Dimensions	Replacement Value ($)
Road Bridge – Underpasses (no.)	2 units	1,713,000
Total Bridge / Underpass Assets		**1,713,000**

Table 16: Current Street Furniture Assets

Street Furniture Asset Component	Dimensions	Replacement Value ($)
Bus Shelter - Standard (no.)	252	5,818,080
Bus Shelter – Non Standard (no.)	22	88,000
Pathway lighting and Special Street Lighting (no.)	213	817,270
Total Street Furniture Assets		**6,723,350**

5.1 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 figures below.

Figure 1: Age profile of road pavement

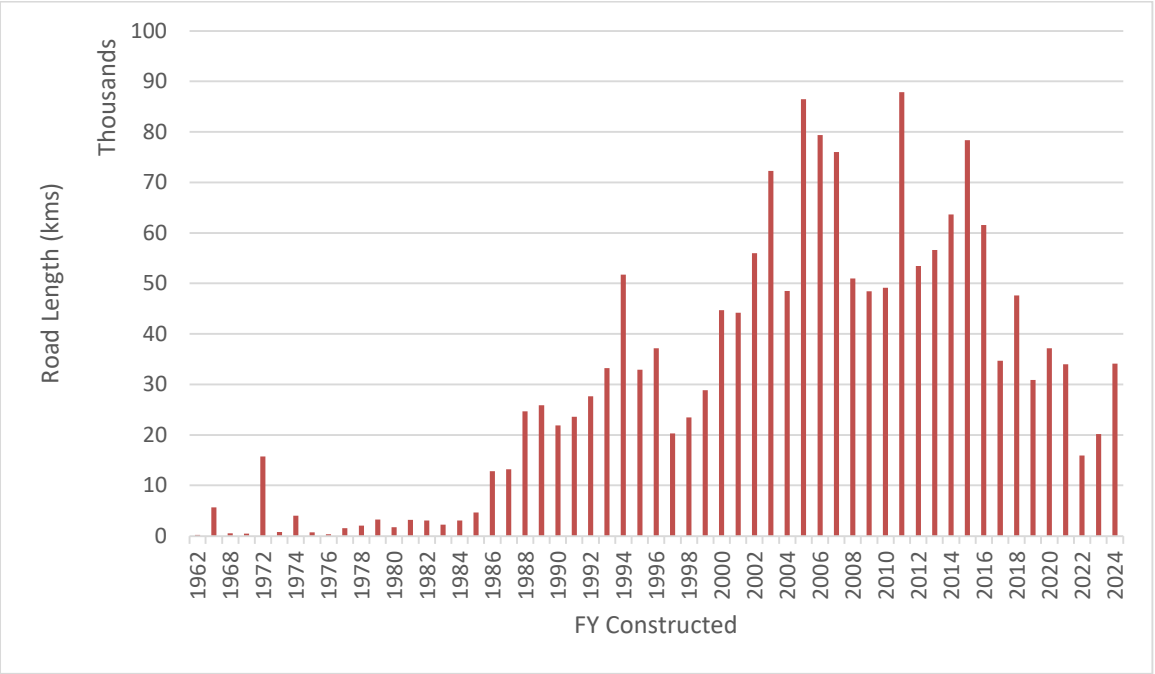
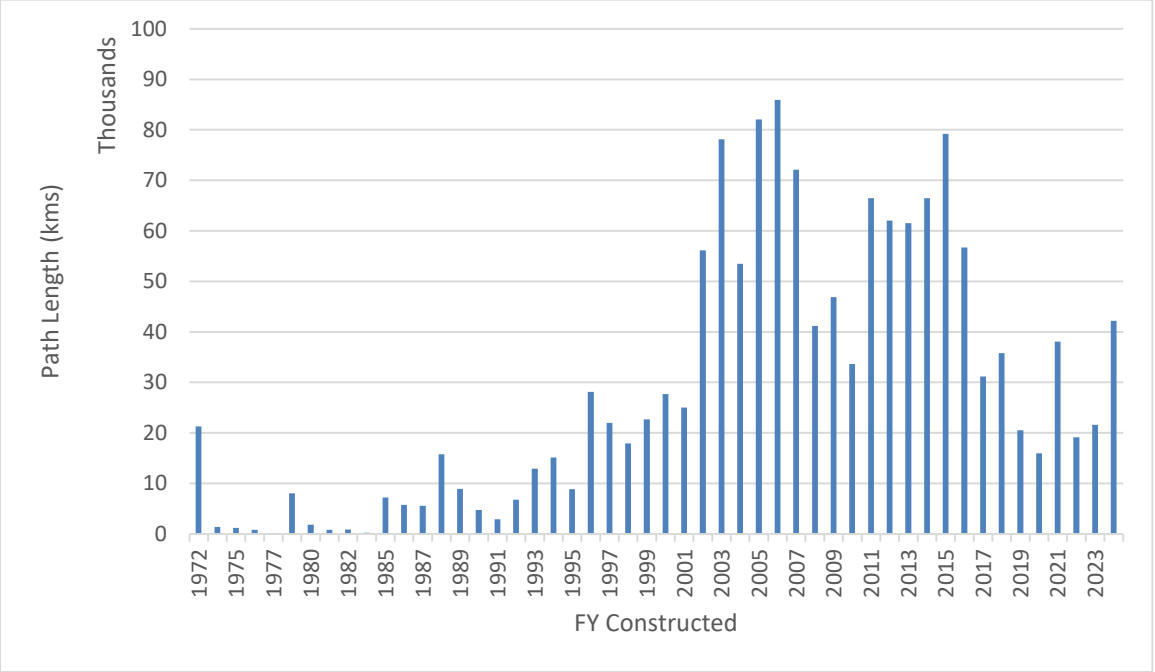


Figure 2: Age profile of pathways



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 3: Age profile of car parks

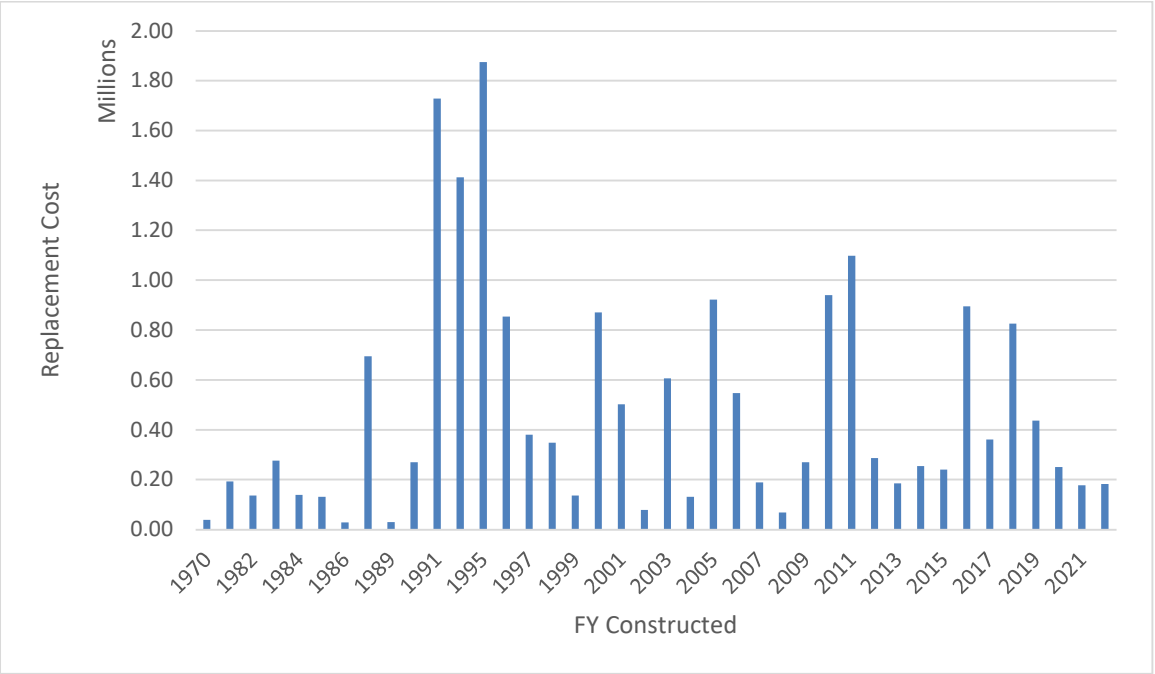
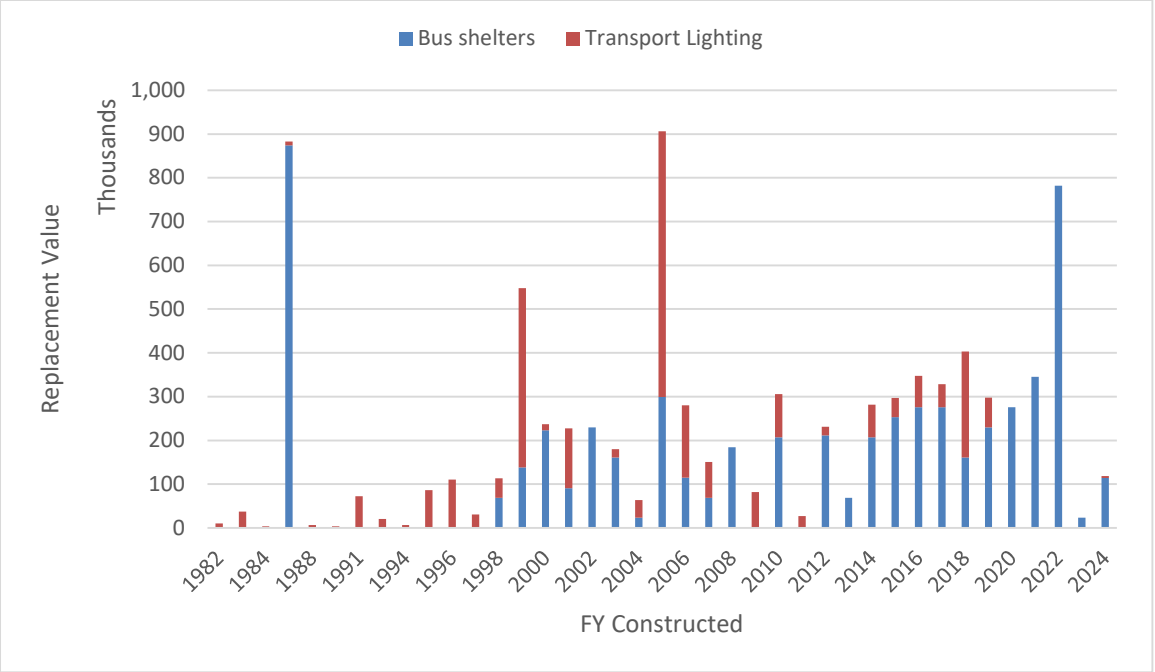


