



# NORTH EAST LINK PROJECT

## **Project Outline**

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## Document Control Page

### Release

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# Table of Contents

1.	Purpose.....	1
2.	Project overview and background .....	1
2.1	Description.....	1
2.2	Context .....	2
2.3	Project benefits.....	3
3.	Project rationale.....	5
3.1	Strategic context.....	5
3.2	Project objectives.....	7
4.	Project description .....	8
4.1	Proposed works.....	8
4.2	Excluded works.....	10
4.3	No-go zones .....	10
4.4	Project schedule and delivery.....	10
5.	Relevant legislation.....	13
5.1	Commonwealth legislation.....	13
5.2	State approvals.....	13
6.	Preliminary Issue Identification and Response .....	14
6.1	Approach to issue identification .....	14
6.2	Initial characterisation of impacts.....	14
6.3	Preliminary mitigation framework.....	15
7.	Specialist studies .....	31
8.	Community and stakeholder engagement.....	33
8.1	Stakeholder engagement strategy.....	33
8.2	Key stakeholders .....	33
8.3	Consultation to date.....	34
8.4	Future consultations .....	35
9.	Conclusion .....	36

# Table Index

Table 3-1	Project objectives for North East Link .....	7
Table 6-1	Characterisation of impacts.....	14
Table 6-2	Hierarchy for prioritisation of issues for investigation .....	15
Table 6-3	Preliminary Identification of Potentially Significant Effects .....	18

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# Figure Index

Figure 1 Project boundary.....	4
Figure 2 No-go zones.....	12

# 1. Purpose

The purpose of this document is to inform the Minister for Planning in his consideration of whether to declare North East Link (‘the project’) as “public works” under Section 3 of the *Environment Effects Act 1978* (EE Act).

This document is based on the State’s concept design which is the basis for the project Business case.

The concept design will undergo further development and assessment in consultation with relevant stakeholders and the community to develop a reference design for the project to be used for the purposes of more detailed assessment and procurement. This process may involve assessment of variations to certain elements of the reference design to facilitate innovation from the private sector that will bid on the delivery of the project. These variations could include things such as the length of the tunnel, the location of tunnel portals and ventilation structures, or the location and design of elevated and surface road connections.

This document provides a preliminary screening analysis of the potential environmental, social and economic effects of the project. The outcomes of this analysis are set out in Section 6. The analysis indicates that the project is capable of having a significant effect on the natural, physical and social environment within and adjacent to the project boundary.

For that reason, the preparation of an Environment Effects Statement (EES) under the provisions of the EE Act may be warranted. In the event that the Minister does declare the project to be “public works” the secondary purpose of this document is to assist the Minister in determining the procedures and requirements that are to apply to an EES for the works.

North East Link Authority (NELA) is an Administrative Office established to undertake the planning, development and delivery of North East Link. The authorised representative for North East Link is:

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<b>Authorised person for the proponent</b>	Duncan Elliott
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## 2. Project overview and background

### 2.1 Description

North East Link is a proposed new freeway standard road connection that would complete the missing link in Melbourne's metropolitan ring road, giving the city a fully completed orbital connection for the first time. North East Link would connect the Western Ring Road (M80) to the Eastern Freeway, and include works along the Eastern Freeway.

To facilitate delivery, North East Link would require temporary and permanent land occupation, drainage and flood mitigation works, and the use of tunnel boring machines to construct most of the tunnel length.

The following section describes the North East Link alignment and the key elements, noting that the development of the concept design is ongoing.

- **Western Ring Road to Lower Plenty Road** – from the M80 and Greensborough Bypass to the northern tunnel portal, this section would include a mixture of above, below and at surface road sections, with new road interchanges at M80, Grimshaw Street and Lower Plenty Road.
- **Tunnels** – from the northern tunnel portal located just north of Lower Plenty Road to south of Manningham Road, twin tunnels would travel under residential areas, Banyule Flats and the Yarra River. Near each tunnel portal supporting tunnel infrastructure would be required, including ventilation structures, substations and associated infrastructure. This section would include a new interchange at Manningham Road.
- **Bridge Street to Eastern Freeway** – this section would include open cut and bored or mined tunnel with the southern tunnel portal located south of the Veneto Club. Further south, surface road and viaduct structures would connect to the Eastern Freeway via a new interchange.
- **Eastern Freeway upgrades** – from around Hoddle Street in the west through to Springvale Road in the east, modifications to the Eastern Freeway would include widening to accommodate future traffic volumes, provision of new dedicated bus lanes for rapid bus services and associated works.

The project location and extent is shown in Figure 1.

The project would also include improvements to existing bus services on arterial roads, pedestrian connections and the bicycle network through connected cycling and walking paths from the M80 to the Eastern Freeway and the city.

There would be road improvements and upgrades that would precede and / or follow the delivery of the project. These activities are distinct from the project as described in this document, subject to separate regulatory and planning assessment and approval processes and are not included in this Project Outline.

Further detail on the project works are provided in Section 4, noting that the scope presented in this Project Outline is a concept design only and should the project proceed past the Business case stage, the State will undertake more exhaustive consideration of all aspects in refining the project scope and develop a reference design. This will involve consideration of more design options and construction methods within the project boundary to inform the project approvals.

## 2.2 Context

Although Melbourne's population has long been increasing, the recent scale of growth is unprecedented for an Australian city. From a population of just over 500,000 people at the turn of the 20<sup>th</sup> century, Melbourne today has grown to a population of more than 4.6 million.

Melbourne's northern corridor is one of the city's fastest growing areas. South Morang was Australia's fastest growing suburb in 2015-2016 and has been in the top three for population growth for the last three to four years. Similarly, Epping was in the top 10 in 2016. When combined, these two suburbs have added over 8,000 people or around 7.5% of Melbourne's total growth in 2016. With a future estimated population capacity of up to 330,000 people and job capacity of up to 105,000, the northern corridor is expected to place additional pressure on Melbourne's north-east transport network in the coming years<sup>1</sup>.

This growth pressure results in a range of issues that can be represented by the following key problems:

- Growing congestion and heavy vehicles are impacting liveability in Melbourne's north-east
- Inefficient freight movements are impacting business
- Poor connections are constraining economic potential.

These problems are discussed in detail in Section 3.1.

Supporting a growing city requires strong transport connectivity for radial, cross city and orbital travel. While Melbourne has strong radial connectivity (to and from the CBD) that enables good central city access, other trips are not as well served by the transport network.

Since 1969, successive Victorian Governments have identified the need for a freeway standard road link through Melbourne's north-east to complete the city's orbital connection. Potential north-east orbital routes have been identified in:

- Victorian Government (1969), Melbourne Transportation Plan
- Victorian Government (1974), F35 Study: Eastern Freeway – Ringwood to Greensborough
- Victorian Government (1979), Outer Ring Study, Diamond Creek to Ringwood: Technical Report: Transport and Economic Evaluation
- Victorian Government (2008), Investing in Transport (the Eddington Study)
- Victorian Government (2008), Victorian Transport Plan.

More recently, in 2016, North East Link was identified as Victoria's next priority road project in Infrastructure Victoria's 30-year strategy, which sets out a pipeline of initiatives to be delivered over the next three decades to help create the best possible future for the State of Victoria. The strategy undertook a high-level analysis and nominated North East Link as a short-to-medium-term project that would enhance access to major employment centres and improve the capacity of the freight network.

*Plan Melbourne*, Melbourne's Metropolitan Planning Strategy, sets out a vision for Melbourne through to 2050. Three underlying principles of this Plan are:

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<sup>1</sup> Victorian Planning Authority (2012) *Growth Corridor Plans – Managing Melbourne's Growth*

- To create a more globally connected and competitive Melbourne by increasing the number and diversity of jobs closer to where people live
- To facilitate social and economic participation
- To establish liveable communities and create 20-minute neighbourhoods so that people can access a range of local services and facilities, ideally within 20 minutes of home.

In the context of a more connected Melbourne, *Plan Melbourne* sets out strategies to meet the objective of providing an integrated transport system connecting people to jobs and services and goods to market. *Plan Melbourne* identifies North East Link as a key transport infrastructure strategy to improve the efficiency of the motorway network and fill the missing link between the north and south-east of metropolitan Melbourne.

