



Morley-Ellenbrook Line

PROJECT DEFINITION PLAN JUNE 2020

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METRONET partner agencies



Aboriginal and Torres Strait Islander people are advised that this publication may contain images or names of people who are deceased.

Foreword

The Morley-Ellenbrook Line has been talked about for decades – the McGowan Government is getting on with the job and delivering this vital piece of infrastructure.

Perth's north-eastern suburbs are one of Australia's fastest growing areas, with the population expected to almost double to more than 415,000 by 2031, compared to 2006 levels.

By 2031, it is estimated the rail line will take more than 10,000 car trips off roads in the north-eastern suburbs each day.

For passengers travelling direct from Ellenbrook to the CBD, the trip on the Morley-Ellenbrook Line will take about 30 minutes - half the current travel time for local residents using public transport.

Stations will be built at Ellenbrook, Whiteman Park, Malaga, Noranda and Morley, with a future station to be developed at Bennett Springs East, when planning in the area is finalised.

More than 3000 local jobs will be created over the life of the project, as well as opportunities for local businesses.

This is a transformational project for our rail network - delivering world-class public transport to residents of Ellenbrook and the north-eastern suburbs while creating local jobs.

Hon Rita Saffioti MLA
Minister for Transport; Planning



Project snapshot

21
kms

of rail line

5

Train
stations

30
mins

from
Ellenbrook
to the CBD

4

Bus
Interchanges

2

viaducts

3

tunnels

Morley Station*

Noranda Station*

Malaga Station*

Whiteman Park Station*

Ellenbrook Station*


 **1365** daily boardings

 **1810** daily boardings


 **3084** daily boardings


 **3795** daily boardings


 **8016** daily boardings

 **15 min** journey to Perth

 **18 min** journey to Perth

 **21 min** journey to Perth

 **25 min** journey to Perth

 **30 min** journey to Perth

 **400** parking bays

 **400** parking bays

 **1100** parking bays

 **900** parking bays

 **500** parking bays

 **12** bus stands

 **2** on-street bus connections

 **12** bus stands

 **10** bus stands

 **12** bus stands

 **Zone 2**

 **Zone 2**

 **Zone 2**

 **Zone 2**

 **Zone 3**

 **Cycling** facilities

 **Cycling** facilities

 **Cycling** facilities

 **Cycling** facilities

 **Cycling** facilities

 Passenger toilets

 Passenger toilets

 Passenger toilets


 Passenger toilets

 Passenger toilets

 Lifts and stairs

 Lifts and stairs

 Lifts and stairs

 Lifts, stairs and escalators

 Lifts and stairs

 Universal access

 Universal access

 Universal access

 Universal access

 Universal access

*Final details of station features are subject to a detailed design process and may change.

Executive Summary

Strategic Need

The State Government's urban growth strategy, *Perth and Peel@3.5million*, estimates the greater metropolitan population will increase to 3.5 million by 2050. To accommodate this projected population growth, and to protect lifestyle values into the future, the strategy is focused on creating a connected city that is liveable, prosperous and sustainable, linking metropolitan centres with priority public transport.

Perth's north east is one of Australia's fastest growing areas with the population expected to more than double from 209,000 in 2011 to 450,000 by 2050. This area is Perth's only remaining corridor without access to rapid public transport.

The Morley-Ellenbrook Line addresses critical strategic needs for the community with:

- A heavy rail service catering to the large and growing population of Perth's north east while also reducing road congestion;
- Direct links to the CBD, Midland, Perth Airport and other destinations on the rail and broader public transport network;
- An almost 50 per cent reduction in public transport travel times for passengers travelling between Ellenbrook and the Perth CBD;
- Rapid access for commuters travelling between Morley-Ellenbrook Line stations, residential areas, employment hubs and the Whiteman Park tourism precinct;
- Opportunities for greater housing diversity and employment density in the future within Perth's north east;
- Improved social and cultural connectivity for residents in Perth's north east through improved transport access to major cultural, sporting and entertainment venues;
- Reduced social vulnerability for residents in Perth's north east through improved access to essential services, education, training and employment opportunities; and
- Economic stimulus.

The Project

The transport infrastructure investment includes:

- Constructing 21km of new dual-track passenger railway from the Midland Line at Bayswater to Ellenbrook;
- Building five new stations at Morley, Noranda, Malaga, Whiteman Park and Ellenbrook complete with station infrastructure including parking, bus interchanges (excluding Noranda which will have on-street bus connections), cycling facilities, passenger amenities and standard station systems to cater for an estimated total of 18,070 daily boardings in 2031;
- Constructing two rail viaducts, three rail bridges, five road bridges and three rail tunnels;
- Building three new intersections and three new roads for station access;
- Building two rail pedestrian underpasses, one at Ellenbrook Christian College and one at Whiteman Park Station, and one road pedestrian underpass at Benara Road, Morley;
- Constructing shared path connections in proximity to the stations to connect to existing pedestrian and cyclist networks; and
- Upgrading signalling infrastructure, systems and the electricity feeder station on the Midland and Fremantle lines to accommodate up to 15 trains per hour between Bayswater and Daglish.

As a result of the integrated METRONET approach, the Morley-Ellenbrook Line will also facilitate land use solutions that promote and encourage higher density development around the new stations. These precincts will be planned for longer-term transit-oriented development to promote liveability, connectivity, increased housing diversity, improved community amenity and local employment opportunities.



Project Objectives

The Morley-Ellenbrook Line creates an opportunity to:

- Improve connectivity and integrated transport options within Perth's north east;
- Reduce car dependency and congestion, and change travel behaviours within Perth's north east and within Greater Perth;
- Improve liveability through the creation of integrated station precincts, that build on the character and identity of the local area and encourage urban consolidation and place making;
- Mitigate project deliverability risks by minimising impacts where possible to major infrastructure, community infrastructure, amenity and the environment; and
- Unlock the economic development potential of Perth's north east and provide improved access to employment opportunities.

Delivery Strategies

Transport Infrastructure

Recognising the complexity of delivering the Morley-Ellenbrook Line, the works will be largely divided into four broad programs of work:

- 1. New Bayswater Station** – in addition to building a new station at Bayswater (to relocate and replace the existing station), this project includes building a second island platform for the Morley-Ellenbrook Line.
- 2. Tonkin Gap and Associated Works** – this project includes significant civil and structural works between Bayswater and Malaga, to prepare the Tonkin Highway median for construction of the rail line and stations and allow the rail to enter and exit the Tonkin Highway.
- 3. Main Morley-Ellenbrook Line Project Works** – includes all rail systems and infrastructure from Bayswater, all stations and facilities within the Tonkin Highway median, and all works north of Malaga to Ellenbrook.
- 4. Forward Works** - including geotechnical field investigations, survey works, and the relocation and protection of the in-ground and overhead services.

Precinct Delivery Strategy

METRONET station precincts are within one kilometre or a 10-15 minute walk from a station. Station precinct planning and development does not form part of this project scope, however they are important METRONET objectives.

The METRONET Office has implemented an Integrated Transport and Land Use Planning (ITLUP) approach to ensure transport infrastructure is planned and designed to integrate with surrounding precincts from day one, while acting as a catalyst for higher intensity urban development over time. For the Morley-Ellenbrook Line this includes:

- A full review of the Ellenbrook Activity Centre Plan to ensure an appropriate land use response to the new station;
- Preparation of structure plans and associated scheme amendments for:
 - the planned 220-hectare Brabham precinct adjacent to Whiteman Park Station;
 - the planned 80-hectare precinct surrounding the potential future Bennett Springs East Station;
 - the planned 67-hectare precinct surrounding Malaga Station; and
- Preparation of a master plan for the Morley Station precinct as a precursor to a local structure plan.

Timing

Early works at Bayswater Station have already started, with work on the Tonkin Gap's Associated Works to start soon. The main Morley-Ellenbrook Line contract is expected to be awarded in late 2020. During the procurement stage, the contractor will be requested to optimise their construction methods and strive for the Morley-Ellenbrook Line to open at the earliest possible date. Once the contract is awarded, the final completion date will be confirmed.

The project will improve connectivity and integrated transport options within Perth's north east.



1 METRONET Overview

METRONET is the State Government's vision to integrate transport and land use planning in Western Australia and provide a framework to support the sustainable growth of greater metropolitan Perth over the next 50 to 100 years.

More than just a rail infrastructure program of works, METRONET planning goes beyond the station forecourts to shape and support the development of communities within the surrounding walkable catchments.

METRONET will transform Perth with connected communities and new opportunities for businesses and jobs to grow.

The Morley-Ellenbrook Line is one of a series of METRONET projects that will add significantly to Perth's public transport network. Combined, METRONET Stage One is proposed to deliver approximately 72km of new passenger rail and up to 18 new stations. This represents the single largest investment in public transport in Perth's history and will give people a viable alternative to using a car. METRONET will create the opportunity to transform Perth through an expanded rail network that will see urban intensification in more than 5,000 hectares of land within walking distance of the stations, supporting delivery of the State's metropolitan growth strategy *Perth and Peel@3.5million*.

Stage One of METRONET includes:

- Forrestfield-Airport Link;
- Yanchep Rail Extension;
- Thornlie-Cockburn Link;
- Morley-Ellenbrook Line;
- New Bayswater Station;
- Byford Rail Extension;
- Midland Station;
- Lakelands Station;
- Karnup Station;
- Level crossing removal on the Armadale and Midland lines;
- Mandurah Station Multi-Storey Car Park;
- High Capacity Signalling; and
- Railcar Procurement.

The Forrestfield-Airport Link is well into construction and scheduled for completion in 2021. Construction contracts have also been awarded and work is underway for the Yanchep Rail Extension, Thornlie-Cockburn Link, New Bayswater Station, Railcar Procurement, Mandurah Station Multi-Storey Car Park and Denny Avenue Level Crossing Removal projects. Lakelands Station is currently in procurement while planning continues on the Byford Rail Extension, Midland Station, Karnup Station, High Capacity Signalling, and up to seven other level crossing removals.

Figure 1: METRONET Stage One projects



2 Project Overview

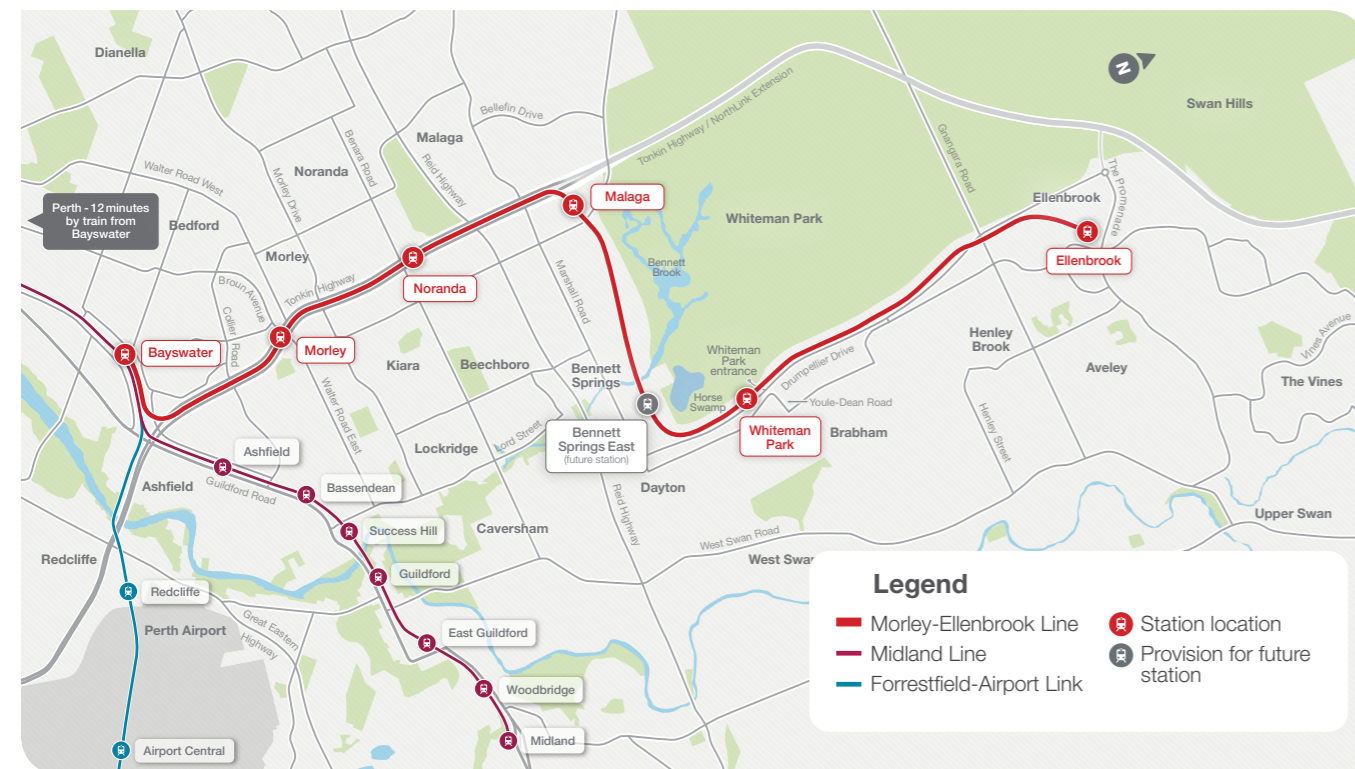
The 21km Morley-Ellenbrook Line spurs from the Midland Line with five new stations at Morley, Noranda, Malaga, Whiteman Park and Ellenbrook, major changes to Bayswater Station and future-proofing for a potential station at Bennett Springs East.

The project will improve amenity in Perth's north east, provide a viable alternative to car usage, reduce congestion on the existing and future road network and increase connectivity to and between major metropolitan centres.

The Morley-Ellenbrook Line will also improve connections to Whiteman Park and the Swan Valley, increasing opportunities for visitors to access these tourism areas and providing employment and business opportunities in Perth's north east.

The project will act as a catalyst for the development of integrated station precincts that provide a diverse mix of housing, employment, entertainment and recreation options.

Figure 2: Morley-Ellenbrook Line project alignment and station locations



City shaping benefits:

- Helps shape and serve new, more intensive transit-oriented station precincts.
- Acts as a catalyst for urban consolidation around stations serving existing urban catchments.
- Helps grow and diversify employment centres, such as Malaga, Ballajura and Morley, which will become destinations of choice for business.
- Supports Ellenbrook, Midland and Morley's growth as major activity centres servicing Perth's north east.
- Facilitates affordable living opportunities and more equitable access for the community.
- Provides rail connectivity and opportunity to grow local, domestic and international tourism for Whiteman Park and the Swan Valley, boosting employment and business in the region.

City transport benefits:

- Provides timely and efficient transport links to the CBD and major employment centres, such as Malaga and Morley.
- Relieves pressure on existing stop-gap public transport services and infrastructure provided in the absence of a high-speed transit connection in the north-eastern and central-northern corridors.
- Enables alternative access to Whiteman Park and the Swan Valley, two of Perth's premier visitor attractions.
- Relieves pressure on key parts of the freight network (i.e. Tonkin Highway) by serving the transport needs of residents without congesting existing roads.

2.1 Planning Context

The extension of the urban growth corridor into Perth's north east was first identified in the 1980s and then recognised in 1990 with the State Government's *Metroplan*. Since then, Perth's north east has rapidly evolved from its traditional rural setting into one of Australia's fastest growing communities with a sub-regional population that is predicted to more than double by 2050 – from 209,000 people in 2011 to more than 450,000 by 2050.