Figure 4: Age profile of Street furniture



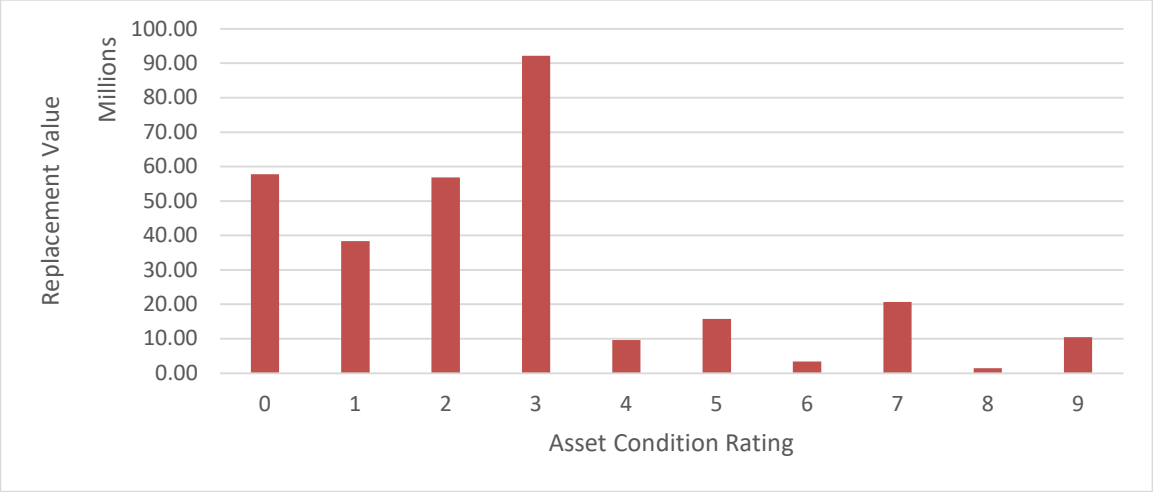
5.3 Condition Profile

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 tables below:-

Table 17: Assets inspection cycles

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

Figure 5: Condition profile of road seals



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 6: Condition profile of pathways

Note: Condition rating of pathways is based on age

Figure 7: Condition profile of Carparks Surface Seal

Note: Condition rating of carpark seals are based on the visual inspections

Figure 8: Condition profile of Bus shelters and Street Lighting

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.

1. 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.

2. 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).
3. 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.
4. 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.
5. The City currently has 2 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.
6. 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 until they are progressively replaced through the PTA bus shelter installation program..
7. There are currently no immediate concerns with renewal funding for City owned Street Lighting although the City will investigate upgrading the streetlights on Dundebar Road and Wanneroo Road to LED with a smart controls.

5.4 Operations and Maintenance Plan

Operations include regular activities to provide services. Examples of typical operational activities include cleaning, street sweeping, asset inspection, and utility costs.

Maintenance includes all actions necessary for retaining an asset as near as practicable to an appropriate service condition including regular ongoing day-to-day work necessary to keep assets operating. Examples of typical maintenance activities include pipe repairs, asphalt patching, and equipment repairs.

Maintenance includes reactive, planned and cyclic maintenance work activities. Assessment

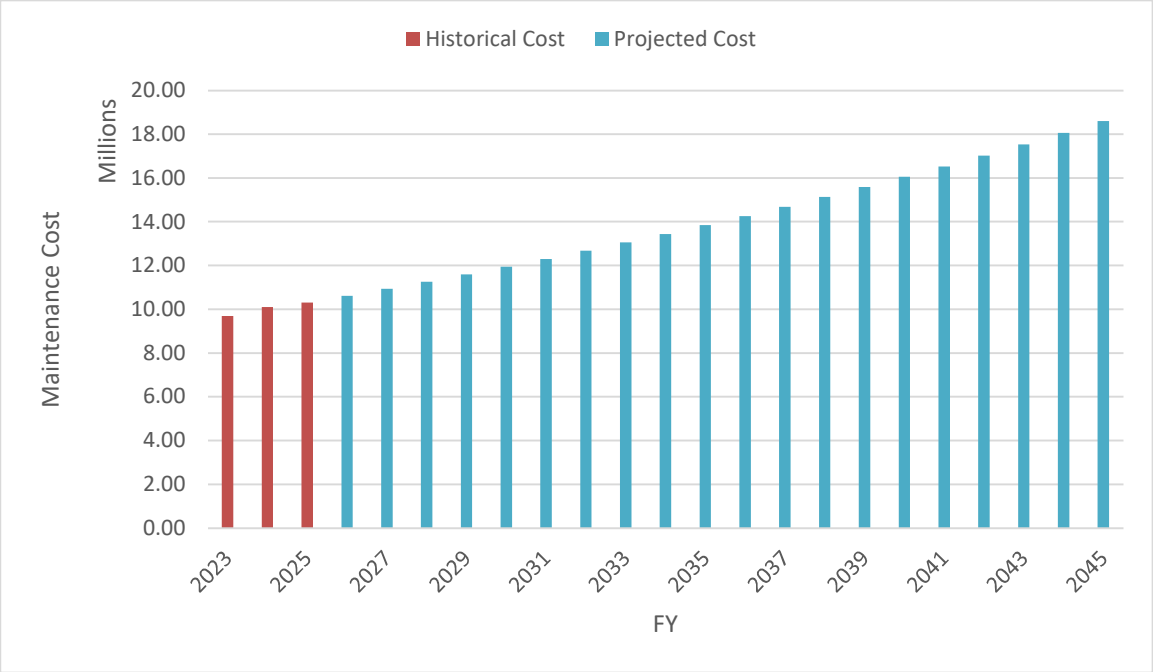
and prioritisation of reactive maintenance is undertaken by the City's Assets Maintenance team using experience and judgement. The City has many maintenance tasks and activities that are associated with the maintenance of transport assets. A large proportion of these procedures are well documented. However,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

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 has been developed for transport assets detailing the maintenance activities that are required to meet the agreed levels of service.

The trend in maintenance budgets and projected requirements is shown in Table 9.

Figure 9: Twenty Year Planned Engineering Maintenance Expenditure



Note that a large portion of the maintenance budget is attributed to Western Power's street lighting tariffs which is currently in the order of $7M per annum.

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 further 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.

5.5 Renewal Plan

The City has a road resurfacing program with annual allocations in the long term Capital Works Program to progressively renew pavement road seals as they reach the end of their useful life.

Road reseals represent the most significant renewal expenditure in this asset category. Future budget will see similar renewal programs set for other asst types such as bus shelters, pathways, streetlighting and carparks.

The responsibility for the programming of renewals of road seals lie with Asset Planning. The construction of the renewal works is project managed by the Infrastructure Capital Works service unit with the physical work predominantly being contracted out. The long term renewal demand requirement is derived from predictions made using available condition data and expected useful life of assets using the City's self-developed renewal spreadsheets. The City will move to utilise the Assetic Predictor module in future years for modelling renewals once the use of the software is fully understood.

The useful lives of each of the asset component 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. The useful lives and intervention conditions for all asset types are to be reviewed regularly. These processes should also incorporate updated parameters for better prediction to be made.