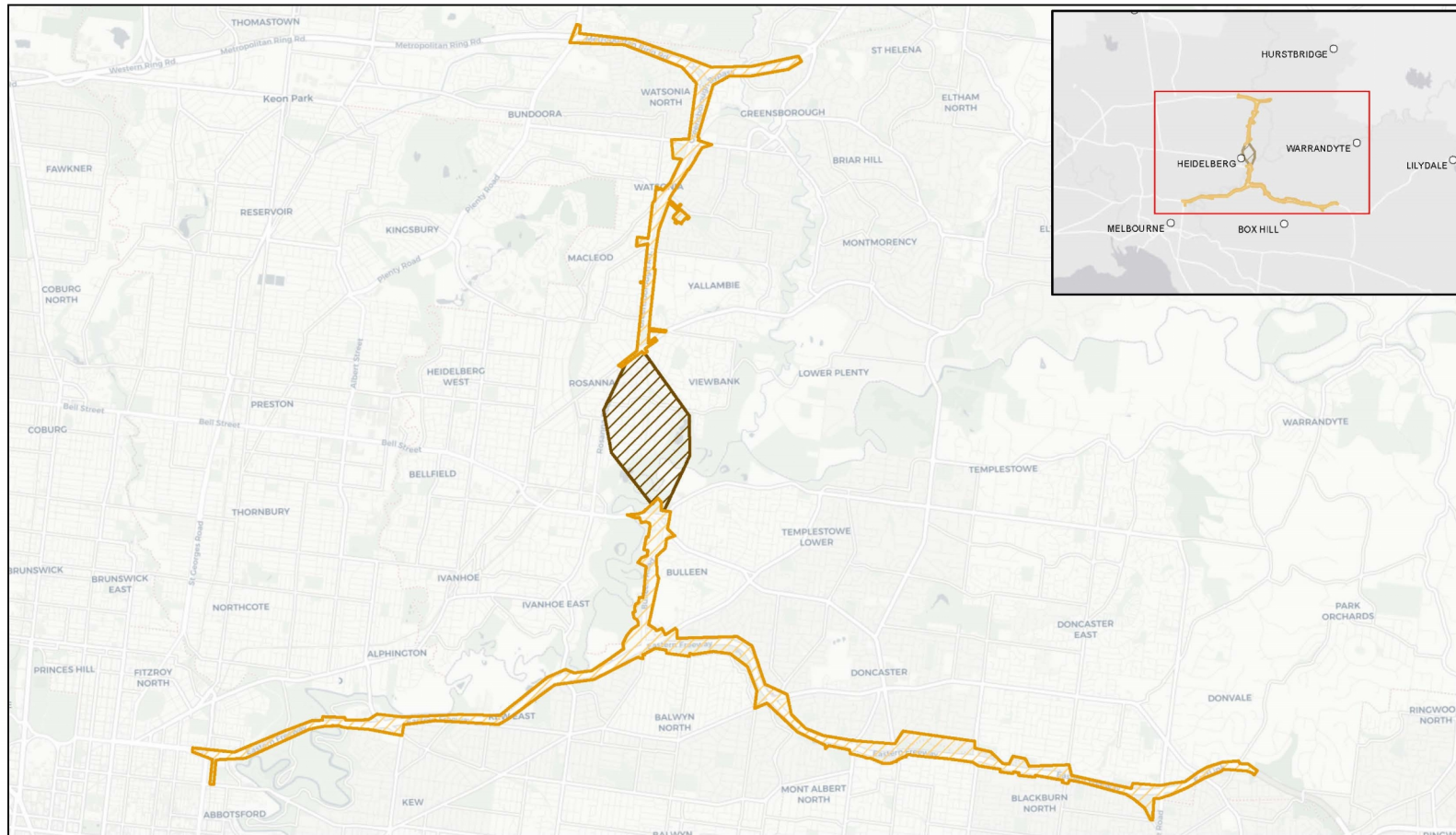
Deferring investment in the north-east road network is not considered a viable option. To address the issues noted above, the Victorian Government has committed funding of \$100 million to complete the Business case, design, planning and preconstruction works for North East Link prior to contract award for its delivery.

### 2.3 Project benefits

The anticipated benefits of the project are:

- **Economic growth** – providing a fast, reliable and direct orbital connection to key employment areas in the north, east and south-east will attract more investment in these areas and improve the ability of businesses to access skilled workers, participate in supply chains and share inputs, ideas and innovation.
- **Increased economic opportunity for households in the north, east and south-east** – improved accessibility will give residents more job choices and more options for working closer to home, boost income levels and support the development of ‘employment rich’ suburban hubs that can generate new economic opportunities from Melbourne’s expanding services sectors.
- **Improved competitiveness of the State** – greater orbital connectivity will allow improvements and efficiencies in freight movements and supply chains, which will flow through to reduced business costs and lower consumer prices and deliver productivity benefits across the Melbourne and Victorian economies.
- **Improved liveability and thriving communities in the north-east** – decreased reliance on local and arterial roads as key orbital routes through Melbourne’s north-east will boost amenity in these areas through reduced noise pollution, improved air quality, safer local roads, less time lost sitting in traffic and better connections to local destinations.





<p>Paper Size A4</p> <p>0 650 1,300 2,600</p> <p>Meters</p>		<p><b>LEGEND</b></p> <p> Project Boundary</p> <p> Indicative Tunnel Alignment</p>		<p>North East Link Authority North East Link Project</p>	<p>Job Number   31-35006 Revision   0 Date   08 Jan 2018</p>
			<p>Project Outline Boundary</p>		

**Figure 1 Project boundary**

## 3. Project rationale

### 3.1 Strategic context

Over the last 50 years, Melbourne has experienced major changes in its population, economic structure and spatial organisation. These changes have been central to the city's success, but have also created numerous challenges. Developing effective policies and smart investments to address these challenges requires a clear understanding of their causes, effects and interconnectedness.

Key major economic and liveability problems to be addressed by the project, and discussed in the sections below, are:

- Growing congestion and heavy vehicles using arterial roads for through movements, impacting liveability in Melbourne's north-east
- Inefficient freight movements are impacting business
- Poor connections are constraining economic potential.

If current conditions remain unchanged, ongoing fragmentation of labour markets, poor business-to business travel and diminished levels of employment access will continue to impose costs on businesses and households, and constrain productivity growth and competitiveness for Melbourne and Victoria.

#### 3.1.1 Growing congestion and heavy vehicles are impacting liveability in Melbourne's north-east

Between Melbourne's west and north, orbital movements are facilitated via the M80, which runs from the Princes Freeway in Altona to the Greensborough Bypass in Greensborough. Movements between the east and south-east are enabled by the EastLink tollway, which traverses the outer eastern suburbs between Donvale and Seaford. Unlike these other parts of Melbourne, the limited arterial road network in Melbourne's north-eastern suburbs has to cater to a range of both local and orbital movements, including commuter and business traffic, heavy freight vehicles, buses and active transport. All of these routes are operating at or well above their capacity, which is resulting in longer and less predictable travel times.

Residents and workers in Melbourne's north-east overwhelmingly rely upon the road network for travel (either using private vehicles or buses). This reliance has become entrenched as traffic volumes on the outer suburban north-east arterial road network have grown over the past decade, compounding the issues of traffic congestion and delays, leading to high variability in trip duration, and unreliability.

The busiest locations on Melbourne's north-east arterial road network are typically at the bridge crossings of the Yarra River (Chandler Highway, Burke Road, Manningham Road, Fitzsimons Lane, and Kangaroo Ground-Warrandyte Road). Other heavily congested locations are Bell Street, Banksia Street, Rosanna Road, Greensborough Road, Diamond Creek Road and Main Road. An arterial road typically carries 800 to 900 vehicles per hour in peak periods<sup>2</sup>. A number of the roads in Melbourne's north-east carry in excess of 1,000 vehicles per lane, leading to significant congestion, delay and poor reliability.

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<sup>2</sup> NELA Traffic Survey 2017

Adding to these problems is the growing number of freight vehicles using arterial roads for through movements between the north and east or south-east. Traffic counts undertaken for North East Link identify that 7% of trips along Rosanna Road and 8% of trips along Fitzsimons Lane are commercial vehicle trips<sup>3</sup>. These freight movements are a significant factor in growing local traffic congestion and contribute to increased emissions and traffic noise.