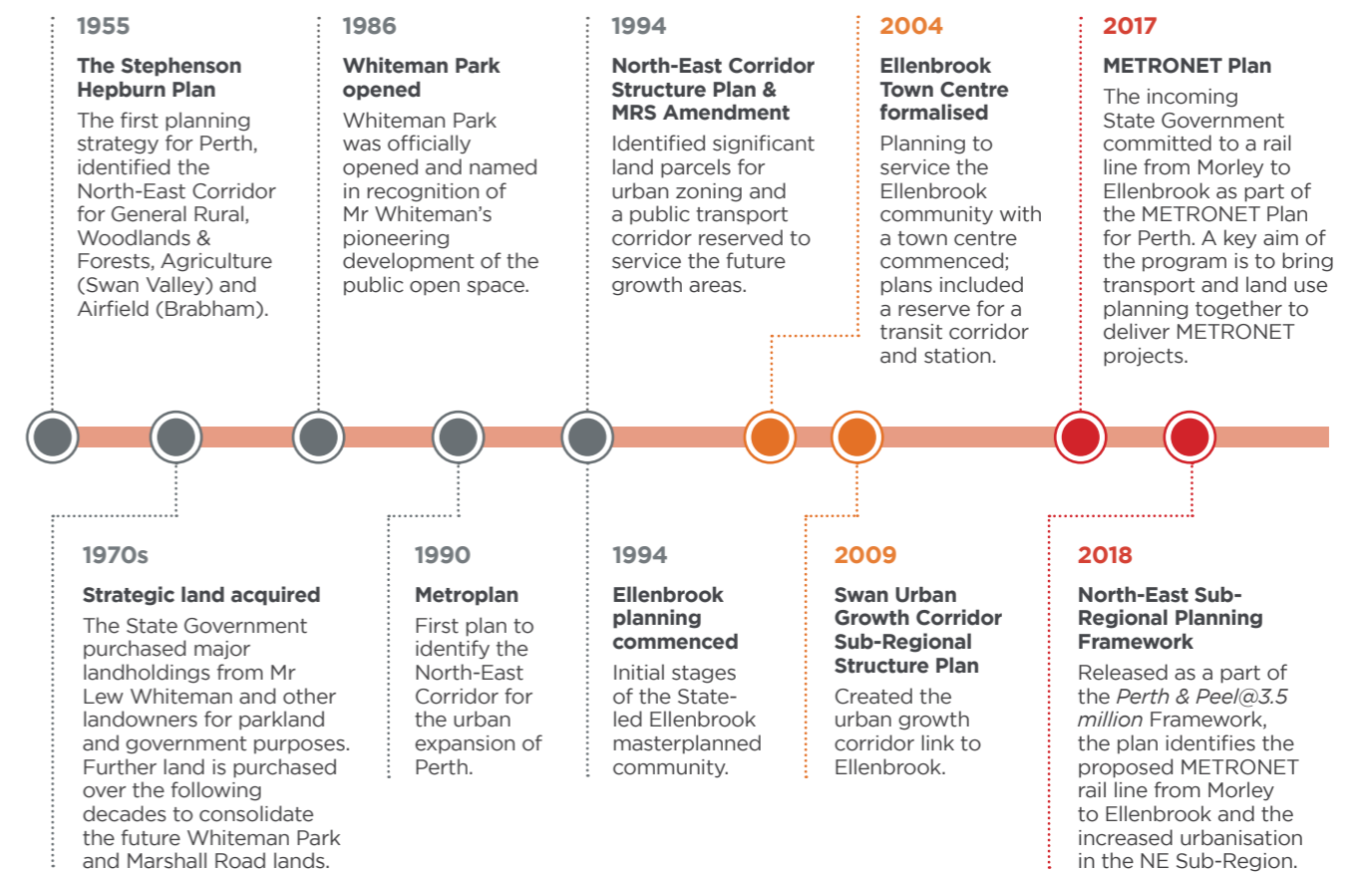
Perth and Peel@3.5million and State Planning Policy 4.2 Activity Centres for Perth and Peel identify the Morley-Ellenbrook Line station precincts as follows:

- Ellenbrook as a secondary centre;
- Brabham (Whiteman Park) and Noranda as district centres;
- Bayswater is identified within the Central Sub-regional Framework as a station precinct with the potential to accommodate transit-oriented development;
- Malaga is an existing industrial centre and a major employment centre for the City of Swan, surrounded by existing residential development; and
- Morley Station will service the Morley strategic metropolitan centre located to the west.

These centre designations, plus close alignment with the Central and North-East Sub-regional Planning Framework, provide opportunities for stations in these locations to achieve higher density, higher amenity and a diversity of land uses connected through efficient public transport.

2.2 Transport Context

Figure 3: Planning context for Perth's north east



Since the 1990s, the State Government has progressively reserved land for transit corridors in Perth's north east following recommendations from transport investigations for the area. Subsequent studies re-examined these corridors and assessed a number of potential transport modes.

In 1994 a decision was made to reserve a transit corridor along Reid Highway and up Lord Street. No decision was made as to the ultimate mode of transport, but all corridor options were to be capable of accommodating heavy rail. A notional station location at Marshall Road just north of the Lord Street/Reid Highway interchange was also included.

The METRONET program was established in 2017 by the State Government to bring together transport and land use planning to support Perth's sustainable growth through a more compact urban development. A key remit under the program was to consider advancing the delivery of public transport infrastructure in the north east region to support existing urban development and forecast growth.

The release of the *Perth and Peel @3.5 million* planning frameworks coincided with the release of the *Perth and Peel@3.5million* Transport Network Plan. This plan reinforced the need to advance the delivery of a new rail line from the existing Midland Line to the Ellenbrook town centre to support existing and forecast development in Ellenbrook and the outer north-east region, and also to act as a catalyst for land use intensification along the entire rail corridor.

2.3 The Project

2.3.1 Operations

During the Morley-Ellenbrook Line's first full year of passenger services, it is projected to cater for 11,753 average weekday passenger boardings. This figure is projected to grow to 18,070 by 2031. A peak-period frequency of five trains per hour to and from Ellenbrook will be needed from day one of operations, requiring nine trains to service the line.

2.3.2 Asset investment

Key infrastructure components of the Morley-Ellenbrook Line project include:

- **Bayswater Station** – construction of a northern platform required to support the Morley-Ellenbrook Line connection, which is included as part of the broader station upgrade.
- **Morley Station** – with intermodal rail and bus, 400-bay multi-deck car park and active mode facilities.
- **Noranda Station** – with on-street bus connections and 400-bay car park and active mode facilities.
- **Malaga Station** – with intermodal rail and bus, 1100-bay car park and active mode facilities.
- **Whiteman Park Station** – with intermodal rail and bus, 900-bay car park and active mode facilities.
- **Ellenbrook Station** – with intermodal rail and bus, 500-bay car park and active mode facilities.
- **Bridge crossings** – fully grade-separated alignment with the design incorporating three rail bridges and five road bridges between Bayswater and Ellenbrook stations, including key crossings at Beechboro Road North, Bennett Brook and the Drumpellier Drive/Gnangara Road intersection.
- **Viaducts** – two viaducts, one crossing the Midland and Forrestfield-Airport lines in Bayswater and one crossing Whiteman Drive East in Whiteman.
- **Rail tunnels** – two tunnels will be constructed to allow the rail lines to enter and exit the Tonkin Highway median, plus an additional tunnel under the Drumpellier Drive/Gnangara Road intersection.
- **Pedestrian underpasses** – three underpasses, one to connect the Ellenbrook Christian College school grounds to the oval, one at Whiteman Park Station to connect communities on the eastern side of Drumpellier Drive and one on the south-eastern side of Benara Road to Noranda Station.
- **Shared path connections** – construction of shared path connections in proximity to the stations will connect new paths to existing pedestrian and cyclist networks.
- **Design future proofing** – provision for potential station at Bennett Springs East and potential rail stabling facility near Henley Brook.
- **Midland/Fremantle line signalling** – upgrades to signalling infrastructure and systems to accommodate up to 15 trains per hour between Bayswater and Daglish.

2.3.3 Non-Asset Investment

Outside of this project scope travel demand management (TDM) initiatives will be investigated to optimise patronage of the new rail service and overcome barriers to uptake, such as the low cost of parking, low congestion levels and rate of development in the catchment area.

A travel behaviour change program will be also be considered after the Morley-Ellenbrook Line opens and other infrastructure improvements, targeting residents in the suburbs along the railway.

2.4 Land Use Integration

Following an Integrated Transport and Land Use Planning (ITLUP) approach (Figure 5), the METRONET Office has undertaken a preliminary evaluation of proposed station precincts to identify development opportunities. The evaluation included:

- Baseline analysis of existing precinct context and potential development opportunities;
- Identification of future precinct typologies and land use characteristics;
- Assessment of market profile and demand;
- Estimated future land use yields (medium and longer term); and
- Prioritisation of station precincts for planning/development intervention.

This evaluation informs the development of Preliminary Place Plans for each of the Morley-Ellenbrook Line stations. The Preliminary Place Plans provide the foundation for orderly, well-integrated and coordinated delivery of METRONET station infrastructure and station precincts.

Figure 4: Estimated travel time and projected daily boardings (weekdays) for 2031

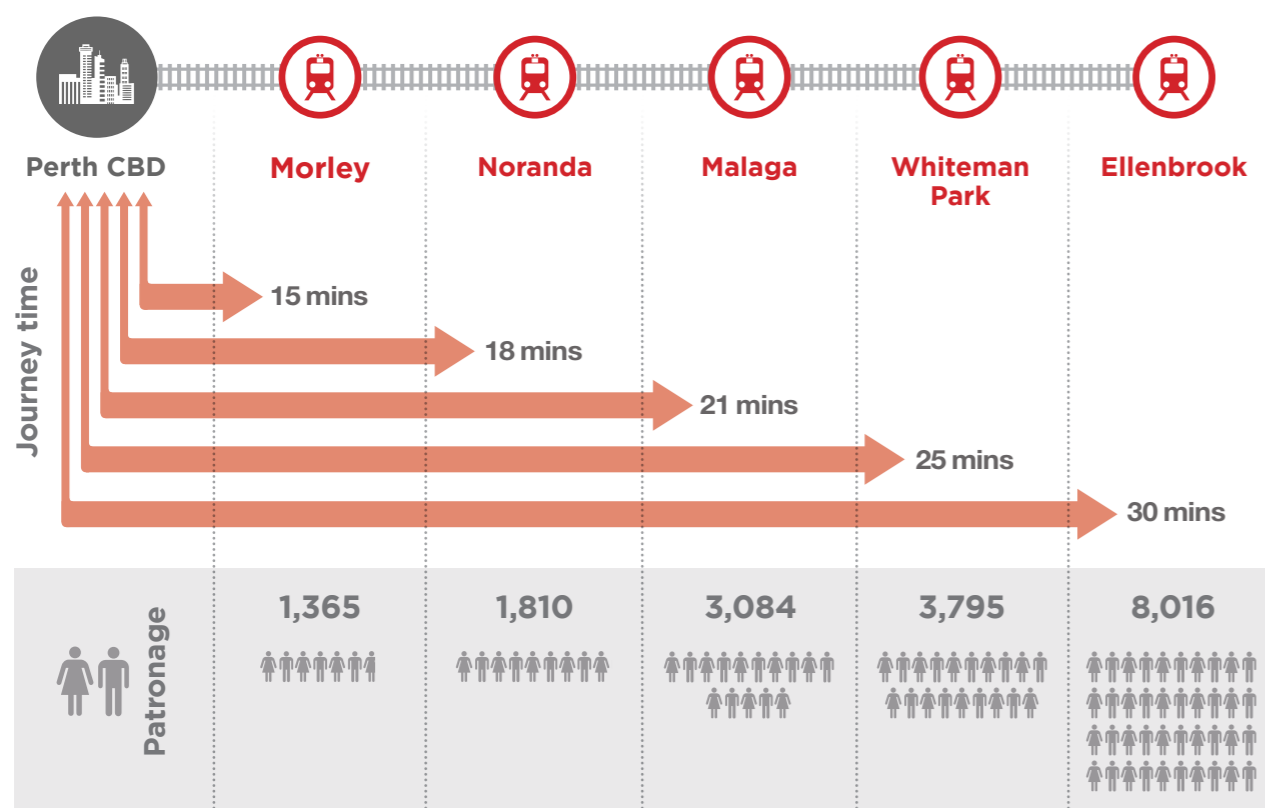




Figure 5: METRONET Integrated Transport and Land Use Planning (ITLUP) approach

<p>Station precinct analysis</p>	<p>A detailed analysis of each precinct using Western Australia's Integrated Land Information Database (ILID) and site verification identified latent land use potential that can be realised through transport infrastructure investment. This will inform opportunity identification for each precinct.</p>
<p>Precincts policy</p>	<p>To facilitate the proper application of existing policy and address gaps to deliver optimal outcomes, the METRONET Office developed a policy framework to inform planning, design and assessment approaches to integrate transit within precincts. The framework includes:</p> <ul style="list-style-type: none"> • Station Precinct Typologies: a methodology to identify the long-term role, function and form of stations and the associated precincts including precinct hierarchy, scale, development intensity, optimal land use mix and urban design considerations. • Precinct Design Guide: addresses the integration of transit within new or existing centres, including station integration, land use, built form, movement network and landscape considerations in advance of the Design WA Precinct Policy, due to be finalised during 2020.
<p>Station precinct planning</p>	<p>During the Business Case phase, existing planning around proposed stations has been reviewed and opportunities identified including potential future station precinct yields. Preliminary Place Plans were developed during the Project Definition Plan phase and following project approval, Final Place Plans will be developed for station infrastructure via a collaborative process with local governments, state government planning and land development agencies and private landowners to inform station infrastructure delivery and provide a foundation for further detailed precinct planning. Where a review of the planning framework is required to enable broader station precinct outcomes, Precinct Plans will be delivered by the relevant lead agency, applying the same methodology.</p>
<p>Economic and market assessment</p>	<p>To best consider the scale of land development for METRONET projects, each project undertakes a property market assessment to:</p> <ul style="list-style-type: none"> • Identify potential land use mix within the precincts; • Identify anticipated absorption rates across land use sectors; and • Advise on priorities and identify development staging timeframes.
<p>Infrastructure coordination</p>	<p>The State Government's netVIEW platform is being used to analyse short, medium and long-term infrastructure requirements. METRONET will be working with the newly formed Infrastructure WA office to ensure cross-government coordination including the timely delivery of services to support METRONET transport infrastructure and station precincts.</p>
<p>Planning and development certainty</p>	<p>Along with transport infrastructure investment, planning and development certainty is essential to stimulate investment in METRONET station precincts and clarify future land use expectations. To optimise the benefit and return from the METRONET investment in public transport infrastructure, the METRONET Expenditure Review Committee Sub-Committee and Taskforce has confirmed that State intervention may be required in some locations to achieve planning and development certainty.</p> <p>The State Government has two legislative models available depending on the level of intervention required:</p> <ul style="list-style-type: none"> • Redevelopment Areas and Schemes under the <i>Metropolitan Redevelopment Authority Act 2017</i>; and • Improvement Plans and Schemes under the <i>Planning and Development Act 2005</i>. <p>The METRONET Office is reviewing each station precinct to recommend the preferred planning and development model.</p>
<p>Early activation</p>	<p>To deliver early development activity and amenity around new stations to improve passenger comfort and experience, METRONET is developing strategies to potentially catalyse early private sector investment and community development. The METRONET Office is working with landowners to determine the necessary infrastructure and development needs that will support the start of station operations.</p>

3 Strategic Justification

The Morley-Ellenbrook Line supports Western Australia on an economic, metropolitan and regional level. The Morley-Ellenbrook Line core benefit-cost ratio is 1.10, increasing to 1.20 including wider economic benefits. Wider economic benefits for the Morley-Ellenbrook Line relate to improvements from workers, employers and industries being in closer proximity to each other.

Transport benefits

The Morley-Ellenbrook Line will provide commuters in Perth's north east with quicker and more convenient access during peak periods. The estimated journey times between the Perth CBD and Morley-Ellenbrook Line stations are as follows:

- **Ellenbrook Station** - 30 minutes
- **Whiteman Park Station** - 25 minutes
- **Malaga Station** - 21 minutes
- **Noranda Station** - 18 minutes
- **Morley Station** - 15 minutes

Other transport benefits include:

- Providing alternative, sustainable transport options, such as connecting to existing or building new shared paths along the alignment to connect the stations to surrounding residential and employment areas;
- Potentially increasing the reach and frequency of bus services in the area; and

- Improving transport network resilience by providing alternative route options.

Shifting people from using their cars to using public transport will provide a number of benefits to affected road users by reducing:

- Congestion (and also competition and demand for parking) during peak periods;
- Operating costs including fuel, tyres, maintenance, repair and depreciation; and
- Fatalities and casualties as a result of a reduction in road vehicle trips.