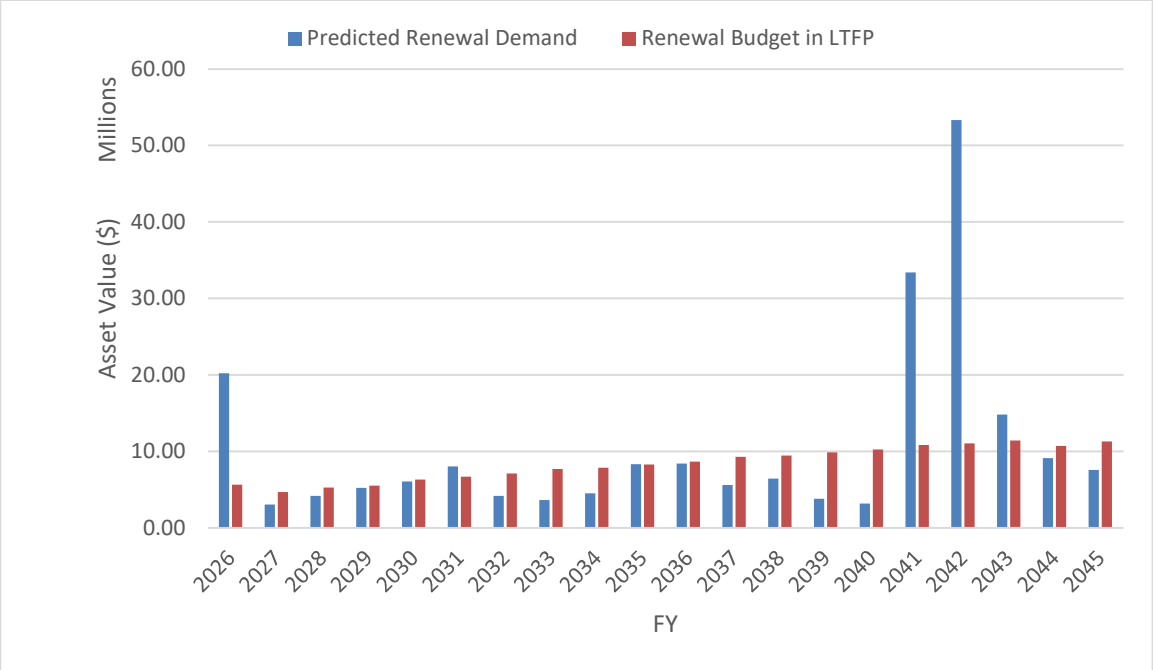
The annual asset renewal program is developed and prioritised based on the following criteria:

- the overall age and/or 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

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.

Figure 10 show the comparison between the predicted renewal demand and the renewal budget allocation for transport assets in the LTFP. The total requirement over the 20 year period is estimated at $212.9M and the corresponding renewal budget total over the same period totals $167.7. This equates to an Asset Renewal Funding Ratio of approximately 80%.

Figure 10: Transport Assets - Renewal Forecast v Budget



This means that the City is not far off fully funding its long term renewal demand. Note that the two significant spike shown in Figure 10 in reality will not occur in that manner. In time as we approach those years, the spikes will flatten out. This is because some asset will outperform its predicted life span and some will have a lesser performance. Thus having a regular asset condition assessment of the network will help with more reliable modelling results.

5.5 Acquisition and Upgrade Plan

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:

- 'Perth to Peel@3.5million: The Transport network'
- Perth Transport Plan for 3.5 Million
- City's Place Framework
- City's Transport Strategy
- City of Wanneroo Cycle Plan
- 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)
- East Wanneroo District Structure Plan
- 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 – Special Street Lighting with banner poles located in the central road median between Dundebar Road and Crisafulli Avenue.
- Rocca Way, Wanneroo Town Centre
- Dundebar Road, Wanneroo – Special Street Lighting with banner poles located along Dundebar Road between Wanneroo Road and Civic Drive.
- Ocean Keys Boulevard, Clarkson – Special Street Lighting with banner poles located along Ocean Keys Boulevard between Marmion Avenue and Key Largo Drive.

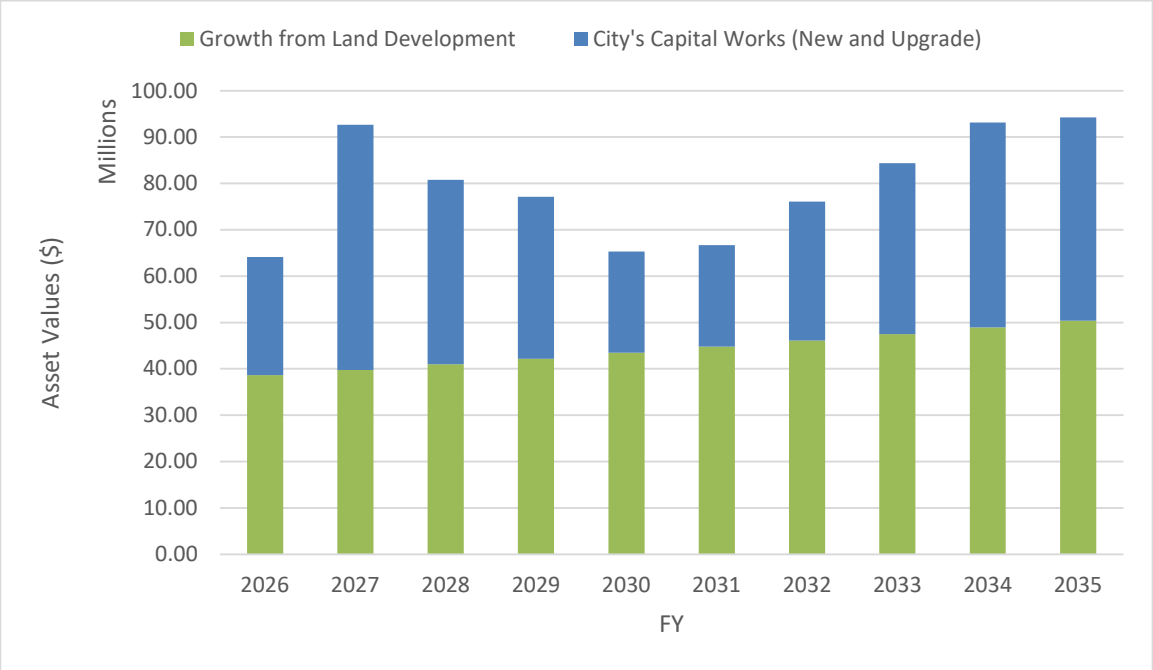
Since 2018, Western Power has added the use of LED technology to its range of street lighting standard options, based on its recognised operational cost saving benefits.. Accordingly, this

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.

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



A significant value of transport assets are constructed and 'gifted' to the City through the land development process. The magnitude of new additions to the asset portfolio annually will put added pressures on the budget and resourcing requirements for the ongoing maintenance of these assets. Accurate long term financial planning is critical for the maintenance budget in the long term to ensure the City keeps up the maintenance of these assets.

Ensuring these assets are constructed to a standard and quality that will last will be key to ensuring that the City is not unnecessary burdened with high maintenance and renewal costs associated with premature failure.

5.6 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 to interrogate the database to determine a list of programmed 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. For eg recently transfers have occurred for 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); and Marmion Avenue from the City's southern boundary with Joondalup up to Yanchep. These road sections are removed from the City's asset register accordingly.

5.7 Standards and Specification

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

- Local Government Guidelines for Subdivisional Development.
- 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

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.

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 identifies 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 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 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 18.

Table 18: 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. FINANCIAL SUMMARY

This section contains the financial requirements resulting from the information presented in the previous sections of this AM Plan. The financial projections will be improved as the discussion on desired levels of service and asset performance matures.

7.1 Financial Sustainability and Projections

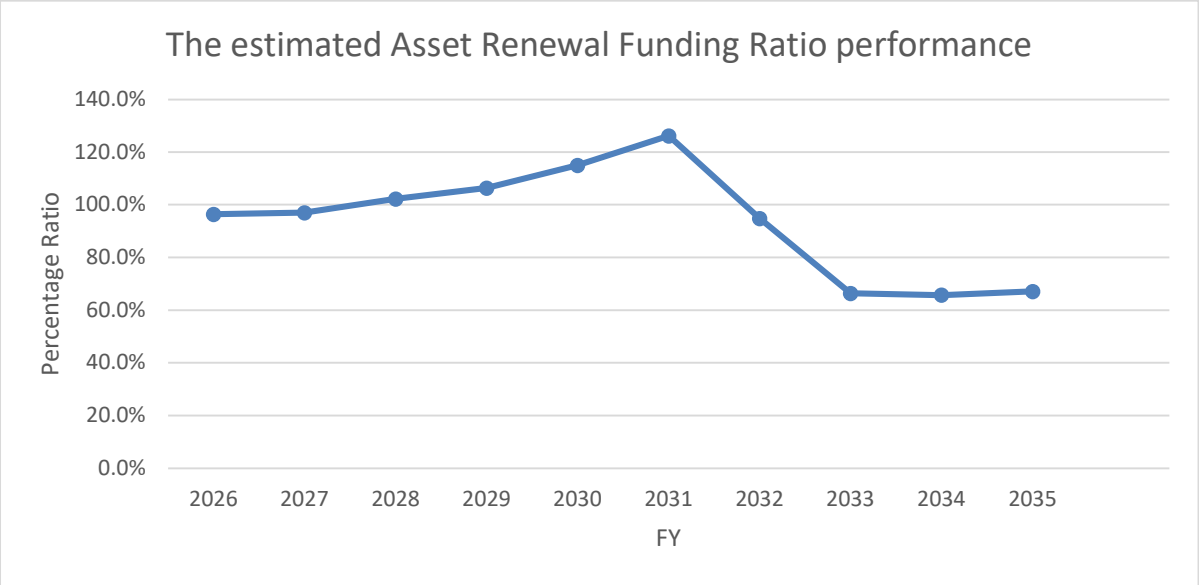
There are two key indicators of sustainable service delivery that are considered in AM. The two indicators are the:

$$\textbf{\textit{Asset Renewal Funding Ratio (ARFR)}} = \frac{\textit{proposed } \textbf{\textit{renewal budget}} \textit{ for the next 10 years}}{\textit{proposed } \textbf{\textit{renewal demand}} \textit{ for the next 10 years}}$$

$$\textbf{\textit{Lifecycle Funding Ratio (LFR)}} = \frac{\textit{proposed } \textbf{\textit{lifecycle budget}} \textit{ for the next 10 years}}{\textit{proposed } \textbf{\textit{lifecycle demand}} \textit{ for the next 10 years}}$$

The ARFR is an important indicator and illustrates how the City will be performing over the next 10 years in terms of funding its renewals demand. An ARFR of 100% would mean that the City intends to fully fund its asset renewal demand over the next 10 years.

