

# Appendix B.2: Station Location Options Assessment Summary (SRL East)

Security Classification: Public (Unclassified)







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# **1** Introduction

# 1.1 Background

Suburban Rail Loop Authority (SRLA) developed a Decision Making Framework (DMF), which is a strategic guidance document that outlines the Suburban Rail Loop (SRL) Objectives, SRL Decision Making Roadmap and SRL Options Assessment Framework. The DMF was endorsed by the SRL Project Steering Committee in June 2019.

As part of the SRL Strategic Assessment and Business and Investment Case, a series of decisions were made in determining the preferred station precincts for the SRL route (SRL Precincts); this is outlined in Chapter 5 of the Business and Investment Case and discussed in more detail in Appendix B1.

Following the establishment of the baseline SRL Precincts, SRLA subsequently undertook a detailed options assessment process to identify preferred station box locations.

# 1.2 Purpose

The purpose of the Station Location Options Assessment Summary (SRL East) report is to outline the methodology and analysis undertaken in relation to the assessment of SRL Precinct station location options.

# **1.3 Scope of this appendix**

SRL will be the biggest infrastructure investment ever undertaken in Victoria and will be completed in several stages over multiple decades. It comprises three sections. Cheltenham to Box Hill is referred to as 'SRL East' and Box Hill to Melbourne Airport is referred to as 'SRL North'. The Business and Investment Case presents the confirmed baseline SRL Precincts for SRL East only. The station precinct locations identified for SRL North are preliminary at this stage and will be subject to further options analysis, technical investigations and stakeholder consultations over time. This appendix presents station location options assessment outcomes for SRL East only. The scope of this appendix is highlighted in Figure B2-1 (see next page) and includes the following six SRL Precincts – Cheltenham, Clayton, Monash, Glen Waverley, Burwood and Box Hill.

SRL Precinct	Description	Station location options assessment
Cheltenham Precinct	Cheltenham is located 18km south-southeast of Melbourne's Central Business District (CBD). The proposed Cheltenham Precinct is part of the City of Kingston local government area (LGA), with the border to the City of Bayside LGA to the west of the precinct.	See section 3.1
Clayton Precinct	Clayton is a suburb located 18km southeast of Melbourne's CBD and resides within the City of Monash LGA.	See section 3.2
Monash Precinct	The Monash Precinct is in the suburb of Notting Hill, located 18km southeast of Melbourne's CBD and part of the City of Monash LGA.	See section 3.3
Glen Waverley Precinct	Glen Waverley is located 19km southeast of Melbourne's CBD and resides within the City of Monash LGA.	See section 3.4
Burwood Precinct	Burwood is located 14km east of Melbourne's CBD. The proposed Burwood Precinct is within the City of Whitehorse LGA.	See section 3.5

#### Table B2-1: SRL East Precincts

Box Hill Precinct	Box Hill is a suburb located 14km east of Melbourne's CBD	See section 3.6
	and resides within the City of Whitehorse LGA.	

The station location options presented in the Business and Investment Case have evolved through technical analysis and consultation and are based upon the work undertaken to inform the development of the Concept Design for SRL East. These options and the preferred station locations may be refined through ongoing technical work (including development of the Reference Design), further consultation, planning approval processes and market engagement.

Figure B2-1: Scope of this appendix - SRL East Precincts



Source: SRLA

# 2 Station location options assessment approach

# 2.1 Options assessment methodology

The purpose of the SRL East station location options assessment is to determine a baseline station box location for each SRL East Precinct – i.e. Cheltenham, Clayton, Monash, Glen Waverley, Burwood and Box Hill. This assessment follows the SRL precinct location options assessment process, which is outlined in Chapter 4 of the Business and Investment Case and further described in Appendix B1.

The station location options assessment process is based on a Multi-Criteria Assessment (MCA) framework and utilises a set of assessment criteria (outlined in section 2.2). Specifically, the process undertaken by SRLA involved the following seven steps:

#### • Step 1: Identification of station location options

This step involved identifying potential station location options at each SRL Precinct. The station location options for each SRL East Precinct were identified by SRLA and their technical advisers with reference to the SRL Objectives (productivity, connectivity and liveability), as well as cost and deliverability considerations.

#### • Step 2: Analysis of station location options

This step involved undertaking an analysis of all station location options (identified in Step 1) against a consistent set of options assessment criteria (outlined in section 2.2).

To inform the assessment of station location options, SRLA and its technical advisers undertook technical analysis and investigations, prepared underlying technical reports and completed detailed options assessment worksheets. These options assessment worksheets then formed the basis of the options assessment workshops (Step 3).

#### • Step 3: Options assessment workshops

This step involved a series of options assessment workshops with subject matter experts (SMEs) to assess and rank the station location options against the options assessment criteria. The purpose was to identify shortlisted station locations (for stakeholder consultations) including a preliminary preferred baseline option.

#### Step 4: Review of options assessment worksheets

This step involved SRLA and its technical advisers reviewing and finalising options assessment worksheets, including all rankings and recommendations.

#### • Step 5: Stakeholder consultations

This step involved SRLA seeking community feedback on the preliminary preferred and shortlisted station locations (as recommended in Steps 3 and 4) during stakeholder consultations. As part of this process, there were opportunities for additional station location options to be identified, which were then analysed as part of Step 6.

# • Step 6: Detailed investigations and further options analysis as part of Concept Design for baseline station

This step involved SRLA undertaking further investigations and technical analysis on the baseline station location, taking into account feedback from stakeholder consultations and any additional options (which were ranked by SMEs against the options assessment criteria). Where applicable, this step provided opportunities for changes and/or variations to the baseline station location identified in prior options assessment workshops (Steps 3 and 4 above).

#### • Step 7: Confirmation of SRL East baseline station locations

This step involved the confirmation of baseline station locations for the SRL East route. (As the design solution for SRL East is further developed, the precise station box configurations will continue to be refined beyond this stage.)

# 2.2 Options assessment criteria

A set of options assessment criteria was developed to enable a consistent approach to assessing precinct location options and station location options.

The options assessment criteria were developed to align with the SRL Objectives (productivity, connectivity and liveability) and to include considerations for cost and deliverability. These criteria are summarised in Figure B2-2 below.

#### Figure B2-2: Options assessment criteria



The key considerations (or sub-criteria) within each of the options assessment criteria are outlined in the following table.

Options assessment criteria	Key considerations / Sub-criteria
Productivity	<ul> <li>Alignment to <i>Plan Melbourne</i> as the policy blueprint to promote economic development, economic growth and economic inclusion</li> <li>Employment generation potential (access to jobs including opportunities to unlock employment growth within the precincts, markets, services closer to where people live)</li> <li>Productivity in Regional Victoria (supports jobs, economic activity, growth)</li> </ul>
Connectivity	<ul> <li>Improves access to public transport (e.g. demand, size of catchment area, local public transport options)</li> <li>Integrated transport outcomes and improved passenger movements (integration with existing lines/wider rail network per Transport for Victoria Integrated Transport Journey Requirements (TFV ITJR) and between transport modes; i.e. creation of interchanges and transport hubs)</li> <li>Customer experience outcomes and service reliability (station to station and interchange journey times, service frequency, punctuality)</li> <li>Operational efficiencies and maintainability (train speed, tunnel depth, route implications)</li> </ul>

Table B2-2: Options	assessment	criteria - key	considerations

Options assessment criteria	Key considerations / Sub-criteria
	Wider network considerations including SRL line-wide connectivity and wider network future proofing, resilience and safety
Liveability	<ul> <li>Growth potential (gross floor area capacity, population uplift potential)</li> <li>Precinct development, urban renewal and value creation opportunities (potential contribution to enable precinct vision)</li> <li>Opportunity for enhanced community cohesiveness, amenity and safety (community facilities, open spaces) and minimises potential displacement/community impacts</li> <li>Opportunities for improved built form, resilient design solutions, better environmental outcomes</li> </ul>
Cost	<ul> <li>Minimises costs (Land acquisition costs; D&amp;C costs; recurrent O&amp;M / whole of life costs)</li> </ul>
Deliverability	<ul> <li>Stakeholder engagement / stakeholder impact considerations</li> <li>Ease of constructability (ground / technical considerations)</li> <li>Project and timing implications</li> <li>Minimises disruption to community and existing transport network (rail and road disruptions)</li> <li>Minimises environmental and water impacts</li> <li>Minimises EMI and vibration impacts on existing adjacent facilities (e.g. hospitals)</li> <li>Minimises indigenous and heritage impacts</li> <li>Minimises impacts to existing essential services infrastructure (sewers, water pipes, utilities)</li> <li>Potential to reduce greenhouse gas emissions and adaptability to the effects of climate change / extreme weather events</li> </ul>