### **3.1.2 Inefficient freight movements are impacting business**

The freight and logistics sector in Australia contributes between \$19 and \$23 billion or 8% to the State's local economic activity<sup>4</sup>. Freight moving between the north and south-east, accounts for 20% of all metropolitan freight volumes – or around 46 million tonnes<sup>5</sup>. Of this volume, 60% travels from the south-east to the north, while 40% moves from the north to the south-east<sup>6</sup>. This also places additional pressure on other key routes across the network, with supply chains increasingly reliant on the M1 corridor, which is heavily congested for a large part of the day, and is increasingly susceptible to incidents.

The capacity issues on the arterial roads that cater for the movement of significant traffic volumes – including important cross city and orbital journeys – are exacerbated by the fact that many still provide a local access function. As a result, they often interface with numerous property accesses, priority intersections and signalised intersections. For example, vehicles travelling from the M80 to the Eastern Freeway via Rosanna Road must pass through 19 sets of signals over a six kilometre length of road. This means that road users encounter one set of traffic lights every 316 metres, resulting in 'stop/start' conditions and inconsistent travel speeds along the corridor.

Poor freeway connectivity through the north-east leads to significant inefficiencies (and associated costs) in the freight task between Melbourne's north and south-east.

### **3.1.3 Poor connections are constraining economic potential**

Businesses located in employment and service centres in Melbourne's major population areas in the north, east and south-east lack access to the large labour markets that underpin productivity and competitiveness. Movement between businesses in these areas and their customers and suppliers is constrained, putting them at a disadvantage. Workers are restricted in accessing employment opportunities across the metropolitan area, which disproportionately affects lower income households and entrenches social and housing market divisions.

Melbourne's population centre now lies to the east of the central city, between the middle northern and south-eastern suburbs. However, compared to the central city, these areas have a much smaller accessible labour market catchment. For example, only 5% of Melbourne's total workforce is accessible to the La Trobe National Employment and Innovation Cluster (NEIC) within 60 minutes by public transport in the morning peak period. The Monash NEIC, which has greater train and bus accessibility, fares slightly better: 13% of the city's workforce can get to the centre within one hour by public transport<sup>7</sup>. This suggests that businesses located in these NEICs may face difficulties in attracting and retaining workers, and building the skilled workforce necessary to life their levels of productivity.

<sup>3</sup> NELA Traffic Survey 2017

<sup>4</sup> Infrastructure Australia (2015) *Australian Infrastructure Audit*

<sup>5</sup> XAct Solutions (2017) *North East Link Needs Assessment*

<sup>6</sup> XAct Solutions (2017) *North East Link Needs Assessment*

<sup>7</sup> Analysis of VLC Zenith Model – Preliminary modelling for North East Link

Fast and reliable transport connections between businesses and their customers and suppliers are critical to keeping transport costs down and boosting business productivity. With no direct orbital connection, business trips to Melbourne Airport from the east and south-east are also taking longer and are less reliable and more expensive. For people accessing economic opportunities across Melbourne, the number of jobs available within a reasonable travel time diminishes significantly the further away one lives from the central city. As transport is the main means to reach employment and educational opportunities, barriers to travel can entrench disadvantage. Worsening orbital connectivity will exacerbate this disadvantage, making it even harder for households in the north, north-east and south-east to access economic opportunities.

### 3.2 Project objectives

North East Link has a strong focus on supporting business and jobs growth in Melbourne's north, east and south-east, while also improving cross-city connectivity and helping to address critical traffic, freight and amenity issues.

High level project objectives reflecting this focus have been established for the project:

**Table 3-1 Project objectives for North East Link**

Project Objectives			
<b>Objective 1</b> Improve business access and growth in Melbourne's north, east and south-east	<b>Objective 2</b> Improve household access to employment and education in Melbourne's north, east and south-east	<b>Objective 3</b> Improve freight and supply chain efficiency across the north, east and south-east	<b>Objective 4</b> Improve access, amenity and safety for communities in the north-east

## 4. Project description

The design presented in this section was developed to inform the Business case and assessment of the project against the project objectives and guiding principles.

The concept design will undergo further development and assessment in consultation with relevant stakeholders and the community to develop a reference design for the project. This process may involve assessment of variations or options to certain project elements to inform project approvals.

### 4.1 Proposed works

North East Link proposed works are detailed below:

#### M80 Ring Road to Lower Plenty Road

Works within the M80 to Lower Plenty Road section of the project would include widening of the M80 Ring Road from Plenty Road to the Greensborough Bypass, and provision of a new interchange at the existing Greensborough Bypass, providing connectivity to and from North East Link in all directions. Minor works may occur on the existing Greensborough Bypass through to Diamond Creek Road and may include bridge strengthening at the Plenty River bridge.

South of the M80 and extending to Watsonia Station, the existing Greensborough Bypass would likely be upgraded to become North East Link. Separate local roads would be provided to the east (generally southbound) and west (generally northbound) of North East Link, providing local connectivity to and from the M80, Greensborough Bypass, North East Link, Grimshaw Street, Watsonia Station and selected local roads.

South of Watsonia Station, North East Link would diverge to the east of the existing Greensborough Bypass, and would likely dive down into an open cut trench structure. To maintain connectivity of the local road network, bridges would be provided across the trench at various locations.

#### Tunnels

The northern tunnel portal would likely be in the vicinity of Erskine Road and Coleen Street, and the driven tunnels would likely start just north of Lower Plenty Road.

An interchange at or near Lower Plenty Road would provide connectivity to and from North East Link in all directions.

Between Lower Plenty Road and Bridge Street, North East Link would include twin three lane bored tunnels running in a generally north-south orientation. The tunnels would travel under the residential area to the south of Lower Plenty Road, Banyule Flats, the Yarra River, Yarra Valley Country Club, the grounds of Heide Museum of Modern Art and Banksia Park.

At each tunnel portal, supporting tunnel infrastructure would be required, including ventilation structures, water treatment plants, deluge tanks, substations, and associated infrastructure.



Bridge Street to  
Eastern Freeway

Within the Bridge Street to Eastern Freeway section of the project, North East Link would be constructed as open cut and bored or mined tunnel. An interchange at Manningham Road would provide connectivity to and from North East Link in all directions.

The southern tunnel portal would likely be located south of the Veneto Club. Further south, North East Link would comprise a new road at surface level and viaduct structure to connect into the Eastern Freeway via a new interchange.

Eastern Freeway  
Upgrades

North East Link would provide new dedicated bus lanes along the Eastern Freeway, the Doncaster Busway, from around the Victoria Park precinct (near Hoddle Street) to Doncaster Road, creating an uninterrupted path for bus services travelling between the eastern suburbs and the City.

Currently there are two options being considered for connection of the new bus lanes into the existing network near the Victoria Park precinct. This includes an option starting near Victoria Park Station, where dedicated bus lanes would travel on a new viaduct structure over the Eastern Freeway and on to the existing freeway median, travelling towards Burke Road. To accommodate the new bus lanes, a new bridge structure would also be required over Merri Creek.

The second option is for the bus lanes to travel along the freeway shoulders from Hoddle Street before passing over the Eastern Freeway on new viaduct structures east of Merri Creek and on to the existing median, travelling towards Burke Road.

In both options, the bus lanes east of Burke Road would cross over the freeway on a new viaduct structure to the northern side of the freeway adjacent to the new Bulleen Road / Eastern Freeway interchange. The bus lanes would cross Bulleen Road and North East Link interchange via a new underpass. East of Bulleen Road, the bus lanes would be at surface level on the northern side of the Eastern Freeway through to Doncaster Road.

Eastern Freeway works would also include widening from around Chandler Highway in the west, to around Springvale Road in the east. The widening would consist of an additional one to four lanes in various locations and in each direction. Widening would likely take place on both sides of the freeway and in the median.

Widening is likely to occur at-grade for the most part although reconstruction of some bridge structures would likely be required. The widening works may also involve covering parts of Koonung Creek with new structures and/or converting sections of the existing open creek to culverts.

In addition to the works described above, other works that would occur include: provision of new shared use paths; replacement and adjustments to noise walls; installation of new noise walls in some sections where they don't currently exist; and reconstruction of traffic signs and gantries.

A series of temporary ancillary worksites would be required along the alignment to facilitate construction activities. These would generally be located within areas of low ecological sensitivity within the project boundary, to the extent practicable. Worksites established outside

of the project boundary would be subject to their own approvals, if required. Their use and rehabilitation may be staged to minimise impacts on local amenity and to reduce impacts on pedestrian and traffic movements.