At this stage the proposed renewal budget is adequate to meet the forecast renewal demand illustrated in the Charts in Section 5.5: Renewal Plan. The projected ARFR for this plan is shown in chart below.



The chart demonstrates that the City has strong plans to fund the renewal demand over the next ten years and maintain ratio close to the 100 % mark at least for the first 5 years. These figures will be reviewed annually to ensure that the City remain on track with funding its renewal demand.

The LFR measure is a similar measure to the ARFR except that the LFR includes all lifecycle costs, inclusive of asset renewal requirement, operations and maintenance costs over a 10-year period. This provides input into 10 year financial and funding plans aimed at providing the required services in a sustainable manner.

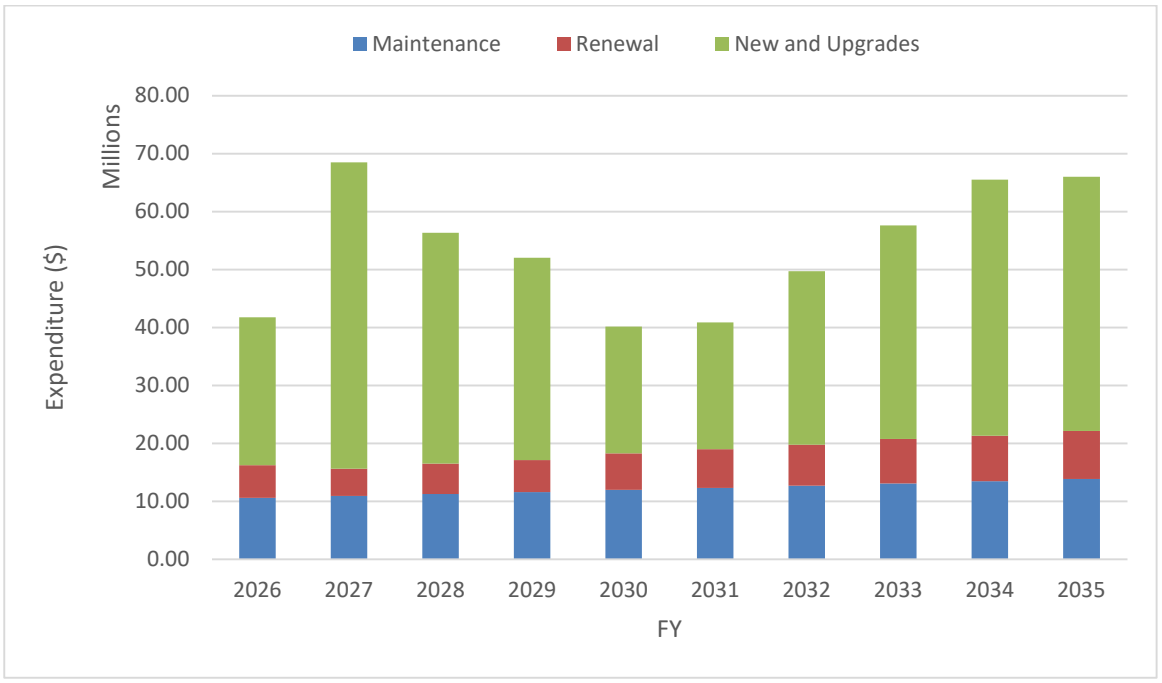
The City currently does not have an accurate way of forecasting it's long-term operating and maintenance budgeting requirement. As part of the LTFP process a percentage allowance for inflation and growth is added to the current financial year operating and maintenance budget. At financial year end, the total actual expenditure is measured against budget to determine the adequacy of budget allowances. Therefore, at this stage the LFR is not able to be calculated.

The financial projections will be improved as further information becomes available. A recent audit report identified improvements required in the City's calculations of the performance ratios. A joint Finance and Asset Management review is to be carried out to improve the processes associated with calculating the ratios.

7.2 Funding Strategy

The forecast renewal demand and maintenance requirements for this AM Plan is expected to be fully accommodated within the current long-term financial plan over the next 10 years. The financial expenditure projections for park assets over the coming 10 years are shown in Figure 12.

Figure 12: 20 Year Planned Expenditure for Transport Assets



The predicted 10 year maintenance and operations cost figures are expected to increase as the cost to maintain existing assets increases. These costs are inclusive of an assumed annual allowance increase to allow for growth and material costs. The current annual estimated percentage increases need to be validated with projections based on more accurate data.

The capital cost for upgrades and new assets shows high figures. These increased costs are attributed to the upgrade of road associated with the anticipated growth in East Wanneroo and the expansion of developments in Yanchep. These figures will be updated as more information about future projects becomes available.

7.3 Asset Valuation Forecasts

The value of transport assets covered by this AM Plan as at 30 June 2024 is summarised in Table 19.

Table 19: Replacement Value of Assets as at 30 June 2024

Asset Category	Replacement Cost ($)	Depreciated Replacement Cost (Fair Value) ($)	Annual Depreciation ($)
Transport Assets	1.289B	928M	19.35M

7.4 Key Assumptions Made in Financial Forecasts

Key assumptions made in this AM Plan are:

- Future operations and maintenance budgets are assumed to be consistent and increase with expansion of the parks asset portfolio.
- Forecasts have been made based on current asset databases and accurate rates for replacement cost.

7.5 Forecast Reliability and Confidence

The forecast costs, proposed budgets, and valuation projections in this AM Plan are based on the best available data. The data confidence used is classified on a 'A'–'E' level scale in accordance with Table 20.

Table 20: Data Confidence Grading System

Confidence Grade	Description
A. Very High	Data based on sound records, procedures, investigations and analysis, documented properly and agreed as the best method of assessment. Dataset is complete and estimated to be accurate ± 2%
B. High	Data based on sound records, procedures, investigations and analysis, documented properly but has minor shortcomings, for example some of the data is old, some documentation is missing and/or reliance is placed on unconfirmed reports or some extrapolation. Dataset is complete and estimated to be accurate ± 10%
C. Medium	Data based on sound records, procedures, investigations and analysis which is incomplete or unsupported, or extrapolated from a limited sample for which

Confidence Grade	Description
	grade A or B data are available. Dataset is substantially complete but up to 50% is extrapolated data and accuracy estimated ± 25%
D. Low	Data is based on unconfirmed verbal reports and/or cursory inspections and analysis. Dataset may not be fully complete, and most data is estimated or extrapolated. Accuracy ± 40%
E. Very Low	None or very little data held.

The estimated confidence level for and reliability of data used in this AM Plan is shown in Table 21.

Table 21: Data Confidence Assessment for Data used in AM Plan

Data		Confidence Assessment	Comment
Demand drivers		C	Demand and growth projections is subject to rate of development experienced
Growth projections		C	
Acquisition forecast		C	
Operations & Maintenance forecast		C	More accurate budget planning needs improvement.
Renewal forecast	Asset values	B	Renewals have been based on condition assessment where available.
	Asset useful lives	C	Useful lives are based on professional judgement, experience and available industry data.
	Condition modelling	B	Modelling based on asset data
Disposal forecast		C	Based on known planned disposals

8. PLAN IMPROVEMENT AND MONITORING

8.1 Improvement Plan

The improvement plan generated from this AM Plan targets the City's asset management of park assets and is detailed in Table 22. All tasks aim at improving AM practices in the short and longer term. The task outcomes will be measured and monitored over the next four years and progress reported on in the next TIAMP iteration.

8.2 Performance Monitoring

It is intended that this AM Plan is a live document that is relevant and integral to the daily AM activities at the City. The AM Plan has a life of 4 years whereby a review will be undertaken following this period.

The annual and LTFP projections detailed in the AM Plan represents the state of assets at the time of AM Plan development. The asset data and lifecycle cost projections are stored separately in the City's Content Manager record system.

Until such time a full review of this AM Plan is undertaken, the core data included in this plan and the associated projections is located in CM ##/##### and will be updated annually as new versions to inform subsequent LTFPs and annual budget developments.

8.3 Performance Measures

The effectiveness of the AM Plan can be measured in the following ways:

- The degree to which the required forecast costs identified in the TIAMP are incorporated into the LTFP,
- The degree to which the 1–5-year detailed works programs, budgets, business plans and corporate structures consider the works program trends provided by the TIAMP,
- The ARFR achieving the organisational target of 90 – 100%.
- Achieving the intended outcomes of the improvement plan.