# 3 Station location options assessment and outcomes

# 3.1 Cheltenham Precinct station location

# 3.1.1 Context

Cheltenham is located 18km south-southeast of Melbourne's CBD. The proposed Cheltenham Precinct is part of the City of Kingston LGA, with the border to the City of Bayside LGA to the west of the precinct. The area is designated as a Major Activity Centre under *Plan Melbourne*, and is characterised by a mix of commercial, residential and public land uses, anchored by the Westfield Southland Shopping Centre. Existing transport connections include Southland train station and Southland bus interchange.

The SRL station at Cheltenham (North) is expected to cater for ~6,900 passengers during the AM peak hour when the full SRL East and SRL North line is operational, of which ~4,100 passengers will interchange with the existing Southland train station for Frankston line services.

In delivering SRL East, SRLA is seeking to position Cheltenham Precinct as a people centred Major Activity Centre. It is envisaged that Cheltenham (North) will support a thriving community and entertainment hub for its workers and residents, and act as the southern gateway to the SRL corridor.

# 3.1.2 Overview of the options

For Cheltenham (North), three station location options were investigated during the options assessment process; these are illustrated in Figure B2-3.

Figure B2-3: Cheltenham (North) station location options



#### Source: SRLA

An overview of each station location option is provided below:

Option 1: Sir William Fry Reserve (east-west alignment) – The proposed site is currently a public
reserve. It is located between the Frankston rail line and Nepean Highway, to the north of Bay Road
and opposite Southland Shopping Centre. Under this option, land assembly of five land parcels will
be required avoiding residential and commercial acquisition. Impacts on the locale and activity
centre are likely to be minimal during construction due to its location. Of the three options, this site
is the closest to the existing Southland Station.

- Option 2: Bay Road, west of existing rail line (east-west alignment) The proposed site is currently a residential area. It is located west of the existing Frankston rail line and north of Bay Road. Under this option, land assembly of ~20-30 land parcels will be required, and the current activity centre will likely be impacted during construction. There is heightened risk for this location to be affected by stormwater flooding.
- Option 3: Chesterville Road (north-south alignment) The proposed site is currently a mix of commercial and residential uses. The location is centred on Chesterville Road to the east of Southland Shopping Centre, and is within a residential / commercial area that is some distance away from the existing Southland station. Under this option, land assembly of ~30-40 land parcels will be required, and the current activity centre and Southland shopping centre will be impacted during construction.

### 3.1.3 Options assessment summary

A summary of the Cheltenham (North) station location options assessment is provided in Table B2-3 below, against each of the five assessment criteria.

In selecting a suitable site for the proposed SRL station, some key considerations include proximity to the existing train station, minimising impacts on existing buildings (including basements) and maintaining suitable station depth for passenger movements.

Table B2-3: Summary of Cheltenham (North) station location options assessment

Criteria	Key assessment findings
Productivity	<b>Options 1 and 2</b> are considered equally preferred due to their proximity to Sir William Fry Reserve and alignment along Bay Road, which are identified as key areas for generating employment uplift potential. Both options are in relative proximity to the existing Southland station, thereby facilitating access to jobs, markets and services for communities on the Frankston line and SRL. Under <b>Option 3</b> , productivity outcomes are less favourable as the surrounding urban characteristics are less amenable to precinct development opportunities and employment uplift potential. Further, Option 3 is situated some distance away from Southland station and thereby provides sub-optimal access to the Frankston line.
Connectivity	<b>Option 1</b> is the closest to the existing Southland station and therefore provides the best connectivity solution for rail-rail interchange passengers. It also offers the best opportunity to potentially combine SRL station entrance with the existing Southland station. <b>Option 2</b> is the next preferred, which is the second closest option to Southland station but situated on the west side of the Frankston railway tracks. It is the furthest from Southland Shopping Centre, particularly the main core of the centre east of Nepean Highway. <b>Option 3</b> is considered to provide the least preferred connectivity solution as it is the furthest from the existing Southland station and hence, inefficient integration of this location with the Southland station (despite its proximity to Southland Shopping Centre on the east side).
Liveability	<b>Options 1 and 2</b> are both considered to produce favourable liveability outcomes, given their proximity to Sir William Fry Reserve and alignment along Bay Road, which are considered key areas for unlocking housing potential. While Option 1 is closer to Southland Shopping Centre, Option 2 is slightly better located to facilitate renewal by leveraging a number of major development sites along Bay Road. Further, while Option 1 will impact some open and recreational space, this option provides opportunities to rejuvenate the existing reserve to support improved quality of open space by reducing noise from surrounding arterial roads. In contrast, <b>Option 3</b> is considered to produce the least preferred liveability outcomes as the surrounding urban fabric (including lot sizes and extensive subdivisions) is less amenable to support precinct development opportunities and housing uplift.
Cost	<b>Option 1</b> is considered to provide the most favourable cost outcome, as it is within Sir William Fry Reserve (involves five land parcels) and avoids expensive acquisition of existing properties. <b>Option 2</b> is the next preferred from a cost perspective given it requires significant residential acquisitions (~20-30 properties) and produces the longest tunnel alignment. In comparison, <b>Option 3</b> is expected to be the most expensive solution due to substantial property acquisition requirements (~30-40 properties). A lack of laydown options and access issues under Option 3 will also result in adverse cost and project outcomes.

Criteria	Key assessment findings		
Deliverability	<b>Option 1</b> is considered to provide the best deliverability solution, as it involves the cleanest land assembly and is expected to create minimal disruptions to the locale and activity centre during construction. Option 1 also provides unimpeded construction access and potential for a shallower station box. <b>Option 2</b> is the next preferred, as land assembly is likely to be kept to a minimum which will impact construction. <b>Option 3</b> is considered the least preferred due to substantial property acquisitions required, limited laydown area, spatial construction and access issues. Further, Option 3 is likely to impact Southland Shopping Centre operations and bus movements during construction.		
SUMMARY: Opti criteria. It was as preferred for prod	on 1 is considered to provide the best overall outcomes across all five assessment sessed as the best option for connectivity, cost and deliverability, and considered equally uctivity and liveability.		
Option 1 is the closest to the existing Southland station and therefore provides the best connectivity solution for interchanging passengers. This option produces the most favourable cost and deliverability outcomes as it involves the cleanest land assembly (five land parcels, as compared to ~20-40 under other options), and is			

interchanging passengers. This option produces the most favourable cost and deliverability outcomes as it involves the cleanest land assembly (five land parcels, as compared to ~20-40 under other options), and is expected to have the least impact on the locale and activity centre during construction. Options 1 and 2 are considered to produce equally favourable productivity and liveability outcomes, due to their proximity to key areas with employment and housing uplift potential. In contrast, Option 3 is considered the least favourable across all criteria.

# 3.1.4 Recommended baseline

**Option 1: Sir William Fry Reserve (east-west alignment)** is considered to produce the most favourable outcomes across all five assessment criteria and therefore selected as the baseline station location for Cheltenham (North). An aerial image of the proposed station box site is provided in Figure B2-4 below.

Figure B2-4: Cheltenham Precinct baseline station location (Option 1)



#### Source: SRLA

The recommended SRL station site is to the north of Bay Road in Sir William Fry Reserve, between Frankston rail line and Nepean Highway. It is north of Southland Shopping Centre and the existing Southland Station. It is intended that there will be a single station entrance orientated towards Bay Road and the existing intersection to the shopping centre and train station car park. As the Cheltenham (North) station is at the end-of-the line for SRL East and SRL North, a crossover facility will be included to allow terminating trains to turnback and recommence passenger services in the opposite direction.