## 4.2 Excluded works

Certain works are excluded from the North East Link 'public works' declaration. Such works will be carried out in accordance with applicable planning and environmental laws and any approvals required. The following works and activities are excluded from the 'public works' declaration:

- works and activities associated with designing and investigating North East Link and assessing its impacts, including geotechnical and environmental investigations, site surveys, and assessments
- establishing the location and assessing the integrity of existing utilities and services.

These works and activities are required to inform the assessment process for North East Link and the further design of the project.

## 4.3 No-go zones

Impacts at a number of sensitive areas near to the project would be avoided through the designation of no-go zones where surface works would not be permitted as part of the project. Preliminary investigations and consultation with stakeholders has identified the following areas as no-go zones (see Figure 2):

- A vegetation offset area near the intersection of M80 and Plenty Road
- Bolin Bolin Billabong, located between Bulleen Road and the Yarra River
- Flying Fox campsite at Yarra Bend, protected under the Flying-Fox Campsite Management Plan.

A tunnel is proposed beneath the Banyule Flats and the Yarra River and its associated floodplain, as well as the Heide Museum of Modern Art and sculpture park, to avoid surface impacts at these locations. These areas are included within a designated 'conditional no-go area' where surface works would not be permitted as part of the project with the possible exception of activities relating to site investigations, relocation of minor utilities and ground improvement.

## 4.4 Project schedule and delivery

Indicative timings for North East Link are:

2017-2018

- Business case preparation
- Project concept design
- Community and stakeholder consultation
- Project Outline and submission to the Minister for Planning
- Public Works declaration by the Minister for Planning
- Development of project reference design

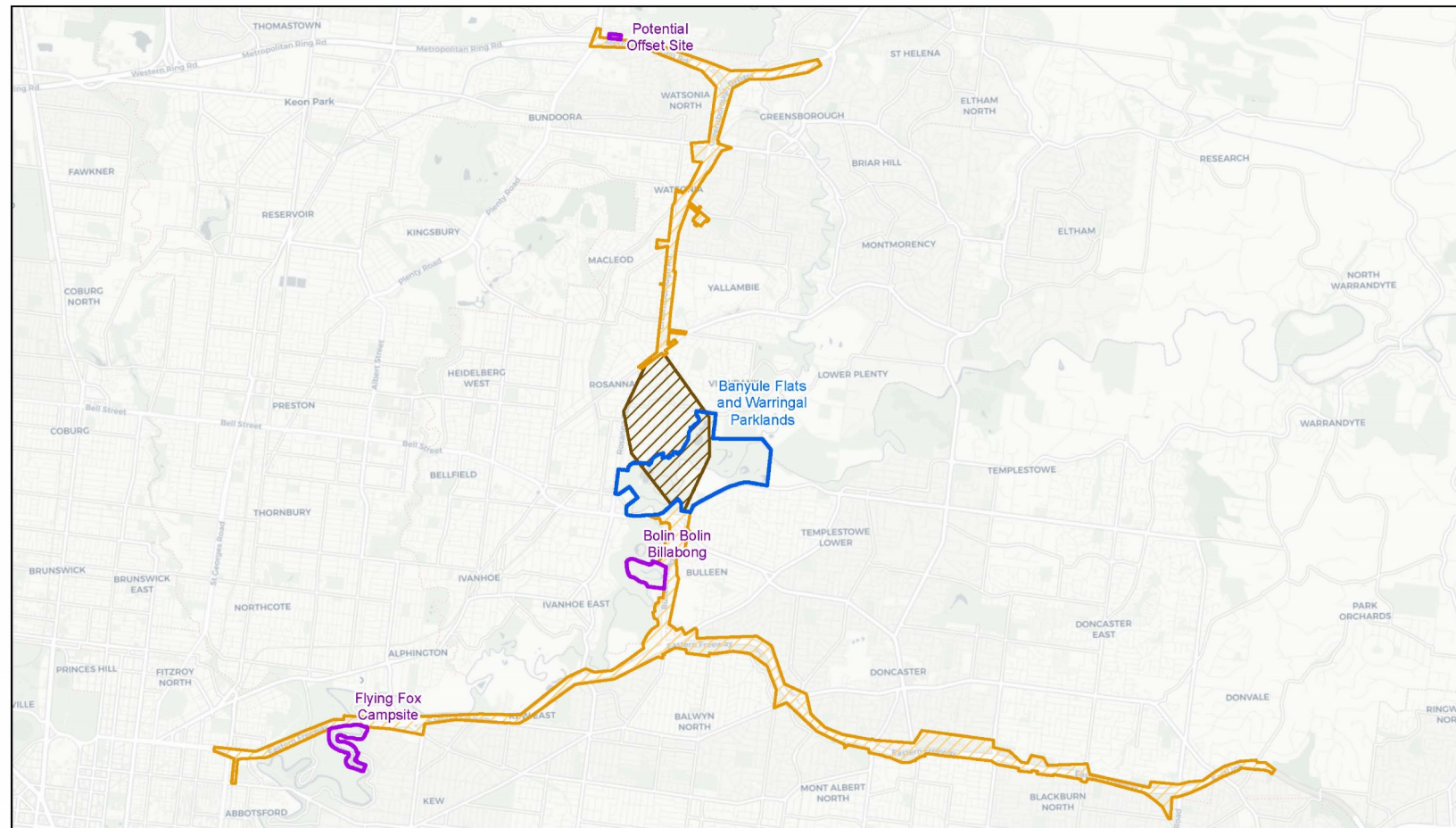
- Draft Scoping Requirements on Public Exhibition
- Scoping Requirements issued by the Minister for Planning
- Preparation of environmental impact assessment and planning documentation.
- Start of procurement process

#### 2019-2020

- EES exhibition and inquiry (if required)
- Completion of planning and environmental assessment
- Decision on environmental assessment and obtaining approvals
- Completion of procurement process for project delivery
- Contract award and commencement of construction.

The project is expected to be operational by 2027.





Paper Size A4  
 0 500 1,000 2,000  
 Meters  
 Map Projection: Transverse Mercator  
 Horizontal Datum: GDA 1994  
 Grid: GDA 1994 MGA Zone 55



LEGEND	
	Conditional No Go Zone Area
	No Go Zone Area
	Project Boundary
	Indicative Tunnel Alignment



North East Link Authority  
 North East Link Project

Job Number | 31-35006  
 Revision | 0  
 Date | 08 Jan 2018

NEL No go zones

Figure 2 No-go zones

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## 5. Relevant legislation

### 5.1 Commonwealth legislation

A referral has been submitted to the Commonwealth Department of Environment and Energy under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) for a determination of whether or not North East Link is a 'controlled action' that requires assessment and approval under the EPBC Act.

As part of the proposed action is within Commonwealth land, in the event that the action is determined to be a controlled action, then the Victorian Bilateral Agreement may not apply. Notwithstanding, the EES assessment process could be separately accredited under the EPBC Act for the purposes of assessing the project, as was the situation before the Victorian bilateral agreement came into effect. In the event that the EE Act process is not accredited, the assessment approach would be determined, and the project assessed, by the Department of Environment and Energy. Under this scenario, the required Commonwealth and Victorian approvals would be sought separately.

### 5.2 State approvals

The project will require a number of approvals or consents under Victorian legislation, including:

- Planning scheme amendment(s) and planning permits (if required) under the *Planning and Environment Act 1987*
- Works Approval under the *Environment Protection Act 1970*
- Permit for the removal of listed flora and and/or fauna under the *Flora and Fauna Guarantee Act 1988*
- Permits and consents under the under the *Heritage Act 2017*
- Consents under the *Road Management Act 2004* for freeway connections, works and/or advertising signs on a road
- Consents and licenses to undertake works near waterways under the *Water Act 1989*
- An approved Cultural Heritage Management Plan under the *Aboriginal Heritage Act 2006*.

In addition to the above, the key principles that underpin the development of the Victorian transport system are enshrined in the *Transport Integration Act 2010*. The approval process for North East Link will need to consider consistency with the policies, objectives and decision making principles of the *Transport Integration Act 2010*.

