

Macquarie Fields Precinct

LAND USE AND INFRASTRUCTURE ANALYSIS

JULY 2015



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Figure 1: Report Structure

Introduction

Purpose of the Land Use and Infrastructure Analysis

This Analysis forms part of the Glenfield to Macarthur Land Use and Infrastructure Strategy and describes the methodology and evidence base that informed the vision and projected growth for the Macquarie Fields precinct. Applying the principles of ecologically sustainable development has been intrinsic to this process.

The Analysis has incorporated a review of the character, demographics and economy of Macquarie Fields.

A comprehensive audit of the precinct's environmental and built form characteristics identified areas to be protected and unconstrained land suitable for development.

The vision and growth projections for the precinct have been informed by economic feasibility and market demand analysis and reflect the long term housing and employment needs for the area.

Recommended improvements to the transport network aim to encourage more people to walk, cycle and use public transport for local and regional trips.

Improved connections to ecological corridors and open spaces have been identified and recommendations made to improve the quality of open spaces and the public domain.

A summary of the infrastructure requirements to support the precinct's growth is also provided to guide more detailed service and infrastructure delivery investigations.

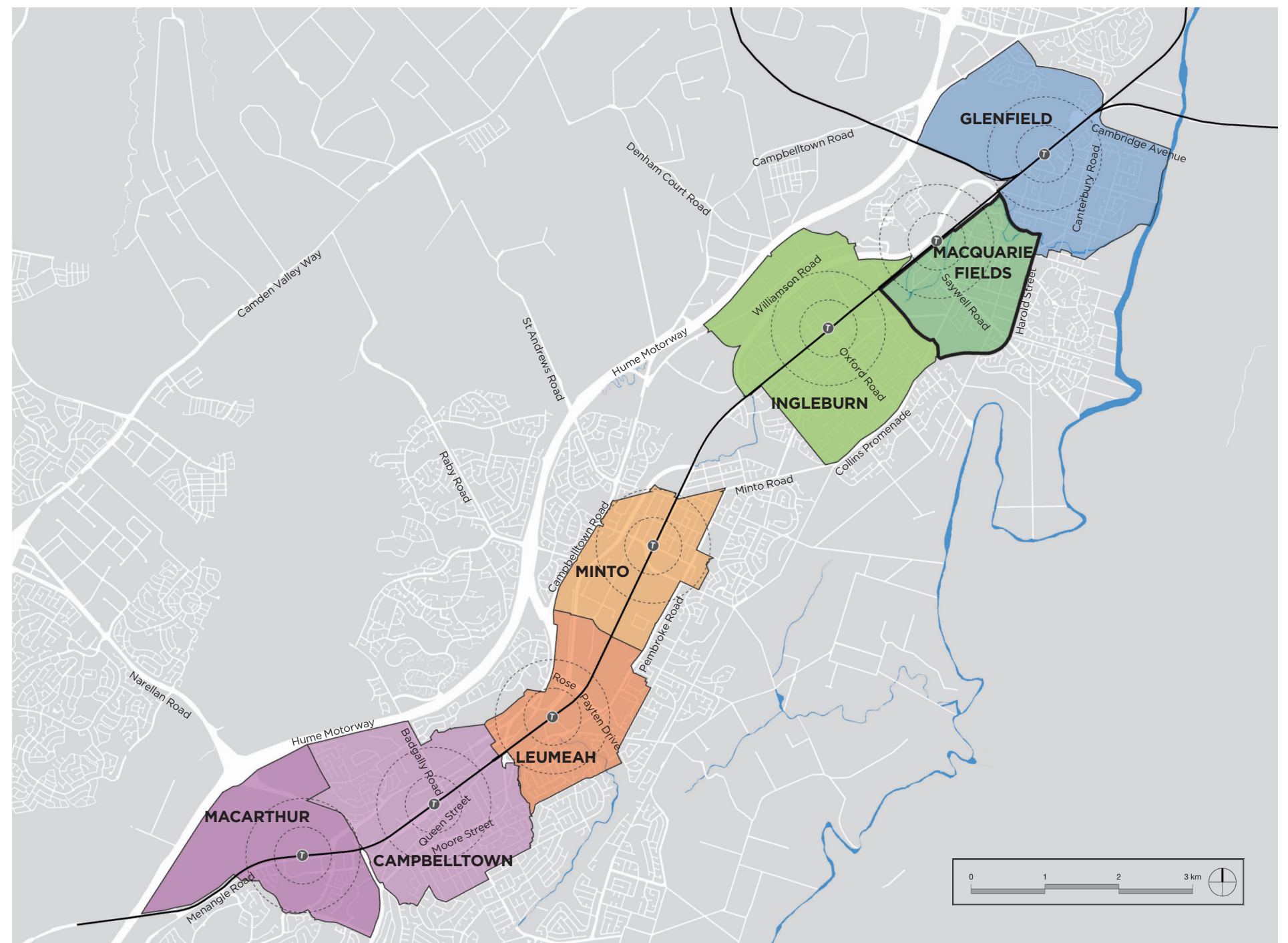


Figure 2: Glenfield to Macarthur Urban Renewal Corridor

Precinct Character

Macquarie Fields is located 42km from Sydney to the south of Glenfield. The precinct is serviced by the Cumberland, Inner West and South Line and Airport Line.

The precinct is defined by the railway line to the west, Henderson Road to the south, Harold Road to the east and Bunbury Curan Creek to the north. The boundary of the precinct is based on a radius of 800m - 1.5km from Macquarie Fields Station, which represents a 10-20 minute walking trip.

The precinct boundary only incorporates land on the eastern side of the rail corridor as Macquarie Links International Golf Course and Macquarie Links Estate, located on the western side of the rail corridor, are segregated from development on the eastern side of the station.

The precinct is characterised by low rise residential detached housing. Unlike other precincts in the corridor there are no retail or commercial uses surrounding the station. A small neighbourhood shopping centre is located approximately 800m from the station on the intersection of Saywell and Parliament Roads.

Glenquarie Town Centre, located on Harold Street 1.5km east of the station, is the focus of retail and commercial activity in the precinct.

East-west connections are limited within the precinct, with Henderson Road providing the only east-west road connection on the southern edge of the precinct. The station is located away from the Glenquarie Town Centre and transport links are somewhat indirect. Access to the station is limited to Saywell Road, with Redfern Creek and Bunbury Curan Creek creating a natural barrier to the station.

The precinct contains a number of education establishments, including James Meehan High School, Macquarie Fields High School, Macquarie Fields Primary School and the TAFE -South Western Institute.

The precinct contains large areas of open space, with Milton Park providing a significant green corridor in the south of the precinct and a natural boundary between the precinct and Ingleburn.

An aerial image of the precinct is provided in Figure 3. A series of photos that illustrate the existing built form and character of the precinct are provided on page 7.



Legend	Key Landmarks			
--- Precinct Boundary	1 Macquarie Fields House	4 Macquarie Road Leisure Centre	7 Macquarie Fields Park	10 Glenquarie Skate Park
T Station	2 Redfern Creek	5 Bob Prenter Reserve	8 James Meehan Park	11 South West Sydney TAFE
← Train Line	3 Milton Park	6 Hazlett Oval and Park	9 Glenquarie Town Centre	12 Saywell Road Shops

Figure 3: Macquarie Fields precinct, with key landmarks identified

Demographics and Economy

Demographics

The population of the precinct was 5,954 people at the last census in 2011, comprising 5% of the population of the corridor. Key characteristics of the precinct population include:

- ▶ A slightly higher median age than the corridor and Sydney as a whole
- ▶ A larger proportion of children under 15 years of age and fewer young adults in their twenties and thirties compared to Sydney as a whole
- ▶ The proportion of detached houses is significantly less than Campbelltown LGA and larger than Sydney
- ▶ A greater proportion of dwellings are semi-detached terrace or townhouses than Campbelltown LGA and Sydney
- ▶ There are no flats, units or apartments in the precinct
- ▶ Over a third of households were families with children - a lower proportion than Campbelltown LGA and Sydney
- ▶ A higher proportion of lone person households compared to Campbelltown LGA
- ▶ Average household size smaller than Campbelltown LGA but larger than Sydney - 2.64 persons per household
- ▶ A slightly higher proportion of properties owned outright or with a mortgage than the Corridor as a whole and Sydney
- ▶ A higher proportion of residents born overseas than the Corridor, Campbelltown LGA and Sydney. The top three countries of birth after Australia are Bangladesh, India and Fiji
- ▶ The majority of residents travelled to work by car. A quarter of residents used the train to travel to work.

Economy

In 2011 there were 1,299 jobs in the precinct. Nearly a third of all jobs in the precinct were in education.

Glenquarie Town Centre provides a number of retail and business jobs within the precinct.