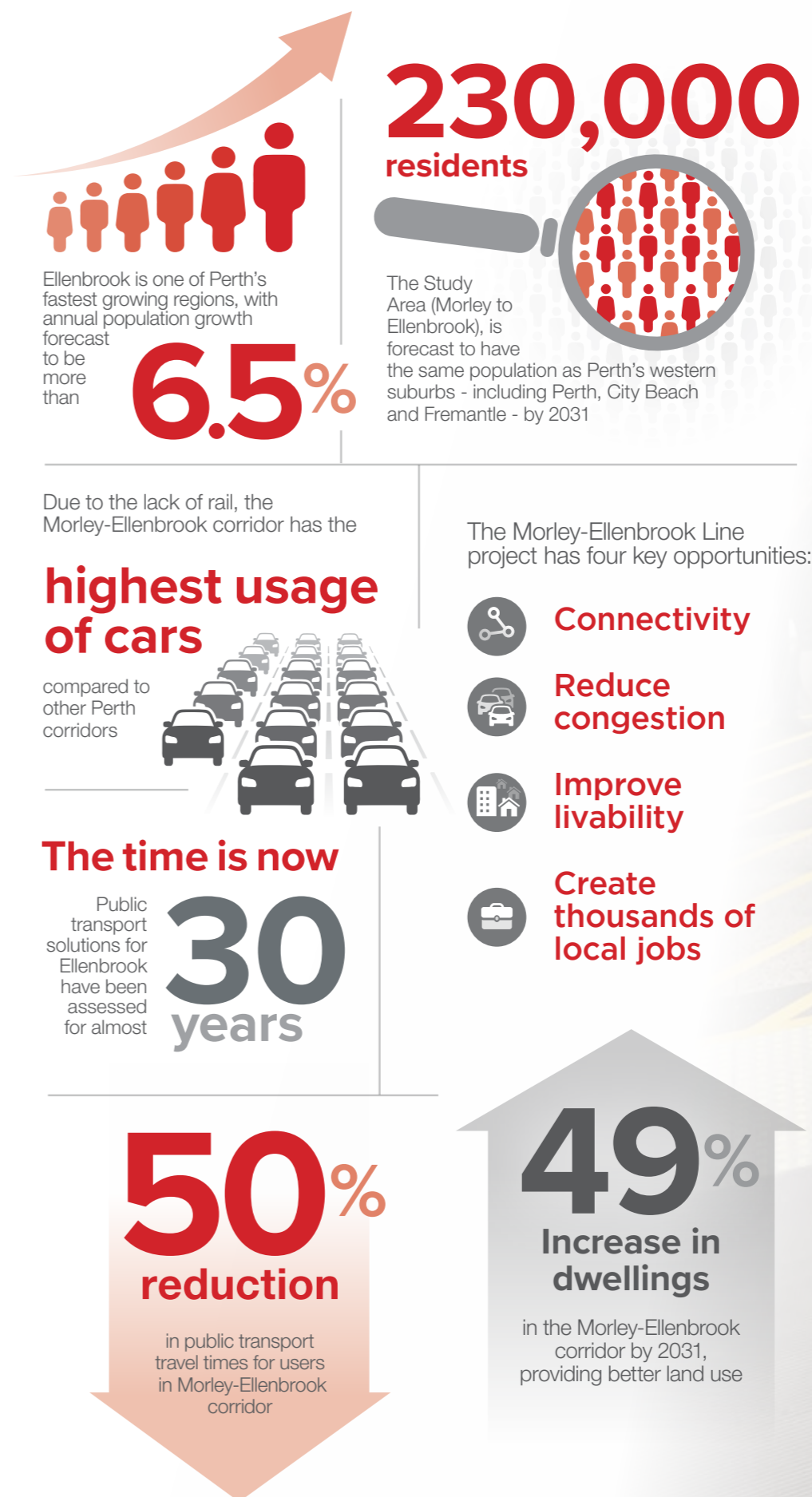
Community and other benefits

Other key community benefits include:

- Having a transport service available for potential use in the future;
- Travel behaviour change including the diversion of trips from cars to walking, cycling and public transport; and
- Tourism benefits from the improved public transport connections to Whiteman Park and the Swan Valley region.

The Morley-Ellenbrook Line will provide commuters in Perth's north east with quicker and more convenient access during peak periods.

Figure 6: Key Project Benefits



3.1 Supporting Economic, Metropolitan and Regional Growth and Addressing Service Gaps

Opportunities exist to strengthen the WA economy and to increase employment, with Perth's north east playing an important role in accommodating a significant portion of this future population and economic growth. However, this already rapidly growing part of the city is also the only remaining

corridor in Perth without access to rapid public transit. There is also an opportunity to influence the type and form of urban development in the area by providing enhanced transport connectivity and well-planned transit-oriented precincts.

The Morley-Ellenbrook Line is closely aligned to a number of existing policies and strategies, such as the *State Planning Strategy 2050 (WA)*, *Perth and Peel@3.5million*, and the Central and North-East Sub-regional Planning frameworks.

Table 1: Morley-Ellenbrook Line's five strategic drivers

Strategic Driver	Description
Accommodating population growth and future demand	The population of Ellenbrook has increased rapidly over the past 10 years (+47%). In addition, State Government projections based on the 2016 Census indicate very strong population growth for Ellenbrook and surrounding suburbs within the study area.
Addressing a network gap	An opportunity exists to shape future urban growth within the study area and lead the population growth curve by improving transport access and connectivity ahead of urban development. Provision of transport infrastructure, combined with targeted precinct planning, will drive better built form outcomes, delivery of supporting infrastructure and density / intensification at designated precincts.
Maximising benefits from government-owned land	<p>There is significant State-owned land in the corridor, meaning an opportunity exists for the Government to realise benefits from land activation and value uplift.</p> <p>As part of the ITLUP approach, the following planning initiatives are being implemented for Morley-Ellenbrook Line station precincts:</p> <ul style="list-style-type: none"> • A full review of the Ellenbrook Activity Centre Plan to ensure an appropriate land use response to the new station; • Preparation of structure plans and associated scheme amendments for: <ul style="list-style-type: none"> – the planned 220-hectare Brabham precinct adjacent to Whiteman Park Station; – the planned 80-hectare precinct surrounding the potential future Bennett Springs East Station; – the planned 67-hectare precinct surrounding Malaga Station; and • Preparation of a master plan for the Morley Station precinct as a precursor to a local structure plan.
Addressing social equity	Access to quality public transportation is critical for employment. With rapid public transport currently not available in Perth's north east, there is a strategic need to address social imbalance and inequality by improving access to employment and education for residents who do not own, or are unable to use a private vehicle.
Fostering tourism and regional economic growth	<p>Perth's north east is characterised by two significant tourism assets, Whiteman Park (including Caversham Wildlife Park) and the Swan Valley. Investment in better transport will help to unlock their potential, with accompanying economic development making these assets more accessible.</p> <p>Industry in this area is also expected to grow and develop in future years, with a major industrial precinct planned north of Ellenbrook and potentially a future intermodal terminal in Bullsbrook.</p>



4 Route Corridor

4.1 Route and Station Locations

The 21km alignment starts at Bayswater Station where the two island platforms allow the Morley- Ellenbrook Line to connect into the central platform faces. This enables maximum operational flexibility for Morley- Ellenbrook Line services to either interchange with the Midland/Forrestfield- Airport lines or to 'through-run' into the Perth CBD.

From Bayswater Station the new rail line will rise above the Midland Line and over Clavering Road and Railway Parade, before diving under the Tonkin Highway northbound lanes into the median. A station will be built within the median at Morley, where Broun Avenue crosses the highway.

From Morley Station the alignment will remain within the Tonkin Highway median, crossing Morley Drive via two new rail spans between the existing road bridges. Noranda Station will be built immediately north of Benara Road.

From Noranda Station the rail alignment will remain in the Tonkin Highway median to Malaga. It will pass beneath the Marshall Road bridge and dive under the Tonkin Highway southbound carriageway (which will be slightly elevated) and enter into 'urban deferred' zoned land.

A below-ground Malaga Station is proposed, which will be achieved by building the rail at grade and by raising the surrounding ground levels. This will minimise how much railway is below the high-water table by using the existing undulating site topography to enable better amenity and connectivity across the rail line for future residents.

From Malaga Station the alignment continues under Beechboro Road North, which will be elevated to provide a grade-separated road over rail crossing. The alignment will travel through land north of Marshall Road to avoid key environmental and community areas within the core part of Whiteman Park.

The rail line crosses Bennett Brook at the narrowest part before entering Bennett Springs East, where it will cross Dulwich and Cheltenham streets. A new road over rail bridge at Dulwich Street and a connector road to the north of the railway between Dulwich and Cheltenham streets will maintain connections in the area. Access to the northern part of Rugby Street will be removed.

The alignment through this area is proposed to avoid Horse Swamp (which is classified as a conservation category wetland).

Future-proofing for a potential station between Dulwich and Cheltenham streets in Bennett Springs East has been provided for in the design.

Leaving Bennett Springs East, the alignment travels north, along the western side of Drumpellier Drive, minimising the need for grade separations and minimising potential noise and amenity impacts on existing and future residents to the east.

Pedestrians from the developing estate to the east of Drumpellier Drive will access Whiteman Park Station via a new underpass south of Youle-Dean Road. The elevated station supports this underpass immediately south of the station building, and will stay elevated on a viaduct across Whiteman Drive East, where it will then return to grade heading north.

Heading north from Whiteman Park Station, the railway will continue until it approaches the Drumpellier Drive-Gnangara Road intersection. The railway will cross beneath this intersection into the existing transit corridor on the eastern side of Drumpellier Drive.

The railway will follow the transit corridor, crossing between the Ellenbrook Christian College school grounds and the oval (pedestrian underpass to be provided), closing part of San Lorenzo Boulevard (an alternative access road will be operational before this section closes) and into the Ellenbrook town centre where an at-grade station will be built, terminating at The Parkway.

4.2 Environmental Considerations

The State Government takes its environmental obligations very seriously and every opportunity is made to avoid, minimise or rehabilitate environmental impacts as much as possible.

METRONET aims to work in a sustainable way by providing an environmentally friendly transport option.

Infrastructure projects require land to build them on, and while every effort is made to construct new transport facilities in established corridors, sometimes this is not practical.

The Morley- Ellenbrook Line project area is located on the Swan Coastal Plain, a low-lying coastal plain with woodlands and surface water features which contains a number of environmental values including flora and vegetation, fauna, and wetlands.

The project area is surrounded by existing urban development and runs just inside the boundary of Whiteman Park, which is a significant recreation area.

The Morley- Ellenbrook Line has been designed to be located in already-cleared or degraded areas as far as possible.

Any key environmental issues identified for the Morley- Ellenbrook Line will be addressed in accordance with the established environmental approvals framework.

Cooperation will continue with the Environmental Protection Authority (EPA) and other State and Commonwealth environmental agencies to adequately identify and assess the environmental values of the area and further refine the project's footprint.

4.2.1 Noise and vibration

The Morley- Ellenbrook Line will comply with *State Planning Policy 5.4 - Road and Rail Noise (2019) (SPP5.4)*. A noise and vibration assessment conducted in 2019 shows that the SPP5.4 targets can be practicably achieved through a combination of mitigation measures.

Construction noise and vibration will be required to comply with the *Environmental Protection (Noise) Regulations 1997*, in order to minimise impacts to the amenity of the community.

4.2.2 Amenity

The Morley- Ellenbrook Line project area intersects two recreational amenity areas:

- It crosses through land north of Marshall Road between Beechboro Road North and Bennett Brook. This land is not part of the core area of Whiteman Park and is not accessible to the public. It has been surveyed, with the majority of the vegetation condition mapped as 'completely degraded'.
- It runs adjacent to Horse Swamp, which is a natural ephemeral Conservation Category Wetland that is predominantly dry for most of the year. Horse Swamp supports many waterbird breeding populations from July to October, providing walking and bird watching opportunities. The wetland also offers good fauna watching opportunities. The project area has been planned to avoid this area.

Local landscape and amenity will be considered for all new structures and railway stations, with an aim to minimise visual impact along the entire rail alignment.

4.3 Heritage Considerations

4.3.1 Aboriginal heritage

The Morley- Ellenbrook Line will comply with Aboriginal heritage legislative requirements and mandatory obligations under the Land Access and Sites Management stream of the METRONET Aboriginal Engagement Strategy (Gnarla Bidji - Our Pathways).



The Public Transport Authority (PTA) submitted an Activity Notice to the South West Aboriginal Land and Sea Council on 25 January 2019 for the construction of the Morley- Ellenbrook Line. SWALSC presented the Activity Notice to the Whadjuk Working Party on 20 February 2019, advising the PTA that a heritage survey was to be undertaken for the proposed construction of the project. An Aboriginal heritage survey of the project area was completed with the nominated Whadjuk working party representatives on 8 April 2019.

4.3.2 Aboriginal heritage sites

The Department of Planning, Lands and Heritage's (DPLH) Aboriginal Heritage Inquiry System (AHIS) identified three registered Aboriginal heritage sites within the Morley- Ellenbrook Line project area, located at Bennett Brook (Site number 3692); and Drumpellier Drive North 1 and 2 (sites 551 and 552).

Following the 2019 Aboriginal heritage survey, the DPLH Registered Knowledge Holders and Whadjuk representatives gave their conditional support for the Morley- Ellenbrook Line, on the grounds that disturbance to Aboriginal heritage sites will be minimal and the proposed railway will have benefits for the general community.

4.3.3 European heritage

There are no State Registered sites of European heritage significance located within or nearby the Morley- Ellenbrook Line project area.

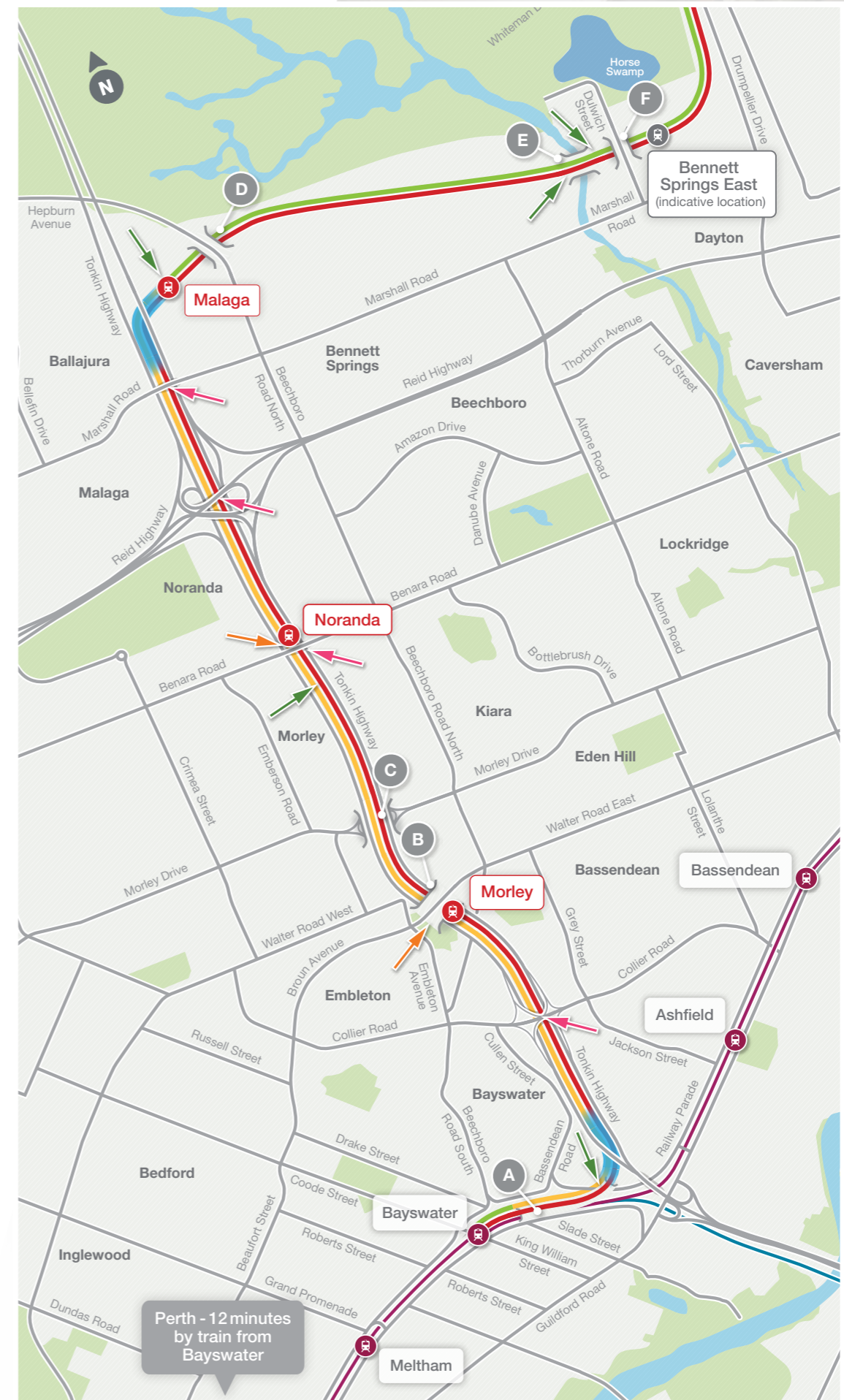
The Bayswater Municipal Inventory lists the following two sites within the Morley- Ellenbrook Line project area as having European cultural significance:

- Brady Plaster Works (Site 11351); and
- Cresco Fertiliser works (11334).

Consideration will be given to reducing impacts to these sites where possible, although they do not meet the criteria outlined in the *Heritage of Western Australia Act 1950*.

Figure 7: Morley-Ellenbrook Line rail alignment and structures

- | | | | |
|------------------------------|---------------------|---|---|
| Morley-Ellenbrook Line | New rail underpass | A New rail viaduct | F Road over rail grade separation |
| Midland Line | Unrestricted access | B New Broun Avenue road and bus bridges | G Pedestrian underpass |
| Forrestfield-Airport Link | Restricted access | C New rail bridges | H Rail over road grade separation |
| Station location | Pier protection | D Road over rail grade separation | I Road over rail grade separation |
| Provision for future station | Pedestrian access | E Bennett Brook new bridge crossing | J Ellenbrook Christian College pedestrian underpass |
| | Vehicle access | | |



5 Transport Operations and Infrastructure

5.1 Rail Operating Strategy

5.1.1 Day One Service Frequency

Morley-Ellenbrook Line train services will operate from Ellenbrook via Bayswater through to Perth (and vice versa) from day one of operations. Passengers will disembark at Perth Station and the trains will turn-back at Daglish to return to Perth Station and head back towards Ellenbrook, via Bayswater.