The proposed station will be designed to provide an exemplar customer experience with a range of transport interchange options, a vibrant town centre and access to services and employment opportunities. Planning of the precinct ground plane has included spatial provision for surface transport including bus, cycle and car-based transport.

# **3.2 Clayton Precinct station location**

#### 3.2.1 Context

Clayton is a suburb located 18km southeast of Melbourne's CBD and resides within the City of Monash LGA. Clayton is designated as a Major Activity Centre and part of the Monash National Employment and Innovation Cluster (NEIC) under *Plan Melbourne*. The area is characterised by a mix of health, commercial and residential land uses. Existing transport connections include Clayton train station and Clayton bus interchange.

The Clayton Precinct will be a key transport interchange hub providing a connection between regional and metropolitan train and bus services. It will be one of the busiest stations on the SRL East and SRL North line, with ~15,000 passengers predicted during the AM peak hour when the full SRL East and SRL North line is operational. Of these, around ~11,850 passengers will interchange with the existing Clayton train station.

In delivering SRL East and SRL North, SRLA is seeking to position Clayton Precinct as a leading health cluster and 'transport super hub' for Melbourne's southern metropolitan area and Gippsland region. It will be home to world standard healthcare, high impact commercialised research and development, and leading-edge innovations in health technology. This will be supported by a population centre and high amenity service hub.

# 3.2.2 Overview of the options

For the Clayton Precinct, three station location options were initially considered during the options assessment workshop, after which variations were developed to yield the three options illustrated in Figure B2-5.



Figure B2-5: Clayton station location options

#### Source: SRLA

An overview of each station location option is provided below:

Option 1: West of Clayton Road (north-south alignment) – The proposed site is currently a mix
of residential and community uses. It is located north of the existing Cranbourne/Pakenham rail line
and west of Clayton Road. The station box is located entirely within residential and commercial land
parcels. It is expected to cause the least amount of disruption to the community (e.g. road diversions
may not be required).

- Option 2: Clayton Road, north of existing rail viaduct (north-south alignment) The proposed site is currently a mix of community, commercial and residential uses. It is located north of the existing Cranbourne/Pakenham rail line, north of Carinish Road and centred along Clayton Road. Under this option, there are multiple deliverability risks and cost challenges, including in relation to utility relocations, road diversions and constructability issues.
- Option 3: Clayton Road, under the existing viaduct (north-south alignment) The proposed site is currently a mix of commercial and community uses. It is located under the existing rail viaduct and centred on Clayton Road. This option has significant constructability and programming risks, elevated delivery costs and is considered to provide limited precinct development opportunities.

# 3.2.3 Options assessment summary

A summary of the Clayton Precinct station location options assessment is provided in Table B2-4 below, against each of the five assessment criteria.

In selecting a suitable site for the proposed SRL station, some key considerations include proximity to the existing Clayton train station and bus interchange, minimising impacts on the existing Cranbourne/Pakenham rail viaduct and maintaining a suitable station depth for passenger movements, whilst managing the constraints imposed by the rising ground plane to the north towards Monash.

Criteria	Key assessment findings
Productivity	<b>Options 1 and 2</b> are considered equally preferred from a productivity perspective, with both providing links to local medical, education and retail areas. Comparatively, Option 1 has a more limited impact on businesses compared to Option 2. <b>Option 3</b> is the least preferred given its location under the existing rail viaduct, which acts as a significant site constraint and limits precinct development opportunities. Option 3 will also directly impact businesses north and south of Clayton Road.
Connectivity	<b>Options 3 and 2</b> are considered to produce equally favourable connectivity outcomes. Option 3 provides the shortest travel distance to the existing Clayton station and therefore shortest rail-rail transfer time for interchanging passengers. However, Option 2 provides good connectivity to the north-eastern sector of the precinct which generates most of the local patronage demand. <b>Option 1</b> is less preferred given its longer travel distance to the existing Clayton train station and sub-optimal access to the existing bus interchange (due to its further distance and road crossings en route).
Liveability	<b>Options 1 and 2</b> are equally preferred from a liveability perspective, with both supporting linkages to local medical, education and retail areas. While Option 2 will impact comparatively less residential properties (than Option 1), it will have a more pronounced impact on community assets (e.g. Remembrance Gardens, Clayton Hall and the Catholic Parish of St Peter's). <b>Option 3</b> is the least preferred given its location under the existing rail viaduct, which acts as a significant site constraint and limits precinct development opportunities. Option 3 will also impact access and connection to surrounding community facilities such as medical centres, schools and churches.
Cost	<b>Option 1</b> is expected to provide the lowest cost outcome during the construction period, with the best deliverability solution and lowest level of construction risk. <b>Option 2</b> provides a less favourable cost outcome due to multiple deliverability risks and challenges, which is expected to result in higher costs compared to Option 1. <b>Option 3</b> is the least preferred cost outcome due to significant complexities and costs associated with constructing the station box under the existing rail viaduct and having a longer construction program.
Deliverability	<ul> <li>Option 1 is considered to provide the best deliverability solution, with good construction access clear of overhead obstructions. Comparatively, Option 1 has the lowest level of construction risk and expected to cause the least amount of disruptions during construction (e.g. road diversions may not be required given it is located entirely within residential / commercial land).</li> <li>Option 2 is a less favourable solution due to its location beneath Clayton Road, which has</li> </ul>
	multiple deliverability risks and challenges including in relation to utility relocations, road

Table B2-4:	: Summary	of	Clayton	station	location	options	assessment
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Criteria	Key assessment findings
	diversions, impacts to road users (including bus services) and constructability issues. <b>Option 3</b> is the least preferred option due to its location under the existing rail viaduct and beneath Clayton Road, which has significant deliverability risks in respect of constructability, programming and cost, as well as utility relocations and road diversions. Further, occupation of the existing viaduct railway may be required during construction of the station box and construction activities in proximity to the viaduct.

**SUMMARY: Option 1 is considered to provide the best overall outcomes across a majority of the five assessment criteria.** It was assessed as the best option for deliverability and cost, and considered an equal first preference for productivity and liveability.

As the Option 1 station box is located entirely within residential / commercial land parcels, it is expected to have lower construction risks and to cause the least amount of disruptions to the community during construction (e.g. road diversions may not be required, which saves time and cost). In comparison, Options 2 and 3 are both located beneath Clayton Road, with multiple deliverability risk and cost challenges. Option 3 is the least preferred given its location under the existing rail viaduct, which limits precinct development opportunities and results in constructability complexities and elevated costs.

# 3.2.4 Recommended baseline

**Option 1: West of Clayton Road (north-south alignment)** is considered to produce the most favourable outcomes across a majority of the five assessment criteria and therefore selected as the baseline station location for Clayton. An aerial image of the proposed station box site is shown in Figure B2-6.

The SRL station site is on land to the west of Clayton Road, north of Carinish Road and east of Madeleine Road, with the Cranbourne/Pakenham line directly to the south. It is intended that two station entrances will be provided, with one located east of Clayton Road in Remembrance Gardens, and the second west of Clayton Road under the existing rail viaduct.

The proposed station will be designed to provide an exemplar customer experience with a range of transport interchange options (including a direct connection to the existing Clayton train station), a vibrant town centre and access to services and employment opportunities. Planning of the precinct ground plane has included spatial provision for surface transport including bus, cycle and car-based transport.

# Figure B2-6: Clayton Precinct baseline station location (Option 1)



Source: SRLA

# **3.3 Monash Precinct station location**

#### 3.3.1 Context

The Monash Precinct is in the suburb of Notting Hill, Victoria, 18km southeast of Melbourne's CBD and within the City of Monash LGA. The area is designated as part of the Monash NEIC under *Plan Melbourne*. It is characterised by a mix of education, health, commercial and residential land uses. Existing transport connections include local bus services.