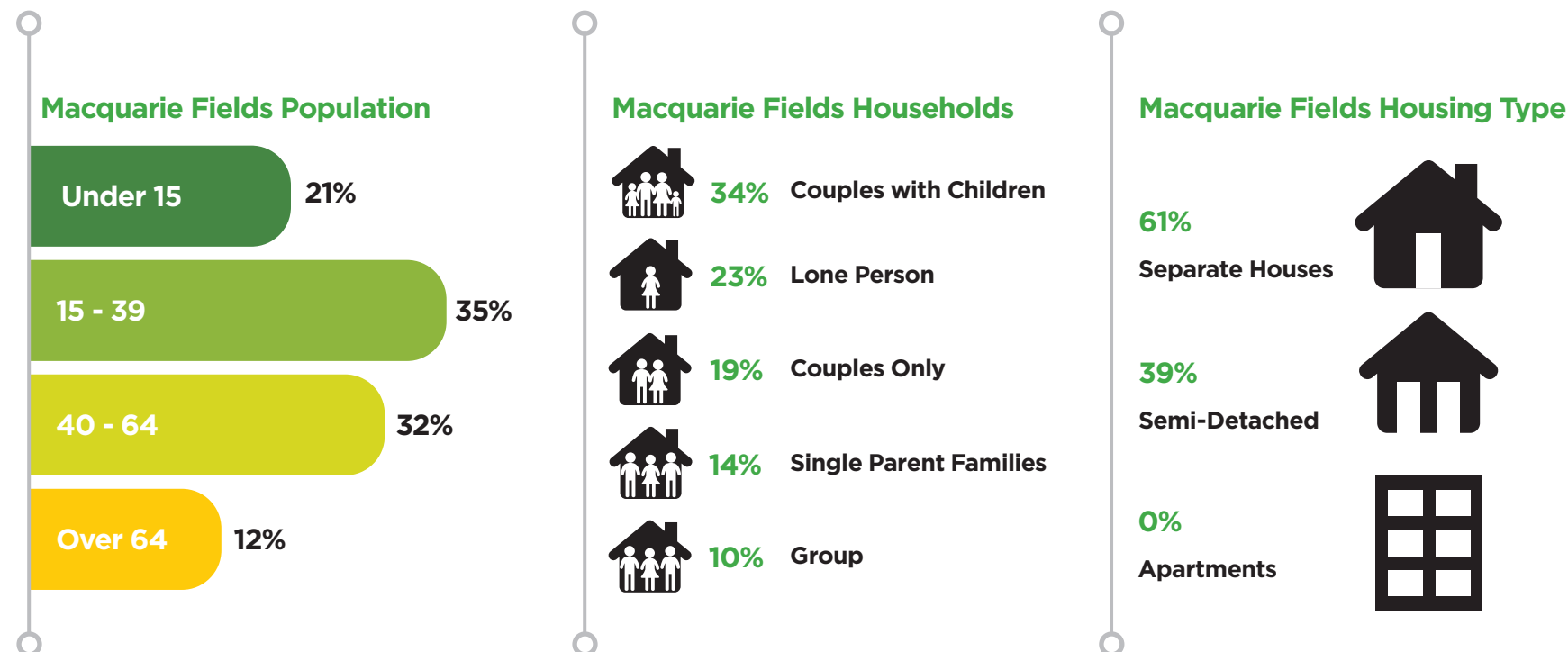


Figure 4: Key demographic facts for the Macquarie Fields precinct

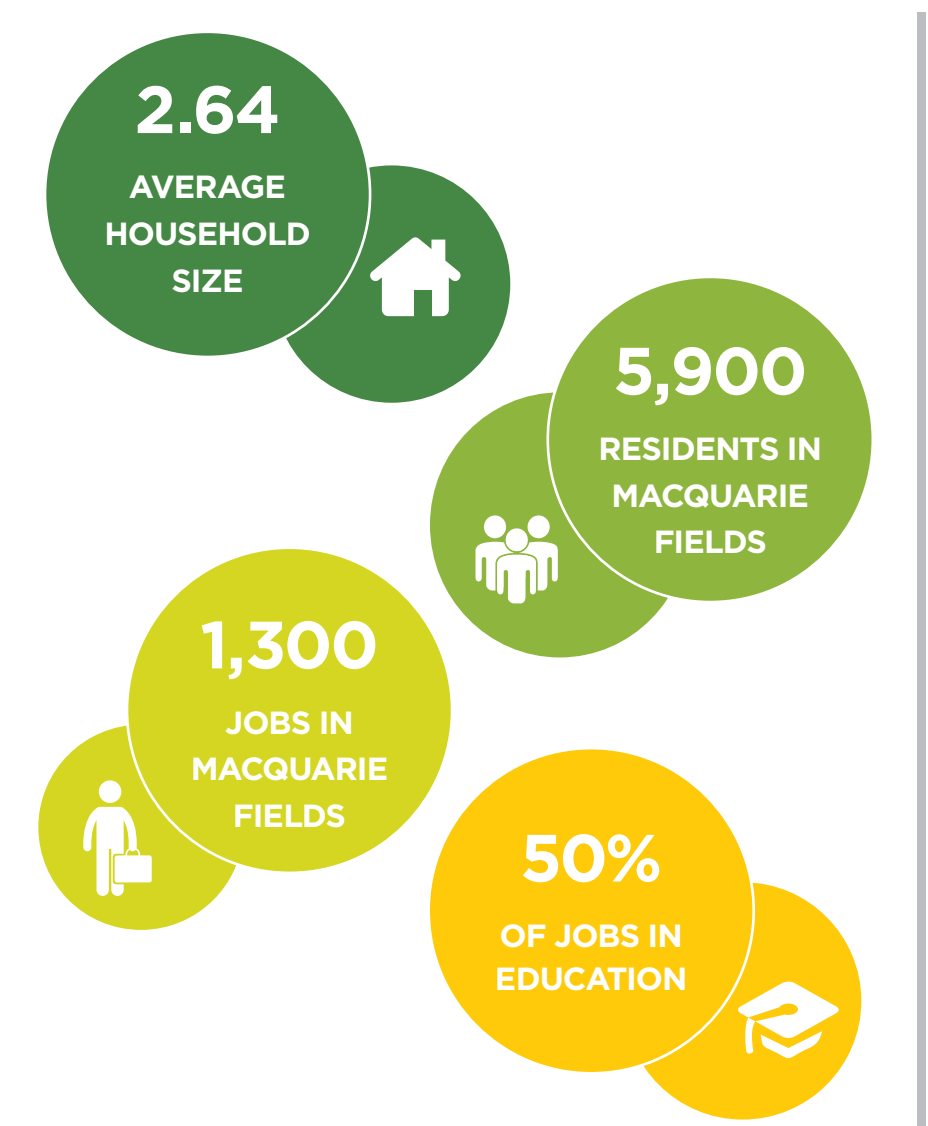


Figure 5: Key demographic facts for the Macquarie Fields precinct

Constraints Analysis

This section is an assessment of the constraints within the precinct. The physical characteristics of the precinct have been mapped and analysed to identify constrained and unconstrained sites for renewal. These characteristics include: transport and movement; open space; topography; flooding; vegetation; bushfire risk; heritage; recent residential development; land ownership; and social infrastructure.

The combination of these elements reveal the overall level of development constraint within the precinct. However, not all constraints that are identified are necessarily barriers to change, often they are opportunities for renewal in the future.



Figure 6: Images demonstrating the existing character and built form of the Macquarie Fields precinct

Site Context

Transport and Movement

Macquarie Road, Fields Road and Atchison Road serve as the primary north-south access ways in the precinct, while the Hume Motorway, Canterbury Road and Harold Street provide the main regional routes for through traffic in the area. Saywell Road is the primary east-west connection through the centre of the precinct to Macquarie Fields Station, with Victoria Road and Parliament Road providing east-west connections to Glenquarie Town Centre.

East-west vehicle movements through the precinct are limited by the lack of road connections due to the barrier formed by Redfern Creek. Henderson Road, bounding the precinct to the south, provides the only connection across the rail line into the precinct.

There is no direct connection linking the station with Victoria Road and Glenquarie Town Centre.

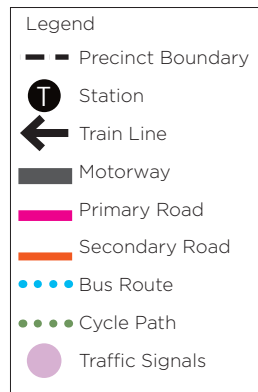


Figure 7: Transport and movement within the Macquarie Fields precinct

Walking Catchment

Figure 8 below demonstrates the 5, 10 and 20 minute walking catchments from Macquarie Fields station. Pedestrian and cycling accessibility is greatly restricted by Redfern Creek and the lack of dedicated and signalised crossings along Saywell, Atchison, Victoria and Parliament Roads, particularly near the schools, public open spaces and to Glenquarie Town Centre.

There are also a number of local streets with limited street lighting and pedestrian footpaths that further restrict active modes of transport.

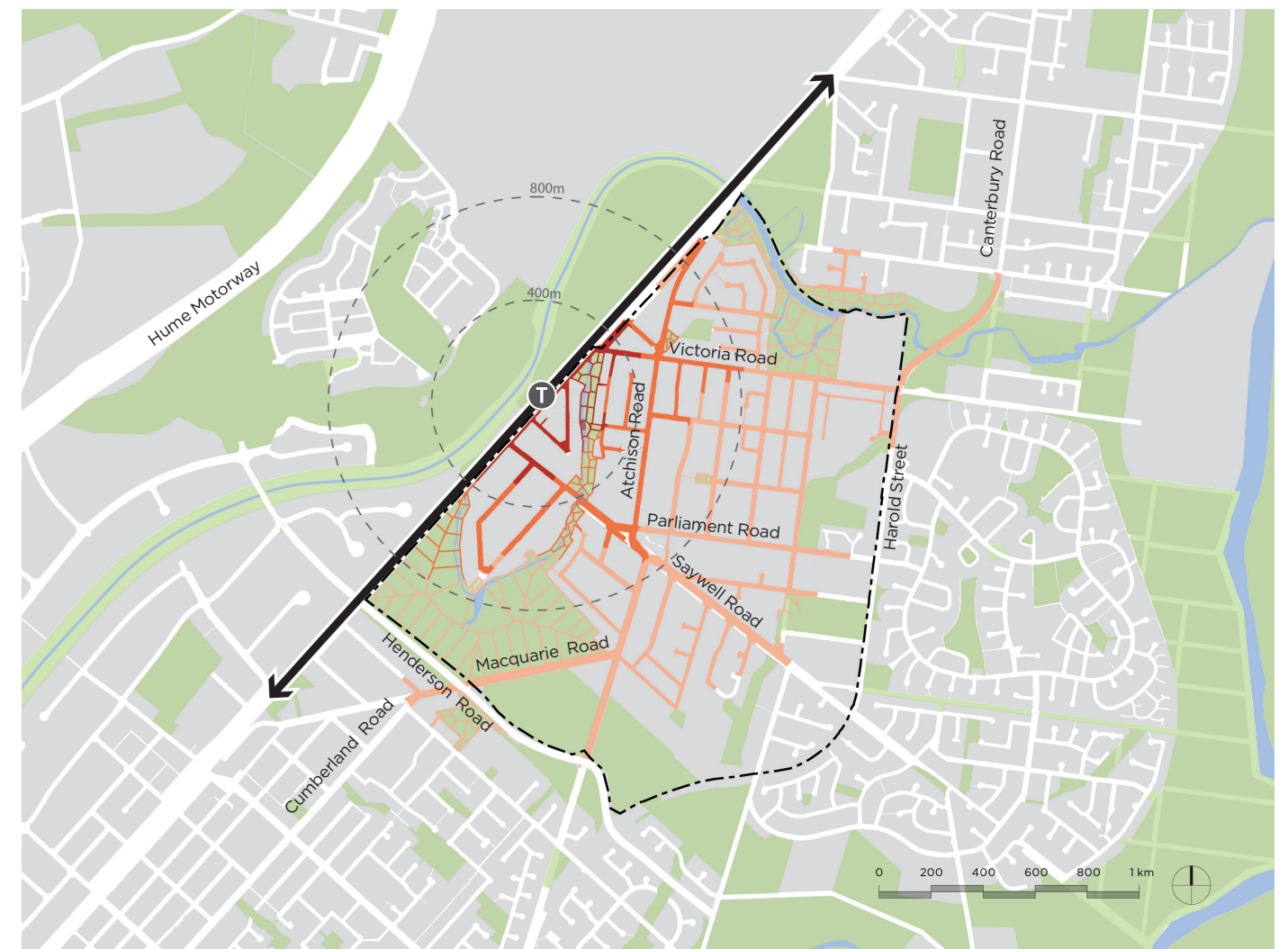
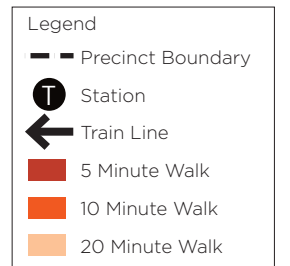


Figure 8: 5, 10 and 20 minute walking catchment within the Macquarie Fields precinct

Open space network

Macquarie Fields has a good supply of passive and recreational open space as identified in Figure 9(b). There are a number of local community parks and sporting facilities, as well as large tracts of natural vegetation and surrounding bushland.

Local parks in the precinct include James Meehan Park and Macquarie Fields Park both to the south of Glenquarie Town Centre. There is additional open space providing sport and recreation facilities along the southern boundary of the precinct including; Milton Park, Macquarie Road Reserve, Bob Prenter Reserve and Wattle Park. Macquarie Fields Leisure Centre and Macquarie Fields Sports Complex. Thomas Atkins Walk provides a green link between these recreation areas in the south and Macquarie Fields Park towards the Town Centre.

Macquarie Links International Golf Course is located to the west of the precinct across the rail line, providing private golf and recreation space. The area to the west of the Golf Course is an environmental conservation area.



Figure 9(a): Existing open space in the Macquarie Fields precincts, Bunbury Curran Park



Figure 9(b): Open space network in the Macquarie Fields precinct

Site Context

Topography

The topography within the precinct is gently undulating. The highest point is to the south of Saywell Road with the topography sloping gently down towards the north, east and south.

Redfern Creek which runs through the eastern side of the precinct and Bunbury Curan Creek which runs through the north, are the lowest points within the precinct. There is also a valley running through Thomas Atkins Walk between Macquarie Fields Park and Macquarie Fields High School.