Table 22: Improvement Plan

AM – Assets Maintenance, LD – Land Development, AP – Asset Planning,, 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 AP	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 AP	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)

Task No	Task	Responsibility	Resources Required	Proposed Completion date	Progress Comment
					are required.
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).	AP and EM	Internal	TBD	In progress
7	Develop a process and procedural documentation to support the AM system for transport assets. Establish ownership and accountabilities – ISO55000	AP, TS, EM, LD & ICW	Internal	TBD	Not started
8	Develop a Predictive Maintenance Model Using AI or Assetic for Road Assets • Completion Date: December 2026	AP, EM	Internal	TBD	Not started
9	Establish a Data Quality and Integrity Audit for Asset Management System (AMIS)	AP, CIS	Internal	TBD	Not started
10	Establish a Long-Term Contract for Regular Asset Monitoring and Maintenance	AP, EM	Internal	TBD	In progress

9. 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.
- 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.

From Nams+ template – IPWEA References

- *IPWEA, 2015, 3rd edn., 'International Infrastructure Management Manual', Institute of Public Works Engineering Australasia, Sydney, www.ipwea.org/IIMM*
- *IPWEA, 2008, 'NAMS.PLUS Asset Management', Institute of Public Works Engineering Australasia, Sydney, www.ipwea.org/namsplus.*
- *IPWEA, 2020 'International Infrastructure Financial Management Manual', Institute of Public Works Engineering Australasia, Sydney*
- *IPWEA, 2018, Practice Note 12.1, 'Climate Change Impacts on the Useful Life of Assets', Institute of Public Works Engineering Australasia, Sydney*
- *IPWEA, 2012, Practice Note 6 Long-Term Financial Planning, Institute of Public Works Engineering Australasia, Sydney, https://www.ipwea.org/publications/ipweabookshop/practicenotes/pn6*
- *IPWEA, 2014, Practice Note 8 – Levels of Service & Community Engagement, Institute of Public Works Engineering Australasia, Sydney, **https://www.ipwea.org/publications/ipweabookshop/practicenotes/pn8***
- *ISO, 2014, ISO 55000:2014, Overview, principles and terminology*
- *ISO, 2018, ISO 31000:2018, Risk management – Guideline*

10. GLOSSARY OF TERMS AND ABBREVIATIONS

For a of other Key Definitions Refer to Section 3 in Asset Management Policy 2023 (CM 16/106984 [V2]). The following terms are used in this AMP:

Term	Definition
Assets	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*:2014 Asset Management – Overview and Pinciples defines an '***Asset***' as an item, thing or entity that has potential or actual value to the organisation.
Asset Class	Groupings of assets of similar nature and use in local government's operations.
Asset Management	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.
Asset Management 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.
Asset Management Improvement Plan	The Asset Management Improvement Plan is a high-level plan that sets out how the asset management intent will be achieved and how objectives will be delivered on. It sets out the key focus areas and within these, the priority areas of work.
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.
Asset Management Strategy	A document that outlines how the City asset portfolio will meet the service delivery needs of its communities into the future, enabling the local government's asset management policies to be achieved and ensuring that asset management is established as part of the Integrated Planning Framework
Council	The elected council (comprising Councillors) of the City.

Term	Definition
Depreciation	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	The defined service quality for a particular activity (i.e. road maintenance) or service area (i.e. street lighting) against which service performance ca be measured. Service levels usually relate to quality, quantity, reliability, responsiveness, environmental considerations, acceptability and cost
Life Cycle	The phases of activities that an asset (or facility) goes through, including planning, design, construction, acquisition, operation, maintenance, rehabilitation and disposal.
Maintenance	The regular ongoing day-to-day work necessary to keep an asset operating to achieve its optimum life expectancy.
Maintenance Management Plan	A documented information that specifies the lifecycle activities and processes required on a day to day, periodical or annual basis to ensure the safe and intended function of the assets is maintained.
Operations	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	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	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	the cost of replacing an existing asset with an identical new asset.
Risk	probability and consequence of an event that could impact on the Council's ability to meet its corporate objectives.
Strategic Community Plan	A documented 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	Enhancing an existing asset to provide higher level of service.
Whole of Life Cost	The total cost of an asset throughout its life cycle inclusive of costs associated with planning, design, construction, acquisition, operation, maintenance, rehabilitation and disposal.

The following abbreviations are used in this AMP:

Abbreviation	Full Form
ACP	Asset Class Plan
AM	Asset Management
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	Undertake prompt repairs and maintenance of damaged transport assets and optimise serviceability and usability of the transport network. 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. Undertake regular pathway inspections of high pedestrian trafficked areas like the Wanneroo Town centre, near schools, shopping centres and near neighbourhood centres.
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	3.5.1 Deliver local transport infrastructure including roads, footpaths and cycle ways to improve accessibility 3.5.2 Connect walking and cycling opportunities to key destinations and distinctive places 3.5.3 Advocate for major integrated transport options close to communities	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. Undertake transport analysis on a neighbourhood district basis to determine future infrastructure needs. 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. Provision of infrastructure in support and promoting public transport services and alternative transport options. Provide adequate funding and resources for maintenance and renewal of existing transport network of assets.

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

APPENDIX B: LIFECYCLE COST PARAMETERS

Road Asset Component	Unit	Intervention Condition	Asset Economic Life (years)	Asset Useful Life
Road Pavement (High Traffic)	m2	7	85	75
Road Pavement (Low Traffic)	m2	8	100	94
Road Seal - Asphalt (High Traffic)	m2	7	25	22
Road Seal - Asphalt (Low Traffic)	m2	8	30	28
Road Seal - Paved (High Traffic)	m2	7	40	33
Road Seal - Paved (Low Traffic)	m2	8	40	36
Road Seal - Spray Seal (High Traffic)	m2	7	18	15
Road Seal - Spray Seal (Low Traffic)	m2	8	20	18
Road Kerb	m	8	55	50
Car park Pavement (Sealed)	m2	9	85	83
Car park Seal (Asphalt)	m2	9	25	24
Car park Seal (Paved)	m2	9	40	38
Car park Seal (Spray Seal)	m2	9	18	17
Car park kerbing	m	9	50	49
Car park Lighting	each	9	33	31
Pathways (Concrete)	m2	8	70	66
Pathways (Asphalt/Bitumen)	m2	8	30	28
Pathways (Brick)	m2	8	50	47
Pathways (Limestone)	m2	8	25	20
Road Bridge (Underpass)	each	8	100	96
Bus Shelters (Concrete)	each	9	50	48
Bus Shelters (Steel)	each	9	50	48
Bus Shelters (Tin)	each	9	30	29
Bus Shelters (Adshel)	each	9	50	48
Bus Shelters (COW)	each	9	50	48
Bus Shelters (PTA)	each	9	50	48
Street Lighting	each	8	33	30

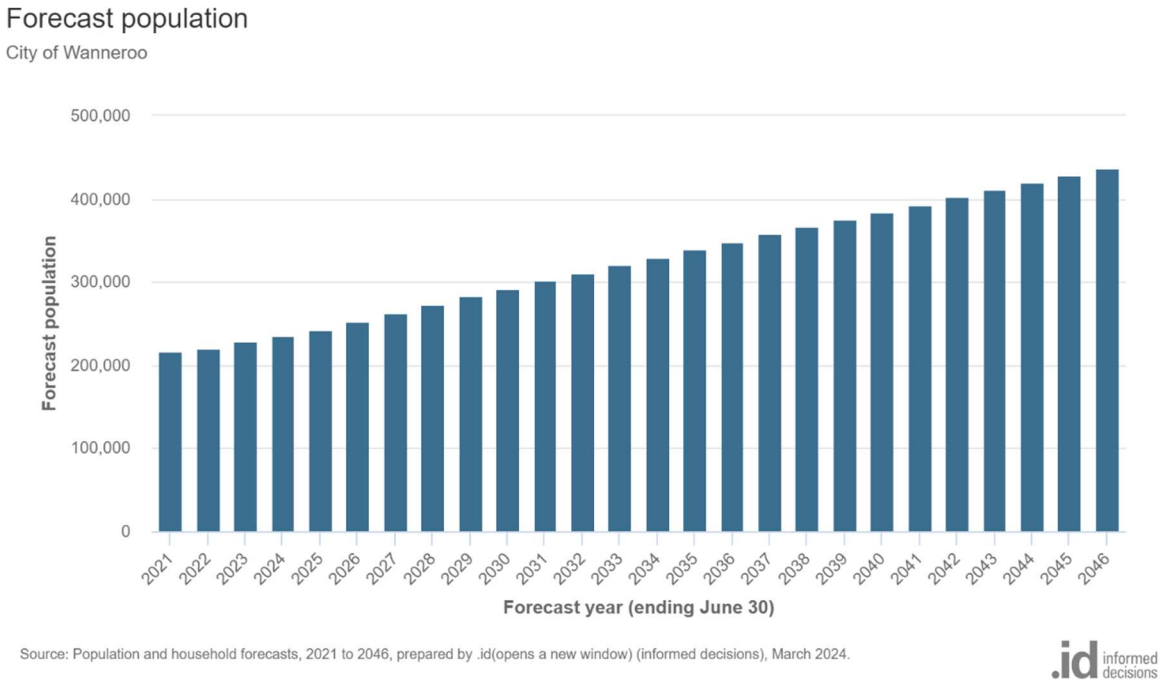
APPENDIX C: GENERIC DESCRIPTION OF ASSET CONDITION RATINGS

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 of Wanneroo Community Profile provides demographic analysis for the city and smaller areas within it based on results from the 2021, 2016, 2011, 2006, 2001, 1996 and 1991 Censuses of Population and Housing. The profile is updated with population estimates when the Australian Bureau of Statistics (ABS) releases new figures. (*https://forecast.id.com.au/wanneroo*).