The SRL station at Monash is expected to cater for ~7,150 passengers during the AM peak hour when the full SRL East and SRL North line is operational.

In delivering SRL East and SRL North, SRLA is seeking to position Monash Precinct as a globally recognised innovation precinct, building on Monash University's strengths in science, technology, engineering and mathematics (STEM) to attract and retain leading global firms. This will be supported by an attractive public realm, comprehensive walking, cycling and public transport networks, accessible spaces and a diverse lifestyle and hospitality offering.

# 3.3.2 Overview of the options

For the Monash Precinct, four station areas were investigated during the options assessment workshop (being north, east, south or within Monash University, and east of Monash University). Seven options were then developed as potential station box locations within these general areas and are illustrated in Figure B2-7.



#### Figure B2-7: Monash station location options

#### Source: SRLA

An overview of each station location option is provided below:

 Option 1: Howleys Road (north-south alignment) – The proposed site is currently a mix of community and industrial / commercial uses. It is located north of Normanby Road and east of Howleys Road. This option is the closest to the existing bus interchange (off Wellington Road), provides good outcomes in relation to rail alignment length and station excavation depth, and will maintain all public roadways during construction (i.e. no road closures).

- Option 2: Normanby Road (east-west alignment) The proposed site is currently a mix of community, commercial and residential uses. It is located east of Howleys Road and centred on Normanby Road. Under this option, rail alignment length is comparatively longer, station excavation depth will be deeper and there are significant interfaces with Commonwealth Scientific and Industrial Research Organisation (CSIRO) that will need to be resolved.
- **Option 3: Howleys Road (east-west alignment)** The proposed site is currently a mix of commercial uses. The station location is mid-block between Normanby Road and Ferntree Gully Road, and partly across Howleys Road. Under this option, relatively fewer land assemblies are required and there is no interface with CSIRO, however it is further from the existing bus interchange.
- Option 4: Ferntree Place (north-south alignment) The proposed site is currently a mix of commercial uses. It is located south of Ferntree Gully Road and west of Howleys Road. The option is the furthest from the existing bus interchange, and has significant interfaces with CSIRO and businesses on Ferntree Gully Road.
- Option 5: Blackburn Road (northeast-southwest alignment) The proposed site is currently a
  mix of education, industrial / commercial and transport uses. The proposed station is orientated
  diagonally across Blackburn Road. This option provides an optimal rail alignment length, however
  will require closure of Blackburn Road during construction and has significant interfaces with
  Australian Synchotron and the future Victorian Heart Hospital. This option involves a speed
  restriction curve (90km/h) that will limit operating speed on the SRL rail line.
- **Option 6: Blackburn Road (north-south alignment)** The proposed station location is beneath Blackburn Road, to the east of Monash University. This option provides comparatively shorter rail alignment length, optimal station depth and will require minimal land acquisitions. However, Blackburn Road will be closed during construction and this option also involves a speed restriction curve (90km/h) that will limit operating speed on the SRL rail line.
- Option 7: Howleys Road, North of Option 1 (north-south alignment) The proposed site is currently a mix of community and industrial / commercial uses. It is located north of Normanby Road and east of Howleys Road. This option is similar to Option 1, however is further from Monash University and the existing bus interchange.

# 3.3.3 Options assessment summary

A summary of the Monash Precinct station location options assessment is provided in Table B2-5 below, against each of the five assessment criteria.

In selecting a suitable site for the proposed SRL station, some key considerations include proximity to the existing education, health and commercial uses within Monash NEIC, minimising impacts on existing buildings and maintaining suitable station depth for passenger movements. As all options are located some distance away from the existing bus interchange (~1km or more), a new bus interchange at the station site will be considered later as part of precinct planning and design.

Criteria	Key assessment findings
Productivity	<b>Options 1, 2 and 7</b> are considered to produce the best productivity outcomes. The three options are strategically located in an employment-focused area, with opportunities to redevelop the industrial / commercial precinct into a new thriving activity centre, and to connect Monash University with existing business parks to the north, east and west. <b>Options 3 and 4</b> are the next preferred, with good opportunities for precinct renewal and development (including potential to consolidate large land parcels and to partner with large landholders), however are further away from Monash University. <b>Options 5 and 6</b> are the least preferred, given their proximity to sensitive facilities including Australian Synchrotron and the future Victorian Heart Hospital, which are likely to constrain employment-focused development opportunities.

 Table B2-5: Summary of Monash station location options assessment

#### Public (Unclassified)

Criteria	Key assessment findings			
Connectivity	<b>Options 1, 2, 5, 6 and 7</b> are all considered to produce the most favourable connectivity outcomes. Options 1 and 2 are within walking distance to Monash University (a key customer base for the SRL) and are the closest to the existing bus interchange Options 5 and 6 are both located on the eastern side of Monash University and away from any existing university entrance, but are of similar distance to the existing bus interchange (as Options 1, 2 and 7) and have good access to arterial roads.			
	In comparison, <b>Options 3 and 4</b> are the least preferred given they are the furthest away from Monash University and the existing bus interchange.			
Liveability	<b>Options 1, 2 and 7</b> are considered to produce the most favourable liveability outcomes. The options are located in a low-density industrial and commercial area (with generally large land parcels), which provides opportunities to unlock the renewal of major development sites to create a vibrant mixed-use activity centre, with amenities to support the growth of dwellings. <b>Options 3 and 4</b> are the next preferred, with good opportunities for precinct renewal and development (including potential to consolidate large land parcels and to partner with large landholders); however, these options are further away from Monash University. <b>Options 5 and 6</b> are the least preferred, as there are less opportunities to unlock major development sites in the area, and further from the government-owned sites that provide the best opportunities for renewal.			
Cost	<b>Options 1 and 7</b> are considered the most favourable from a cost perspective. Both options have advantages in rail alignment length and station box excavation depth; however, require acquisition of commercial properties.			
	<b>Options 3 and 4</b> are the next preferred. Option 3 requires less land assembly (two major parcels) and station depth is within the desirable range, but produces a slightly longer rail alignment length. Option 4 provides good alignment length and station depth, but involves interfaces with CSIRO and sensitive receivers, and requires acquisition of commercial properties.			
	<b>Options 2, 5 and 6</b> are the least preferred. Option 2 produces the longest rail alignment length and requires deeper station excavation; however, acquisition of commercial properties is less than some other options. Option 5 produces a deeper station depth to account for interfaces with the future Victorian Heart Hospital, requires acquisition of commercial properties and will involve closure of Blackburn Road during construction. While Option 6 has reduced land acquisition, a relatively short rail alignment and optimal station depth, it involves higher costs and project implications associated with the closure of Blackburn Road and proximity to sensitive receivers during construction.			
Deliverability	<b>Option 1</b> is considered the best deliverability solution, providing good alignment length, suitable station depth and maintains all public roadways during construction (i.e. no road closures). However, it will impact an existing childcare facility and has potential interfaces with CSIRO. <b>Option 7</b> is similar to Option 1 but positioned further north (~150m) to avoid the childcare facility.			
	<b>Options 3 and 6</b> are the next preferred. Option 3 involves a slightly longer rail alignment and may require closure of Howleys Road during construction, but provides good station depth, has minimal land impacts (two major parcels) and no significant interface issues. Option 6 involves construction beneath Blackburn Road (minimises permanent land acquisition impacts); however, it requires closure of Blackburn Road during construction, will impose speed restrictions on the SRL rail line and has potential sensitive receiver interface issues.			
	<b>Options 2, 4 and 5</b> are the least preferred. Option 2 involves the longest rail alignment, a deeper station, significant interfaces with CSIRO, impacts on the childcare facility and some road closures during construction. Option 4 involves significant interfaces with CSIRO and Ferntree Gully Road businesses but will not impact public roadways. Option 5 will impose speed restrictions on the SRL rail line, require closure of Blackburn Road during construction and involve significant interfaces with Australian Synchrotron and the future Victorian Heart Hospital.			
SUMMARY: Option criteria. It was associated to connectivity, livea	on 1 is considered to provide the best overall outcomes across all five assessment sessed the best option for deliverability, and considered equally preferred for productivity, bility and cost.			