# 6. Preliminary Issue Identification and Response

## 6.1 Approach to issue identification

The potential environmental, social and economic impacts of the project have been broadly identified using the following:

- Preliminary scoping investigations, discussions with experienced technical specialists and fieldwork where relevant
- Preliminary discussions with key stakeholders such as the cities of Banyule, Manningham, Boroondara, Whitehorse, and Yarra, Nillumbik Shire, Melbourne Water, Parks Victoria, EPA Victoria, Aboriginal Victoria, the Wurundjeri Tribe, Heritage Victoria, VicRoads and the Victorian Planning Authority
- Early engagement with the community through online forums, surveys, videos and interviews, face to face, phone and email discussions
- Relevant legislation, policy and guidelines that apply to the project, primarily the statutes listed in Section 5.

## 6.2 Initial characterisation of impacts

The project is expected to have a range of positive and adverse effects. The initial characterisation of impacts has focused on the potential adverse effects which would require investigation and assessment as part of the EES.

The scale, magnitude and duration of potential effects of the project have initially been categorised as presented in Table 6-1.

**Table 6-1 Characterisation of impacts**

Extent	Local Municipality Corridor Wider region
Magnitude of impact	<p><b>HIGH:</b> Impacts on an environmental asset, value or use of high significance which requires specific measures to avoid or mitigate adverse impacts</p> <p><b>MEDIUM:</b> Impacts on an environmental asset, value or use of medium significance where standard measures or responses may be suitable to avoid or mitigate adverse impacts</p> <p><b>LOW:</b> Impacts on an environmental asset, value or use of low significance where standard measures are available to avoid or mitigate adverse impacts.</p>
Duration	Short term construction (0 – 2 years) Long term construction (2 – 8 years) Permanent (8+ years)

Each potential effect was then screened to establish the extent of risk and further investigation required for each effect.

The screening process adopted the hierarchy in Table 6-2 to prioritise investigations.

**Table 6-2 Hierarchy for prioritisation of issues for investigation**

Priority	Criteria
<b>A</b>	<ul style="list-style-type: none"> <li>Potential for <b>high</b> environmental, social and economic impacts/effects or where the <b>complexity of mitigation is either medium or high</b>. Standard management measures may not be suitable for these impacts/effects, and the objective is to avoid these impacts through project design where feasible and/or</li> <li>Level of understanding of the magnitude of potential adverse effects may not at this stage be sufficient to fully characterise the likelihood and consequences of the impacts or inform the appropriate mitigation response.</li> </ul>
<b>B</b>	<ul style="list-style-type: none"> <li>Potential for environmental, social and economic impacts/effects of <b>moderate</b> significance.</li> <li>Impacts/effects may be managed by standard or routine management measures. These management measures are considered to be of <b>medium or low complexity</b>. Standard management measures could be suitable, but attempts will be made to avoid these impacts/effects through project design where feasible. and/or</li> <li>Level of understanding of the magnitude of the potential adverse effects is generally sufficient to characterise the likelihood and consequences of the impacts and inform the appropriate mitigation response.</li> </ul>
<b>C</b>	<ul style="list-style-type: none"> <li>Potential environmental, social and economic impacts/effects which are routinely managed on large projects and have a <b>low significance</b>.</li> <li><b>Standard management measures</b> are suitable and can be incorporated into Environment and other Management Frameworks to achieve compliance with policy and regulatory requirements. and/or</li> <li>Level of understanding of the magnitude of the potential adverse effects is sufficient to characterise the likelihood and consequences of the impacts and inform the appropriate mitigation response.</li> </ul>

## 6.3 Preliminary mitigation framework

### 6.3.1 Environmental Management Framework

The mitigation of actual or potential adverse impacts associated with any infrastructure project typically takes place within an overarching Environmental Management Framework (EMF). This framework typically involves the following:

- The statutory approvals and consents that would influence the specific elements of various Environmental Management Plans (EMPs) and measures
- The environmental management measures committed to by the proponent through the assessment and approvals process, and consultation with stakeholders, including commitments to mitigate adverse effects and enhance environmental performance
- A proposed programme for evaluating and auditing environmental outcomes as well as reviewing, revising and auditing compliance with EMPs
- Arrangements for the management of baseline and monitoring data in order to ensure transparency and accountability in the environmental management of the project
- Environmental management objectives, performance requirements and indicators to guide environmental monitoring and management actions.

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### **6.3.2 Environmental Performance Requirements**

A set of Environmental Performance Requirements (EPRs) will be developed for the project during detailed assessment to define the minimum environmental outcomes that must be achieved for design, construction and operation of the project.

The EPRs will define the environmental outcomes to be achieved regardless of the design solution delivered. The objective of this type of performance-based approach is to set the requirement to achieve outcomes that avoid, mitigate or manage potential environmental impacts of the project, while allowing flexibility in the detailed design response or specific measures to be put in place to achieve the desired outcomes.

The EPRs are not intended to be prescriptive in how the outcomes are to be achieved, but rather set out an approach for project delivery that is flexible and encourages innovation to develop strategies and use best practice methodologies and technologies in order to implement and achieve the EPRs.

Should it be determined that an EES is warranted, specialist studies to inform the preparation of the EES (refer Section 7) will be based on a reference design. During detailed design the project's design would be further developed and refined suitable for construction. However, all refinements would need to satisfy, and where relevant implement the project's EPRs and all permanent works would need to be contained within the project boundary.

The EPRs will require a number of key management plans to be prepared including:

- Construction Environmental Management Plan (CEMP)
- Operation Environmental Management Plan (OEMP)
- Community and Stakeholder Engagement Management Plan (CSEMP)
- Sustainability Management Plan
- Cultural Heritage Management Plan (CHMP)
- Transport Management Plan (TMP).

In addition, the EPRs will require development of plans or protocols to address key issues such as (but not limited to):

- Construction Noise and Vibration Management
- Dust and Air Quality Management & Monitoring
- Ground Movement
- Groundwater Management
- Landscaping
- Spoil Management Plan
- Tree Protection.

### **6.3.3 Urban Design Strategy**

An Urban Design Strategy (UDS) will be prepared to provide urban design guidance for the design, procurement and implementation of North East Link. It will ensure the project's visual and landscape impacts are addressed in a way that maximises the project's positive contribution to the places within the corridor.

The document will establish urban design principles and objectives which will guide the design of the project and ensure that interventions result in a high quality public domain, which enhances physical and visual amenity and minimises adverse impacts.

#### **6.3.4 Sustainability**

Planning for North East Link will include a focus on sustainability across the core sustainability themes of environment, society/community and economy. As the project progresses from the design and procurement phases through to the construction and operation phases, it would be guided by a Sustainability Management Plan. The Infrastructure Sustainability Council of Australia's Infrastructure Sustainability Rating Tool will be used to measure the implementation of sustainability measures in the development and delivery of the project.

The Sustainability Management Plan will set out how NELA will embed sustainability into the design process and management systems associated with various aspects of the North East Link. It will define sustainability commitments relevant to the project and NELA's approach to implementing, managing and measuring these commitments.



**Table 6-3 Preliminary identification of potentially significant effects**

Key issue / effect	Significance of effect			Assessment response	Prelim. mitigation methods	Complexity of mitigation	Investigation priority
	Extent	Magnitude of impact	Duration (years)				
<b>1. Land Use</b>							
1.1 Permanent changes to existing residential and community land uses	Corridor	High	8+	Assessment of the land use impacts arising from the complete or partial permanent acquisition of buildings and land through the land use impact assessment	Design/ UDS/ EMF	High	A
1.2 Temporary changes to existing community land uses	Corridor	High	2-8	Assessment of the land use impacts arising from the complete or partial temporary acquisition of buildings and land through the land use impact assessment	Design/ UDS/ EMF	High	A
1.3 Permanent changes to existing commercial and industrial land uses	Municipality	High	8+	Assessment of the impact of permeant acquisition and subsequent rehabilitation of commercial and industrial land through the land use impact assessment	Design/ UDS/ EMF	High	A
1.4 Temporary change to commercial and industrial land during construction	Municipality	Medium	0-2	Assessment of the impact of temporary occupation and subsequent rehabilitation of commercial and industrial land through the land use impact assessment	Design/ UDS/ EMF/ TMP	Medium	B
1.5 Permanent changes to the development potential in the vicinity of the project boundary	Corridor	Medium	8+	Assessment of impacts on the redevelopment potential through the land use impact assessment	Design/ UDS/ EMF	Medium	B
1.6 Temporary changes to development potential in the vicinity of the project boundary during construction	Corridor	Medium	2-8	Assessment of impacts on the redevelopment potential through the land use impact assessment	Design/ UDS/ TMP	Medium	B