As the Midland, Forrestfield-Airport and Morley-Ellenbrook lines will converge at Bayswater, it will be necessary for all three timetables to be integrated. On day one of Morley-Ellenbrook Line operations, peak period services will operate at five trains per hour.

5.1.2 Service frequency in 2031

By 2031, it is predicted that 18 trains per hour will be required in peak periods between Bayswater and Perth. This will be made possible by future investment to implement High Capacity Signalling and upgrade a number of platforms on the inner sections of the Midland and Fremantle lines to accommodate six-car trains. Every station on the Morley-Ellenbrook Line will include six-car platforms to ensure the project is future-proofed.

5.1.3 Rollingstock requirements

On day one of operations, nine three-car B-series trains (the series which currently runs on the Mandurah and Joondalup lines) will operate the five-trains-per-hour peak period Morley-Ellenbrook Line service through to Perth.

By 2031, it is predicted that service frequencies will need to increase to six trains per hour during peak periods to accommodate forecast patronage.

5.1.4 Rollingstock maintenance and stabling facilities

No rollingstock maintenance or stabling facilities will be required on the Morley-Ellenbrook Line initially. Morley-Ellenbrook Line trains will be maintained at Bellevue, and stabled at one or more of the existing rail stabling locations (primarily Bellevue and Claisebrook).

However, a design provision has been made for a future rail stabling facility on the Morley-Ellenbrook Line with capacity to stable twelve six-car trains.

5.1.5 Turnback facilities

Morley-Ellenbrook Line trains will terminate at Perth, but will continue empty to Daglish on the Fremantle Line where they will turn back. Analysis has shown the existing single turnback at Daglish is sufficient in its current configuration for turn back of either 3-car, 4-car or 6-car trains.

It will be possible to turn Morley-Ellenbrook Line trains at five trains per hour at Daglish from day one of operations. To accommodate the predicted requirement for increased frequency to six trains per hour in 2031, it is likely that additional turnback capacity will be needed in the future.

5.2 Bus Operating Strategy

5.2.1 Current bus services

The project corridor is currently served by local bus routes that feed into the Midland Line (at Bassendean Station) and the Morley Activity Centre business district. The southern half of the project area is generally served by local bus routes, travelling to Bassendean Station and Morley and Mirrabooka bus stations as regional centres and transfer hubs.

Frequencies are optimised for peak-period travel with timed connections to train services or mainline bus services, for travel to and from the CBD. Bus routes that are well-established and serve significant regional links operate comprehensive off-peak timetables. However, routes with more localised roles or catchments, or those that have been introduced relatively recently, generally operate a basic level of service on weekdays, limited Saturday services and no services at all on Sundays or public holidays.

5.2.2 Day one service frequency

A comprehensive feeder bus service is integral to the Morley-Ellenbrook Line's success. The frequency and coverage of the proposed feeder bus network aims to reduce the proportion of private vehicles driving to the new stations and local and regional destinations.

Feeder bus services will build on the existing bus network by adjusting services to connect to the new stations and by creating 'loops' between neighbouring stations.

Important existing links to regional destinations will remain with several new routes proposed for cross-regional links, to help improve connectivity and reduce the need for all passengers to travel via the Perth CBD to make such journeys.

Final service details will be determined 12-18 months before operations begin, following detailed planning and community consultation to ensure the bus network best aligns with local community needs.



5.3 Infrastructure

5.3.1 Civil works

The Morley-Ellenbrook Line is broken up into three distinct areas of civil works.

- 1. Bayswater Station to Tonkin Highway:** within the Midland Line corridor, civil structures include a viaduct from Bayswater Station over the existing Midland Line and over Clavering Road and Railway Parade, onto a short section of embankment, and then into an underpass with a dive structure to bring the rail line into the Tonkin Highway median.
- 2. Tonkin Highway median:** concrete barriers will be installed along Tonkin Highway median to segregate rail and road operations (including upgrading existing steel and wire barriers). Two stations will be located in this section: Morley Station beneath a reconstructed Broun Avenue bridge, and Noranda Station, immediately north of Benara Road. Local widening of Tonkin Highway will be performed adjacent to Morley Station to maintain future four-lane operations. The design has aimed to balance cut and fill quantities whilst maintaining the existing topography as much as possible within the Tonkin Highway median. Figure 8 shows the cross section of the rail corridor within the Tonkin Highway median.

- 3. North of Malaga section:** generally, the rail design has aimed to balance cut and fill quantities within the rail transit corridor while providing compliant geometry and minimising import of material, providing for new maintenance access tracks and minimising impact to third party utility services.

5.3.2 Track alignment

The track and infrastructure design will be consistent with the existing passenger rail network to conform to the desirable limits of PTA's Narrow Gauge Code of Practice. Rail will typically be 50kg rail ballasted track structure throughout.

The exception being the following, which require a track slab arrangement and 60kg rail:

- On the viaduct structures east of Bayswater Station and immediately north of Whiteman Park Station;
- In dive and underpass structures at the entry to and exit from the Tonkin Highway median, east of Bayswater Station and west of Malaga Station respectively; and
- Beneath the Malaga Station back-filled station structure and through Whiteman Park Station which is on an elevated structure.

A connection to the Forrestfield-Airport Link turnback is designed to the west of Bayswater Station and a crossover is designed to the south of Ellenbrook Station. No stowage is required as part of the line, noting the design must allow for a future stabling facility in Henley Brook.

A connection to the Forrestfield-Airport Link turnback is designed to the west of Bayswater Station and a crossover is designed to the south of Ellenbrook Station.

Figure 8: Typical track design cross section at Tonkin Highway

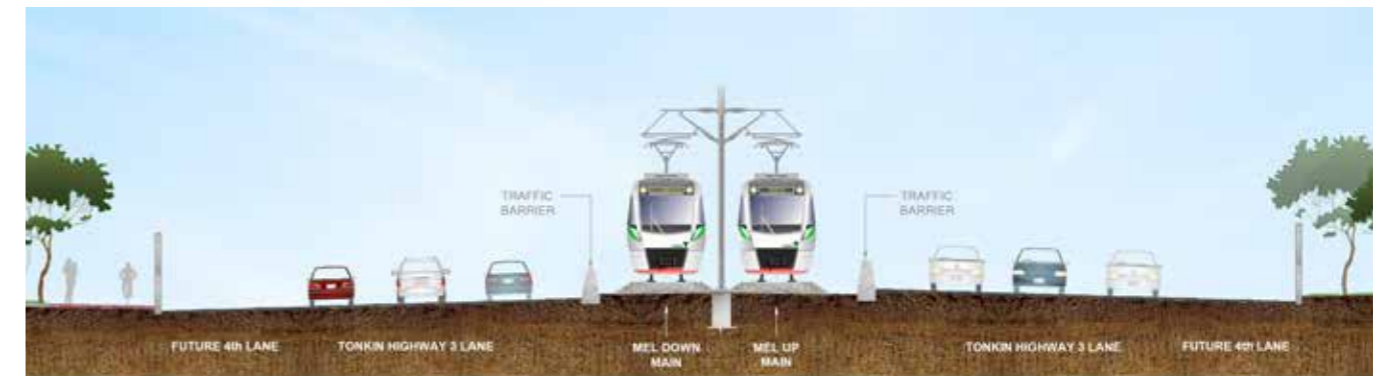


Figure 9: Typical track design cross section at Drumpellier Drive

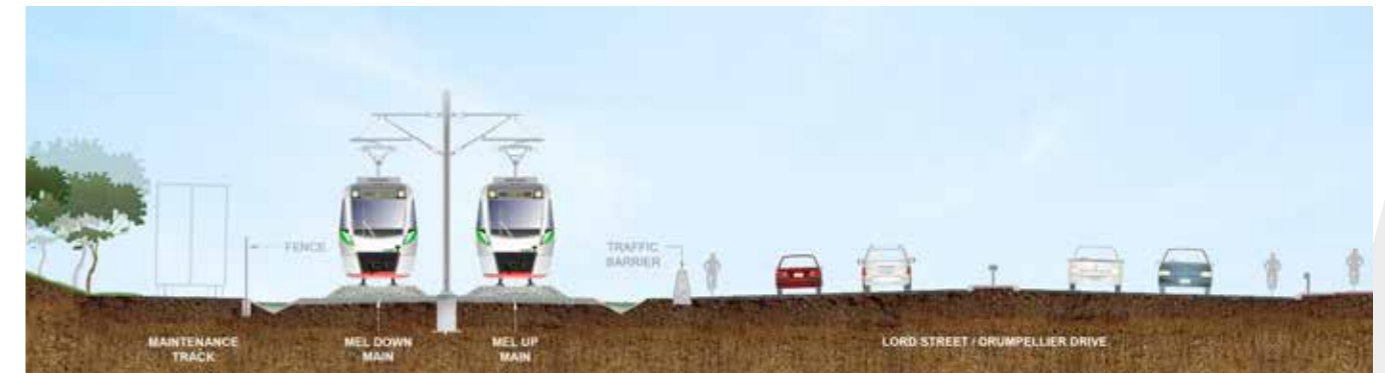


Figure 10: Typical track design cross sections at viaducts for Whiteman Park Station and Bayswater





5.3.3 Traction power and overhead line equipment

The overhead line equipment (OLE) design has been developed to be compatible with the existing network.

Western Power indicate there is sufficient capacity in the existing northern terminal at Malaga to provide two separate single phase 132kV feeds to a new PTA traction power substation. This will be located at the southern end of the government-owned land at the Malaga Station precinct and will feed the two new 35MVA transformers.

Traction power supply will be integrated with the existing system – a 25kV, 50Hz, single-phase booster-less return earth wire system – which will require:

- 35MVA dual transformer traction power substation at Malaga; and
- Installation of a new track sectioning cabin and associated neutral section in the Tonkin Highway median, north of the line's southern dive structure.

In addition to the above, an upgrade is required to the Sutherland Street substation to accommodate dual 35MVA transformers. This will support the increase in train frequencies on the Midland and Fremantle lines due to through running from day one of operations (contributing to 15 trains per hour between Perth and Bayswater).

5.3.4 Signals and systems

The signalling system will include three-aspect colour light signals, supplemented with ASTS L10000 automatic train protection, in keeping with the PTA's current standards and Code of Practice.

To accommodate through running from Ellenbrook to Perth, signalling upgrades are required to increase capacity from 12 to 15 trains per hour in areas of the Midland and Fremantle lines affected by the Morley- Ellenbrook Line operations.

A new communications transmission network will interconnect all new communications, signals and control systems including:

- Train control;
- Traction power supervisory control and data acquisition (SCADA);
- Infrastructure Monitoring System SCADA (e.g. stations, railway infrastructure and tunnels);
- CCTV networks;
- Station services; and
- Radio and signals control and indications sites.

The PTA's existing fire monitoring system will be modified to incorporate the Morley- Ellenbrook Line requirements, specifically:

- Fire safety provisions of underground rail elements and constrained areas such as the Tonkin Highway, including operating concepts (particularly under emergency conditions), critical fire safety assumptions, incident response planning, fire service access and intervention.
- Holistic fire safety design at each of the new stations including structural fire resistance, smoke hazard management, egress strategies, and firefighting provisions.

Railway infrastructure, dive structures, underpasses, viaducts, station buildings and structures, systems and services, will be earthed and bonded in accordance with PTA standards to ensure safety and asset protection.

5.3.5 Structures

New structures required for the Morley- Ellenbrook Line project include:

- New pedestrian underpass maintaining connection between the Ellenbrook Christian school grounds and the oval.
- Gnangara grade-separated crossing - a road over rail crossing to allow the rail line to travel beneath the signalised intersection of Gnangara Road and Drumpellier Drive.

- Whiteman Park Station viaduct - connecting into the new station, this bridge will support the railway crossing above Whiteman Park Drive East.
- Whiteman Park Station pedestrian underpass - this new underpass will provide a safe pedestrian and cycling connection beneath Drumpellier Drive and the railway line between the Brabham estate and the station facilities/precinct.
- A new road over rail bridge at Dulwich Street in Bennett Springs East - maintaining connections by raising the road over the rail corridor.
- A new road along the northern side of the rail at Bennett Springs East - connecting the northern sections of Cheltenham Street, that will be severed by the railway.
- A new rail bridge over Bennett Brook.
- A new road over rail bridge on Beechboro Road North - maintaining this important north-south road connection and facilitating access into the new Malaga Station.
- For approximately seven kilometres, the Morley- Ellenbrook Line will run within the median of Tonkin Highway. To enter and exit the road corridor, two tunnels will be constructed at Malaga and Bayswater.
- Along the length of Tonkin Highway, a number of existing road bridges will be amended:
 - **Reid Highway:** Protection of the pier in the rail corridor.
 - **Marshall Road:** This pier will be protected against collision.
 - **Sewell Court:** Pedestrian overpass pier will be in the rail corridor. This pier will be protected against collision.
 - **Benara Road:** Amended to provide access into Noranda Station, and protection of the pier in the rail corridor.
 - **Benara Road:** A new pedestrian underpass will be constructed on the eastern approach of the bridge to provide pedestrian access into Noranda Station.
 - **Morley Drive:** A new span between the existing road bridges crossing the roundabout to provide for the new rail track.
 - **Broun Avenue:** Demolition of existing bridge once the new bus bridge is built, to maintain connections across Tonkin Highway during construction and rebuilding as part of an integrated road/ bus interchange bridge serving Morley Station.
 - **Collier Road Bridge** pier will be in the rail corridor and protected against collision.
- Bayswater rail viaduct.

5.3.6 Rail corridor access points

Along the rail corridor, access points will be provided for personnel to:

- Undertake regular maintenance activities within the rail corridor; and
- Access (and egress) the area in the event of an incident or emergency.

In developing this PDP design a high-level maintenance and access strategy was developed. Critical equipment has been positioned close to access points where possible.

5.3.7 Utility interfaces

As the project is located within an established land corridor that has historically been used by third-party utility providers, the project interfaces with a high number of existing services and utilities.

Initial consultation with utility owners has assisted to assess the impact of the works on their assets, develop concept schemes for relocation or protection, and estimate costs, where applicable.

5.3.8 Fencing and guard rail/road vehicle safety

Allowance has been made for 1.8m high, barbed-wire fencing along the rail alignment, to prevent unauthorised access to the railway corridor. Within the vicinity of stations, appropriate fencing of lower heights and/or design is to be used.

Palisade fencing is to be provided around high-security areas where required. Fauna fencing will be used through the Bush Forever and Whiteman Park areas, as well as the Marshall Road lands.



6 Stations and Precincts

The Morley-Ellenbrook Line includes five new stations at Morley, Noranda, Malaga, Whiteman Park, and Ellenbrook. A potential future station at Bennett Springs East has been allowed for in the design, which may be delivered once development and population densities reach the appropriate threshold. The New Bayswater Station project is being delivered as a standalone project.

The stations have been designed to:

- Align with METRONET objectives and program strategies;
- Meet Rail Safety Management Standard AS 4292;
- Minimise environmental impacts;
- Optimise quality, value for money and benefit to the community;
- Provide access, comfort and usability for the public and stakeholders;
- Minimise maintenance and life cycle cost;
- Minimise capital costs and contractual risks; and
- Meet medium to long term patronage forecasts, including future operation of six-car trains.

In the medium-to-long term, the stations will be a catalyst for change within the walkable catchment from the station, encouraging the transformation of underutilised urban

and industrial land into new transit-oriented precincts featuring:

- A diversity of housing, including medium-to-high density around the stations;
- High-amenity public spaces leading into and around the stations;
- Greater diversity of land use at key locations to provide increased amenity and local economic activity, including office, retail, cafes and entertainment;
- Pathways and cycleways connecting the stations to surrounding residential and employment areas, and tourism facilities at Whiteman Park; and
- The opportunity for local, high-frequency public transport linking Morley Station to the Morley Strategic Metropolitan Centre.

The majority of this land use change will be delivered by the private development sector or State Government development agencies – Development WA and the Department of Communities. Where State development agencies are leading the planning and development of station precincts, separate business cases may be developed for the Government's consideration.





The Parkway

Ellenbrook Station
The Parkway looking north

6.1 Precinct Delivery Strategy

METRONET station precincts comprise the area within one kilometre or a 10-15 minute walk from the station. The planning and development of station precincts does not form part of the scope of this PDP, however they are important objectives of the overall METRONET program.

Transport projects are typically planned and delivered in a relatively defined timeframe. In contrast, the planned build-out of station precincts can take 30-40 years (or longer) to reach target densities, and is influenced by a range of planning, political and market circumstances.