Option 1 is strategically located in an employment-focused area with significant opportunities to redevelop into a new thriving activity centre, thereby supporting superior productivity and liveability outcomes. It is the closest

#### Key assessment findings

to Monash University and the existing bus interchange, and has advantages in rail alignment length, station box depth and maintains all publicly roadways during construction.

Option 3 provides good opportunity for precinct development, involves fewer land assembly and no interface with CSIRO, but is further from Monash University and requires closure of Blackburn Road during construction. Option 6 is beneath Blackburn Road and requires minimal land acquisitions but will result in a speed restriction curve and closure of Blackburn Road. The remainder, Options 2, 4 and 5, are assessed to produce less favourable outcomes overall and therefore not preferred.

# 3.3.4 Recommended baseline

Criteria

#### Option 1: Howleys Road (north-south alignment) is

considered to produce the most favourable outcomes across all of the five assessment criteria and therefore selected as the baseline station location for Monash. An aerial image of the proposed site is shown in Figure B2-8.

The proposed SRL station site is to the north of Normanby Road and east of Howleys Road. A primary station entrance will be located to the south of the station box and orientated to Monash University. A second entrance to the north of the station box will provide connectivity to the current industrial precinct.

The station will be designed to provide an exemplar customer experience with a range of transport interchange options, a vibrant town centre and access to services and employment opportunities. Planning of the precinct ground plane has included spatial provision for surface transport including bus, cycle and car-based transport. It has been proposed that a bus interchange will be provided at the station site, and a future tram route may also be considered to improve transport connectivity. Figure B2-8: Monash Precinct baseline station location, with crossover (Option 1)

NGAS ROAD Station Bo

Source: SRLA

# 3.4 Glen Waverley Precinct station location

#### 3.4.1 Context

Glen Waverley is located 19km southeast of Melbourne's CBD and resides within the City of Monash LGA. The area is designated as a Major Activity Centre under *Plan Melbourne*, and is characterised as a mix of commercial, residential and education land uses. Existing transport connections include Glen Waverley train station and Glen Waverley bus interchange.

The SRL station at Glen Waverley is expected to cater for ~8,400 passengers during the AM peak hour when the SRL East and SRL North line is operational, of which ~1,850 will interchange with the existing Glen Waverley train station.

In delivering SRL East and SRL North, SRLA is seeking to position Glen Waverley Precinct as a growing activity centre, providing an intensified mix of businesses, retail, services and entertainment uses. The precinct will have a highly permeable local environment that prioritises walking and cycling. The centre will be a focus for the needs of workers, students and residents, anchored by a thriving multicultural core that is accessible from across Melbourne's eastern metropolitan region.

### 3.4.2 Overview of the options

For the Glen Waverley Precinct, three station locations were initially considered during the options assessment workshop, after which variations (in orientation) were developed to yield six station box location options; these are illustrated in Figure B2-9.



Figure B2-9: Glen Waverley station location options

#### Source: SRLA

An overview of each station location option is provided below:

- Option 1: Railway Parade (east-west alignment) The proposed site is currently a mix of commercial, transport and residential uses. The site is centred on Railway Parade west of Kingsway, adjacent to the existing bus interchange. This option will likely have significant impacts on surrounding commercial properties, will require temporary relocation of the existing bus interchange and will also impact the existing Glen Waverley train station.
- Option 2: Glendale Street (north-south alignment) The proposed site is currently a mix of transport, commercial, residential and religious uses. The site is located between Coleman Parade

and Bogong Avenue, and east of Myrtle Street. This option will provide comparatively shorter rail alignment length and shallower station depth, as well as a good transport interchange solution without significant redevelopments of the existing infrastructure (i.e. bus interchange, existing metropolitan train station). Further, this option will likely have a lesser impact on the community during construction.

- Option 3: Euneva Avenue (north-south alignment) The proposed site is currently a mix of transport, commercial and residential uses. The proposed site is located north of Coleman Parade, south of O'Sullivan Road and west of Kingsway. This option will likely have a significant impact on the existing Glen Waverley train station, including multiple lengthy rail occupations and potential total redevelopment of the station. Further, this option will likely cause significant disruptions to the community during construction and impact the existing bus interchange.
- Option 4: Kingsway (north-south alignment) The proposed site is currently a mix of transport and commercial uses. The proposed site is located along Kingsway to the east of the existing Glen Waverley rail station, north of Coleman Parade and south of O'Sullivan Road. This option is in close proximity of a nearby residential tower, with rail alignment required to pass beneath The Glen Shopping Centre and underground infrastructure (resulting in increased station depth). This option will likely cause greater community disruptions during construction.
- Option 5: West of Kingsway and north of Glen Waverley line (north-south alignment) The proposed site is currently a mix of transport and commercial uses. It is located north of Railway Parade and west of Kingsway. Due to existing building constraints to the north of Option 5, an increased station depth is required. This option is also likely to cause significant community disruptions during construction, including impacts on a local school.
- Option 6: West of Kingsway (north-south alignment) The proposed site is currently a mix of transport, commercial and community uses. The proposed site is located north of Montclair Avenue, south of O'Sullivan Road and west of Kingsway. This option will likely have a significant impact on the existing Glen Waverley train station, including rail occupations and potential total redevelopment of the station. This option will likely cause significant disruptions to the community during construction and impact the existing bus interchange.

# 3.4.3 Options assessment summary

A summary of the Glen Waverley Precinct station location options assessment is provided in Table B2-6 below, against each of the five assessment criteria.

In selecting a suitable site for the proposed SRL station, some key considerations include proximity to the existing Glen Waverley train station and bus interchange, potential to create a well-connected transport interchange, minimising impacts to surrounding properties and maintaining a suitable station depth for passenger movements.

Criteria	Key assessment findings	
Productivity	<b>Option 1</b> is strategically located in the centre of the Major Activity Centre, facilitating access to existing employment areas and commercial activities, as well as potential major development sites that could be unlocked for precinct renewal. <b>Option 2</b> is located at the edge of the Major Activity Centre and considered to provide marginally less opportunities in accessing key employment areas and potential major redevelopment sites when compared to Option 1. However, Option 2 provides good access to identified major development sites across the precinct that could facilitate growth in employment.	
	<b>Options 3 and 6</b> are the next preferred, offering favourable redevelopment, placemaking and precinct potential, but benefits are hindered by significant impacts on the existing station / stabling and the excessive depth of Option 6. <b>Options 4 and 5</b> are the least preferred. While they offer similar benefits to Option 1, with the potential to unlock development sites for further precinct renewal, they are associated with significant station depth.	