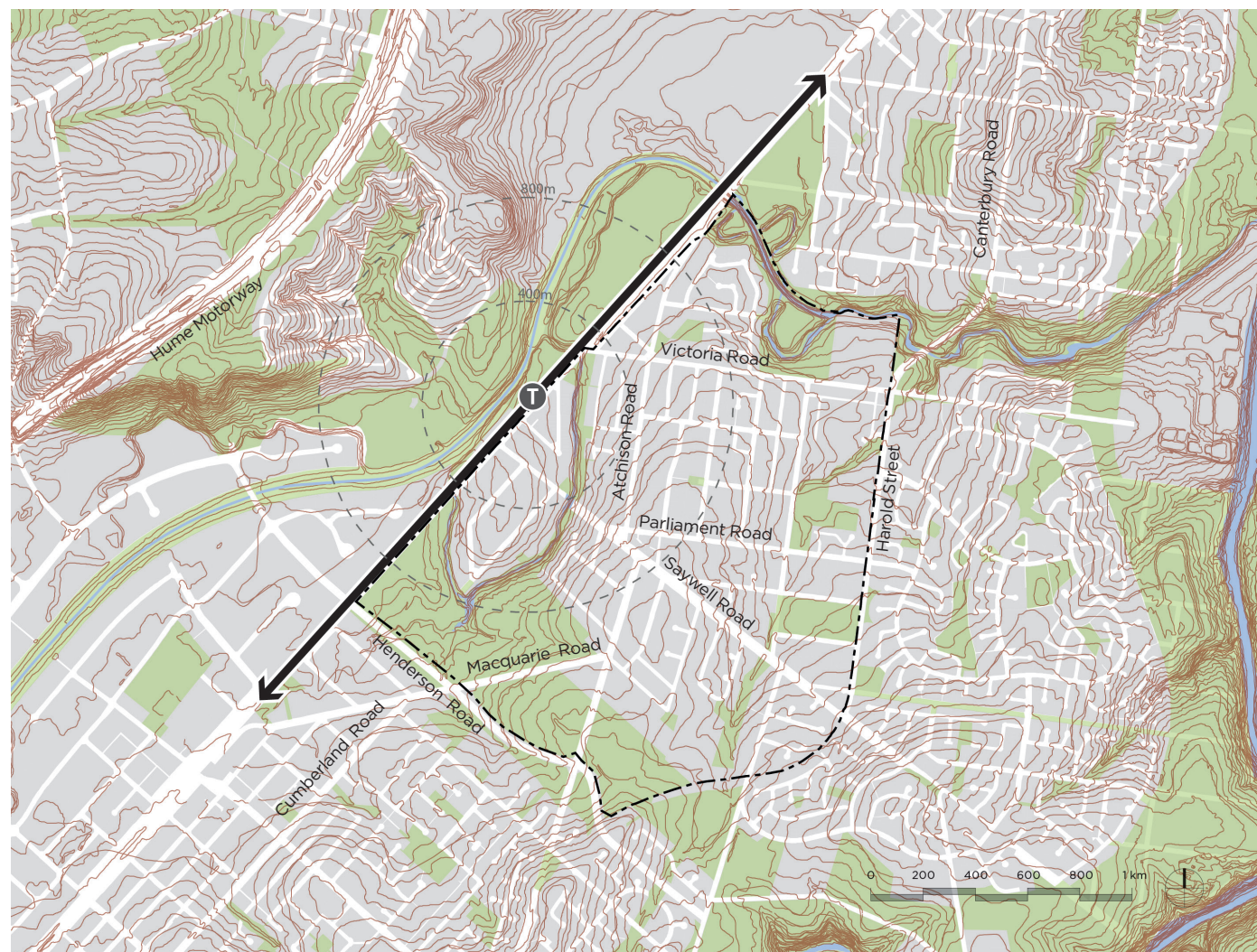
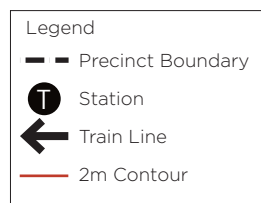


Figure 10: Topography within the Macquarie Fields precinct

Flooding and Drainage

Figure 11 shows the location of waterways and associated riparian corridors in the precinct.

Campbelltown City Council is currently preparing a Floodplain Management Plan to identify areas subject to flooding. Once finalised, this Plan will be used to manage flood risk and inform future planning for the precinct.

Any development of land within the precinct will need to consider whether the land is flood prone and address any relevant flooding controls.

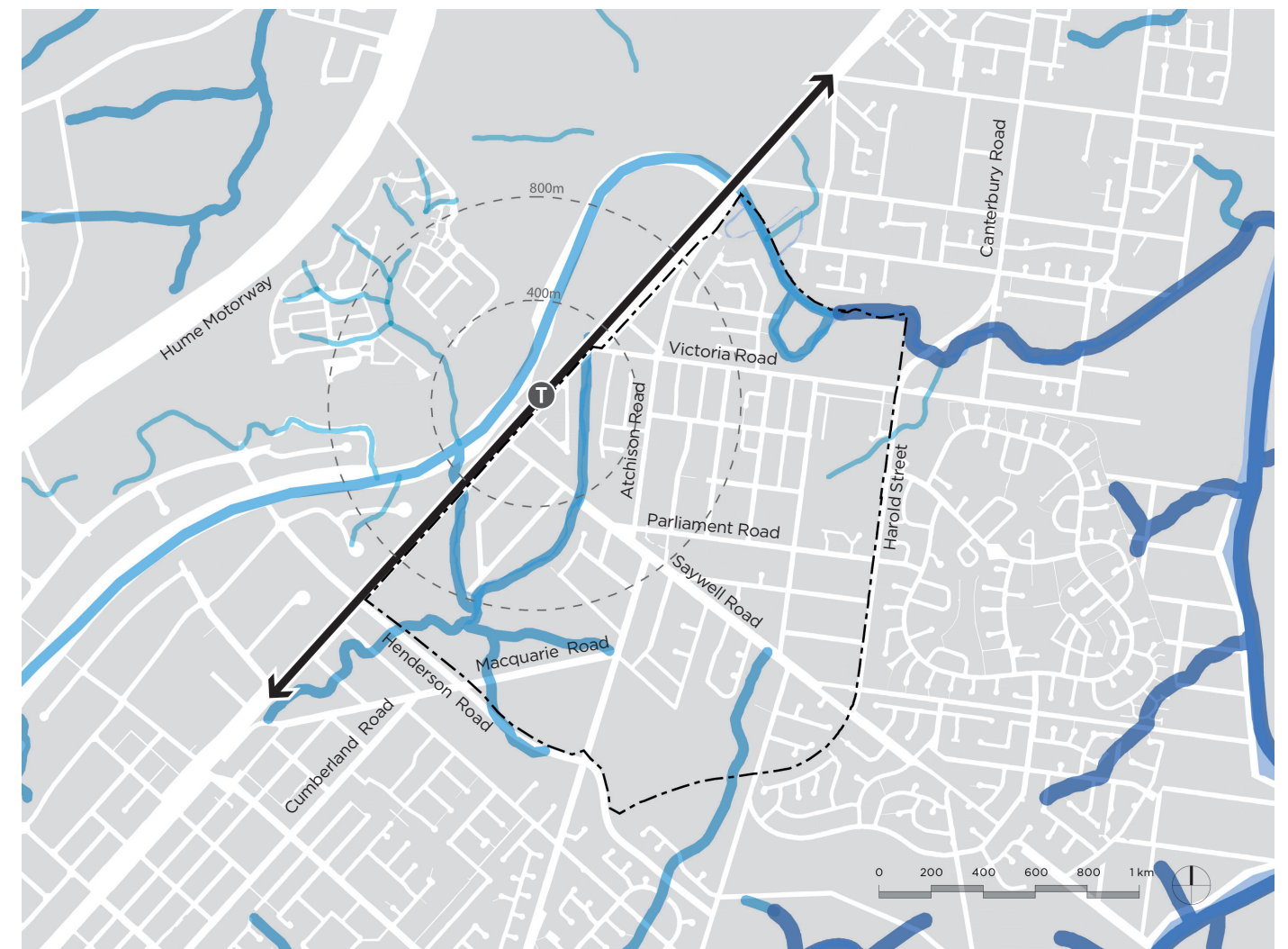
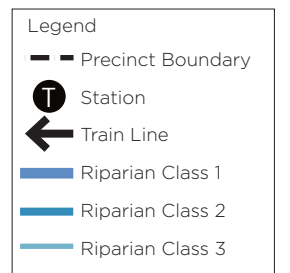


Figure 11: Riparian corridors and waterways within the Macquarie Fields precinct

Vegetation and Ecology

The precinct contains tracts of vegetation that are classified as Endangered Ecological Communities under the *Threatened Species Conservation Act 1995*. These include areas of Cumberland Plain Woodland and River Flat Eucalypt Forest.

The larger spanning tracts of vegetation are found along the riparian corridors running through the precinct. These are located on the northern boundary of the precinct along Burnbury Curran Creek and along the Redfern Creek corridor. Pockets of vegetation are found along the western edge of the precinct and in parks and reserves along the southern boundary of the precinct.

Riparian corridors are also identified in Figure 12 below, and these are largely co-located with significant areas of natural vegetation.

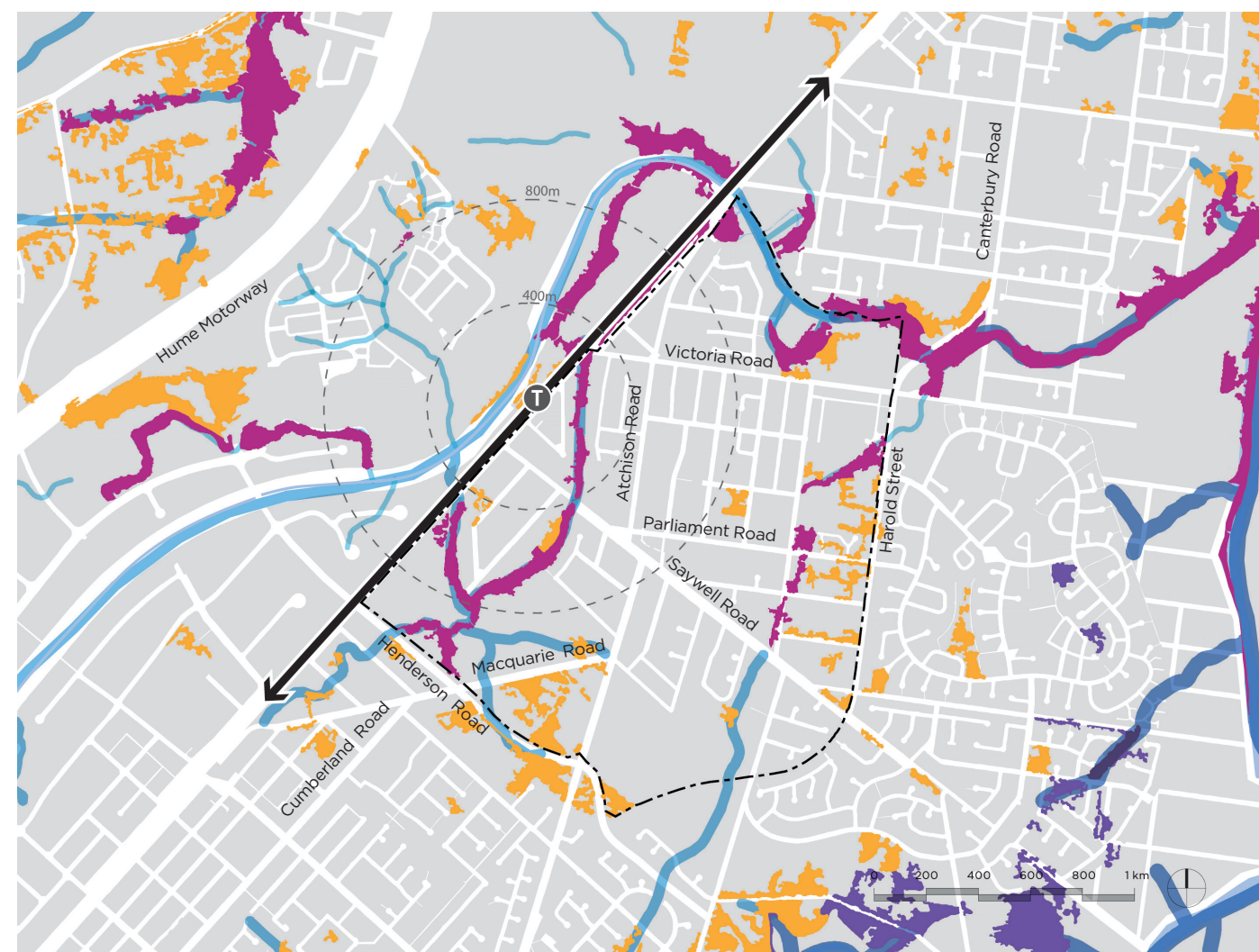


Figure 12: Vegetation and ecology within the Macquarie Fields precinct

Bushfire Risk

Due to the small amount of existing vegetation in the precinct there is a relatively low risk of bushfire. Land subject to bushfire risk is located along the southern boundary, in existing open space and areas with existing vegetation largely in the Redfern Creek corridor. There is also a small area along the northern boundary of the precinct that is identified as bushfire prone.