To ensure transport infrastructure integrates with surrounding precincts from day one, while acting as a catalyst for higher intensity urban development over time, work is underway to:

- Review the Ellenbrook Activity Centre Plan to ensure an appropriate land use response to the new station;
- Prepare structure plans and associated scheme amendments for:
 - the planned 220-hectare Brabham precinct adjacent to Whiteman Park Station;
 - the planned 80-hectare precinct

surrounding the potential future Bennett Springs East Station;

- the planned 67-hectare precinct surrounding Malaga Station; and
- Prepare a master plan for the Morley Station precinct as a precursor to a local structure plan.

Outside of these planned initiatives, the METRONET Office will continue to collaborate on station precinct delivery, working with landowners, developers and government to stimulate activity and build strong, vibrant communities utilising strategies such as:

- Attracting strategic developments and employment-generating uses;
- Implementing well-considered collaborative planning processes and resulting planning frameworks that are carefully tailored to the unique conditions in each location;
- Establishing well-staged and coordinated development programs;
- Using available government land assets in the precincts to best effect;
- Delivering place making and community development initiatives; and
- Incentivising early development, including interim uses and adaptable and staged developments.

6.2 Ellenbrook Station and Precinct

Ellenbrook Station will be in the heart of Ellenbrook’s town centre, located south of The Parkway and west of Civic Terrace. The station will offer transport services for the 20,000 residents living in and around Ellenbrook, allowing quick and easy travel to a range of destinations including schools, retail and recreational venues. Passengers travelling by train directly from the station to the Perth CBD will have a journey time of just 30 minutes – half the current travel time for local residents using public transport.

6.2.1 Station design

Ellenbrook Station was selected for review through the State Design Review Panel (SDRP), with the first stage of this review seeing general support for the preliminary design. Design changes reflect the feedback received and further design review will be undertaken as the project progresses.

The station will be at grade with a 150m-long island platform, and has been designed “off-line”, east of the transit reserve. Ellenbrook Station will include a bus interchange, approximately 500 parking bays and facilities for pedestrians and cyclists, with integrated access for all users into the city centre.

Figure 11: Ellenbrook Station design and facilities



Ellenbrook Station design and facilities

Figure 12: Ellenbrook Station - Day one

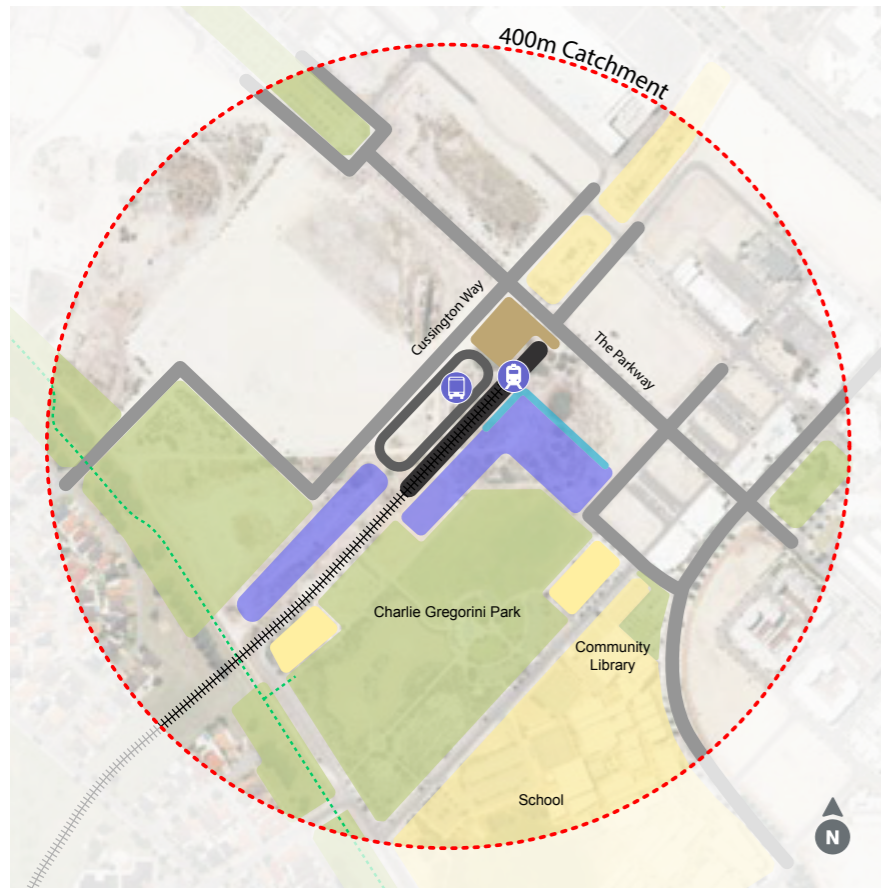
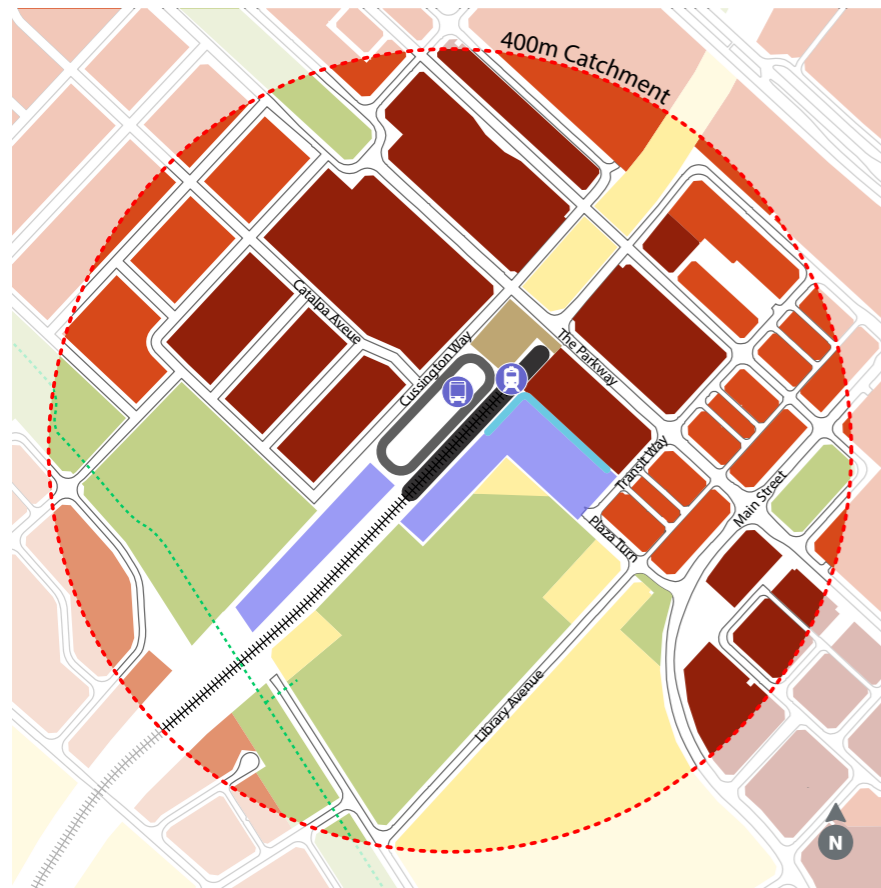


Figure 13: Ellenbrook Station - Future precinct opportunities



6.2.2 Precinct opportunities

The following opportunities have been identified:

- Short-to-medium term development of approximately 20 hectares around Ellenbrook Station comprising Department of Communities joint venture land;
- Temporary station parking to allow surplus government land to be developed in the medium-to-long term; and
- Review of current residential and employment density proposed under the Town Centre Development Plan to maximise patronage of the new rail service, transit oriented development and local economic development opportunities.

6.2.3 Planning status and development staging

The 'Ellenbrook Town Centre Development Plan (2015)' provides a framework for the progressive development of the town centre into a thriving commercial, cultural, civic and residential heart for Ellenbrook and the wider region. The Town Centre Development Plan also introduces the principles of transit oriented development, with the station being incorporated into the reserve and the adjacent landholdings being designed to accommodate mixed-use development.

Ellenbrook is a joint venture project between Department of Communities and Morella Pty Ltd (managed by LWP Property Group). The majority of the development activity is occurring within the Ellenbrook town centre which occupies approximately 150 hectares of land owned by the Ellenbrook joint venture. The existing planning framework provides for an estimated 1,650 dwellings to be located within the Ellenbrook town centre which is anticipated to be completed by 2025-26.

The planning framework for the town centre will be reviewed in response to Ellenbrook Station. The METRONET Office will continue to collaborate with Department of Communities and LWP to consider development staging options and planning framework changes that enable development intensity to respond to station infrastructure and evolve as the centre matures.



6.3 Whiteman Park Station and Precinct

Whiteman Park Station is an exciting opportunity to connect an important tourist attraction and growing residential community to the greater Perth area. A comfortable 25-minute train ride to or from the city centre, the station will be built just south of the Drumpellier Drive entrance to Whiteman Park and will serve the growing communities of Henley Brook, Dayton, West Swan and Brabham.

6.3.1 Station design

Whiteman Park Station was selected for review through the SDRP, with the first stage of this review seeing general support for the preliminary design. Design changes reflect the feedback received and further design review will be undertaken as the project progresses.

The elevated station will provide parking, bus transfer, passenger drop-off, approximately 900 parking bays and pedestrian/cycle access. A new underpass to the south of the station building will provide pedestrian access across Drumpellier Drive, and vehicles will access the station by a new signalised intersection that will replace the existing roundabout at Youle-Dean Road, immediately north of the station.

One 150m-long island platform will have at least 50 per cent platform coverage with passenger safe zones, dedicated seating central to the platforms, and passenger information facilities.

6.3.2 Precinct opportunities

The following opportunities have been identified:

- Medium-term development of higher intensity land uses within the Whiteman Park Station catchment comprising of State-owned land (Department of Communities/PEET joint venture) and the Brabham District Activity Centre within the Whiteman Edge development (Stockland);
- Provide significant and safe east-west pedestrian and cycling links including a grade-separated underpass from the station across Drumpellier Drive and north toward the Brabham District Activity Centre including a signalised intersection,

- connecting the station and rail services to these communities and businesses;
- Integration and gateway entry opportunities with Whiteman Park – one of Perth’s key tourism destinations which attracts over a million local and international visitors per annum; and
- Integration with complementary land uses adjacent to the station in Whiteman Park, including potential for sporting, cultural, community and associated facilities on the western side of Drumpellier Drive, consistent with the existing Whiteman Park Strategic Plan 2017-2021 (subject to separate planning, Business Case and funding process).

6.3.3 Planning status and development staging

Whiteman Park Station precinct catchment includes a mix of land uses including urban, parks and recreation, public purpose and regional roads. There are a number of public and private entities surrounding this precinct which are currently or will be amending their planning frameworks in response to the future Whiteman Park Station. These include:

- Department of Communities and PEET, who are jointly developing the Brabham precinct project which encompasses over 220 hectares of land, with initial precinct planning of this area underway; and
- Rationalisation of surplus lands by the WAPC as a result of the proposed Morley-Ellenbrook Line alignment.

The METRONET Office will continue to collaborate on proposed planning interventions within this station precinct, as required.



Whiteman Park Station
Drumpellier Drive looking east

Whiteman Park Station is an exciting opportunity to connect an important tourist attraction and growing residential community to the greater Perth area.

Figure 14: Whiteman Park Station design and facilities



Whiteman Park Station design and facilities

Figure 15: Whiteman Park Station - Day one

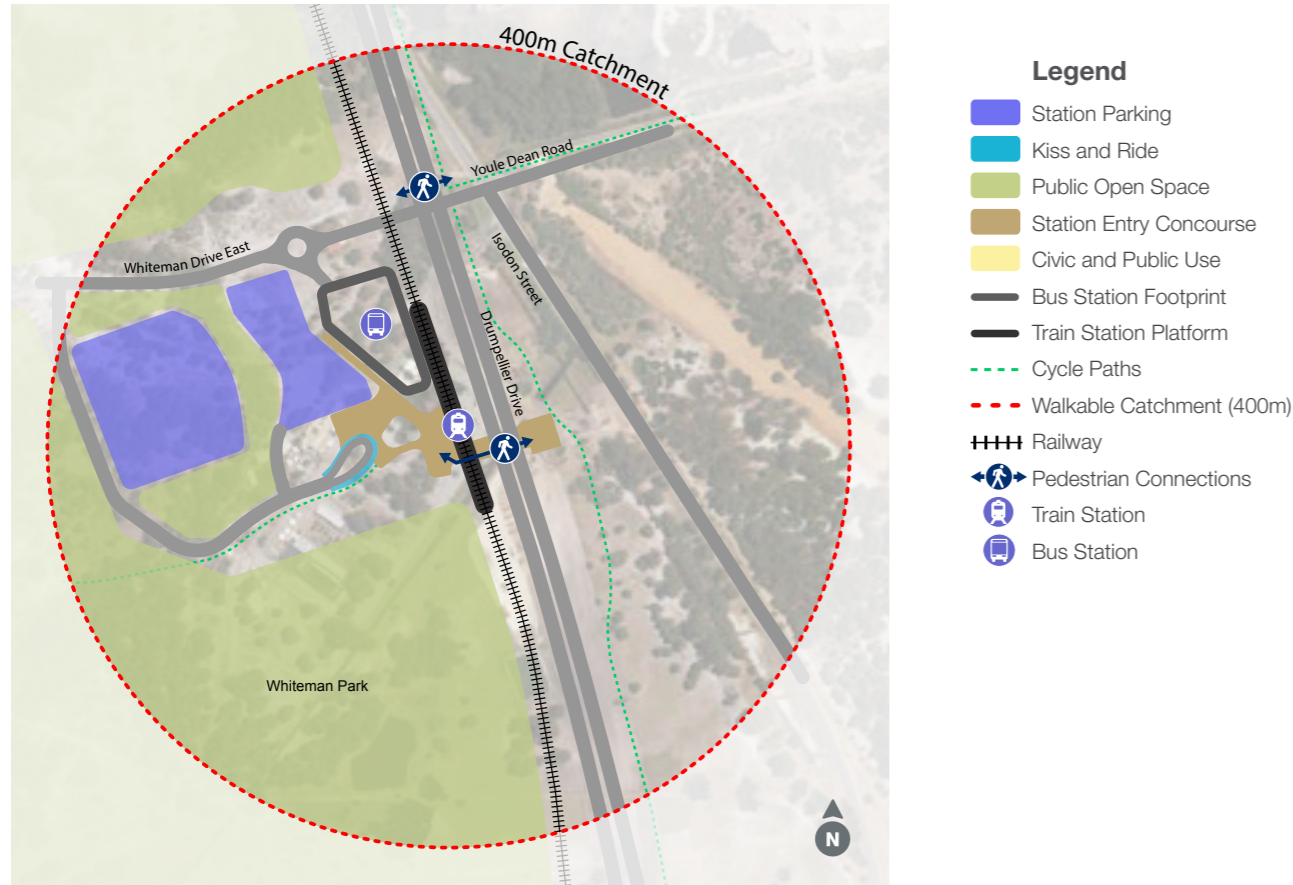


Figure 16: Whiteman Park - Future precinct opportunities



6.4 Malaga Station and Precinct

Malaga Station will provide efficient transport links to the suburbs of Landsdale, Alexander Heights, Ballajura, Malaga and Bennett Springs. Travel time between the station and the Perth CBD will be just 21 minutes and the new transport hub will connect passengers to the Malaga industrial and employment centre.

6.4.1 Station design

The undulating nature of the surrounding area presents an opportunity to build the station largely "at grade" based on existing ground levels, and to backfill the surrounding area in order to provide a "below ground" station similar to Butler Station. The station entry will be at grade (based on a built-up entry concourse and bus interchange level), removing the need for vertical transport at the entry to the station, with required access provided from the station concourse down to the platforms.

The station will include an entry building and concourse connecting the island platform to a station plaza, future shared paths, bus interchange, drop-off area, approximately 1100 parking bays, cycling facilities and connection to a future precinct boulevard.

Vehicle access to the station car park will be from a precinct entry road off Beechboro Road North. Buses will access the bus interchange via a separate signalised priority lane from Beechboro Road North.

6.4.2 Precinct opportunities

The area's varying ground levels will enable the precinct to be developed to span over the rail reserve, with grade-separated access to the station's entrance at an upper level also facilitating future north-south street and pedestrian connection(s).

The precinct will be planned for mixed land use, including residential, retail and community facilities, with a focus on medium to high-density residential.

To facilitate connection with adjacent areas to the east, the planned bridge span of the Beechboro Road North grade separation can accommodate a future pedestrian and cycling connection underneath, parallel to the rail corridor.

The following opportunities have been identified:

- Medium-term development of the Malaga Station precinct comprising State Government-owned land (WAPC Malaga land); and
- Investigation of town centre options that allow Malaga to grow from an initial transit node to an integrated town centre with medium-to-high residential and employment density (e.g. Cockburn Central).