Population forecast to 2046

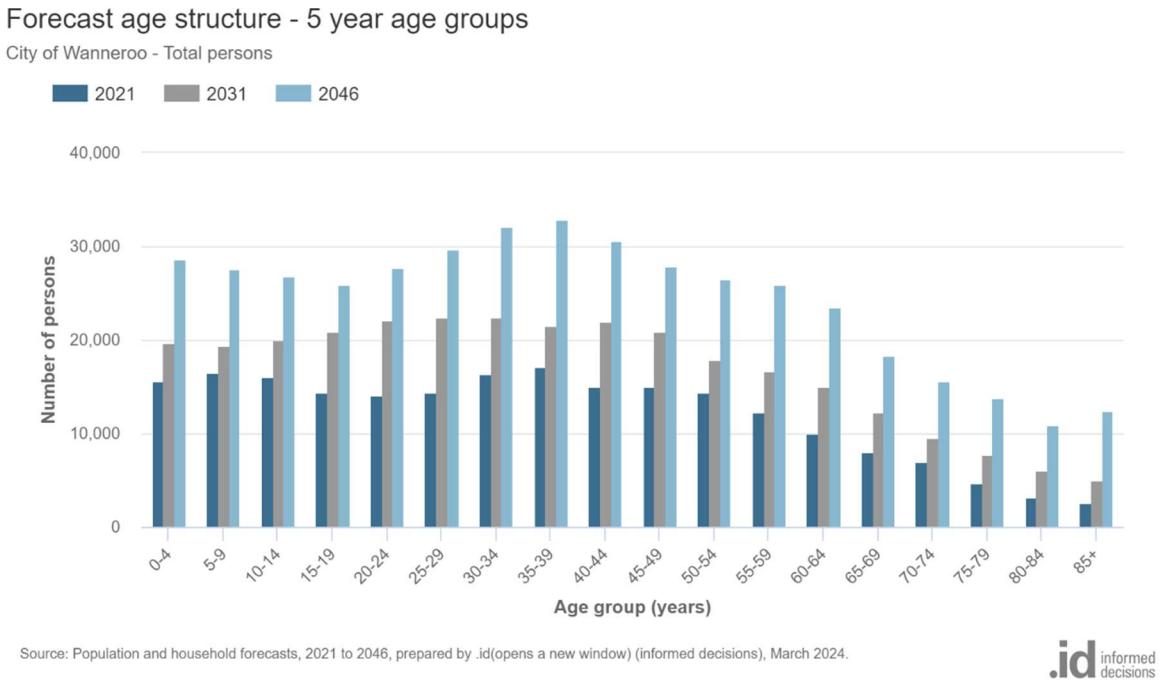


The City of Wanneroo population forecast for 2025 is 243,013 and is forecast to grow to 437,016 by 2046.

Between 2021 and 2046, the population for the City of Wanneroo is forecast to increase by 220,581 persons (101.92% growth), at an average annual change of 2.85%.

The City of Wanneroo population and household forecasts present what is driving population change in the community and how the population and age structure will change each year between 2021 and 2046

Age Structure forecast to 2041



Between 2021 and 2031, the age structure forecasts for City of Wanneroo indicate a 22.7% increase in population under working age, a 60.9% increase in population of retirement age, and a 41.3% increase in population of working age.

APPENDIX E: TRANSPORT ASSETS – CAPITAL SUBPROGRAMS

(Figures reported in '000)

Sub Program	Asset Location	Work Description	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045
Capital Works Renewals																						
Pathways & Trails	Quinns Mindarie Foreshore path (Clarecastle Retreat to Quinns SLSC) in Mindarie Foreshore Reserve	Pathway renewal min 3m width	85	50	550	550	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Roads	Amberton Avenue (A)	Road Rehabilitation MRRG from Girrawheen Ave to Hainsworth Ave	405	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Roads	Amberton Avenue (B)	Road Rehabilitation MRRG from Hainsworth Ave to Marangaroo Dr	340	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Roads	Errina Road	Road Rehabilitation MRRG from Azelia St to Mirrabooka Ave	535	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Roads	Hainsworth Avenue	Road Rehabilitation MRRG from Amberton Ave to Beach Rd	545	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Roads	MRRG Road Rehabilitation Program	Renewal of identified Road Rehabilitation sites	-	1,072	1,125	1,125	1,125	1,125	1,125	1,125	1,125	1,125	1,125	1,125	1,125	1,125	1,125	1,125	1,125	1,125	-	-
Roads	Recurring Program, Renew Transport Infrastructure Assets	Renewal of various transport infrastructure assets on a priority basis	3,437	3,477	3,517	3,557	3,597	3,637	3,677	3,717	3,757	3,797	3,837	3,877	3,917	3,957	3,997	4,037	4,077	4,117	4,157	4,197
Roads	Recurring Program, Renew Transport Infrastructure Assets (Funding Increase)	Renewal of various transport infrastructure assets on a priority basis	-	-	-	-	1,500	1,855	2,210	2,565	2,920	3,275	3,630	3,985	4,340	4,695	5,050	5,405	5,760	6,115	6,470	6,825
Street Landscaping	Christmas Decorations	Renew Christmas Decorations at various locations	200	-	-	200	-	-	-	200	-	-	-	200	-	-	-	200	-	-	-	200
Traffic Treatments	Recurring Program, Road Furniture Renewals (including Bus Shelter)	Bus shelter renewals at various locations	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75
Renew Total			**5,622**	**4,673**	**5,267**	**5,507**	**6,297**	**6,692**	**7,087**	**7,682**	**7,877**	**8,272**	**8,667**	**9,262**	**9,457**	**9,852**	**10,247**	**10,842**	**11,037**	**11,432**	**10,702**	**11,297**

Sub Program	Asset Location	Work Description	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045
Capital Works Upgrades																						
Community Buildings	Recurring Program, Upgrade Accessibility To Community Car Parks	Upgrades to improve Accessibility to Community Car Parks	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170	170	185
Community Buildings	Rotary Park	Upgrade carpark accessibility including ACROD Bus bay	60	200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Foreshore Management	Frederick Stubbs Park	Upgrade Carpark and Surrounds	1,000	5,100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pathways & Trails	Lenore Road	Elliot Rd to northern bdry Cell 4 (actually Stockholm Rd) Dual Use Path $66,000 (DCP)	-	-	-	-	20	66	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pathways & Trails	Yellagonga Regional Park /Chianti Estate	Upgrade section of pathway that is subject to seasonal inundation from groundwater.	425	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Roads	Badgerup Road	Upgrade to dual carriageway from Ocean Reef Road to (future) Sydney Road / Hawkins Road intersection	-	-	500	500	500	3,281	4,781	4,781	4,781	4,781	-	-	-	-	-	-	-	-	-	-
Roads	Badgerup Road	Upgrade Ashby Street to Ross Street	-	-	-	-	-	-	-	-	-	-	-	-	-	900	1,400	-	-	-	-	-
Roads	East Wanneroo Town Planning Scheme Cell 2	Upgrade Infrastructure for Outstanding DCP Commitments	-	1,864	2,686	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Roads	East Wanneroo Town Planning Scheme Cell 3	Upgrade Infrastructure for Outstanding DCP Commitments	-	-	-	2,421	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Roads	East Wanneroo Town Planning Scheme Cell 4	Upgrade Infrastructure for Outstanding DCP Commitments	30	1,020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Roads	Elliot Road	Construct dual carriageway from Lenore Road to Whiteman - Yanchep Highway	-	-	-	-	500	1,283	1,283	1,283	1,283	1,283	1,283	1,283	1,283	1,283	1,283	1,283	1,283	1,283	1,283	1,283
Roads	Flynn Drive	Mather Drive to Old Yanchep Road - Contribution to roadworks as and service relocations by BGJV	4,210	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Roads	Flynn Drive	Upgrade to dual carriageway from Pinjar Rd to Old Yanchep Road	-	19,000	4,794	730	750	670	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Roads	Flynn Drive	Upgrade to dual carriageway from Wanneroo Rd to Old Yanchep Road	1,700	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Roads	Franklin Road / Lenore Road	Upgrade/construct dual carriageway from Elliot Road to Neaves Road	-	-	100	500	500	500	13,361	14,861	14,861	14,861	14,861	-	-	-	-	-	-	-	-	-
Roads	Girrawheen Avenue	Upgrade from Hudson Ave to Nanovich Ave	50	750	635	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Roads	Gnangara Road	Upgrade and Realignment from Wanneroo Road to Hartman Drive	26	100	100	50	5,074	5,074	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Roads	Gnangara Road	Upgrade from Hartman Drive to Mirrabooka Avenue	-	-	-	-	28	-	-	-	-	-	-	-	-	5,774	5,774	4,420	-	-	-	-
Roads	Hawkins Road - Trichet Rd to Ross St	Road widening and upgrade of pavement structure as part of Commodity Route funding program	40	180	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Roads	Joondalup Drive	Upgrade to dual carriageway from Ghostgum Blvd to Old Yanchep Rd	-	-	-	-	-	-	500	6,000	6,000	5,500	-	-	-	-	-	-	-	-	-	-