Any redevelopment of land within these bushfire prone areas will need to provide the required asset protection zones in accordance with relevant bushfire protection guidelines.

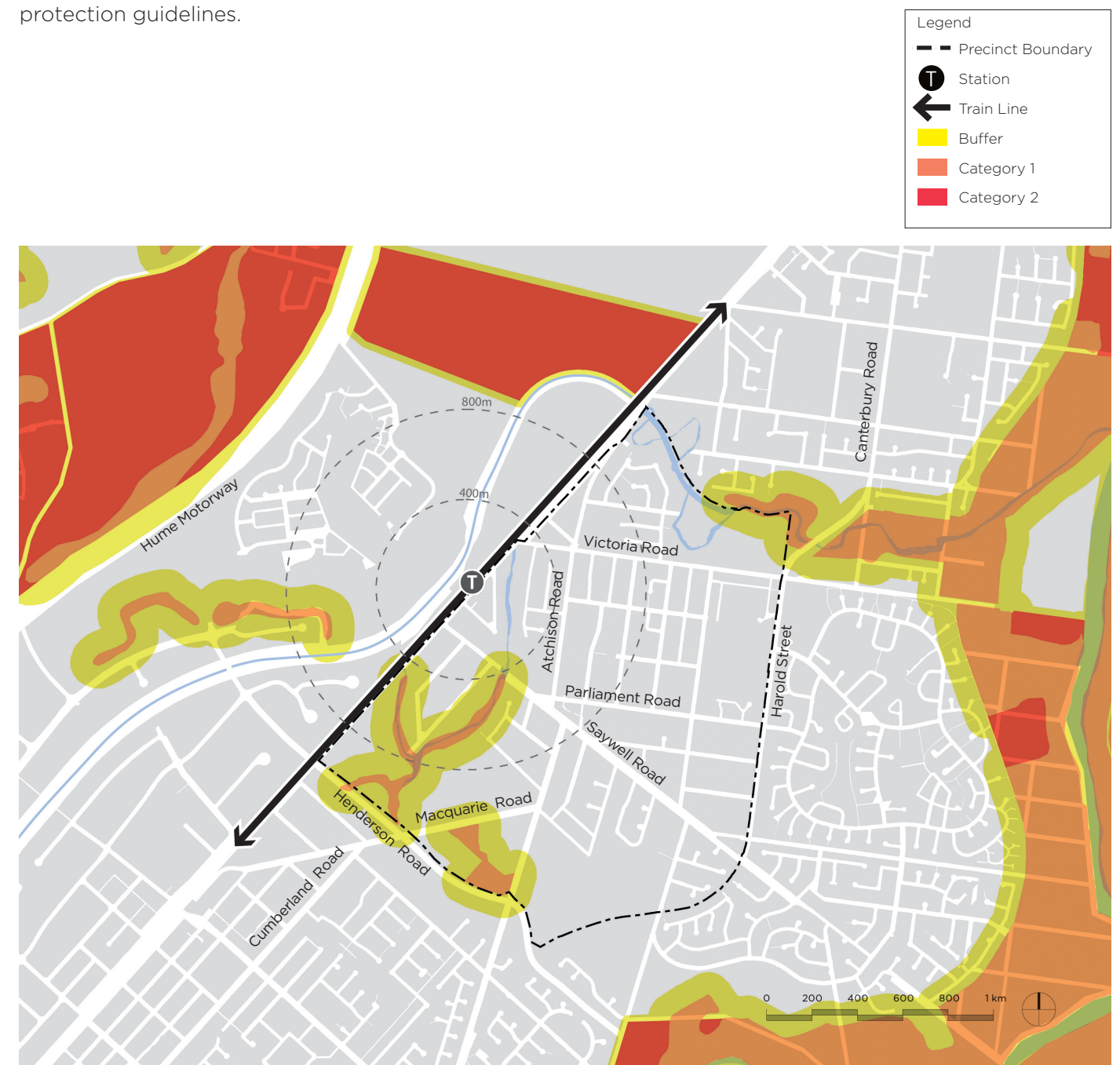


Figure 13: Areas of bushfire risk within the Macquarie Fields precinct

Site Context

Heritage

The precinct does not contain any heritage items.

To the west of the precinct is Macquarie Field House which is a State Significant Heritage Item. While it is not located within the precinct, Macquarie Field House adds significantly to the historic landscape and story of the Macarthur region, and has significant views corridors to Macquarie Fields and Denham Court.

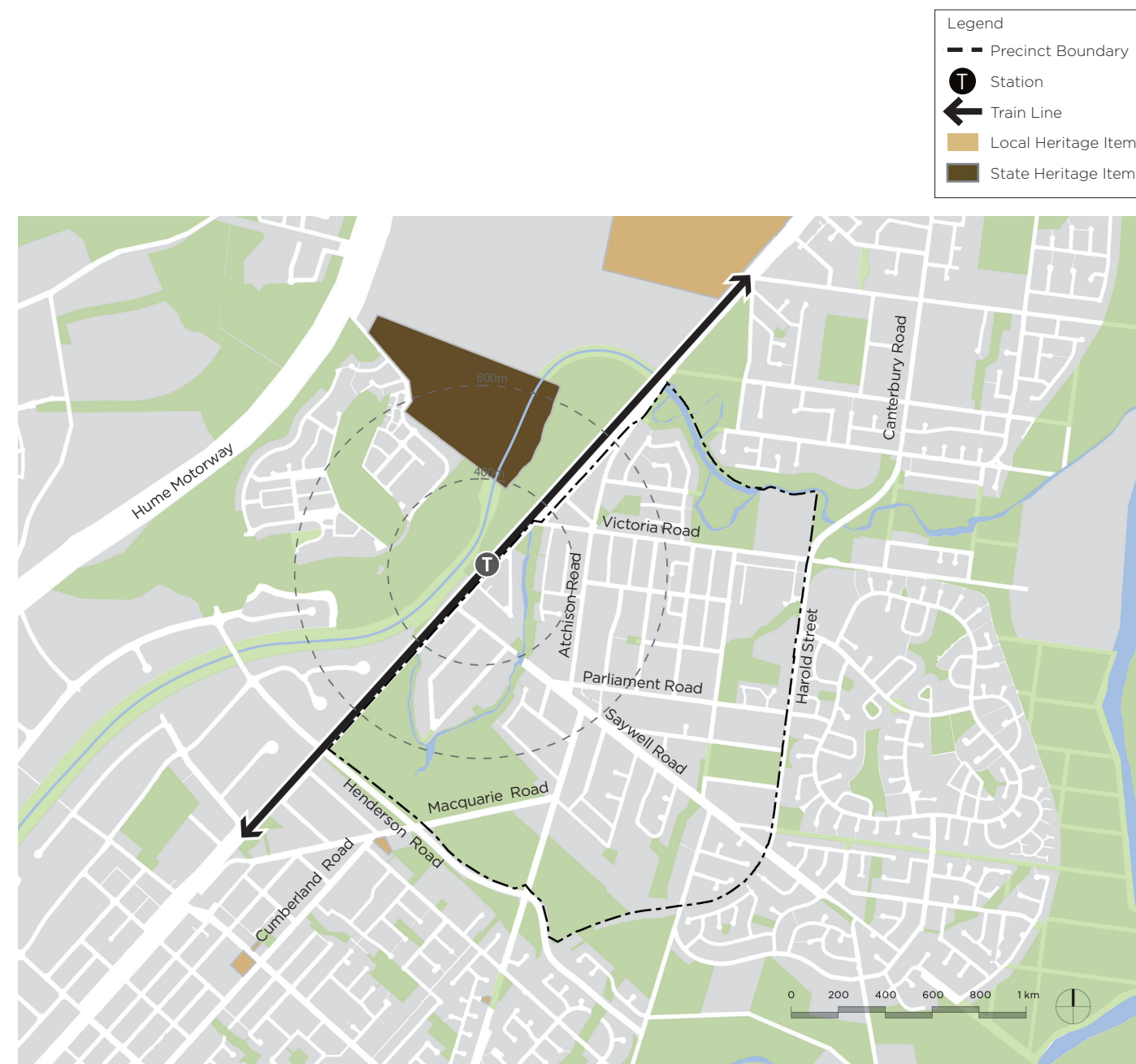


Figure 14: Heritage items within the Macquarie Fields precinct

Recent Residential Development

Recent development is considered a short to medium term constraint to development as the average life cycle of a building is generally 30 to 40 years.

Analysis of recent residential development over the last 15 years indicated that incremental low rise development has occurred throughout the precinct. Figure 15 below illustrates where this development has occurred.

While not located in concentrated areas, much of the recent development has occurred around the centre of the precinct along the main corridors of Saywell Road and Parliament Road. Approximately half of this has been located within 800m of Macquarie Fields station.

A relatively low proportion of dwellings in the precinct have been redeveloped. This provides opportunities for a large number of sites in the precinct to be redeveloped over the next 20 years due to the condition and age of the existing building stock.



Figure 15: Recent residential development within the Macquarie Fields precinct

Land Ownership

The following figure illustrates the different land ownership patterns in the precinct. There are many parcels of land owned by the NSW Government which are largely educational institutions. These include TAFE NSW South-Western Sydney Institute, James Meehan High School, Macquarie Fields Public School, and Macquarie Fields High School.

Large areas of open space are owned by Campbelltown City Council, including James Meehan Park, Macquarie Fields Park, Klensendorff Reserve, Thomas Atkins Walk, Milton Park, Macquarie Road Reserve and Bob Prenter Reserve.

There is some strata titled land throughout the precinct.

Overhead transmission wires traverse through the southern portion of the precinct along Macquarie Road and Fields Road. This significant utility service represent a constraint to certain types of development within its vicinity, however this area is largely also constrained by existing parks and recreation space.



Figure 16(a): Land ownership within the Macquarie Fields precinct, Glenquarie Town Centre