6.4.3 Planning status and development staging

The Malaga precinct is predominately zoned 'Urban Deferred' with some portions of 'Rural' under the Metropolitan Region Scheme. The station is located on WAPC-owned land which provides opportunities for State-led precinct planning and development to occur over the short to medium term.

The design of the station recognises that land to the east has been identified as a Planning Investigation Area under the North-East Sub-

Regional Planning Framework and that some development may occur over time; however, this is not part of the project scope and is not required to support project outcomes.

The METRONET Office will continue to collaborate on proposed planning interventions within this station precinct, as required.

Figure 17: Malaga Station design and facilities

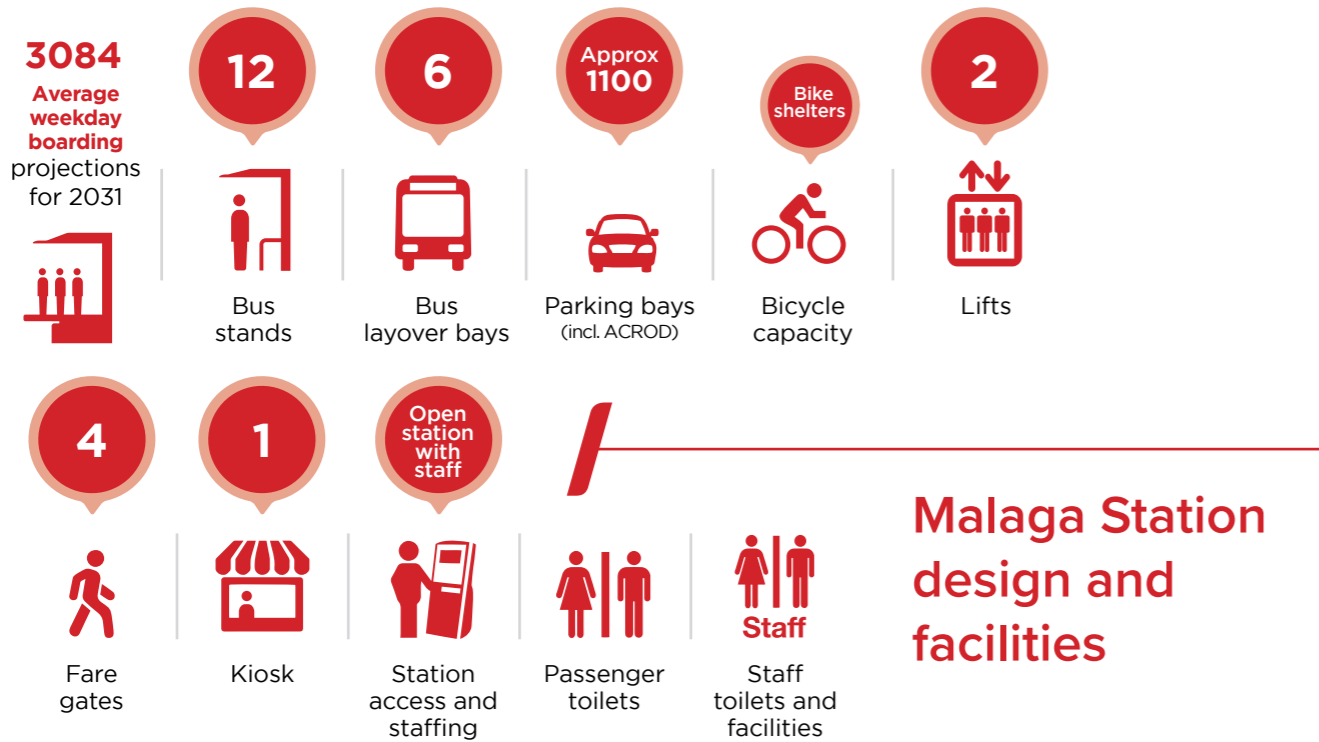


Figure 18: Malaga Station - Day one

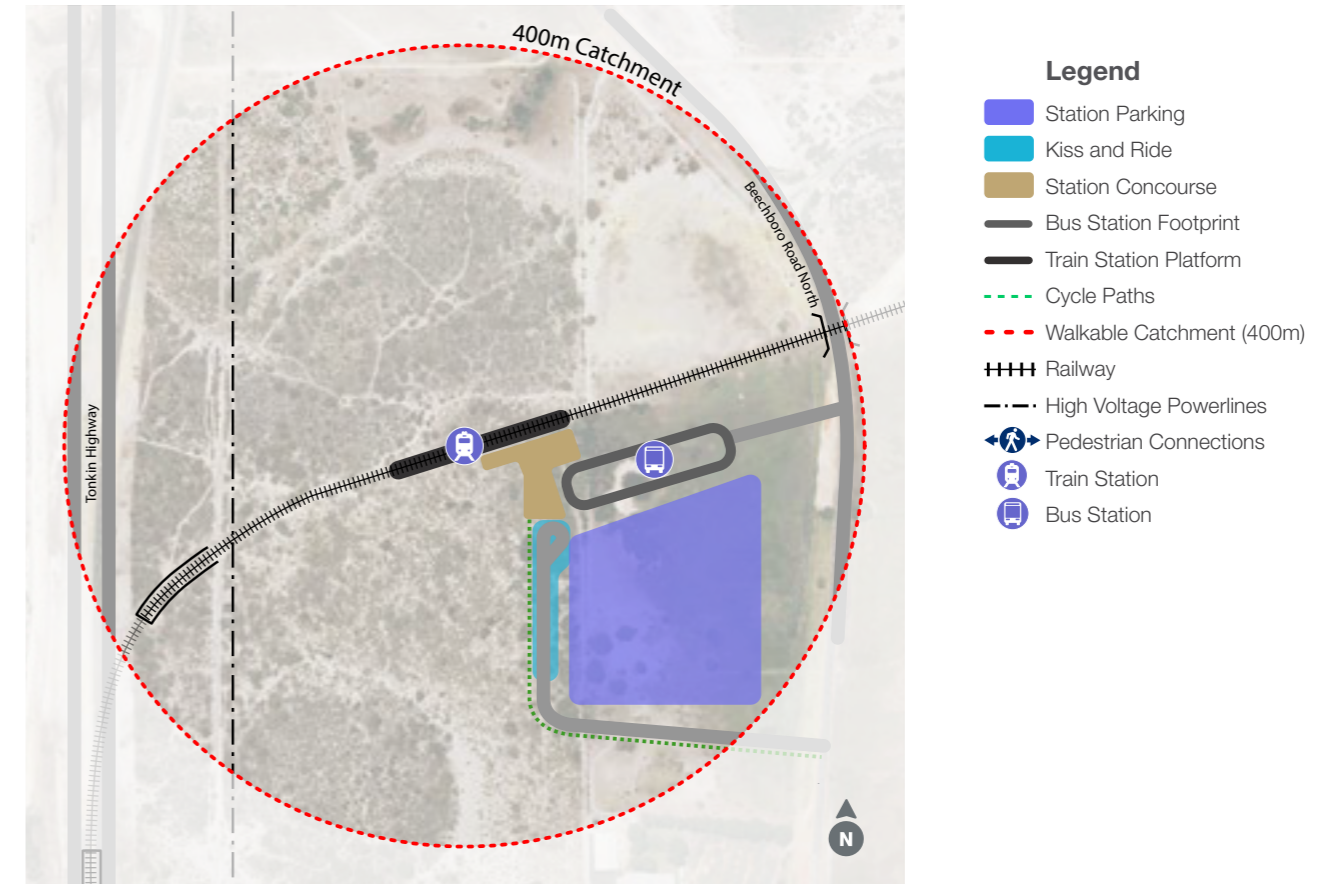
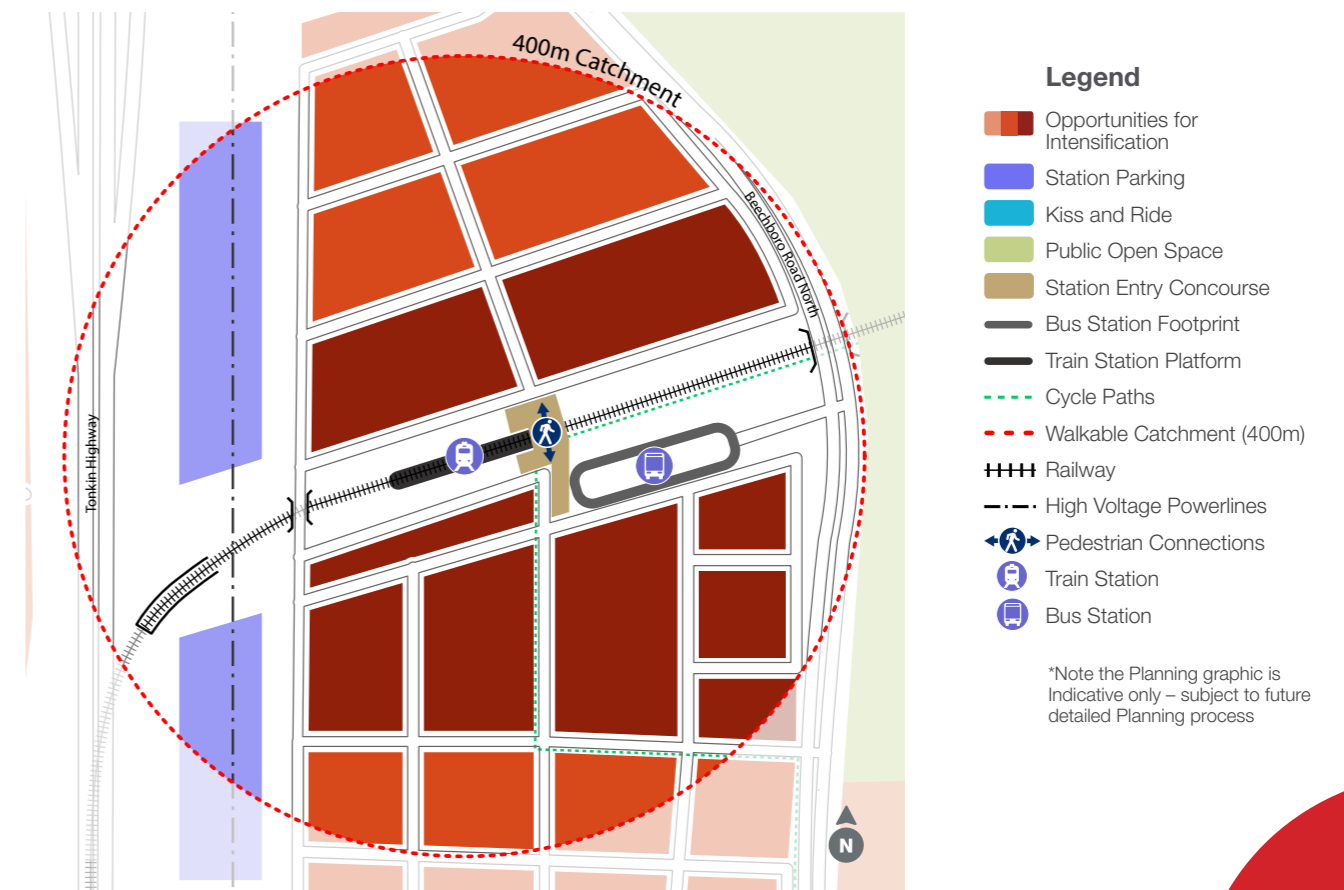


Figure 19: Malaga Station - Future precinct opportunities





6.5 Noranda Station and Precinct

Passengers travelling by train from Noranda Station to the Perth CBD will enjoy an 18-minute journey to their destination. Positioned at the intersection of Tonkin Highway and Benara Road, the station will offer passengers a full range of convenient facilities while delivering a reliable and efficient transport service for local and surrounding communities.

6.5.1 Station design

Noranda Station is located in the median of Tonkin Highway, immediately north of Benara Road. A pedestrian bridge over Tonkin Highway, with lifts and stairs, will connect passengers to the station from the car park located at the north-eastern corner of the Benara Road bridge. The at-grade car park will cater for approximately 400 vehicles and be accessed directly from Benara Road. Additional pedestrian access to the platform will be provided directly from the Benara Road bridge.

New bus bays on the approaches of the Benara Road bridge and a pedestrian underpass at the eastern end of the bridge will connect bus passengers with the station.

The existing north-south principal shared path connectivity will be maintained, although some minor modifications may be required.

6.5.2 Precinct opportunities

The following opportunities have been identified:

- Undertake local structure planning for the Noranda Station precinct to investigate opportunities for higher intensity uses to evolve over time in the Station Precinct and Activity Corridors to the east and west of the station, including a potential Activity Corridor linking to the Noranda District Activity Centre; and
- Investigate opportunities for urban amenity improvement in the short-to-medium term in key streets and public areas around the station.

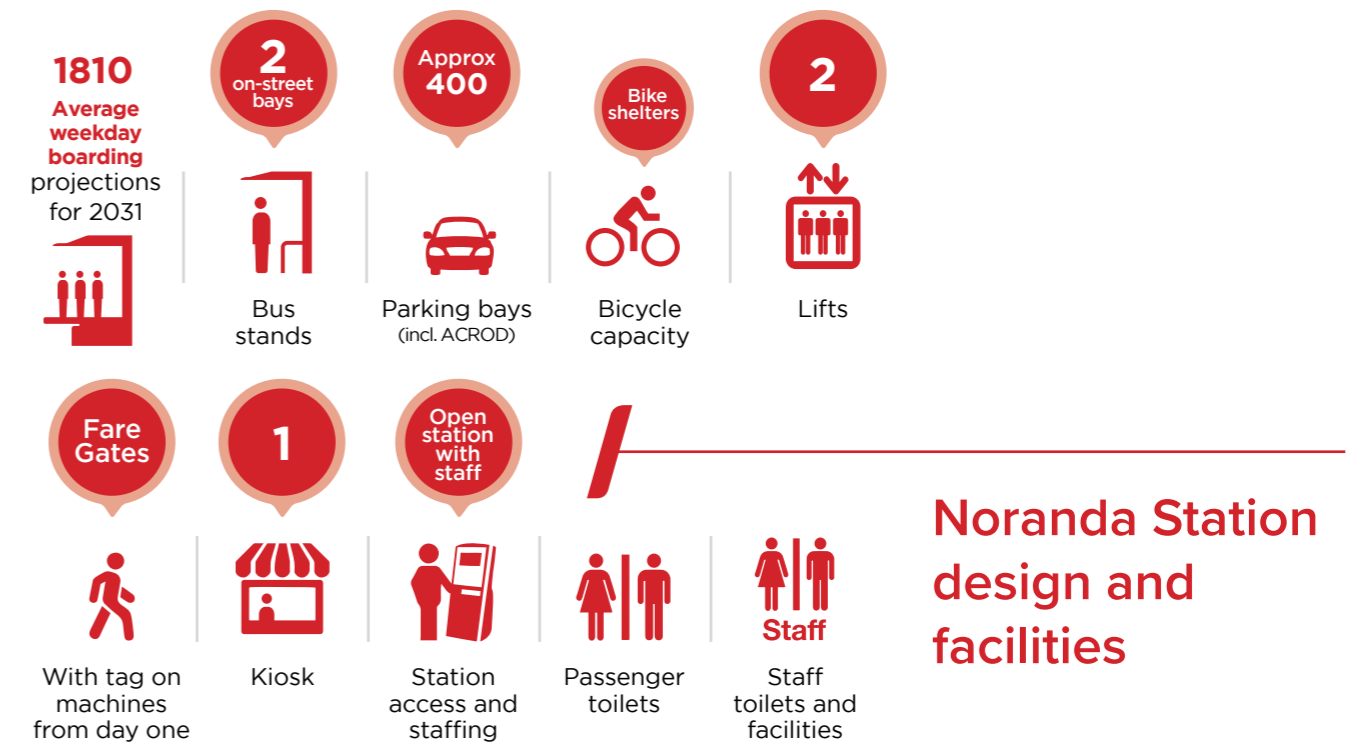
6.5.3 Planning status and development staging

Given the prevailing cul-de-sac subdivision pattern, significant urban intensification is expected to be challenging in the short term and likely to be limited to local level planning interventions to facilitate change in the broader precinct.

It is anticipated the City of Bayswater would undertake a future review of the planning framework for the Noranda Station precinct to investigate opportunities for higher-intensity land uses and building typologies to evolve. This review should consider the local activity centre and activity corridors to the east and west of the station, including a potential activity corridor linking to the Noranda District Activity Centre.

The METRONET Office will continue to collaborate on proposed planning interventions within this station precinct, as required.

Figure 20: Noranda Station design and facilities



Noranda Station design and facilities

Passengers travelling by train from Noranda Station to the Perth CBD will enjoy an 18-minute journey to their destination.