Sub Program	Asset Location	Work Description	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045
Roads	Lenore Road	Upgrade to dual carriageway from Kemp St to Elliot Rd	526	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Roads	Mather Drive	Upgrade from Flynn Drive to Pederick Road	-	500	1,500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Roads	Mirrabooka Avenue / Kingsway	Upgrade Intersection with capacity improvements	1,068	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Roads	MRRG Road Improvement Program	Construct second carriageway and intersection capacity improvement treatments on district distributor roads - subject to detailed submission & approval by MRRG.	-	-	-	-	-	-	-	-	7,500	7,500	7,500	7,500	7,500	-	-	-	7,500	7,500	7,500	-
Roads	Neaves Road	Upgrade from Old Yanchep Road to (future) Franklin Road	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	500	500	3,500	5,000	4,777
Roads	Neaves Road	Upgrade to dual carraigeway from Old Yanchep Road to (future) Franklin Road	-	-	-	-	-	-	-	-	-	-	-	-	-	-	500	-	-	-	-	-
Roads	Old Yanchep Road - Flynn Drive to Pederick Road	Upgrade first carriageway on ultimate alignment. Includes upgrading of street lighting (subject to detailed design, construction estimate and firm quotations from Service Providers)	-	100	1,650	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Roads	Old Yanchep Road and Trandos Road intersection	Upgrade Intersection with capacity improvements	2,100	540	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Roads	Orchid Road	Construct new road from Pederick Road to Wattle Ave East	-	-	5,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Roads	Orchid Road and Trandos Road	Upgrade roads to industrial standard.	100	-	-	-	3,850	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Roads	Pederick Road	Construct new road from Mather Drive to Pinnacle Drive	-	250	250	3,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Roads	Pederick Road	Upgrade to dual carriageway from Mather Drive to Old Yanchep Road	-	250	250	10,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Roads	Pinjar Road	Upgrade to dual carriageway from Joondalup Dr to Golf Links Dr	887	887	887	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Roads	Quinns Rocks Catchment	Upgrade Road Drainage System Program as listed in the 'Quinns Rocks Stormwater Drainage Catchment Study'.	5	-	800	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Roads	Recurring Program, Upgrade Rural Roads	Upgrade to sealed pavement	-	820	850	750	750	750	750	750	750	750	750	750	750	750	750	750	750	750	-	-
Roads	Rocca Way	Upgrade Road from Dundebar Road to Conlan Avenue	-	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Roads	Rocca Way	Upgrade Rocca Way from Dundebar Road to Conlan Avenue	-	-	50	500	500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Roads	Safari Place and Bailey Road	Stage 2 - Upgrade of existing road to improve road alignment, involves land requirements - construction.	-	-	-	30	340	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Roads	Sydney Road	Upgrade from Ocean Reef Road to (future) Badgerup Road / Hawkins Road intersection	-	-	-	-	-	-	-	-	-	-	-	1,507	-	-	-	-	-	-	-	-

Sub Program	Asset Location	Work Description	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045
Roads	Sydney Road	Upgrade/construct dual carriageway from Ocean Reef Road to (future) Badgerup Road / Hawkins Road intersection	-	-	500	500	500	1,507	1,507	1,507	1,507	1,507	1,507	-	1,507	1,507	1,507	1,507	1,507	1,507	1,514	-
Roads	Townsend Road	Road widening and upgrade of pavement structure as part of Commodity Route funding program	60	640	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Roads	Yanchep Beach Road	Upgrade to dual carriageway from Marmion Ave to Spinnaker Blvd	750	4,893	4,893	4,893	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sports Facilities	Liddell Park	Upgrade Car Park (ARMP)	-	-	-	-	-	-	-	198	-	-	-	-	-	-	-	-	-	-	-	-
Sports Facilities	Scenic Park	Upgrade Car Park (ARMP)	-	-	-	-	-	-	-	-	-	19	166	-	-	-	-	-	-	-	-	-
Street Landscaping	Clarkson Train Station Precinct, Ocean keys Boulevard, Clarkson	Design and construction of streetscape rejuvenation infrastructure	-	30	75	400	400	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Street Landscaping	Marmion Avenue (north of Yanchep Beach Road)	Design and construction of street landscaping	50	800	800	800	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Street Landscaping	Recurring Program, Upgrade Streetscape Infrastructure	Design and construction of streetscape rejuvenation infrastructure	620	75	80	125	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85
Street Landscaping	Wanneroo Town Centre Precinct	Implementation of Wanneroo Town Centre masterplan outcomes	-	20	80	280	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Street Landscaping	Yanchep Beach Road (Beach to Bush Linkage), Yanchep	Design and construction of streetscape rejuvenation infrastructure	-	-	-	-	-	-	110	560	560	-	-	-	-	-	-	-	-	-	-	-
Street Landscaping	Yanchep Lagoon, Brazier Road, Yanchep	Design and construction of streetscape rejuvenation infrastructure	-	-	55	560	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Traffic Treatments	Anchorage Drive (South)	Pedestrian Crossing Signals	-	-	-	-	600	600	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Traffic Treatments	Attwell Street	Upgrade Traffic Treatments from Gnangara Road to Furniss Road	-	-	23	100	345	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Traffic Treatments	Azelia Street	Upgrade of Traffic Management Scheme from The Avenue (south) to The Avenue (north)	355	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Traffic Treatments	Baltimore Parade	Upgrade Traffic Treatments from Hester Avenue to Lukin Drive	-	-	-	-	-	-	-	-	75	500	1,000	-	-	-	-	-	-	-	-	-
Traffic Treatments	Beachside Parade	Upgrade traffic treatments from Zamia Rise to Templetonia Boulevard	246	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Traffic Treatments	Belvoir Parkway	Construct parking embayment	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	45	-
Traffic Treatments	Berriman Drive	Upgrade Traffic Treatments from Prindiville Drive (East) to Prindiville Drive (West)	-	-	-	47	200	740	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Traffic Treatments	Brazier Rd	Upgrade Traffic Management Scheme from Yanchep Beach Road to Capricorn Esplanade including 3m red asphalt shared pathway	50	660	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Sub Program	Asset Location	Work Description	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045
Traffic Treatments	Capricorn Esplanade	Upgrade Traffic Management Scheme. Element of Yanchep Lagoon Masterplan project	-	-	200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Traffic Treatments	Chancellor Rise, Decourcey Way	Upgrade to Safe Active Street	-	-	-	-	350	350	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Traffic Treatments	Connolly Drive	Pedestrian Crossing Signals	-	-	-	-	-	-	55	300	350	55	300	350	55	300	350	-	-	-	-	-
Traffic Treatments	Connolly Drive	Signalised Midblock Pedestrian Crossing north of Homebush Drive	-	-	300	350	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Traffic Treatments	Connolly Drive	Signalised Pedestrian Crossing north of Homebush Drive	-	55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Traffic Treatments	Connolly Drive	Signalised Pedestrian Crossing north of Jenolan Way	-	55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Traffic Treatments	Connolly Drive / Jenolan Way	Signalised Pedestrian Crossing	-	-	300	350	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Traffic Treatments	Connolly Drive / Kingsbridge Boulevard	Upgrade Roundabout	-	-	750	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Traffic Treatments	Coogee Road	Upgrade Traffic Treatments from Tumbleweed Drive to road end	-	-	-	75	500	1,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Traffic Treatments	Elliot Road	Upgrade Traffic Treatments from Aldersea Circle to Whinston Crescent	-	-	-	-	-	-	-	-	50	414	-	-	-	-	-	-	-	-	-	-
Traffic Treatments	Elliot Road	Upgrade Traffic Treatments from Quarkam Street to Montreal Street	-	-	-	-	-	-	-	23	-	-	-	-	-	-	-	-	-	-	-	-
Traffic Treatments	Evandale Road	Upgrade Traffic Treatments from Kingsway to Hepburn Avenue	-	-	-	-	-	-	-	26	50	463	-	-	-	-	-	-	-	-	-	-
Traffic Treatments	Furniss Road	Upgrade Traffic Treatments from Mosey Street to Mirrabooka Avenue	-	-	-	-	46	200	721	-	-	-	-	-	-	-	-	-	-	-	-	-
Traffic Treatments	Giralt Road	Upgrade Traffic Treatments from Marangaroo Drive to Hepburn Avenue	-	-	-	-	44	100	778	-	-	-	-	-	-	-	-	-	-	-	-	-
Traffic Treatments	Gnangara Road / Hartman Drive	Upgrade Roundabout	-	-	800	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Traffic Treatments	Greenvale Place	Upgrade Traffic Treatments from Coogee Road to Road End	-	37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Traffic Treatments	Greenvale Place	Upgrade Traffic Treatments from Coogee Road/Tumbleweed Drive to road end	-	-	100	642	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Traffic Treatments	Hainsworth Avenue	Upgrade Traffic Treatments from Amberton Avenue to Beach Road	-	-	-	-	-	30	100	500	-	-	-	-	-	-	-	-	-	-	-	-
Traffic Treatments	Hartman Drive / Prindiville Drive	Construct Traffic Signals	804	801	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Traffic Treatments	Hester Avenue	Pedestrian Crossing Signals	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	55	300	350	-	-
Traffic Treatments	Joseph Banks Boulevard	Upgrade Traffic Treatments from Grandis Boulevard to Splendens Avenue	-	-	-	-	-	-	-	-	-	16	25	284	-	-	-	-	-	-	-	-