Key issue / effect	Significance of effect			Assessment response	Prelim. mitigation methods	Complexity of mitigation	Investigation priority
	Extent	Magnitude of impact	Duration (years)				
<b>2. Business</b>							
2.1 Displacement of businesses due to acquisition of commercial or industrial land	Municipality	High	8+	Assessment of impacts to businesses as a result of complete or partial acquisition of land through the business and social impact assessments	Design/ EMF	High	A
2.2 Permanent changes to the environment for businesses adjacent to the project boundary (including changes to access and amenity)	Corridor	Medium	8+	Assessment of impacts to businesses during the operation of the project through the business and social impact assessments  Impacts on access and connectivity also to be considered in the transport impact assessment	Design/ UDS/ EMF	Medium	B
2.3 Temporary changes to the environment for businesses adjacent to the project boundary (including changes to access and amenity) during construction	Corridor	Medium	2-8	Assessment of impacts to businesses during the construction of the project through the business and social impact assessments	EMF/ TMP	Medium	B
2.4 Permanent changes to employment access and opportunities	Wider region	Low	8+	Assessment of long term impacts to employment access and opportunities through the business and social impact assessments	Design/ EMF	Low	C
2.5 Temporary changes to employment access and opportunities	Wider region	Medium	2-8	Assessment of short term impacts to employment access and opportunities through the business and social impact assessments	EMF/ TMP	Low	B
<b>3. Social and community</b>							
3.1 Displacement of residents due to acquisition of properties or changes in access	Corridor	High	8+	Assessment of the impact to residents arising from the acquisition of properties and changes in access arising from project operation through the social and land use impact assessments	Design/ EMF	High	A



Key issue / effect	Significance of effect			Assessment response	Prelim. mitigation methods	Complexity of mitigation	Investigation priority
	Extent	Magnitude of impact	Duration (years)				
3.2 Permanent loss of passive open space	Corridor	High	8+	Assessment of impacts on open space through the social, land use planning, urban design and landscape and visual impact assessments	Design/ UDS/ EMF	High	A
3.3 Temporary loss of passive open space	Corridor	Medium	2-8	Assessment of impacts on open space through the social, land use planning, urban design and landscape and visual impact assessments	Design/ UDS/ EMF	Medium	B
3.4 Permanent loss or reduced function of community or recreation facilities	Municipality	High	8+	Assessment of impacts on community and recreation facilities through the social, land use planning, urban design and landscape and visual impact assessments	Design/ UDS/ EMF	High	A
3.5 Temporary loss or reduced function of community or recreation facilities	Municipality	High	0-2	Assessment of impacts on community and recreation facilities through the social, land use planning, urban design and landscape and visual impact assessments	Design/ UDS/ EMF/ TMP	Medium	A
3.6 Permanent changes to amenity associated with noise, air quality or visual outlook from residences and the public realm	Corridor	High	8+	Assessment of amenity impacts through the social, transport impact, noise and vibration, air quality, urban design and landscape and visual impact assessments	Design/ UDS/ EMF	High	A
3.7 Temporary changes to amenity associated with noise, air quality or visual outlook from residences and the public realm	Corridor	Medium	2-8	Assessment of amenity impacts through the social, transport impact, noise and vibration, air quality, urban design and landscape and visual impact assessments	Design/ UDS/ EMF/ CEMP	Medium	B

Key issue / effect	Significance of effect			Assessment response	Prelim. mitigation methods	Complexity of mitigation	Investigation priority
	Extent	Magnitude of impact	Duration (years)				
3.8 Amenity and safety changes associated with the re-distribution of heavy vehicle traffic	Wider region	Medium	8+	Assessment of amenity and safety impacts through the social, transport impact and noise, vibration and air quality impact assessments	Design/ EMF	Medium	B
<b>4. Traffic and transport</b>							
4.1 Implications of permanent re-distribution of heavy vehicle traffic on the local road network	Wider region	High	8+	Assessment of the impacts on the re-distribution of traffic through the network, through the transport impact assessment	Design/ EMF	Medium	A
4.2 Implications of the reconfiguration of local street network and pedestrian networks or links	Wider region	Medium	8+	Assessment of local impacts on connectivity and accessibility through the transport impact assessment	Design/ EMF/ UDS	Medium	B
4.3 Permanent changes to local pedestrian, cycling and public transport connectivity and accessibility	Wider region	High	8+	Assessment of the impacts of permanent road changes on the surface transport network for private and public transport and pedestrian movements through the transport impact assessment	Design/ EMF/ UDS	High	A
4.4 Permanent changes to public transport services	Wider region	Medium	8+	Assessment of the impacts of permanent road changes on the surface transport network for public transport through the transport impact assessment	Design/ EMF	High	A
4.5 Implications of construction vehicle movements including spoil transport for local street networks, accessibility and connectivity	Corridor	Medium	2-8	Assessment of the impacts of temporary modifications to the existing transport network during construction through the transport impact assessment	EMF/ TMP	Medium	B

Key issue / effect	Significance of effect			Assessment response	Prelim. mitigation methods	Complexity of mitigation	Investigation priority
	Extent	Magnitude of impact	Duration (years)				
4.6 Implications of construction activity including spoil transport for local pedestrian, cycling and public transport connectivity and accessibility	Wider region	Medium	2-8	Assessment of the impacts of construction road changes on the surface transport network for private and public transport and pedestrian movements through the transport impact assessment	EMF/ TMP	Medium	B
<b>5. Aboriginal cultural heritage</b>							
5.1 Changes to intangible Aboriginal values	Corridor	Medium	8+	Assessment of impacts on known and unknown sites of Aboriginal heritage arising from construction and operation activities through the Aboriginal cultural heritage impact assessment	Design/ CHMP/ UDS	High	A
5.2 Disturbance or destruction of registered Aboriginal cultural heritage places	Corridor	Medium	8+	Assessment of impacts on known sites of Aboriginal heritage arising from construction activities through the Aboriginal cultural heritage impact assessment	Design/ CHMP/ UDS CEMP	Medium	B
5.3 Disturbance or destruction of unknown Aboriginal cultural heritage	Corridor	Medium	8+	Assessment of impacts on unknown sites of Aboriginal heritage arising from construction activities through the Aboriginal cultural heritage impact assessment	CHMP/ CEMP	Medium	B
<b>6. Historical heritage</b>							
6.1 Permanent changes to historical heritage values associated with proximity to new built form (elevated structures, tunnel ventilation structures, portals etc.)	Corridor	Medium	8+	Assessment of impacts on known and unknown sites of historical heritage through the historical heritage impact assessment	Design/ UDS/ EMF	Medium	B

Key issue / effect	Significance of effect			Assessment response	Prelim. mitigation methods	Complexity of mitigation	Investigation priority
	Extent	Magnitude of impact	Duration (years)				
6.2 Temporary changes to historical heritage values associated with construction infrastructure	Corridor	Medium	0-2	Assessment of impacts on known and unknown sites of historical heritage through the historical heritage impact assessment	UDs/ EMF/ CEMP	Low	B
6.3 Vibration and subsidence impacts on heritage structures	Municipality	Medium	0-2	Assessment of potential damage from vibration and subsidence to historical heritage buildings and structures or known and unknown places of historical heritage through the historical heritage and ground movement impact assessments	Design/ EMF/ CEMP	Low	B
6.4 Full or partial disturbance or removal of historical heritage places	Corridor	Medium	8+	Assessment of impacts on known and unknown places of historical heritage through the historical heritage impact assessment	Design/ UDS/ CEMP	Medium	B
<b>7. Landscape and visual</b>							
7.1 Visual changes to high quality landscapes within residential areas, community facilities, parks and reserves, shared use paths and roads due elevated structures, tunnel ventilation structures, noise walls, cuttings and other infrastructure	Corridor	High	8+	Assessment of impacts of elevated structures and tunnel ventilation structures on urban form, landscape and visual amenity through the landscape and visual impact assessment	Design/ UDS/ EMF	High	A
7.2 Temporary visual changes associated with construction activities and compounds including spoil management facilities	Corridor	Medium	2-8	Assessment of the impacts of construction activities on landscape and visual amenity values through the landscape and visual impact assessment	Design/ UDS/ EMF/ CEMP	Low	B
7.3 Alteration, removal or severance of public open space, landscape buffers and vegetation	Corridor	Medium	8+	Assessment of the impacts on public open space, landscape buffers and vegetation through the land use and the landscape and visual impact assessment	Design/ UDS/ EMF	High Medium	A