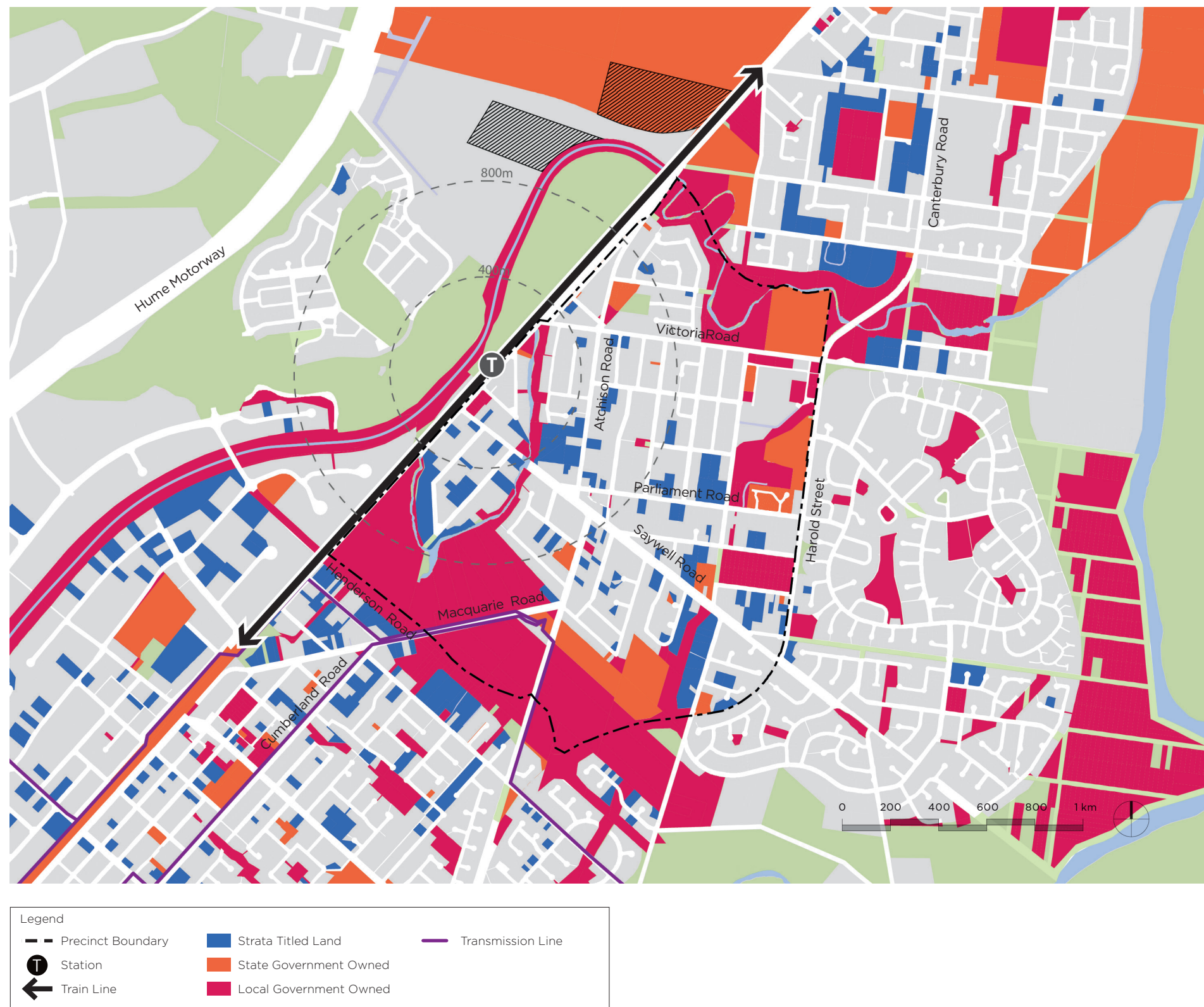


Figure 16(b): Land ownership within the Macquarie Fields precinct

Site Context

Social Infrastructure

The precinct is well served by a range of community facilities and infrastructure as indicated in Figure 17. There are more than six local open spaces, three schools and TAFE - South Western Sydney Institute - Macquarie Fields, as well as many religious centres, childcare and early learning facilities, and community services.

Many of these community facilities are located around the Glenquarie Town Centre as well as in the recreational areas in the southern part of the precinct. The majority of non-government infrastructure and services such as childcare and religious centres are concentrated around the neighbourhood centre on Saywell Road within 800m of the station.

Local Government Social Infrastructure

1. Bob Prenter Reserve (include indoor sports complex)
2. Bunbury Curran Park
3. Glenquarie Library
4. Glenquarie Neighbourhood Centre
5. Glenquarie Senior Citizens Centre
6. James Meehan Oval
7. Macquarie Fields Leisure and Swim Centre
8. Macquarie Fields Park and Scout Hall
9. Milton Park
10. Saywell Road Community Hall
11. Wombat Willows Early Learning Centre

(+ 4 small reserves)

State Government Social Infrastructure

12. James Meehan High School
13. Macquarie Fields Early Childhood Health Centre
14. Macquarie Fields Fire Station
15. Macquarie Fields High School
16. Macquarie Fields Police Station
17. Macquarie Fields Public School (primary)
18. TAFE NSW South Western Institute

Private and Non-government Infrastructure

19. Bluewater Medical Centre, Macquarie Fields Women's Clinic and Macquarie Fields Medical Centre
20. Break the Cycle Glenquarie
21. Brightstars Child Care
22. Eden College/Youth off the Streets
23. Glenquarie Anglican Church
24. Kidzland Preschool
25. Kinder Kare Child Care
26. Lall R S Medical Centre
27. Little Learners Academy
28. Macarthur Adventist College (pre-K to 12)
29. Macquarie Fields Baptist Church
30. Macquarie Fields Family Medical Practice
31. Mary Mother of the Church
32. Samaritan House St Vincent de Paul (homelessness services)

Nearby facilities servicing the precinct

33. Curran Public School (primary)
34. Guise Public School (primary)
35. Macquarie Fields Skate Park
36. Salvation Army Community Welfare Centre

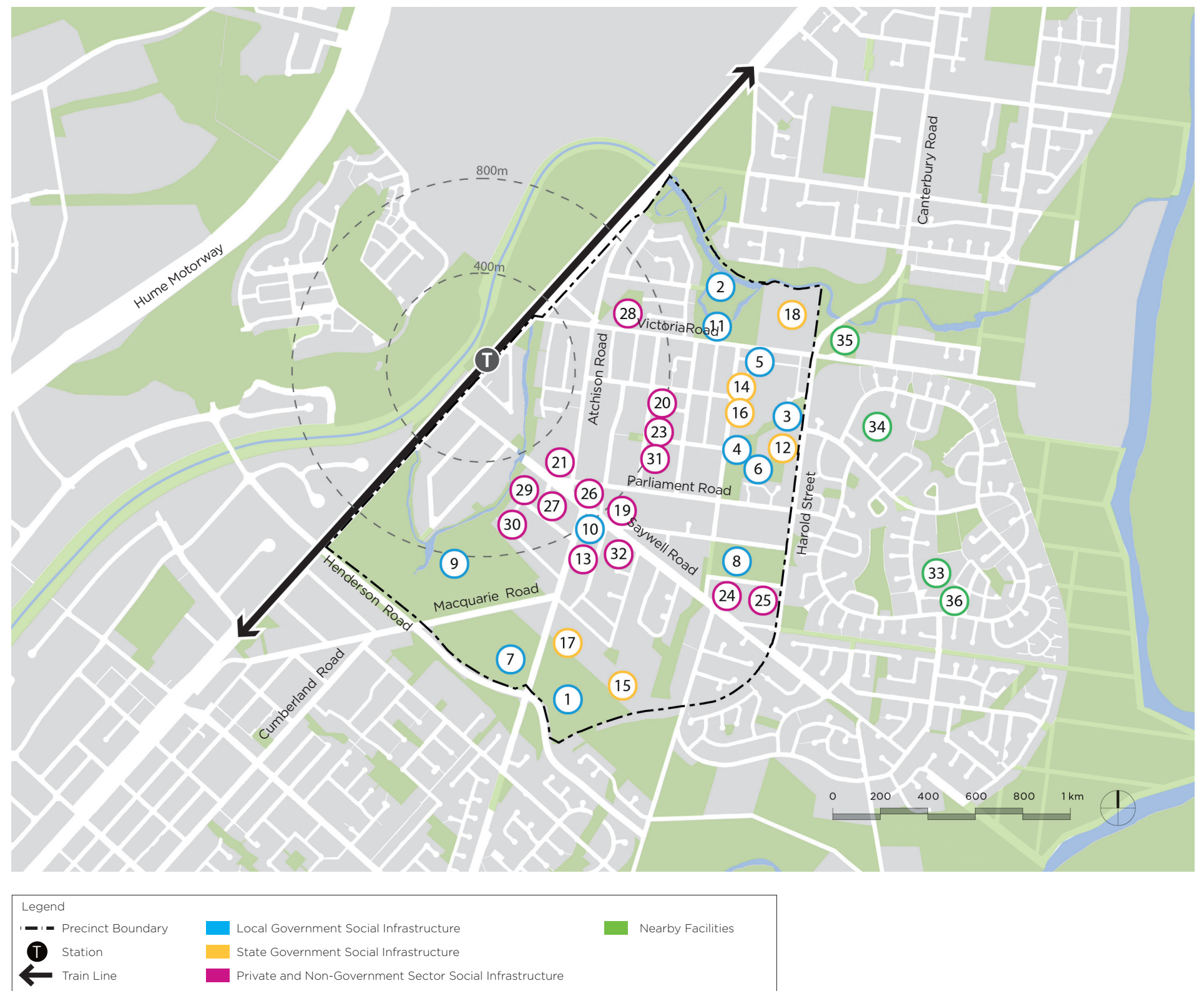


Figure 17: Social Infrastructure within the Macquarie Fields precinct

Combined Constraints

The combined constraints mapping indicates there are large portions of the precinct that are unconstrained.

The largest areas of constrained land are along the riparian corridors of Bunbury Curran Creek and Redfern Creek.

Large areas of open space and recreation areas along the southern boundary of the site are constrained, however these areas are valuable recreation and landscape space and not subject to change.

The centre of the precinct has pockets of strata titled land and recent residential development which are a constraint to future development.

Unconstrained Land

Unconstrained land provides the most potential for renewal over the next 20 years, subject to further investigations.

There are significant areas of unconstrained land including land close to the train station and in the vicinity of the Glenquarie Town Centre.

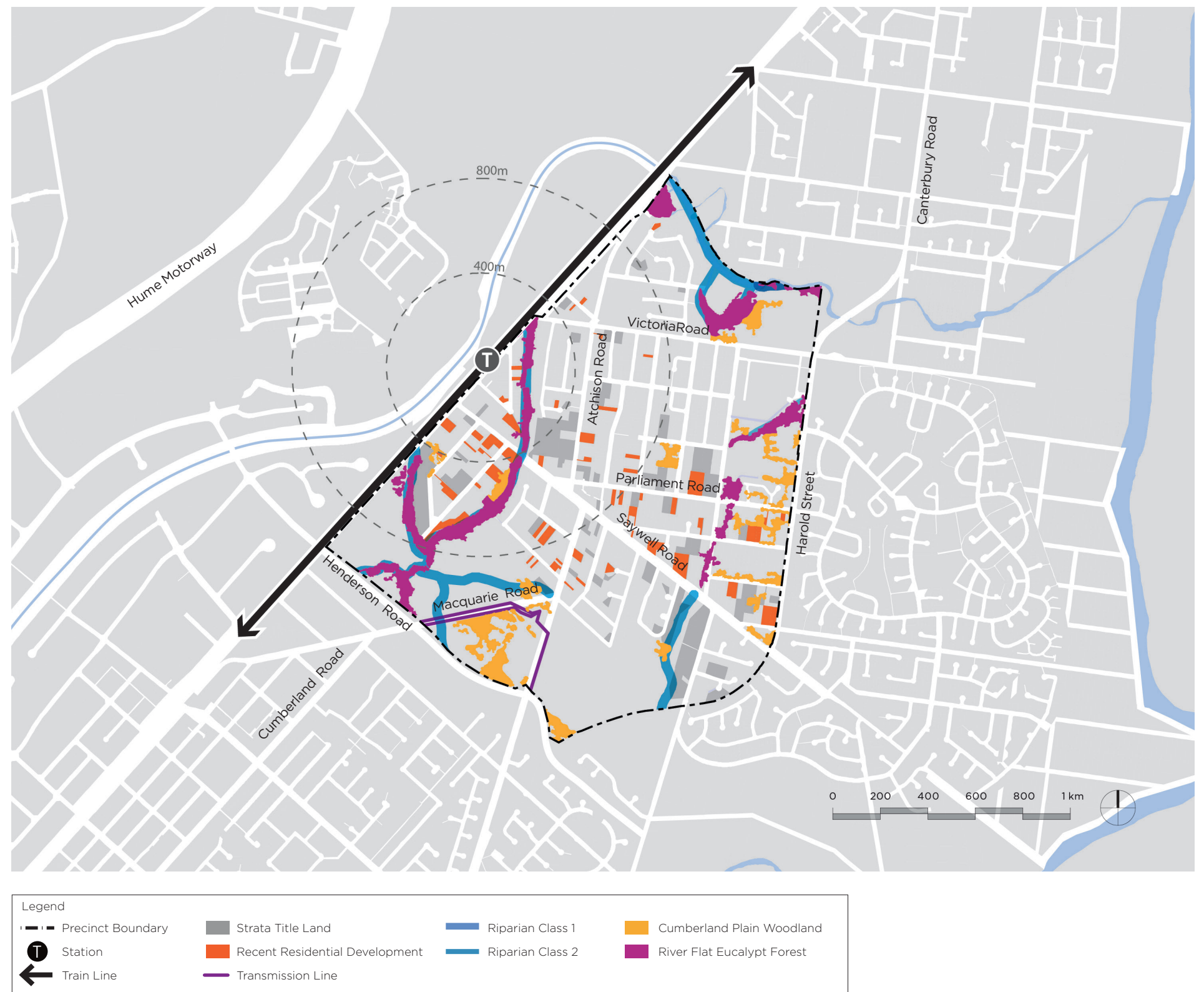


Figure 18: Combined constraints within the Macquarie Fields precinct

Macquarie Fields Vision



Figure 19: Existing character of the Macquarie Fields precinct, Redfern Creek and Victoria Road