Sub Program	Asset Location	Work Description	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045
Traffic Treatments	Kemp Street	Upgrade Traffic Treatments from Archer Street to Lenore Road	40	100	690	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Traffic Treatments	Kingsway	Upgrade Traffic Treatments from Alhambra Parkway to Alexander Drive	-	-	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Traffic Treatments	Kingsway	Upgrade Traffic Treatments from Mirrabooka Avenue to Rangeview Road	-	-	-	100	259	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Traffic Treatments	Lagoon Drive	Upgrade Traffic Treatments from Marmion Avenue to Lagoon Drive	-	-	-	-	-	-	-	-	-	26	50	475	-	-	-	-	-	-	-	-
Traffic Treatments	Landbeach Boulevard	Upgrade of Traffic Management Scheme from Connolly Drive to Cardross Gardens	-	-	-	-	-	-	-	-	-	-	34	100	580	-	-	-	-	-	-	-
Traffic Treatments	Marangaroo Drive / Girrawheen Avenue	Upgrade Intersection with Geometric Improvements	1,303	1,303	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Traffic Treatments	Marmion Avenue	Pedestrian Crossing Signals	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	55	300	350
Traffic Treatments	Mirrabooka Avenue	Signalised Pedestrian Crossing north of Landsdale Road	-	55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Traffic Treatments	Mirrabooka Avenue / Landsdale Road	Signalised Midblock Pedestrian Crossing	-	-	300	350	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Traffic Treatments	Mirrabooka Avenue / Koondoola Avenue / Montrose Avenue	Upgrade Intersection with Geometric Improvements	281	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Traffic Treatments	Motivation Drive	Upgrade Traffic Treatments from Excellence Drive to Ocean Reef Road	-	-	-	-	-	-	-	32	100	537	-	-	-	-	-	-	-	-	-	-
Traffic Treatments	Neaves Road	Upgrade shoulders, line marking, lighting and guideposts	193	4,900	4,950	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Traffic Treatments	Placeholder - LATMP assessed traffic treatments	Install traffic treatments to improve road safety and amenity in accordance with LATM Policy	-	-	-	-	-	-	-	-	-	-	-	50	50	1,000	1,000	1,000	1,000	975	1,000	500
Traffic Treatments	Placeholder Traffic Treatments (Blackspot Funded)	Upgrade of identified Black Spot sites - Placeholder	-	-	-	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000
Traffic Treatments	Quinns Road	New Traffic Treatments from Tapping Road to Bennett Street	200	200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Traffic Treatments	Recurring Program, Miscellaneous Traffic and Parking Management	Miscellaneous traffic and parking management	-	-	-	-	-	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75
Traffic Treatments	Recurring Program, Miscellaneous Traffic and Parking Management - 2025/26	Miscellaneous traffic and parking management	75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Traffic Treatments	Recurring Program, Miscellaneous Traffic and Parking Management - 2026/27	Miscellaneous traffic and parking management	-	75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Sub Program	Asset Location	Work Description	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045
Traffic Treatments	Recurring Program, Miscellaneous Traffic and Parking Management - 2027/28	Miscellaneous traffic and parking management	-	-	75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Traffic Treatments	Recurring Program, Miscellaneous Traffic and Parking Management - 2028/29	Miscellaneous traffic and parking management	-	-	-	75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Traffic Treatments	Recurring Program, Miscellaneous Traffic and Parking Management - 2029/30	Miscellaneous traffic and parking management	-	-	-	-	75	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Traffic Treatments	Recurring Program, Upgrade Road Infrastructure and Streetscapes - Design Only	Survey, design and documentation of various future road and streetscape upgrades	-	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300
Traffic Treatments	Recurring Program, Upgrade Road Infrastructure and Streetscapes - Design Only - 2025-26	Survey, design and documentation of various future road and streetscape upgrades	300	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Traffic Treatments	Recurring Program, Upgrade Street Lighting	Upgraded street lighting for road network to address safety issues	250	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220	220
Traffic Treatments	Renshaw Boulevard	Upgrade Traffic Treatments from Aldersea Circle to Whinston Crescent	-	-	-	-	-	-	11	50	160	-	-	-	-	-	-	-	-	-	-	-
Traffic Treatments	Rothesay Heights	Upgrade Traffic Treatments from Honiara Way - Rochester Drive	-	-	-	-	-	-	16	50	270	-	-	-	-	-	-	-	-	-	-	-
Traffic Treatments	Santa Rosalia Vista, Seurat Loop, Cezane Bend	Upgrade to Safe Active Street	-	309	309	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Traffic Treatments	Santorini Promenade	Upgrade Traffic Treatments Scheme from Marmion Avenue to Benenden Avenue	200	670	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Traffic Treatments	Templeton Crescent	Upgrade Traffic Treatments from Wanneroo Road to Marangaroo Drive	-	-	-	-	-	-	-	-	-	-	36	100	611	-	-	-	-	-	-	-
Traffic Treatments	Two Rocks Road Beach Access Way	Upgrade Intersection with Geometric Improvements	45	215	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Traffic Treatments	Waldburg Drive	Upgrade Traffic Treatments from Joondalup Drive to Yandella Promenade	-	-	-	-	-	17	50	296	-	-	-	-	-	-	-	-	-	-	-	-
Traffic Treatments	Wanneroo Road / Elliot Road	Upgrade Intersection with Geometric Improvements	380	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Traffic Treatments	Wanneroo Road / Kingsway	Upgrade Intersection with Geometric Improvements	-	100	600	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Traffic Treatments	Windsor Road	Upgrade Traffic Treatments from Wanneroo Road to Road End	-	34	100	580	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Traffic Treatments	Woodvale Drive	Upgrade Traffic Treatments Wanneroo Road to City of Joondalup boundary	250	250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Traffic Treatments	Wyatt Road	Upgrade Traffic Treatments from Montreal Street to Nicholas Road	-	-	-	-	-	-	-	-	23	50	407	-	-	-	-	-	-	-	-	-
Upgrade Total			**18,849**	**48,576**	**36,739**	**32,398**	**19,906**	**20,019**	**27,874**	**35,068**	**42,171**	**42,113**	**31,770**	**16,249**	**16,186**	**15,365**	**16,415**	**13,365**	**16,690**	**19,770**	**20,492**	**10,775**

Sub Program	Asset Location	Work Description	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045
Capital Works New																						
Community Safety	Various Car Park Sites	NewAutomatic Closing Gates and CCTV at various Car parks	50	210	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pathways & Trails	Alexander Drive	New shared path, west side from Hepburn Avenue to Gnangara Road	1,410	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pathways & Trails	Alexander Heights Park	New Pathway	336	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pathways & Trails	Hartman Drive	New Shared Pathway from Ocean Reef Rd to Gnangara Rd	1,003	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pathways & Trails	Marmion Avenue	New Shared Pathway from Yanchep Beach Road to Botanic Boulevard	748	975	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pathways & Trails	Recurring Program, New Major Pathways	Design and construction of new footpaths, shared paths and cycling facilities subject to prioritised program	1,142	1,489	1,659	1,692	1,601	1,506	1,719	1,420	1,664	1,408	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600
Pathways & Trails	Recurring Program, New Minor Pathways And End Of Trip Facilities	New pathway connections to bus stops, children's crossings, disability access improvements and end of trip facilities	387	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300
Pathways & Trails	Various Locations	New Shared Pathway from Butler Station to Alkimos Station	1,028	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pathways & Trails	Various Locations	New Shared Pathway from Yanchep Beach Road to Botanic Boulevard	-	665	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pathways & Trails	Wanneroo Road	Detailed Design and construction of Wanneroo Road 3x pathway projects	467	600	1,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sports Facilities	Shelvock Park	New Path Network to Sports Field - (ARMP) - with security lighting	-	-	50	463	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Traffic Treatments	Recurring Program, New Bus Shelter Installations	New bus shelter installations at various locations, as agreed with Public Transport Authority	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75
New Total			**6,645**	**4,314**	**3,084**	**2,530**	**1,976**	**1,881**	**2,094**	**1,795**	**2,039**	**1,783**	**1,975**	**1,975**	**1,975**	**1,975**	**1,975**	**1,975**	**1,975**	**1,975**	**1,975**	**1,975**

APPENDIX F: LEVEL OF SERVICE PERFORMANCE

Community Levels of Service

Key Performance Measure	Level of Service	Performance Measure Process	Performance Target	Current Performance
COMMUNITY LEVELS OF SERVICE				
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
TECHNICAL LEVELS OF SERVICE				
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	Increased potential for vehicle accidents due to poor design	Moderate	Unlikely	Moderate	Identify problem sites through the Blackspot improvement program. Assess and	Satisfactory

Asset at Risk	Risk	Consequence	Likelihood	Risk Rating	Risk Treatment Plan	ECA
(Sub-standard road alignment)	configuration (i.e. at intersections, blind curves and crests)				undertake road improvement programs (e.g. Traffic Treatments Program and Blackspot Program). Ensure road networks are designed and constructed to meet Austroads standards	
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)	Edge breaks and erosion, vertical displacement and cracking can occur - potent trip hazards.	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

Asset at Risk	Risk	Consequence	Likelihood	Risk Rating	Risk Treatment Plan	ECA
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
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

Asset at Risk	Risk	Consequence	Likelihood	Risk Rating	Risk Treatment Plan	ECA
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