Key issue / effect	Significance of effect			Assessment response	Prelim. mitigation methods	Complexity of mitigation	Investigation priority
	Extent	Magnitude of impact	Duration (years)				
7.4 Overshadowing of residential areas, vegetation and public spaces	Corridor	Medium	8+	Assessment of overshadowing through the landscape and visual impact assessment	Design/ UDS/ EMF	Medium	B
7.5 Overlooking from elevated structures to residential areas, community facilities and public spaces	Corridor	High	8+	Assessment of overlooking from elevated structures through the landscape and visual impact assessment	Design/ UDS/ EMF	High	A
7.6 Lighting impacts on residential areas, community facilities and public spaces	Corridor	Medium	8+	Assessment of lighting impacts through the landscape and visual impact assessment	Design/ UDS/ EMF CEMP	Low	B
<b>8. Ecology</b>							
8.1 Threats to populations of EPBC Act listed and state listed (FFG Act) aquatic species due to the disturbance or modification of fish passage	Corridor	Medium	8+	Assessment of impacts to fish species through the flora and fauna and surface water impact assessment	Design/ EMF/ CEMP	Medium	B
8.2 Threats to populations of EPBC Act listed and state listed (FFG Act) flora or fauna due to changes to surface water quality	Corridor	Low	8+	Assessment of impacts to habitat and listed species through the flora and fauna and surface water impact assessment	Design/ EMF/ CEMP	Medium	C
8.3 Shading of waterways and vegetation by elevated structures causing changes to habitat and/or vegetation	Municipality	Medium	8+	Assessment of impacts of shading through the flora and fauna impact assessment	Design/ EMF	Medium	B
8.4 Disturbance of native fauna by increased artificial light, noise or vibration	Corridor	Low	8+	Assessment of impacts to native fauna through the flora and fauna impact assessment	EMF/ CEMP	Low	C
8.5 Disturbance and/or removal of remnant vegetation and/or scattered trees	Corridor	Medium	8+	Assessment of impacts to remnant vegetation and scattered trees through the flora and fauna impact assessment	Design/ EMF CEMP	Medium	B

Key issue / effect	Significance of effect			Assessment response	Prelim. mitigation methods	Complexity of mitigation	Investigation priority
	Extent	Magnitude of impact	Duration (years)				
8.6 Removal of habitat for EPBC Act listed and state listed (FFG Act) aquatic flora and fauna	Municipality	Medium	8+	Assessment of impacts on habitat and listed species through the flora and fauna impact assessment	Design/ EMF/ CEMP	Medium	B
8.7 Removal of habitat for EPBC Act listed and state listed (FFG Act) terrestrial flora and fauna	Corridor	Medium	8+	Assessment of impacts on habitat and listed species through the flora and fauna impact assessment	Design/ EMF/ CEMP	Medium	B
8.8 Spread of weeds or pathogens due to construction	Corridor	Low	2-8	Assessment of impacts due to the spread of weeds or pathogens through the flora and fauna impact assessment	EMF/ CEMP	Low	C
8.9 Death or injury to fauna due to construction	Municipality	Low	2-8	Assessment of impacts to fauna through the flora and fauna impact assessment	EMF/ CEMP	Low	C
8.10 Groundwater drawdown causing changes to groundwater availability for ecosystems	Municipality	Medium	8+	Assessment of the impacts of construction and operation on groundwater movement through the groundwater impact assessment and the flora and fauna impact assessment	Design/ EMF/ CEMP	Medium	B
<b>9. Arboriculture</b>							
9.1 Removal of amenity plantings	Corridor	Medium	8+	Assessment of the impact on amenity plantings through the arboriculture and flora and fauna assessment	Design/ UDS/ EMF/ CEMP	Medium	B
<b>10. Soils and contamination</b>							
10.1 Disturbance of contaminated soil due to construction	Municipality	Low	0-2	Assessment of the potential for disturbing contaminated ground conditions through the contaminated land impact assessment	EMF/ CEMP	Low	C

Key issue / effect	Significance of effect			Assessment response	Prelim. mitigation methods	Complexity of mitigation	Investigation priority
	Extent	Magnitude of impact	Duration (years)				
10.2 Treatment, storage, reuse, transport and/or disposal of contaminated soil	Municipality	Low	0-2	Assessment of the impacts of the disturbance, excavation and disposal of contaminated soils through the contaminated soils impact assessment	EMF/ CEMP	Medium	C
10.3 Management, transport and disposal of asbestos-containing materials or other waste	Municipality	Medium	0-2	Assessment of the impacts of asbestos-containing materials through the contaminated soils impact assessment	EMF/ CEMP	Low	B
10.4 Management, disposal and transport of Potential Acid Sulphate Soils (PASS)	Corridor	Medium	0-2	Assessment of the impacts associated with PASS through the contaminated soils impact assessment	EMF/ CEMP	Low	B
10.5 Spills or leaks potentially affecting soil quality	Corridor	Low	2-8	Assessment of the impacts associated with spills or leaks during construction and operation through the contaminated soils impact assessment	EMF/ CEMP	Low	C
10.6 Release of vapours and/or ground gases from contaminated soil	Local	Low	0-2	Assessment of the impacts associated with the release of vapours and/or ground gases from contaminated soil through the contaminated soils impact assessment	EMF/ CEMP	Low	C
<b>11. Groundwater, ground movement and contamination</b>							
11.1 Handling and management of saline groundwater during construction and operation	Local	Low	8+	Assessment of the impacts of construction and operation on groundwater quality through the groundwater impact assessment	Design/ EMF/ CEMP	Low	C
11.2 Changes to groundwater quality due to spills or leaks during construction and operation	Local	Low	8+	Assessment of the impacts associated with accidental spills or leaks during construction and operation activity through the groundwater, contaminated land, and surface water quality impact assessments	EMF/ CEMP	Low	C

Key issue / effect	Significance of effect			Assessment response	Prelim. mitigation methods	Complexity of mitigation	Investigation priority
	Extent	Magnitude of impact	Duration (years)				
11.3 Mobilisation of existing contaminated groundwater due to the construction and operation of the project	Municipality	Low	8+	Assessment of the impacts of construction and operation on groundwater movement and through the groundwater impact assessment	EMF/ CEMP	High	B
11.4 Changes to hydraulic connectivity associated with construction of structures	Local	Low	8+	Assessment of the impacts of construction and operation on groundwater movement through the groundwater impact assessment	Design/ EMF/ CEMP	Low	C
11.5 Changes to groundwater availability or quality impacting users	Municipality	Low	8+	Assessment of the impacts of construction and operation on groundwater movement through the groundwater impact assessment	Design/ EMF/ CEMP	Low	C
11.6 Release of vapours from contaminated groundwater	Local	Low	0-2	Assessment of the impacts associated with the release of vapours from contaminated groundwater through the groundwater impact assessment	EMF/ CEMP	Low	C
11.7 Local subsidence due to dewatering associated with construction activity	Municipality	Low	0-2	Assessment of the impacts of construction on groundwater movement through the groundwater and ground movement impact assessment	EMF/ CEMP	Medium	B
11.8 Local subsidence due to deep excavations associated with tunnel works and long term operation	Municipality	Medium	8+	Assessment of the impacts of construction and operation on groundwater movement through the ground movement impact assessment	Design/ EMF/ CEMP	Medium	B
11.9 Construction activities in locations where there are folds, faults, dykes and fractures in the Silurian bedrock, which may give rise to instability around the tunnel headings and at portals	Municipality	Medium	0-2	Assessment of the impacts of construction on ground movement through the ground movement impact assessment	Design/ EMF/ CEMP	Medium	B