Figure 21: Noranda Station - Day one

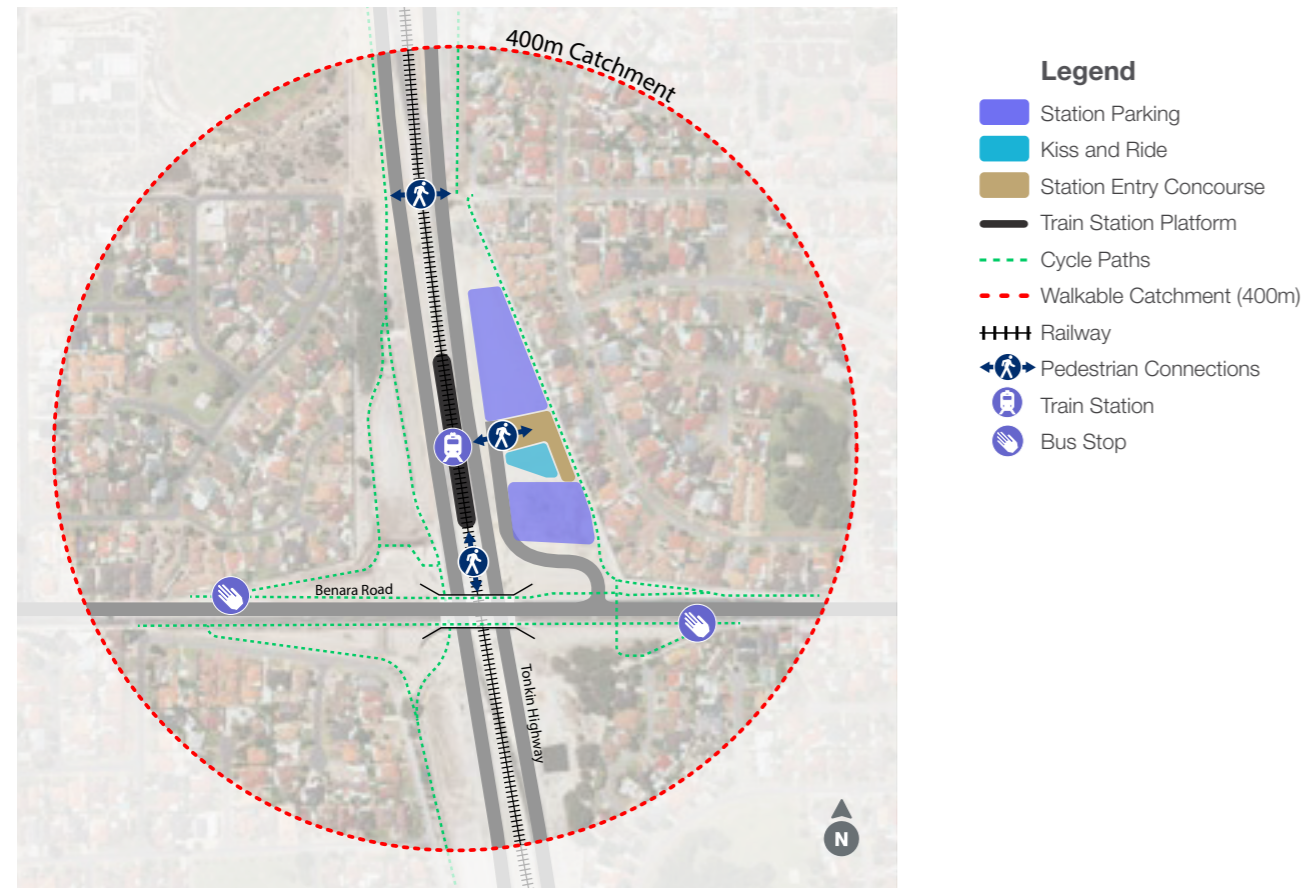
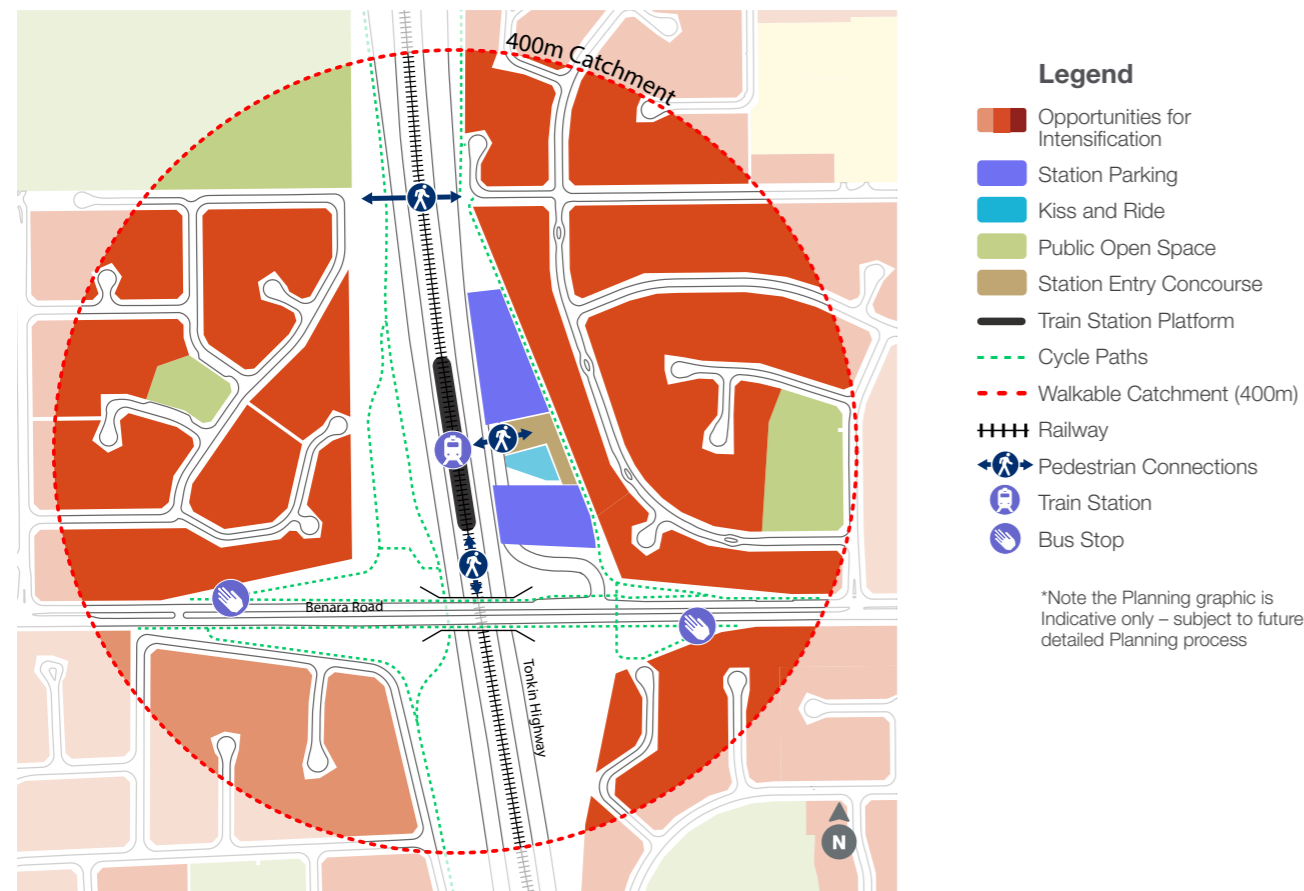


Figure 22: Noranda Station - Future precinct opportunities



6.6 Morley Station and Precinct

Morley Station will be located eight kilometres north-east of Perth CBD, within the Tonkin Highway median at Broun Avenue. Connections to the Morley Galleria, surrounding businesses and local community will be provided through high-frequency and local feeder bus services. The station will be a seamless 15-minute train ride from Perth Station. Redevelopment of existing residential areas surrounding the station is expected to progressively occur over the medium-to-long term (10-30 years).

6.6.1 Station design

Morley Station is an at-grade station, with a new bus interchange located on a bus bridge over Tonkin Highway, and a multideck carpark to the west. As part of delivery of the station, the existing Broun Avenue bridge will be replaced, providing an optimised and more integrated design solution and addressing a number of key constraints that currently exist.

Bus access is provided from above the station via a dedicated bus interchange. This provides efficient access between bus and train services and minimises transport infrastructure required in the surrounding precinct to allow maximum development potential.

The station has two fully accessible proposed entrances: one from the northern side of the new Broun Avenue bridge with stairs and one lift; and

another from the southern side of the new bus interchange with one lift (future-proofed for a second lift) and stairs. These two bridges will provide connectivity to the surrounding community.

Passengers parking in the multideck carpark will access the station via the bus bridge. ACROD and drop-off bays will also be located on the ground floor of this facility. Stairs and two lifts are provided within the car park structure.

6.6.2 Precinct opportunities

The following opportunities have been identified:

- Planning for urban intensification, amenity improvements and the establishment of urban corridor(s) between the Morley Station precinct and the Morley Activity Centre; and
- Consideration of options for State Government led planning and/or development intervention to provide greater planning and development certainty.

6.6.3 Planning status and development staging

The METRONET Office, in collaboration with the City of Bayswater, is preparing a Concept Master Plan which will establish a shared vision for the longer-term development of Morley Station precinct. This will be used to inform the preparation of a subsequent structure plan/activity centre plan by the City of Bayswater.

Figure 23: Morley Station design and facilities

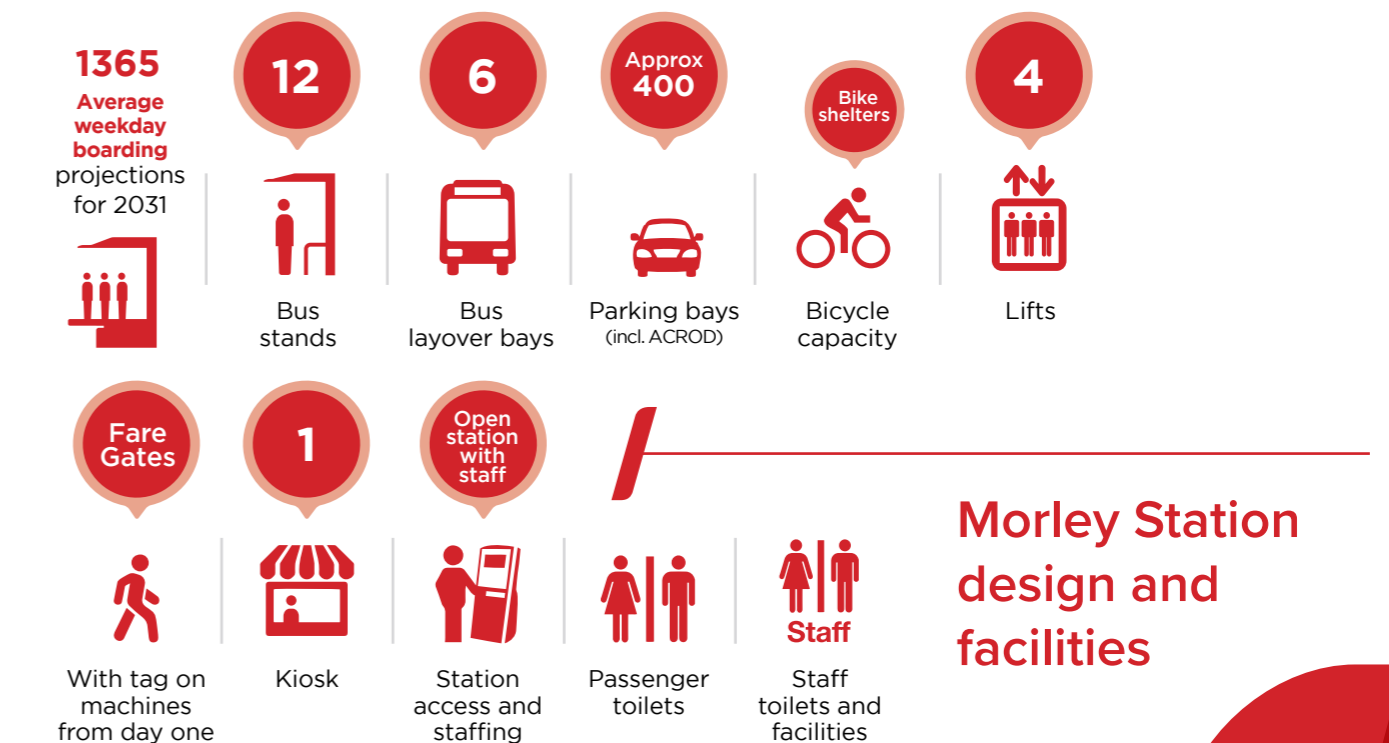
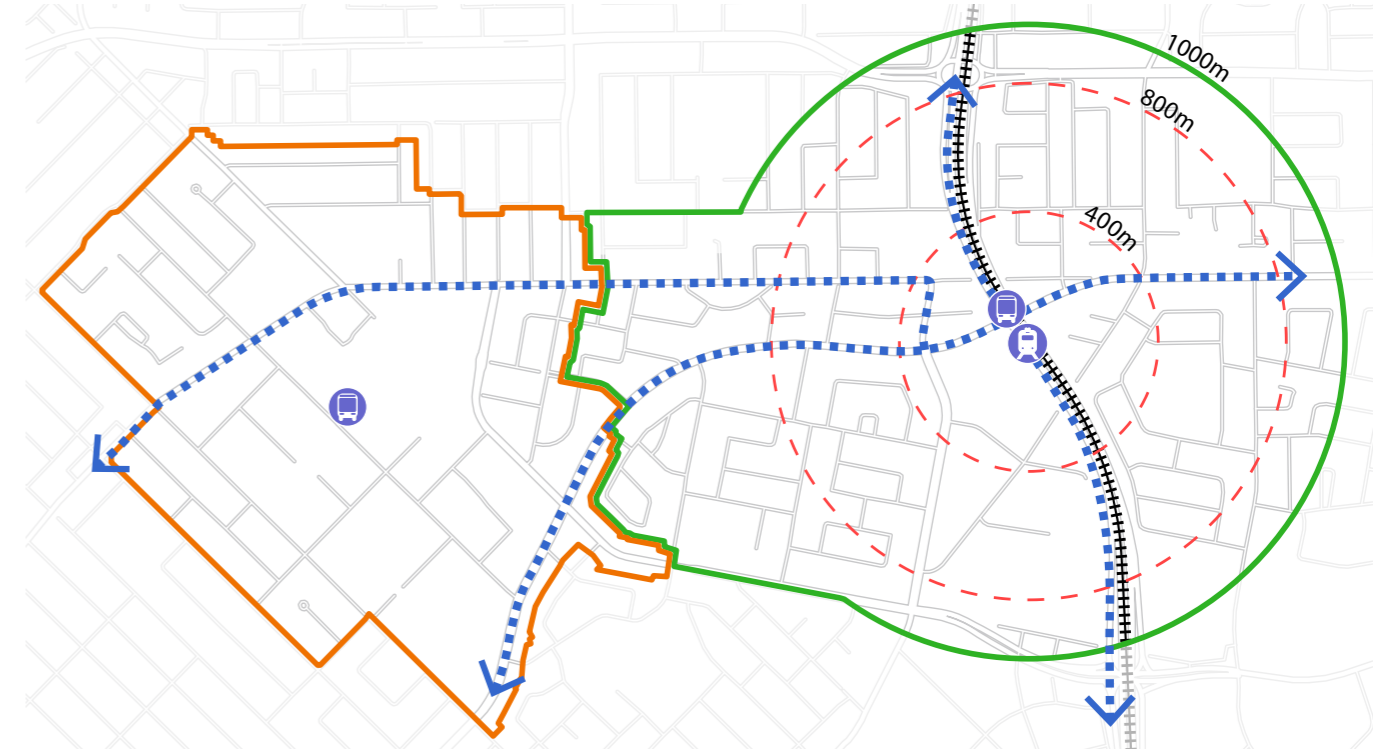