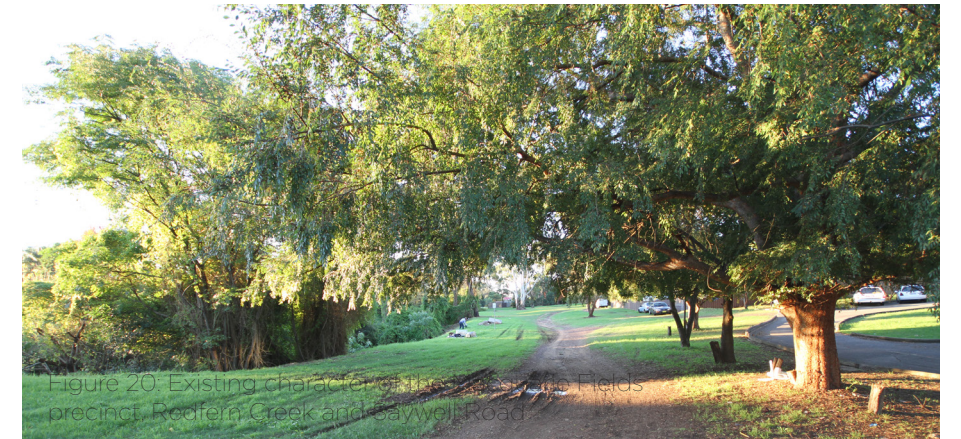


Figure 20: Existing character of the Macquarie Fields precinct, Redfern Creek and Baywolf Road

Housing



- Provide a variety of housing types within walking distance of the station to cater for all members of the community
- Retain the existing character of areas east of Parkland Avenue, with a mixture of detached dwellings and townhouses

Jobs



- A new local centre at the station will promote more activity to service the daily shopping needs of residents and commuters.
- Education and retail jobs will continue to provide an important employment base for the precinct

Open Space and Public Domain



- The establishment of a quality open space and public domain network that provides better linkages to, and embellishments of existing open spaces, including the replacement of ageing playgrounds and park furniture.
- Investigate opportunities to review underutilised open space to contribute towards recreational outcomes
- Potential longer term expansion of the Macquarie Fields Leisure Centre into a regional aquatic facility for south west Sydney
- Promote ecological corridors and connections along Redfern Creek, through the connecting sports reserves and towards Georges River

Movement Network



- Extend Victoria Road and Railway Parade over Redfern Creek to enhance amenity and access to Macquarie Fields station by providing a direct connection to the town centre
- Develop a continuous, safe regional commuter and recreational cycle route from Glenfield to Macarthur adjacent to the rail corridor
- Introduce new local cycle routes to improve connections with Macquarie Fields station and the surrounding area, including between the station, the sports precinct of Milton Park, Macquarie Road Reserve and Bob Prenter Reserve and Glenquarie shops
- Promote cycling and walking by providing new shared pathways, separated cycleways, footpaths, pedestrian refuges, street tree planting, bicycle storage facilities and lighting

Built Form



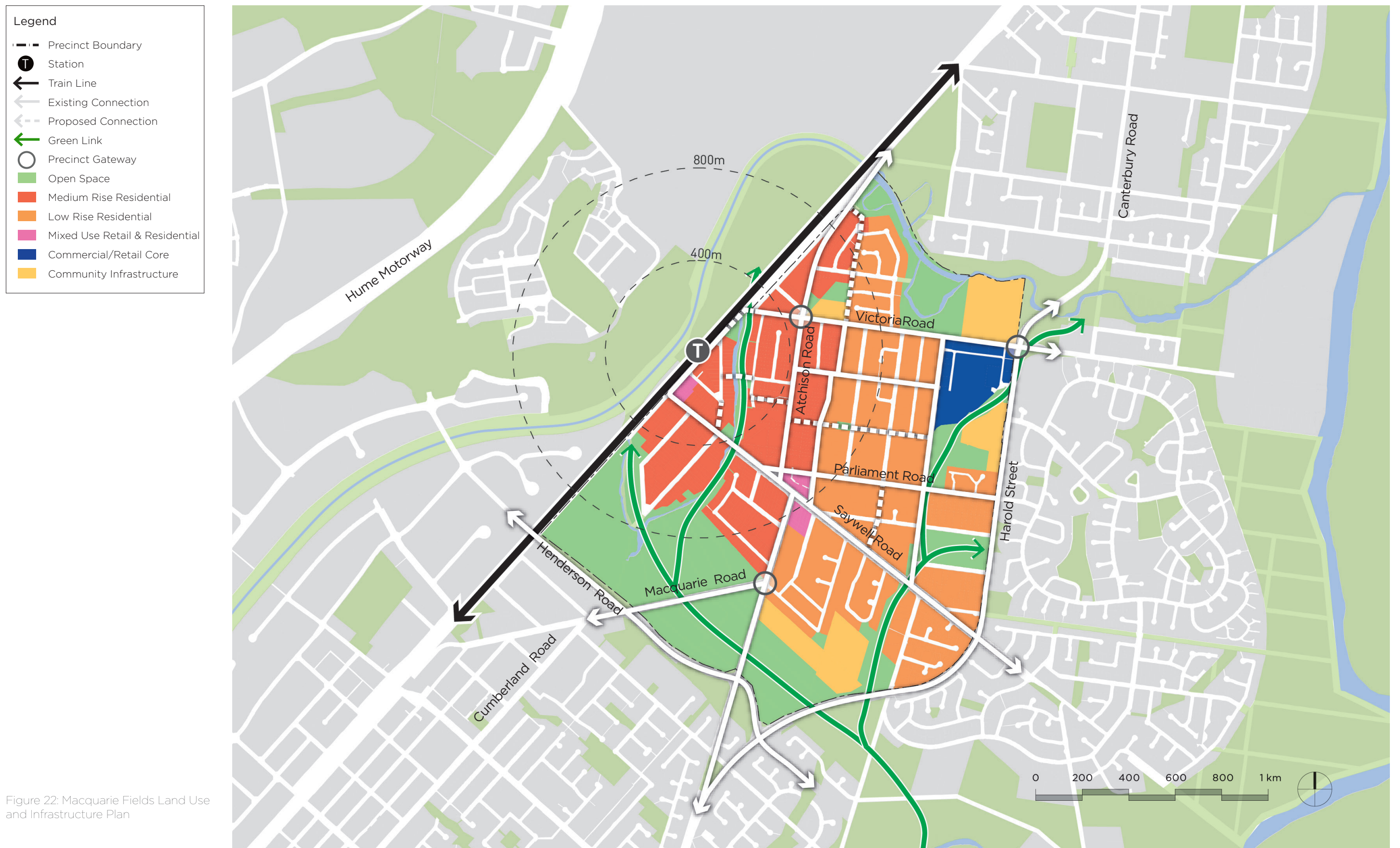
- Establish a small scale mixed use centre at the station providing a variety of retail uses
- Ground floor retail and local jobs within the mixed use centre to generate activity
- Provide a range of building heights, with increased heights closest to the station to maximise pedestrian activity and increase trade for local businesses

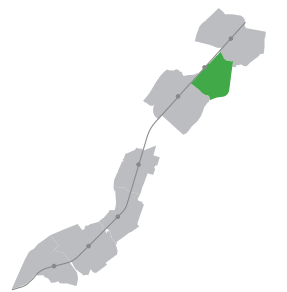
“A local village centre”



Figure 21: Desired future character for the Macquarie Fields precinct, Redfern Creek and Victoria Road

Land Use and Infrastructure Plan





Future Precinct Character

The following diagrams and images demonstrate the desired future character for each area in Macquarie Fields precinct.

Low Rise Residential

This area will largely retain its existing character and dwelling mix. Single-detached dwellings will remain the dominant housing type, however over time there is potential for renewal of building stock to provide a mixture of duplexes, townhouses and terraces.

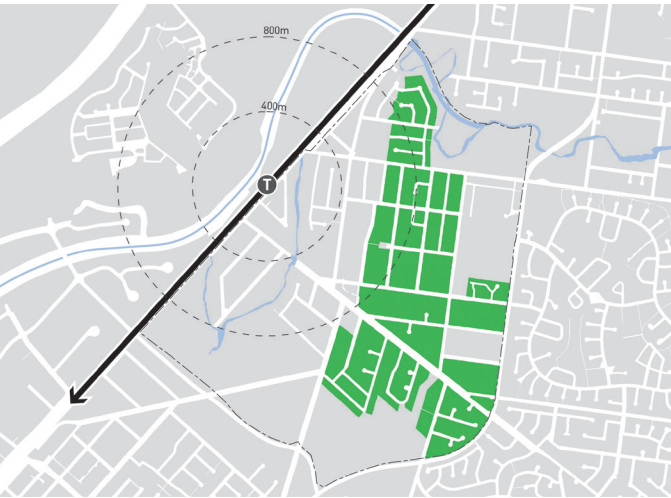


Figure 23: Proposed location of low rise residential, and desired character and built form

Medium Rise Residential

This area could accommodate a mix of town houses and medium rise apartments where the site is an appropriate size to deliver a high level of amenity. This could comprise 3-4 storey apartment buildings, with potential for communal open space and landscaped setbacks to enhance the existing streetscape.

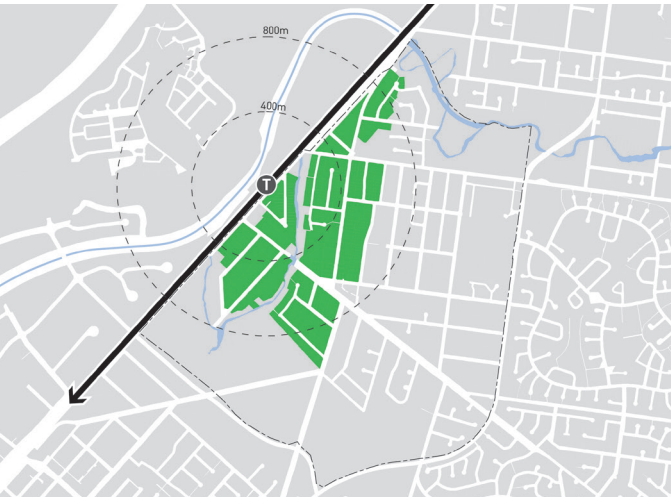


Figure 24: Proposed location of medium rise residential, and desired character and built form

Mixed Use Retail & Residential

These areas could provide a mix of retail and residential uses in areas close to the station and accommodate apartment housing to deliver a high level of amenity and increase the range of housing in the precinct. This could comprise 3-4 storey apartment buildings with ground floor retail uses.



Figure 25: Proposed location of mixed use retail & residential, and desired character and built form

Commercial & Retail Core

This area could accommodate a mix of local retail and commercial uses that would continue to complement the character and function of the Glenquarie Town Centre. Any improvements would be carefully designed to integrate into the surrounding streetscape and new public spaces will seek to enhance the landscape character of the area.