Table B2-6: Summary of Glen Waverley station location options assessment

Criteria	Key assessment findings	
Connectivity	<ul> <li>Option 2 is considered the best connectivity option, as it will provide a good transport interchange without requiring disruptions and/or redevelopment of the existing train station or bus interchange. Option 1 is less preferred. It is located adjacent the existing bus interchange, with an opportunity to create a transport interchange connecting the SRL, existing train station and bus interchange, but will require temporary relocation of the bus interchange and impact on the existing station.</li> <li>Options 3, 4, 5 and 6 are not preferred from a connectivity perspective. Options 3 and 6 will significantly impact the existing Glen Waverley train station (multiple and lengthy rail occupations) and also the bus interchange. Options 4, 5 and 6 will require deeper station</li> </ul>	
	box depths to mitigate nearby building constraints, which may result in sub-optimal passenger movements and a longer travel distance for rail-rail interchange.	
Liveability	<b>Option 1</b> is strategically located in the centre of the Major Activity Centre, in close proxin to The Glen Shopping Centre and other amenities. It facilitates good access to identified major development sites, which allow greater building heights and uplift potential. <b>Optio</b> is situated at the edge of the Major Activity Centre adjacent low-rise residential blocks. It further from The Glen Shopping Centre and is considered provide marginally less opportunities in accessing key potential redevelopment sites to support built form uplift when compared to Option 1.	
	<b>Options 4, 5 and 6</b> are less preferred. All three options are in close proximity to The Glen, but their positions offer fewer opportunities to unlock major development sites in the area (compared to Option 1). <b>Option 3</b> is the least preferred option as it is furthest away from The Glen and other amenities on Kingsway.	
Cost	<b>Option 2</b> is considered the most preferred from a cost perspective, given it involves the second shortest rail alignment, shallower station depth and requires few commercial property acquisitions.	
	<b>Option 3</b> is the next preferred, with the shortest rail alignment length and a comparatively shallow station depth. However, this option may require total redevelopment of the existing train station.	
	<b>Options 1, 4, 5 and 6</b> are not preferred. Options 4, 5 and 6 require a deeper station box due to various constrains, and Option 6 may also require a total redevelopment of the existing station. Option 1 will deliver the longest rail alignment and require land assembly of a larger number of commercial properties.	
Deliverability	<b>Option 2</b> is the most preferred deliverability solution as it produces a comparatively short rail alignment length, shallower station depth, good transport interchange outcomes and will have lesser impacts on the community during construction.	
	<b>Option 3</b> is the next preferred, with the shortest rail alignment length and shallow station depth, but with more significant impacts on the existing train station during construction.	
	<b>Options 1, 4, 5 and 6</b> are not preferred. Option 1 provides the longest rail alignment, involves a speed restriction curve, has significant impacts on commercial properties, will impact the existing train station and require temporary relocation of the bus interchange. Options 4, 5 and 6 will produce deeper station box depths due to various constraints. In addition, Option 4 will impact commercial properties and require road closures during construction, Option 5 will require acquisition of a number of existing buildings (including a local school) and cause significant impacts to the community, whilst Option 6 will have a significant community disruptions during construction.	
SUMMARY: Optio	on 2 is considered to provide the best overall outcomes across a majority of the five	

**SUMMARY:** Option 2 is considered to provide the best overall outcomes across a majority of the five assessment criteria. It was assessed as the best option for deliverability, cost and connectivity, and second preferred for productivity and liveability.

Option 2 provides the second shortest rail alignment length, station depth within the ideal range, good transport interchange outcomes without significant redevelopment of the existing infrastructure (i.e. no relocation of the bus interchange or occupations of the existing railway station), requires few commercial property acquisitions and is considered to have a lesser impact on the community during construction.

Option 3 is considered the next preferred overall, with the shortest rail alignment length, station depth within the ideal range, but likely to have a significant impact on the existing train station during construction (including rail occupations), as well as disruptions to the community. The remainder, Options 1, 4, 5 and 6, are assessed to produce less favourable outcomes overall and therefore not preferred.

# 3.4.4 Recommended baseline

**Option 2: Glendale Street (north-south alignment)** is considered to produce the most favourable outcomes across a majority of the five assessment criteria and therefore selected as the baseline station location for Glen Waverley. An aerial image of the proposed site is shown in Error! Reference s ource not found.

Figure B2-10: Glen Waverley Precinct baseline station location (Option 2)



Source: SRLA

The proposed SRL station site is located south of the existing Glen Waverley railway line and station, between Coleman Parade and Bogong carpark, and east of Myrtle Street. It is intended that there will be a single station entrance on the eastern side orientated towards Coleman Parade.

The station will be designed to provide an exemplar customer experience with a range of transport interchange options including convenient passenger interchange with the existing Glen Waverley station, a vibrant town centre and access to services and employment opportunities. Planning of the precinct ground plane has included spatial provision for surface transport including bus, cycle and car-based transport.

# 3.5 Burwood Precinct station location

#### 3.5.1 Context

Burwood is a suburb located 14km east of Melbourne's CBD. The proposed Burwood Precinct is within the City of Whitehorse LGA and situated to the east of Burwood Village Neighbourhood Activity Centre. The area is characterised by a mix of residential, education and light industrial land uses, anchored by the presence of Deakin University. Existing public transport connections include tram route 75 and local bus services.

The SRL station at Burwood is expected to cater for ~10,500 passengers during the AM peak hour when SRL East and SRL North line are operational.

In delivering SRL East and SRL North, SRLA is seeking to position Burwood Precinct as a major education precinct for Victoria. It is envisaged that the precinct will become a leading technology and commerce hub centred around Deakin University. Burwood Highway will transform into an activated public realm and will support an increasing residential population with an enhanced Gardiners Creek, while maintaining Burwood's green and open space.

# 3.5.2 Overview of the options

For the Burwood Precinct, four station location options were investigated during the options assessment process; these are illustrated in Figure B2-11.





#### Source: SRLA

An overview of each station location option is provided below:

 Option 1: Industrial area south of Burwood highway (north-south alignment) – The proposed site is currently a mix of industrial uses. The site is located south of Burwood Highway and some distance away (~1km) from the main Deakin University Campus. It is likely to impact a larger number of land parcels compared to other options, as it is located on land with greater density of industrial buildings.

- Option 2: Industrial site at 200 Burwood Highway (north-south alignment) The proposed site is currently of commercial / industrial use. The site is located south of Burwood Highway opposite Deakin University. This option provides good precinct development opportunities whilst maintains suitable proximity to the Deakin University Campus. It is considered to provide the simplest construction method and offers the largest construction area to support tunnelling activities.
- Option 3: Education site at 245 Burwood Highway (north-south alignment) The proposed site
  is currently an educational facility. The site is located north of Burwood Highway and directly east of
  Deakin University. This option provides limited opportunities for precinct development due to
  constraints of the educational facilities to the north of the site, and will likely affect a larger number
  of residential properties compared to other options.
- Option 4: Sporting ovals at 221 Burwood Highway (north-south alignment) The proposed site is currently utilised as sporting ovals, with shared use by Whitehorse City Council and Deakin University. The site is located to the north of Burwood Highway, within Deakin University boundaries. This option will remove open and recreational space from the area by reducing the footprint of Bennetswood Reserve. The main station box excavation will be in an area with land contamination.

### 3.5.3 Options assessment summary

A summary of the Burwood Precinct station location options assessment is provided in Table B2-7 below, against each of the five assessment criteria.

In selecting a suitable site for the proposed SRL station, some key considerations include proximity to Deakin University Campus, access to existing tram and bus services, potential to unlock precinct development potential and provision for the launch of up to four tunnel boring machines (TBMs). Construction power will be required to power the TBMs, which will involve delivery of a bulk power supply point nearby within the broader Burwood Precinct.

Criteria	Key assessment findings		
Productivity	<b>Option 2</b> is considered to produce the best productivity outcomes, as it provides an opportunity to maximise precinct development potential (due to its strategic locational advantage between commercial / industrial development sites), whilst maintains suitable proximity to Deakin University. <b>Options 1 and 3</b> are the next preferred. Option 1 facilitates productivity outcomes due to its proximity to the industrial precinct but is disconnected from the key educational precinct. Option 3 is adjacent to Deakin University, with precinct opportunities more weighted towards residential rather than employment / mixed-use. <b>Option 4</b> is the least preferred, as it is within a recreation zone that does not present a ready opportunity to unlock precinct development potential.		
Connectivity	<b>Options 2, 3 and 4</b> are considered to produce equally favourable connectivity outcomes due to their proximity to Deakin University, which facilitates connectivity and access between SRL and the key customer base. All three options are of Burwood Highway frontage, which support interface and connectivity to existing tram and bus services along this arterial road. <b>Option 1</b> is the least preferred, as it is remote from the main Deakin University Campus and therefore offers inferior connectivity and access to this key customer base.		
Liveability	<b>Option 2</b> is considered to produce the best liveability outcomes, as it provides an opportunity to maximise precinct development potential whilst maintaining suitable proximity to the Deakin University Campus. <b>Option 3</b> is the next preferred as it is adjacent to Deakin University; however, this site has some physical constrains on precinct development opportunities due to educational facilities to the north. <b>Options 1 and 4</b> are the least preferred. Option 1 offers comparatively limited development uplift potential due to its smaller site area, while Option 4 will does not provide direct development opportunities given it is within a recreation zone, and will remove open and recreational space by reducing the footprint of Bennetswood Reserve.		
Cost	<b>Options 2 and 3</b> are considered equally preferred from a cost perspective as both involve minimal land assembly (single property acquisition under both options). <b>Option 4</b> is less preferred given the area is a landfill site that will require potentially expensive remediation		