Figure 24: Morley Station - Day one



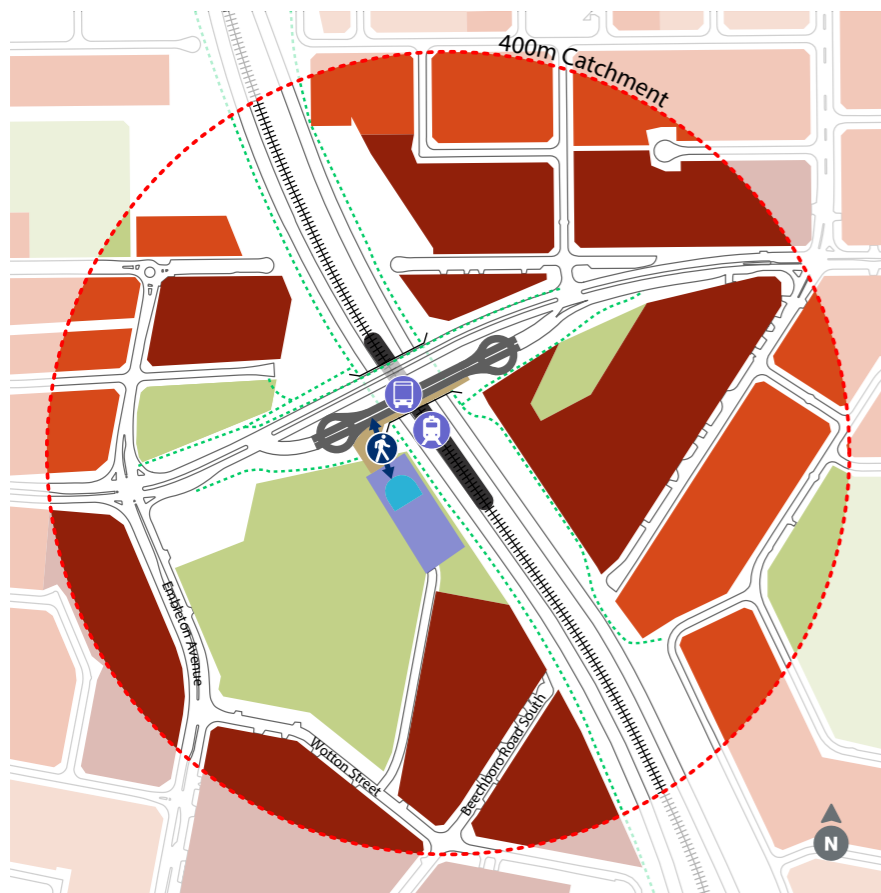
- Legend**
- Station Parking
 - Kiss and Ride
 - Station Entry Concourse
 - Bus Station Footprint
 - Train Station Platform
 - New Car Park Access Road
 - - - Cycle Paths
 - - - Walkable Catchment (400m)
 - ||||| Railway
 - ↔ Pedestrian Connections
 - Ⓜ Train Station
 - Ⓜ Bus Station

Figure 26: Connection between Morley Station and Morley Activity Centre



- Legend**
- Morley Station Precinct Concept Masterplan Study Area
 - Morley Activity Centre
 - - - Walkable Catchment
 - - - Movement Corridors
 - ||||| Railway
 - ↔ Pedestrian Connections
 - Ⓜ Train Station
 - Ⓜ Bus Station

Figure 25: Morley Station - Future precinct opportunities



- Legend**
- Opportunities for Intensification
 - Station Parking
 - Kiss and Ride
 - Public Open Space
 - Station Entry Concourse
 - Bus Station Footprint
 - Train Station Platform
 - - - Cycle Paths
 - - - Walkable Catchment (400m)
 - ||||| Railway
 - ↔ Pedestrian Connections
 - Ⓜ Train Station
 - Ⓜ Bus Station

*Note the Planning graphic is Indicative only – subject to future detailed Planning process





6.7 Future Bennett Springs East Station and Precinct

Bennett Springs East has been identified as a potential future station. While not included in the Morley- Ellenbrook Line project, it has been accommodated in the design for future construction.

A preliminary investigation into this precinct has identified some opportunities for urban development and renewal, however several land use and transport challenges exist which constrain this location from early delivery of a station, including:

- Low short-to-medium term patronage forecasts;
- Highly fragmented land;
- The need for comprehensive structure planning of the station precinct;
- Lack of government landholdings requiring acquisitions for rail and future station;
- Limited short-term opportunities for urban renewal and development; and
- Significant cost to make land suitable for development.

The METRONET Office, in collaboration with the City of Swan, is undertaking a local structure planning process within Bennett Springs to investigate opportunities to urbanise the area surrounding the proposed station location, and provide complementing transport, housing, employment and recreation choices within the station precinct.

From day one of Morley- Ellenbrook Line operations, Bennett Springs residents west of Bennett Brook are predicted to use Malaga Station.



7 Project Cost and Delivery

7.1 Transport Infrastructure Cost

The Morley-Ellenbrook Line main works cost will be confirmed following the competitive bid tender and contract award, expected to be completed by late 2020.

7.2 Sources of Funds

State and Federal Governments have a shared interest in strategic infrastructure investment that enhances the productivity and liveability of Australian capital cities.

User pays

Average annual revenue projections are typically approximately 30 per cent of total operating costs. Direct user pays revenue sources are therefore insufficient to offset operational costs and an operating subsidy will be required as per the existing PTA funding arrangements. Other revenue sources, e.g. from advertising and commercial leasing opportunities in stations are considered to be limited.

Commonwealth funding

The Commonwealth Government has committed \$500m of capital funding towards the project; this was subject to a favourable assessment of the Business Case by Infrastructure Australia – which was received on 7 April 2020.

State funding

As the sponsor and major beneficiary of the project, the State Government is assumed to fund the balance of capital and full operational costs required to deliver the project through the normal State budget process. The balance will take into account Commonwealth Government and estimated user pays funding/revenue sources.

7.3 Procurement Strategy

Recognising the complexity of delivering the Morley-Ellenbrook Line, the works are largely divided into four packages.

- **New Bayswater Station** – in addition to building a new station at Bayswater (to relocate and replace the existing station), this project includes building a second island platform for the Morley-Ellenbrook Line.
- **Tonkin Gap Project and Associated Works** – this project includes significant civil and structural works between Bayswater and Malaga, to prepare the Tonkin Highway median for construction of the rail line and stations and allow the rail to enter and exit the Tonkin Highway.
- **Main Morley-Ellenbrook Line Project Works** – includes all rail systems and infrastructure from Bayswater, all stations and facilities within the Tonkin Highway.
- **Forward works** – includes geotechnical field investigations, survey works, and the relocation and protection of the in-ground and overhead services of both the PTA and third-party assets.

The procurement strategy has considered the total scope of the Morley-Ellenbrook Line project and how this might be delivered.



8 Implementation Frameworks

8.1 Governance

As a METRONET project, delivery of the Morley- Ellenbrook Line will operate in accordance with the Cabinet endorsed METRONET Governance Framework. The fundamental principle underpinning the METRONET governance structure is decision-making at the appropriate management level.

After the investment decision, the Department of Transport's Office of Major Transport Infrastructure Delivery (OMTID), a strategic collaboration between the PTA and Main Roads, will be responsible for building the Morley- Ellenbrook Line transport infrastructure (and integrating it with the land use planning outcomes). OMTID is also responsible for managing the interfaces between the New Bayswater Station and the Tonkin Gap projects.

8.2 Approvals

To gain the approvals necessary to enable the construction and operation of the Morley- Ellenbrook Line, State and Commonwealth regulatory processes will be followed.

Preliminary consultation has been undertaken with the approving agencies during the project planning phase and PDP preparation. Approval requirements will be reviewed on an ongoing basis, as the scope of the project is refined. At the time this PDP was prepared, the following approval requirements had been identified.

8.2.1 Rail approvals - authorisation under the Railway (METRONET) Act 2018

Under current State legislation, the Governor, by Order in Council, may authorise the PTA to undertake, construct, or provide a railway as a public work, subject to the passage of a special rail enabling act authorising the construction of the railways, as passed by the Parliament of Western Australia.

The *Railway (METRONET) Act 2018* authorised construction of the Yanchep Rail Extension and the Thornlie- Cockburn Link railways. As the Morley- Ellenbrook Line is the third railway in the Government's METRONET program of projects to integrate transport and land use planning, an amendment to the *Railway (METRONET) Act 2018* was required to authorise the Morley to Ellenbrook railway.

On 27 February 2020, the *Railway (METRONET) Amendment Bill 2019* received Royal Assent, authorising the PTA to construct the Morley- Ellenbrook Line railway. In addition, the passage of the amendment Bill has authorised the PTA to compulsorily acquire and pay compensation for land required for the Morley- Ellenbrook Line railway.

8.2.2 Environmental approvals

The following project proposals have been referred under both State and Commonwealth environmental legislation:

- The Bayswater to Malaga Rail Works Proposal (205ha development envelope) was referred to the WA Environmental Protection Authority (EPA) on 14 November 2019 and determined to not need assessment. A Native Vegetation Clearing Permit (NVCP) will be required to undertake native vegetation clearing of this area.
- The Malaga to Ellenbrook Rail Works Proposal (500.8ha development envelope) was referred to the Commonwealth under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) on 23 September 2019. An assessment decision of 'controlled action' was made on 24 December 2019. The PTA has requested an accredited assessment by the State on behalf of the Commonwealth.

The Malaga to Ellenbrook Rail Works Proposal was also referred to the EPA on 24 December 2019 and in February 2020, determined to be assessed as requiring a Public Environmental Review, with a two-week public comment period. This level of assessment is due to the complexity and scope of environmental issues within the development envelope. All environmental studies and technical assessments are being undertaken to support a Public Environmental Review assessment level.

8.2.3 Aboriginal heritage approvals

The PTA submitted a Section 18 application to DPLH on 16 April 2019 for partial disturbance upon two registered Aboriginal heritage sites. The Minister for Aboriginal Affairs granted approval on 13 August 2019 for partial disturbance upon the two registered heritage sites on Drumpellier Drive (sites 551 and 552).

A Section 18 Notice application will be submitted for partial disturbance to the registered Aboriginal heritage site, Bennett Brook in Toto (Site number 3692), once further detailed design of the Bennett Brook railway crossing is available.

8.2.4 Planning approvals - rail alignment and infrastructure

The *Railway (METRONET) Act 2018* (the Act), authorises construction of the Morley- Ellenbrook Line with all necessary, proper and usual works and facilities in connection with the railway, but does not include the construction or alteration of a railway station, or any related car parks, public transport interchange facilities or associated means of pedestrian or vehicular access.

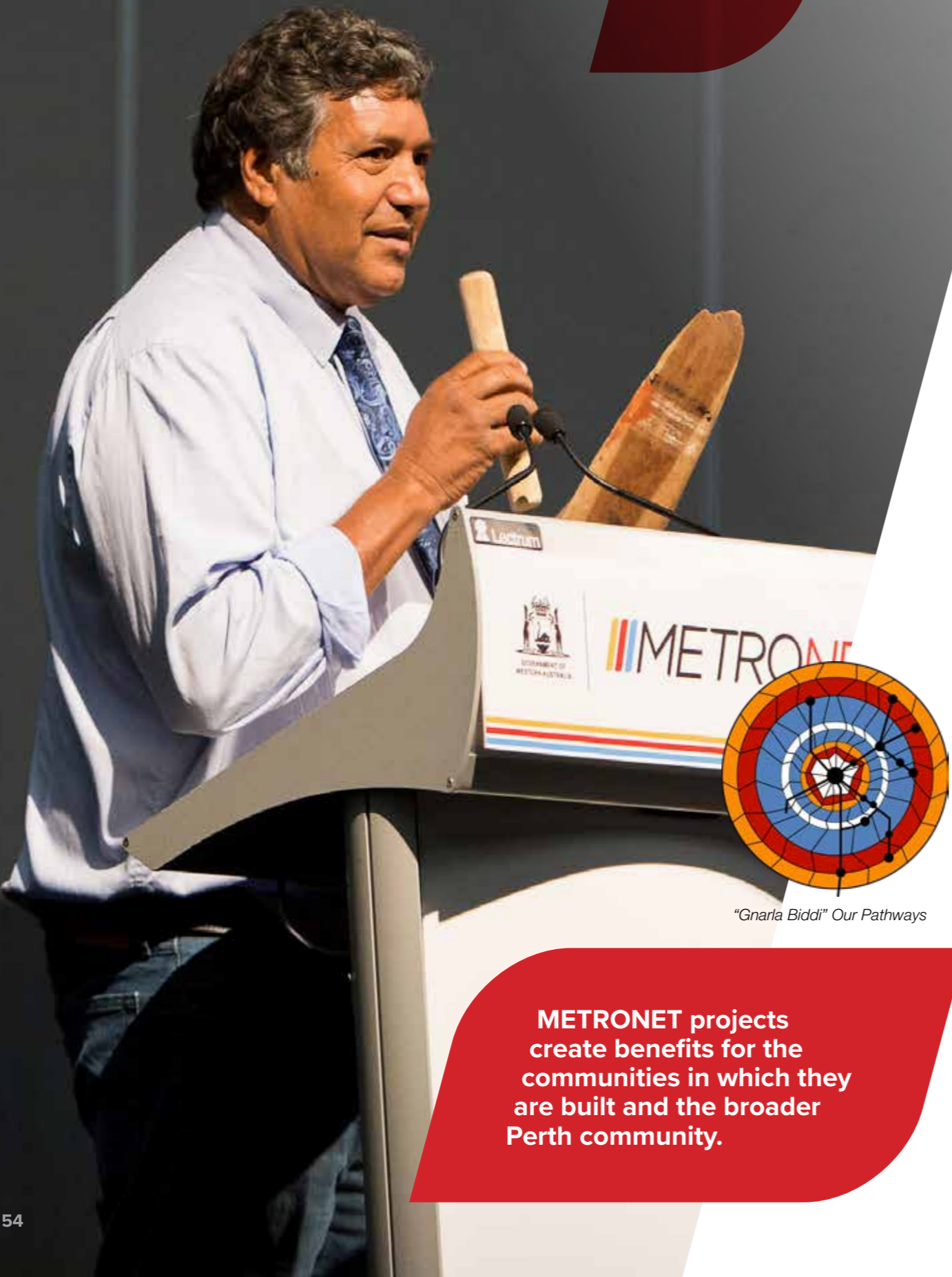
Development approval from the WAPC will be required for all station infrastructure including the construction of railway stations or any related car parks, public transport interchange facilities or associated means of pedestrian or vehicular access. Development applications for these works will be subject to assessment by the State Design Review Panel.

8.2.5 Planning approvals - station precincts

Planning approvals may include any or all of the following:

- Planning scheme/improvement scheme/redevelopment scheme preparation and approval setting out planning outcomes, development control and development contribution arrangements;
- Precinct plans to identify opportunities for increased densities which could be later mandated through a town planning scheme amendment;
- Any required environmental approvals;
- Subdivision approval; and
- Development approval.





METRONET projects create benefits for the communities in which they are built and the broader Perth community.

8.3 Sustainability Strategy

The Morley-Ellenbrook Line project will be implemented in accordance with the METRONET Sustainability Strategy to ensure the project is delivered in an economically, socially and environmentally responsible manner.

The project is targeting a 4-Star 'Design and As Built' certification for Ellenbrook and Malaga stations under the *Green Star - Railway Stations rating tool* to ensure a high standard of sustainability features because they have been assigned a 'Town Centre' station precinct typology.

Environmentally sustainable design (ESD) principles will be incorporated into the three remaining stations.

To assist in optimising the environmental, social and economic outcomes, the Morley-Ellenbrook Line transport infrastructure will be targeting Silver 'Design' and 'As Built' Infrastructure Sustainability ratings.

8.4 Aboriginal Engagement Strategy

The Morley-Ellenbrook Line will be implemented in accordance with the overarching METRONET Gnarla Bidi - Aboriginal Engagement Strategy which includes minimum requirements for the METRONET Office, the delivery agencies and engaged contractors towards targets set across the following five engagement streams:

1. Noongar cultural recognition;
2. Noongar input into place making;
3. Aboriginal procurement;
4. Aboriginal employment; and
5. Land access and sites management.

8.5 Public Art Strategy

The Morley-Ellenbrook Line project will be implemented in accordance with the METRONET Public Art Strategy (MPAS) to support the creation of a distinctive identity for station buildings and transport infrastructure. A Public Art Project Plan is required to be developed and implemented for the Morley-Ellenbrook Line to define the scope and intent of the public art program for the project.

8.6 Communications and Stakeholder Engagement

METRONET projects create benefits for the communities in which they are built and the broader Perth community, which is why key stakeholders are identified and engaged early in the planning phase to develop mutual understanding of the project objectives.

A Morley-Ellenbrook Line Communications and Stakeholder Engagement Plan guides the project's communication and engagement to:

- Build relationships with key stakeholders and foster support for the project by involving stakeholders, where appropriate and as early as possible, in the planning and design process of the project;
- Communicate project milestones throughout the process to increase awareness and allow for a greater understanding of what the planning process involves;
- Communicate the project vision and benefits to allow for an increased understanding of the alignment, station locations and why the preferred route was chosen;
- Identify stakeholder and community perceptions of potential risks/impacts/issues associated with the project and use this information to inform project planning;
- Establish opportunities for two-way feedback during planning and design to engage community stakeholders and maximise project outcomes through obtaining local knowledge and expertise; and
- Provide regular information when and how stakeholders wish to receive it.

The successful implementation of this plan will involve:

- Working together - developing an internal communications plan to provide direction to the project team on branding, development and performance, internal communication, partner communication and industry communication.
- Working with the community - applying the guiding principles to work effectively with communities to minimise impacts, maximise project benefits and deliver value for money for Government and its customers.
- Working with the contractor - understanding roles and responsibilities and aligning the project's community and stakeholder management implementation, at both the program and project levels, with the project's key messages, branding and protocols.
- Managing risk - taking a risk-management approach to the development of tailored community engagement and communications plans for each project phase which addresses risks and opportunities, and manages stakeholder priorities.



MORE INFORMATION

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