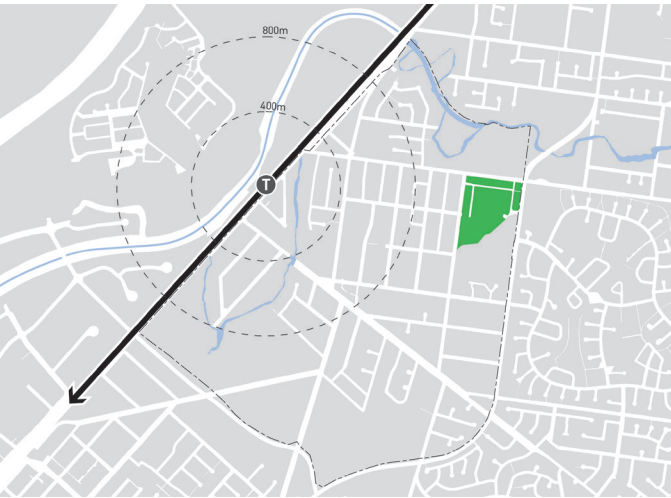


Figure 26: Proposed location of commercial & retail core, and desired character and built form

Land Use and Infrastructure Plan

Transport and Movement

The proposed transport network aims to:

- Improve walking and cycling connections to Macquarie Fields Station and Glenquaire Town Centre;
- Increase direct bus routes and improve suburban bus route travel times to centres; and
- Improve road and street legibility and permeability throughout the precinct.

Key network improvements are identified in Figure 27 and include:

Roads

- Potential local road connection over Redfern Creek to connect Railway Parade and Victoria Road

Public Transport

- Investigate opportunities to improve direct connections and reduce travel times for the suburban bus network suburban bus network to create a more connected system that provides direct routes to, from and through the corridor
- Investigate extending local bus services in the northern part of the precinct, including Victoria Road.

Walking and Cycling

- New regional cycle route parallel to the railway line to provide better connections to the station and surrounding area
- Series of local cycle network improvements, including;
 - Victoria Road
 - Saywell Road
 - Parliament Road
- Streetscape works, such as footpath improvements and pedestrian crossings, to improve station connections and pedestrian environments.

Parking

- Undertake a parking study for the precinct to identify parking demand, develop appropriate parking management strategies and identify opportunities for improved mode share to increase walking, cycling and public transport use.

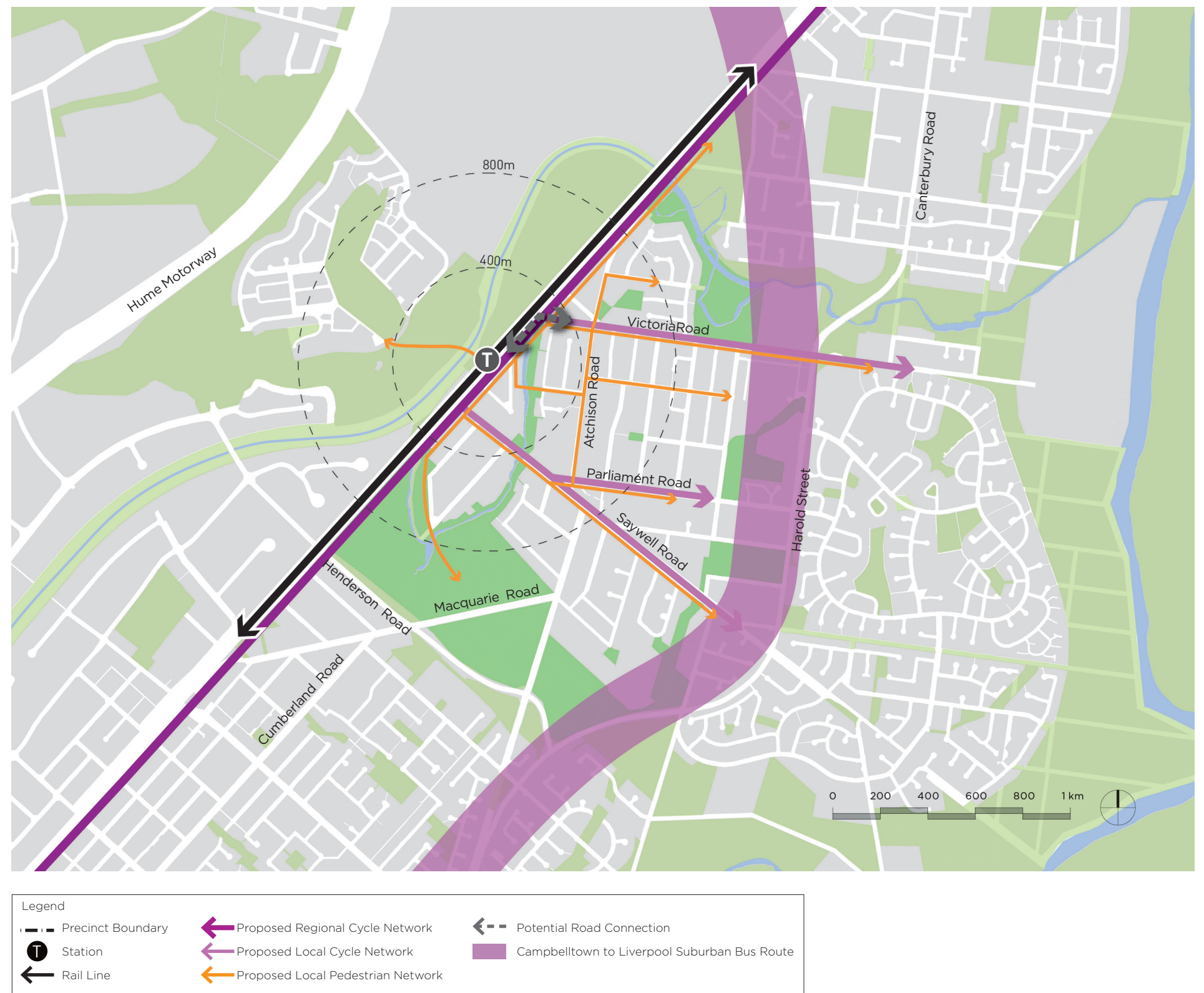


Figure 27: Proposed transport infrastructure improvements in Macquarie Fields

Environment and Open Space

Milton Park, the Macquarie Fields Leisure and Swim Centre, and Bob Prenter Reserve constitute a significant corridor of contiguous green space that offers a variety of sporting and leisure activities for local residents. This area serves district and regional sporting functions.

At present there is limited connectivity between open space. The embellishment of linkages between open spaces and the creation of a better connected green network is a key priority.

Other key priorities include improving pedestrian and cycling connectivity between the train station, neighbourhood shops on Saywell Street and Glenquarie Town Centre.

Key recommendations for the precinct are proposed to:

- ▶ Enhance Bob Prenter Reserve to function as a district level recreational facility;
- ▶ Encourage ecological corridors and connections along Redfern Creek, Milton Park and towards the Georges River;
- ▶ Encourage green streets linking green spaces within the precinct;
- ▶ Provide regional and local cycling and walking connections within the precinct;
- ▶ Supplement street tree planting throughout the precinct;
- ▶ Increase indigenous tree planting.

Community Facilities

No new community facilities are likely to be required in the precinct in the short term. In the medium to long term there may be a need to investigate upgrading Glenquarie Branch Library and Neighbourhood Centre, in line with established library and community facility standards.

Education

The NSW Department of Education has advised that any school expansion required in the longer term is likely to be accommodated within existing school sites.

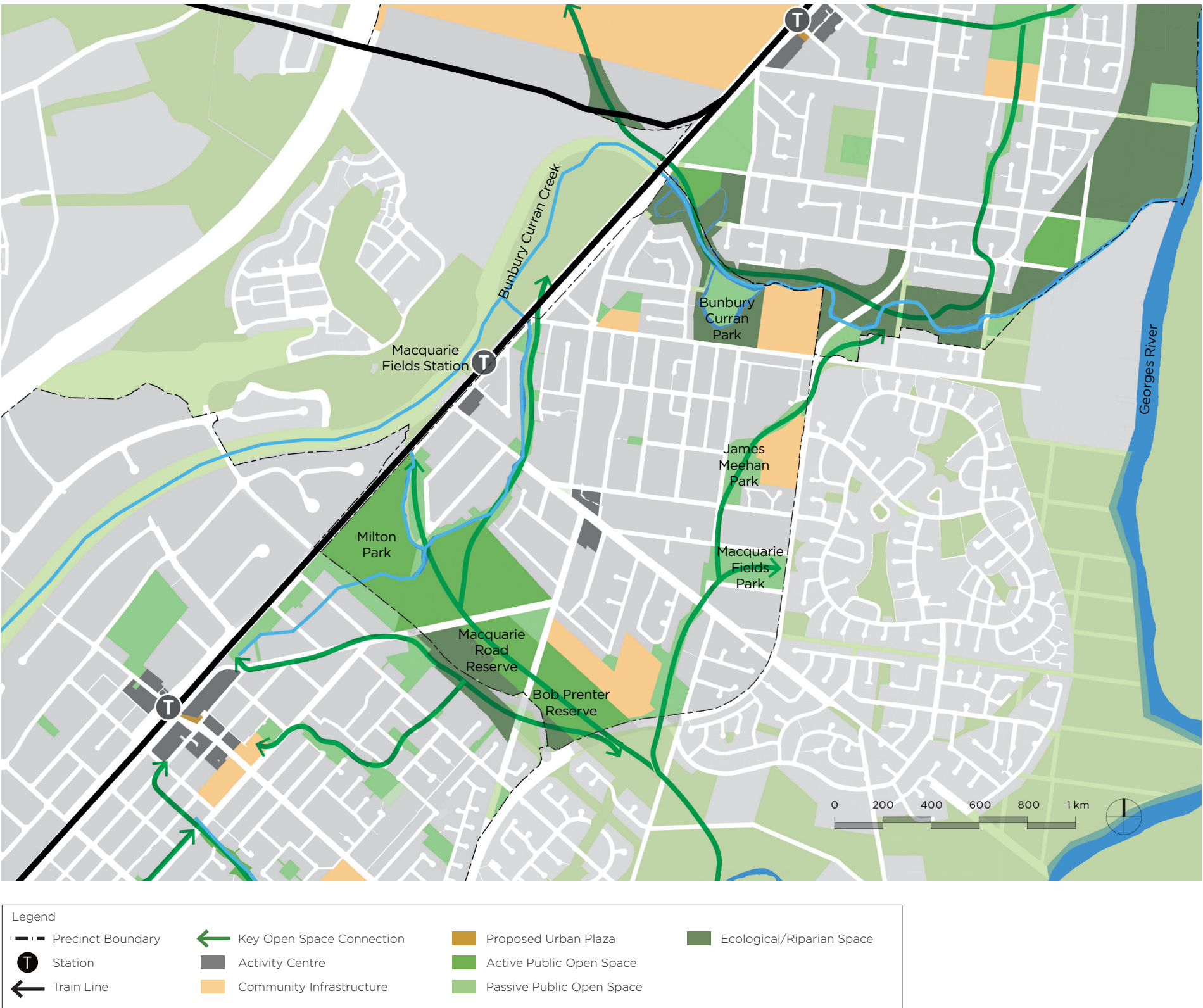


Figure 28: Proposed social infrastructure improvements in Macquarie Fields

Projected Growth

Projected Growth

Macquarie Fields precinct's projected growth is a calculation of the amount of residential and employment development that is expected to take place by 2036. The outcome of these projected growth calculations is provided below.

Residential

The Department applied the Urban Feasibility Model (UFM) to determine the precinct's development potential under existing market conditions. The analysis indicated limited potential for dwellings to be feasibly developed in the current market. Additional market demand analysis indicated that in the short to medium term, feasibility may increase as land values and property prices increase and the availability of detached homes decreases.

It is anticipated that around 340 additional dwellings could be delivered by 2036. This equates to around 14 dwellings per year, which has been used to assess future infrastructure requirements in the precinct. Low density residential housing will continue to be the predominant housing type to be developed throughout the precinct in the short term. However, over time there is likely to be increasing demand for a greater diversity of housing close to the station, which will facilitate more medium density residential housing development. This is consistent with broader market trends. Further from the station, low density housing will remain the predominant housing type.