Table B2-7: Summary of Burwood station location options assessment

Criteria	Key assessment findings			
prior to commencing construction activities. <b>Option 1</b> is expected to produce the least favourable cost outcome, as it is situated on land with greater density of industrial build and will require a larger number of property acquisitions. Option 1 also produces the longest tunnel alignment and deepest station box, which are more expensive to deliver				
<b>Deliverability Options 2 and 3</b> are considered to produce equally favourable deliverability solution both involve large site areas with minimal construction constraints, providing ample s to support tunnelling activities without increased risk of spoil contamination. <b>Option 1</b> next preferred from a deliverability perspective, as it requires a deeper station box, lo tunnel length and multiple property acquisitions. <b>Option 4</b> is considered to provide the preferred deliverability solution, with the main station box excavation in an area of contaminated land, which will pose health and safety and spoil disposal issues during construction.				
SUMMARY: Option criteria. It was as preference for cost	on 2 is considered to provide the best overall outcomes across all five assessment sessed as the best option for productivity and liveability, and considered an equal first st, deliverability and connectivity.			
Option 2 is strategically located to maximise precinct development opportunities whilst maintaining suitable				

proximity to Deakin University, and therefore considered to produce superior productivity, connectivity and liveability outcomes. Option 2 also provides favourable deliverability and cost outcomes, as it involves a clean land take, simple construction method and provides a large construction area to support tunnelling activities.

Broadly, Option 3 is less preferred as precinct development opportunities are more weighted towards residential (rather than employment / mixed-use), Option 1 is remote from Deakin University and will require a larger number of property acquisitions, and Option 4 is in a recreation zone with limited precinct development opportunities and on land with significant contamination issues.

### 3.5.4 Recommended baseline

**Option 2: Industrial site at 200 Burwood Highway** (north-south alignment) is considered to produce the most favourable outcomes across all five assessment criteria and therefore selected as the baseline station location for Burwood. An aerial image of the proposed site is shown in Figure B2-12.

The proposed SRL station site is to the south of Burwood Highway, east of Gardiners Creek and north of Sinnott St Reserve. Deakin University is directly opposite on the north side of Burwood Highway. It is proposed that there will be a single entrance on the western side of the station box orientated north towards Burwood Highway with prioritised pedestrian access across Burwood Highway linking to the station entry (the location of this entry is flexible).

Planning of the precinct ground plane has included spatial provision for surface transport including bus, tram, cycle and car-based transport. To facilitate connectivity to the existing tram route 75, a new tram stop on Burwood Highway immediately adjacent to the SRL station is proposed. Figure B2-12: Burwood Precinct baseline station location (Option 2)



Source: SRLA

# 3.6 Box Hill Precinct station location

#### 3.6.1 Context

Box Hill is a suburb located 14km east of Melbourne's CBD and resides within the City of Whitehorse LGA. Box Hill is designated as a Metropolitan Activity Centre (**MAC**) under *Plan Melbourne*, as well as a Health and Education Precinct. The area is characterised by a mix of commercial, residential, health and education land uses. The suburb is currently undergoing change with numerous high-rise developments in either planning or delivery. Existing public transport connections include Box Hill train station, tram route 109 and Box Hill bus interchange.

The proposed Box Hill SRL station will be one of the busiest on the SRL East and SRL North line, with patronage predicted to approach ~23,150 passengers during the AM peak hour when the full SRL East and SRL North line is operational. Of these, around ~16,600 passengers will interchange with the existing Box Hill train station for Belgrave/Lilydale line services.

In delivering SRL East and SRL North, SRLA is seeking to leverage Box Hill's position as a significant Metropolitan Activity Centre (MAC) and strategic multi-modal hub for Melbourne's east. It is envisaged that the Box Hill Precinct will see growth in health and public sector jobs, anchored by Eastern Health, Box Hill Institute and government offices. This will be balanced by a leafy and permeable central area with higher density mixed used development, providing a multicultural hub and community infrastructure for its diverse population.

# 3.6.2 Overview of the options

For the Box Hill Precinct, five station location options were investigated during the options assessment process; these are illustrated in Figure B2-13.

Figure B2-13: Box Hill station location options



Source: SRLA

An overview of each station location option is provided below:

- Option 1: Nelson Road (northwest-southeast alignment) The proposed site is currently a mix
  of commercial uses and a road zone. It is located north of Belgrave/Lilydale train line, and crosses
  Whitehorse Road to Nelson Road. This site is centrally located within Box Hill MAC, and its
  horizontal alignment towards Doncaster (SRL North) will be subject to an operating speed restriction
  of 70km/h (below SRL design specification target of 100km/h).
- Option 2: Shipley Street (north-south alignment) The proposed site is currently a mix of commercial uses and a road zone. It is located north of Belgrave/Lilydale train line, crosses Whitehorse Road and east of Shipley Street. This site is centrally located within Box Hill MAC but poor ground conditions and land issues have been identified, which significantly impacts deliverability.
- Option 3: Market Street (north-south alignment) The proposed site is currently a mix of commercial uses and a road zone. It is located north of Belgrave/Lilydale train line, crosses Whitehorse Road and is east of Market Street. This site is centrally located within Box Hill MAC, provides the shortest connection to the existing Box Hill station and offers a relatively large site for construction.
- Option 4: Station Street (north-south alignment) The proposed site is currently a mix of commercial uses and a road zone. It is located north of Belgrave/Lilydale train line, crosses Whitehorse Road and is east of Station Street. Option 4 is less centrally located (compared to other options) and has a constrained laydown area.
- Option 5: Whitehorse Road (east-west alignment) The proposed site is currently a mix of commercial uses and a road zone. It is located beneath Whitehorse Road, north of Belgrave/Lilydale train line, Box Hill train station and the retail precinct. The site represents a major transport interchange location and its east-west alignment facilitates a shallower station box depth. However, this option produces the longest alignment length.

# 3.6.3 Options assessment summary

A summary of the Box Hill Precinct station location options assessment is provided in Table B2-8 below, against each of the five assessment criteria.

In selecting a suitable site for the proposed SRL station, some key considerations include proximity to the existing Box Hill train station, tram and bus interchange, minimising impacts on existing buildings and basements, interface with Vicinity (Box Hill Central) and maintaining a suitable station depth for passenger movements whilst managing the constraints imposed by the declining ground plane to the north towards Box Hill Gardens.

Criteria	Key assessment findings		
Productivity	<b>Options 1, 2, 3 and 5</b> are considered equally preferred from a productivity perspective. All four options are centrally located within Box Hill MAC, providing good access to major local attractors, service providers and employment areas (including Box Hill Central, Box Hill Hospital and Box Hill Institute) and opportunities to support major precinct developments. Ir comparison, <b>Option 4</b> is less centrally located, does not offer the same level of access to major local attractors, service providers and employment areas, and is expected to be less effective at supporting some of the precinct development opportunities.		
Connectivity	<ul> <li>Options 3 and 5 are considered equally preferred. Option 3 provides opportunity for a shared station entry with the existing Box Hill station, the shortest travel distance for rail-rail interchange and the most direct access to the existing bus interchange. Option 5 is in a major transport interchange location which facilitates links between SRL, the existing Box Hill station, tram route 109 and the bus interchange. Option 3 provides the shortest travel distance for rail-rail interchanging passengers.</li> <li>Options 1 and 2 are less preferred. Both provide opportunity to create an interchange into the existing Box Hill station and direct entry to the existing tram terminus, but involve longer</li> </ul>		
	travel distances for rail-rail interchange. <b>Option 4</b> is the least preferred as it is located at		

Table B2-8: Summary of Box Hill station location options assessment

#### Public (Unclassified)

Criteria	Key assessment findings		
	the eastern end of the activity centre, is the furthest removed from the existing tram interchange, but also provides opportunity to create an interchange into the existing Box Hill station (from the east).		
Liveability	<b>Options 1, 2 and 3</b> are considered equally preferred, with all three options located centrally within Box Hill MAC. For Options 1 and 2, major development sites south of the existing activity centre have been identified, which can be catalysed for renewal as part of overall precinct planning and development. For Option 3, there is a significant opportunity for site consolidation and subsequent redevelopment, which will facilitate desirable urban renewal outcomes. In comparison, <b>Option 5</b> is located beneath Whitehorse Road and has less opportunities for precinct development and renewal, while <b>Option 4</b> is less centrally located than other options but provides an opportunity to renew and improve built form outcomes along Station Street.		
Cost	<b>Option 3</b> is considered to produce the best cost outcome, as it provides a relatively large, site for construction and the shortest platform-to-platform distance to the existing Box Hill station. However, it involves considerable land acquisitions (which is an issue for most options).		
	platform distance to the existing Box Hill station, as well as considerable land acquisition requirements. <b>Option 5</b> provides for a shallower station box depth and involves less property impacts, but produces the longest tunnel alignment of all options and significantly increased cost. <b>Option 2</b> is the least preferred given this is expected to require the most expensive land acquisitions and the second longest platform-to-platform distance to the existing Box Hill station.		
Deliverability	<b>Option 3</b> is considered the most preferred deliverability solution as it provides a relatively large clean site for construction, which reduces project delivery risks. <b>Option 5</b> provides an east-west alignment which avoids the north-south topography challenges in Box Hill and facilitates a shallower station box depth; however, this option provides the longest tunnel length and will impact existing commercial accessways on Whitehorse Road (including tram terminus) during construction.		
	<b>Options 1, 2 and 4</b> are the least preferred, with Option 1 involving a horizontal alignment towards Doncaster that will be subject to an operating speed restriction of 70km/h, Option 4 with challenges associated with a constrained laydown area, and Option 2 having significant deliverability issues due to poor ground conditions (i.e. cavern is highly unlikely to be feasible at this site).		
SUMMARY: Option criteria. It was as productivity, connectivity	on 3 is considered to provide the best overall outcomes across all five assessment sessed as the best option for cost and deliverability, and considered equally preferred for ectivity and liveability.		
Option 3 is centra liveability outcome	Ily located within Box Hill MAC and expected to produce optimal productivity, connectivity and es. This option provides an opportunity for a shared station entry with the existing Box Hill		

liveability outcomes. This option provides an opportunity for a shared station entry with the existing Box Hill station, the shortest travel distance for rail-rail interchanging passengers and the most direct access to the existing bus interchange. Further, Option 3 provides a relatively large clean site for construction, which supports good cost outcomes and reduced deliverability risks.

Option 5 provides a good alternative option, as it facilitates a shallower station box depth and provides for a major transport interchange between SRL, the existing Box Hill station, tram route 109 and bus interchange, but will produce the longest tunnel alignment. While Options 1 and 2 are also centrally located, these are less preferred overall given both options involve greater project and cost risks associated with the Vicinity development site. For Option 4, this is less centrally located than other options and has constructability challenges associated with a constrained laydown area.

# 3.6.4 Recommended baseline

**Option 3: Market Street (north-south alignment)** is considered to produce the most favourable outcomes across all five assessment criteria and therefore

selected as the baseline station location for Box Hill. An aerial image of the proposed station box site is shown in Figure B2-14.

The proposed SRL station site is to the north of the existing Belgrave/Lilydale rail line, east of Market Street and crosses Whitehorse Road. Two station entrances have been proposed, with one to the north of Whitehorse Road (orientates towards Box Hill Gardens) and the other to the south that serves Main Street. As the Box Hill station is at the end-of-the line for SRL East, crossover and turnback structures will be provided to allow terminating trains to recommence passenger services in the opposite direction (prior to the delivery of SRL North beyond Box Hill).

The station will be designed to provide an exemplar customer experience with a range of transport interchange options, a vibrant town centre and access to services and employment opportunities. Planning of the precinct ground plane has included spatial provision for surface transport including bus, tram, cycle and carbased transport. Figure B2-14: Box Hill Precinct baseline station location (Option 3)



Source: SRLA

# 4 Summary of SRL East baseline station locations

As part of the station location options assessment process, a baseline station site was selected for each SRL Precinct and progressed to Concept Design. A summary overview of SRL East baseline station locations is presented in Table B2-9 below.

SRLA notes that as the design solution is further developed for each station during Concept Design phase (and beyond), the precise station box configurations and alignment will continue to be refined.

Table DZ-9. SKL East baseline station location	Table	B2-9:	SRL	East	baseline	station	location
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SRL Precinct	Baseline station location	
Cheltenham Precinct	Option 1: Sir William Fry Reserve (east-west) The proposed SRL station site is on parkland known as Sir William Fry Reserve to the north of Bay Road, between Frankston rail line and Nepean Highway. The southern portion of the park will be assembled for SRL, with the balance of the park remaining as public open space. The existing Southland train station and Southland Shopping Centre are located opposite the proposed station location to the south of Bay Road. As Cheltenham station is at the end- of-the line, crossover and turnback structures will be provided to allow terminating trains to recommence passenger services in the opposite diraction	Station Box       Bay Road
Clayton Precinct	Option 1: West of Clayton Road (north-south) The proposed SRL station site sits between Clayton Road and Madeleine Road, with Carinish Road forming the southern boundary and the north extending to the approximate alignment of Lilian / Wright Street. It is currently occupied by a mixture of shop fronts along the southern leg of Clayton Road, detached residential dwellings, medical suites and community uses. A direct paid-to-paid interchange connection will be provided between SRL station and the existing Clayton train station.	Station Box Bit Box Bi

SRL Precinct	Baseline station location	
Monash Precinct	Option 1: Howleys Road (north- south) The proposed SRL station site is to the north of Normanby Road and east of Howleys Road. Within walking distance to the north of Monash University, the broader area is currently dominated by light industrial, large format buildings and street level car parks. CSIRO occupies land to the west and southwest of the core area. This location includes provision for crossover and turnback structures to provide increased operational flexibility.	BYRICAS ROAD
Glen Waverley Precinct	Option 2: Glendale Street (north- south) The proposed SRL station site is south of the existing Glen Waverley rail line and station, within the Glen Waverley activity centre. The core station precinct is broadly defined by Myrtle Street to the west, Railway Parade to the north, the Ikon Building and Kingsway retail strip to the east, and Bogong Avenue to the south.	De Interchange Bis Interchange
Burwood Precinct	Option 2: Industrial site at 200 Burwood Highway (north-south) The proposed SRL station site is to the south of Burwood Highway and east of Gardiners Creek. The core station precinct is broadly defined as the land west of McComas Grove and north of 20 Sinnott Street. Deakin University is directly opposite on the north side of Burwood Highway. Tram route 75 operates along Burwood Highway, with an existing stop to the east of the proposed station site.	Burwood Highway Salon Bos Curdiners Creek Reserve

SRL Precinct	Baseline station location	
Box Hill Precinct	Option 3: Market Street (north- south) The proposed SRL station site is to the north of the existing Belgrave/Lilydale rail line, east of Market Street and crosses Whitehorse Road. As the Box Hill station is at the end- of-the line for SRL East, crossover and turnback structures will be provided to allow terminating trains to recommence passenger services in the opposite direction (prior to the delivery of SRL North).	Box Hill Gardonn Bruin Arenna Accumando artines n Bruin Arenna Accumando artines n Bruin B

# **APPENDIX:** Maps of baseline station locations (SRL East)

# **Cheltenham Precinct**

#### Sir William Fry Reserve (east-west)



# **Clayton Precinct**

#### West of Clayton Road (north-south)



# **Monash Precinct**

#### Howleys Road (north-south) – with crossover structure



# **Glen Waverley Precinct**

#### **Glendale Street (north-south)**



# **Burwood Precinct**

#### Industrial site at 200 Burwood Highway (north-south)



# **Box Hill Precinct**

#### Market Street (north-south)