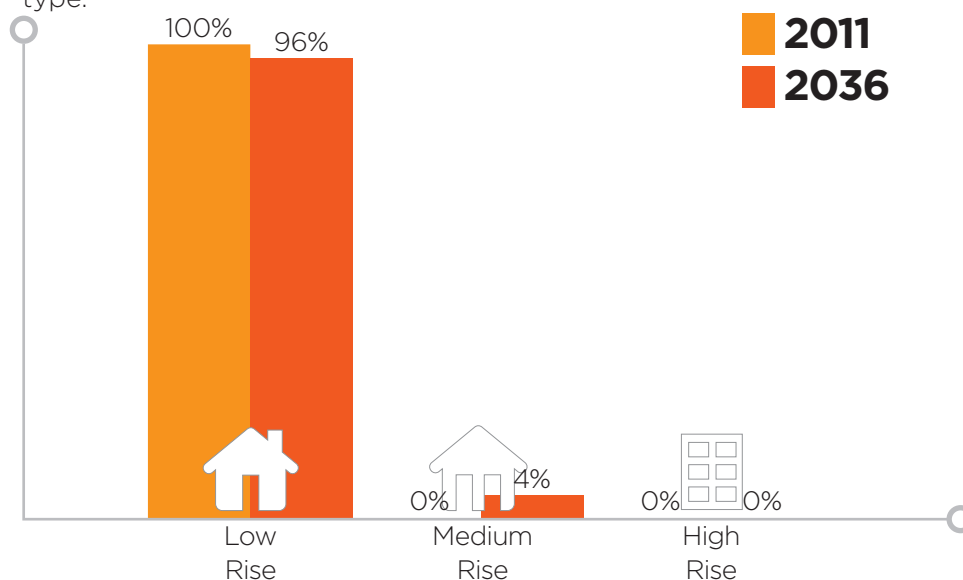


Figure 29: Existing and projected dwelling growth by typology in Macquarie Fields

Dwelling Type	2021	2031	2036
Low Rise	100	200	250
Medium Rise	0	110	150
High Rise	0	0	0
Total Dwellings	100	310	400

Figure 30: Cumulative projected dwelling growth in Macquarie Fields

Employment

An employment lands analysis projected demand for an additional 43,000m² of employment lands within the precinct to 2036. This will deliver around 780 additional jobs, predominately in education and healthcare (21,500m²) and retail (10,000m²).

The Land Use and Infrastructure Plan provides appropriate employment floorspace to ensure there is capacity to accommodate this employment growth. The growth in education jobs is expected to be generated from primary and high school expansions as well as increased operations at TAFE NSW - South Western Sydney Institute Macquarie Fields.

The proposed mixed use area adjacent to Macquarie Fields station will help to meet some of the demand for new retail and commercial floorspace and there are opportunities to achieve a greater utilisation of Glenquarie Town Centre and Parliament Road for further retail and commercial development.

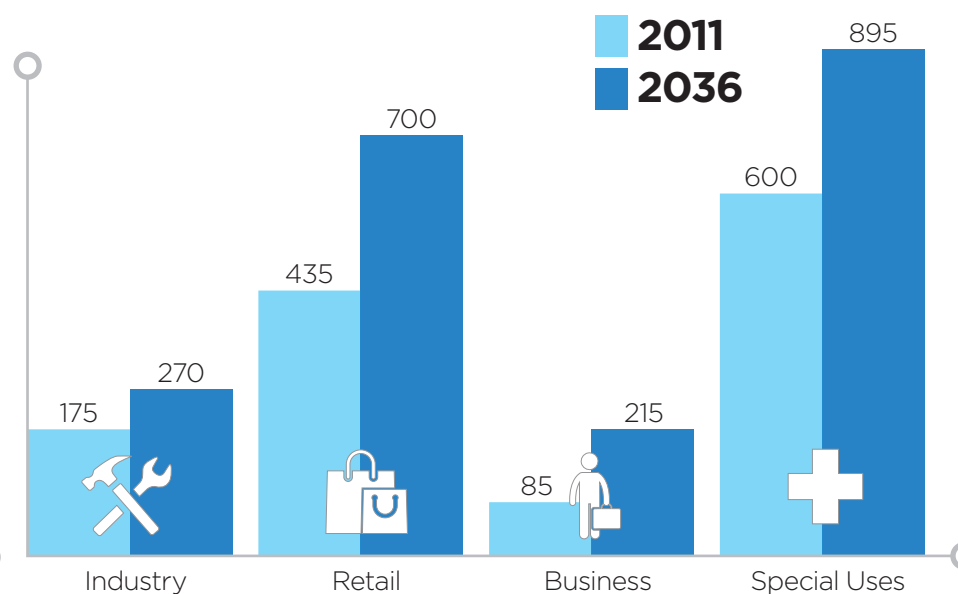


Figure 31: Existing and projected jobs growth by typology in Macquarie Fields

Job Type	2021	2031	2036
Industry	40	80	100
Retail	100	200	260
Business	60	100	120
Special Uses	120	240	300
Total Jobs	320	620	780

Figure 32: Cumulative projected jobs growth in Macquarie Fields

Calculating Growth Potential

Macquarie Fields precinct's projected growth is a calculation of the amount of residential and employment development that is expected to take place by 2036. The projected growth calculations take into consideration the following factors:

- **Development on unconstrained sites.** Development is projected to occur on the unconstrained sites identified on page 15 of this report.
- **The Proposed Future Character and Built Form.** The Land Use and Infrastructure Plan on page 18 identifies the desired future character and built form throughout the precinct. These building types have been applied to the precinct's unconstrained sites.
- **Assumptions.** A series of assumptions have been applied to calculate the land areas required for each development type, and the number of dwellings and jobs that could be provided. These assumptions are documented in Figure 5 of the Glenfield to Macarthur Urban Renewal Corridor Strategy.
- **Economic Feasibility.** An analysis of the housing potential and development feasibility of the precinct's unconstrained sites was undertaken using the Department's Urban Feasibility Model (UFM). The UFM is a strategic planning tool used to determine the likelihood of the current market to deliver various types of dwellings.
 - Assessed the desired future character, built form and housing types proposed under the Land Use and Infrastructure Plan, against market conditions and demand; and
 - Identified take-up/realisation rates for each land use within the precinct, which informed the calculation of the projected growth.
- The 'take-up' or 'realisation' rates were informed by several factors, including broader population growth, property sub-markets, historic dwelling activity, the development pipeline, the precinct's dwelling capacity and current market feasibility.

Infrastructure Analysis

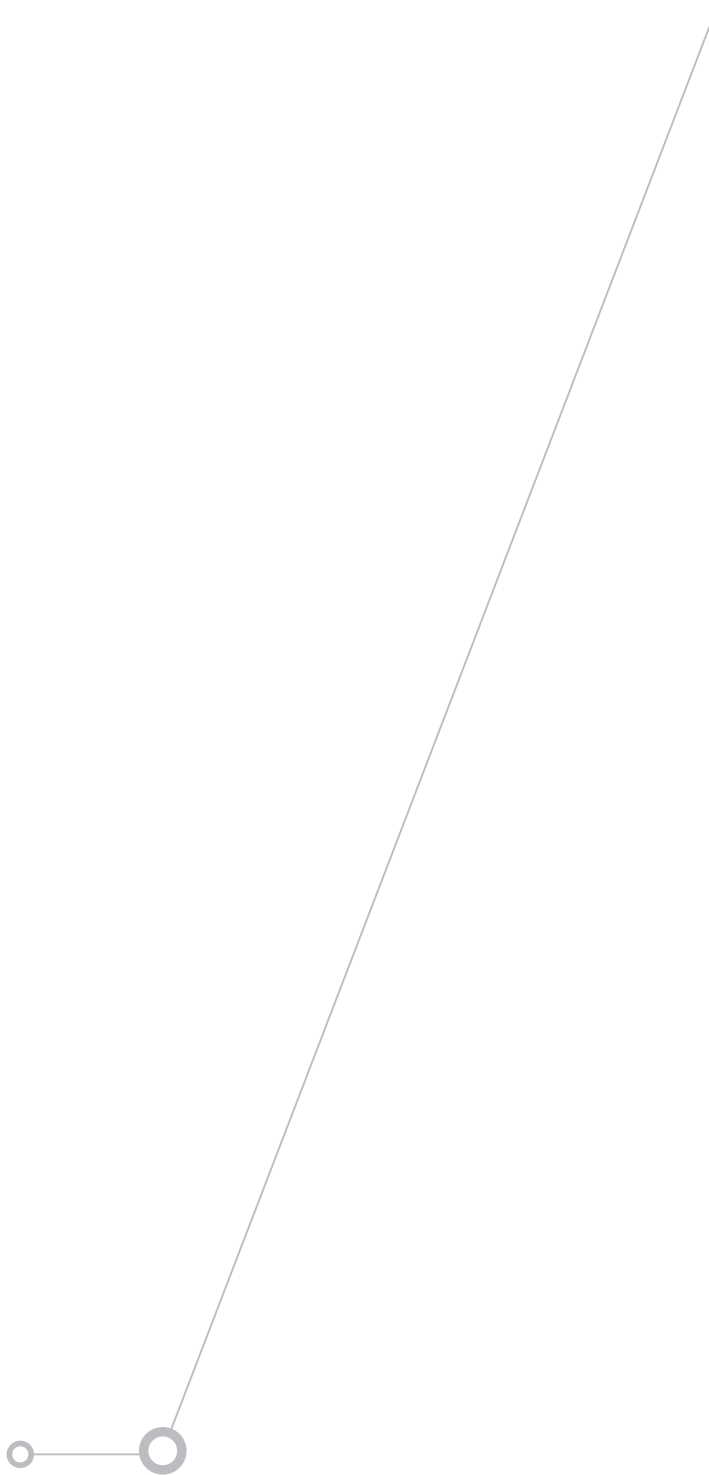
Infrastructure Analysis

Figure 33 provides a summary of the infrastructure items required to support the projected growth in the precinct. This includes public transport, walking and cycling upgrades, roads and community infrastructure. Services utilities such as water, sewage, electricity and gas will also be upgraded as the growth occurs.

The infrastructure items would be funded and delivered by a range of sources as identified in Figure 33, and would be subject to more detailed investigations to inform the delivery time frames, design and costings.

Item	Measure	Planning Responsibility	Timing	Funding Mechanism
Public Transport				
1	Increased rail services to meet the needs of the precinct's growth	TfNSW	Train service levels are reviewed continually by TfNSW. The stopping patterns and level of service will be matched to the growth of the precinct	TfNSW delivery responsibility
2	Investigate opportunities to improve direct connections and reduce travel times for the suburban bus network suburban bus network to create a more connected system that provides direct routes to, from and through the corridor	TfNSW	Bus service levels are reviewed continually by TfNSW and RMS. Detailed planning for a new suburban bus route to be investigated based on development in the area.	TfNSW delivery responsibility
Walking & Cycling				
4	New regional cycle routes parallel and perpendicular to the railway line to provide better connections to the station and surrounding area	TfNSW	To be determined as precinct develops	TfNSW funding responsibility
5	Series of local cycle network improvements, including at; <ul style="list-style-type: none"> Victoria Road, Saywell Road, Parliament Road, through Macquarie Links Golf Course 	Council	To be determined as precinct develops	Delivery as part of Council's Section 94 Plan/VPA
6	Streetscape works such as footpath improvements, pedestrian crossings and refuges, street tree planting, bicycle storage facilities and lighting.	Council	To be determined as precinct develops	Delivery as part of Council's Section 94 Plan/VPA
Roads				
7	New local road over Redfern Creek to connect Railway Parade and Victoria Road	Council/developer	Tbc. Further transport investigations to be undertaken as the precinct develops.	Delivery as part of Council's Section 94 Plan/VPA
Education & Community Infrastructure				
8	Additional teaching spaces and infrastructure at existing primary and high schools	Department of Education and Communities	To be determined as precinct develops	Delivered as part of DEC's School Cluster Asset Plan
9	Potential longer term expansion of the Macquarie Fields Leisure Centre into a regional aquatic facility for south west Sydney.	Council/ developer	To be determined as precinct develops	Delivery as part of Council's Section 94 Plan/VPA

Figure 33: Infrastructure servicing required in the Macquarie Fields precinct



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