Key issue / effect	Significance of effect			Assessment response	Prelim. mitigation methods	Complexity of mitigation	Investigation priority
	Extent	Magnitude of impact	Duration (years)				
<b>12. Surface water</b>							
12.1 Changes to flood frequency due to built infrastructure	Corridor	High	8+	Assessment of the impacts on floodplains and storm water management through the surface water impact assessment	Design/ EMF	High	A
12.2 Diversion or obstruction of stormwater flow paths during construction causing inundation of properties	Corridor	High	2-8	Assessment of the impacts on floodplains and storm water management through the surface water impact assessment	EMF / CEMP	Medium	A
12.3 Flooding of the tunnel portals or cuttings	Local	High	0-2	Assessment of the impacts to project infrastructure arising from climate change and flood events through the surface water impact assessment	Design/ EMF	High	A
12.4 Changes to surface water quality due to construction and operation	Corridor	Medium	8+	Assessment of the impacts to water quality due to the construction and operation of the project and potential discharge of contaminants, through the contaminated land and surface water impact assessments	EMF/ CEMP	Low	B
12.5 Bed and or bank erosion of waterways due to construction works	Local	Low	0-2	Assessment of the impacts arising from construction activity on or near waterways through the surface water impact assessment	EMF/ CEMP	Low	C
<b>13. Noise and vibration</b>							
13.1 Changes to noise levels for communities associated with the redistribution of traffic due to operation	Wider region	High	8+	Assessment of the redistribution of traffic through the transport impact assessment and the associated noise impacts through the noise and vibration impact assessment	Design/ EMF	Medium	A
13.2 Noise associated with the operation of the tunnel ventilation system and structures	Local	Low	8+	Assessment of potential noise impacts of the ventilation system and structures through the noise and vibration impact assessment	EMF	Low	C

Key issue / effect	Significance of effect			Assessment response	Prelim. mitigation methods	Complexity of mitigation	Investigation priority
	Extent	Magnitude of impact	Duration (years)				
13.3 Noise and vibration from surface works during construction including handling of spoil	Corridor	High	2-8	Assessment of the construction noise and vibration impacts through the noise and vibration impact assessment	EMF/ CNVMP	Medium	A
13.4 Noise and vibration from tunnelling works	Municipality	Medium	0-2	Assessment of vibration impacts associated with tunnelling activity through the vibration and regenerated noise impact assessment	EMF/ CNVMP	Medium	B
13.5 Changes to noise levels for communities associated with the redistribution of traffic due to construction	Corridor	Medium	2-8	Assessment of the redistribution of traffic through the transport impact assessment and the associated noise impacts through the noise and vibration impact assessment	Design/ EMF	Medium	B
<b>14. Air quality</b>							
14.1 Changes in air quality associated the redistribution of traffic on surface roads during operation	Wider region	Medium	8+	Assessment of the redistribution of traffic through the transport impact assessment and the associated air impacts through the air quality impact assessment	Design/ EMF	Low	B
14.2 In-tunnel NOx and CO concentration and impact on road users	Local (in-tunnel)	High	8+	Assessment of in-tunnel NOx and CO concentration as part of the Works Approval Application	Design/ EMF	Medium	A
14.3 Changes in air quality associated with emissions from the tunnel ventilation structures	Wider region	Medium	8+	Assessment of the air quality impacts from tunnel ventilation structure through the air quality impact assessment	Design/ EMF	Low	B
14.4 Changes in air quality associated with the redistribution of traffic during construction	Corridor	Medium	2-8	Assessment of the redistribution of traffic through the transport impact assessment and the associated air impacts through the air quality impact assessment	EMF/ CEMP	Medium	B

Key issue / effect	Significance of effect			Assessment response	Prelim. mitigation methods	Complexity of mitigation	Investigation priority
	Extent	Magnitude of impact	Duration (years)				
14.5 Odour arising from the excavation of soil	Local	Low	0-2	Assessment of the potential for odour from construction activities through the air quality impact assessment	EMF/ CEMP	Low	C
14.6 Changes in air quality due to construction works including spoil management	Corridor	Low	2-8	Assessment of air quality impacts generated during construction through the air quality impact assessment	EMF/ CEMP	Medium	B
<b>15. Human health</b>							
15.2 Changes to human health as a result of changes to air quality or noise during operation	Corridor	Low	8+	Assessment of the human health impacts from the operation of the project through the human health impact assessment	Design/ EMF	Medium	B
15.1 Changes to human health as a result of changes to air quality or noise during construction	Corridor	Low	2-8	Assessment of the human health impacts from the construction of the project through the human health impact assessment	EMF / CEMP	Medium	B
<b>16. Greenhouse gas</b>							
16.2 Changes to greenhouse gas emissions across the transport network due to the project	Wider region	Low	8+	Assessment of the potential sources of greenhouse gas emissions and longer term emissions profile from operation of the project in the greenhouse gas impact assessment	Design/ EMF	Low	C
16.3 Greenhouse gas emissions from operation of tunnel pumps, lighting and ventilation	Wider region	Low	8+	Assessment of the potential sources of greenhouse gas emissions and longer term emissions profile from operation of the project in the greenhouse gas impact assessment	Design EMF	Medium	B
16.1 Greenhouse gas emissions from use of construction plant and equipment	Wider region	Medium	2-8	Assessment of the potential sources of greenhouse gas emissions and longer term emissions profile from construction of the project in the greenhouse gas impact assessment	EMF/ CEMP	Medium	B

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## 7. Specialist studies

To address the effects listed in Table 6-3 a comprehensive set of specialist studies will be undertaken.

These studies will inform the development of the reference design in order to avoid or minimise adverse effects on the natural, social or economic environment impacted by the project.

This work will be undertaken in two phases:

- Baseline studies – to understand the existing conditions within and adjacent to the project boundary, and the policy context within which the project will be evaluated
- Impact assessment studies – to understand the potential impacts of the project and to identify mitigation and management measures associated with the construction and operation of the project.

The following specialist studies will be undertaken to address the environmental, social and economic issues and impacts identified through the preliminary issues screening process:

### ***Built Environment and Community Assets***

- Business Impacts
- Land Use and Planning
- Landscape and Visual
- Social and Community

### ***Connectivity***

- Traffic and Transport

### ***Cultural Assets***

- Aboriginal Cultural Heritage
- Historic Heritage

### ***Ecology***

- Arboriculture (trees)
- Freshwater Aquatic Flora and Fauna
- Terrestrial Flora and Fauna

### ***Health and Amenity***

- Air Quality
- Human Health
- Noise and Vibration (surface)
- Vibration and regenerated noise (tunnels)
- Greenhouse Gas

### ***Soils and Hydrology Assets***

- Contaminated Soils

- Groundwater
- Ground movement
- Surface Water

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## 8. Community and stakeholder engagement

### 8.1 Stakeholder engagement strategy

Consultation is a key part of the statutory planning and environmental assessment process that NELA will be undertaking to obtain requisite Victorian approvals for the project. This will build on the community and stakeholder engagement which NELA undertook during 2017 to inform the assessment of different project corridors prior to submitting this Project Outline.

NELA's approach to consultation is based on the guidance and requirements provided by Victorian legislation and policy. An overarching Communications and Engagement Strategy and supporting sub strategies have been developed. A key objective is to provide accurate and timely information and opportunities for communities and stakeholders to participate in the planning for North East Link. The communication and engagement principles are:

- Open communication
- Transparency and integrity
- Collaboration
- Inclusion
- Responsiveness
- Accountability
- Awareness.

### 8.2 Key stakeholders

North East Link will attract interest from a broad range of community stakeholders including:

- Potentially impacted landowners, tenants and businesses
- Road users including pedestrians and cyclists
- Operators and patrons of community facilities
- Community and environment interest groups
- Culturally and linguistically diverse communities
- Vulnerable and hard to reach groups.

There are also a large number of organisational stakeholders including:

- Victorian government bodies including various departments, Aboriginal Victoria, Environment Protection Authority Victoria, Department of Environment Land Water and Planning, Department of Economic Development Jobs Transport and Resources, Heritage Victoria, Office of the Victorian Government Architect, Parks Victoria, VicRoads, emergency services and water authorities
- Commonwealth government
- Local government, including Banyule, Boroondara, Manningham, Nillumbik, Whitehorse, Yarra and adjoining councils

- Transport operators
- Private road operators
- Transport advocacy stakeholders
- Utilities owners and providers
- Social service providers
- Media.

### **8.2.1 Indigenous stakeholders**

Initial consultation with Traditional Owners, the Wurundjeri, has commenced to provide an overview of the project and its proposed location.

Consultation with the Wurundjeri would be undertaken during the development of a Cultural Heritage Management Plan as required under the *Victorian Aboriginal Heritage Act 2006*.

NELA aims to have more than just statutory involvement with the Wurundjeri to inform design development and explore opportunities for involvement in place making and urban design outcomes recognising the Aboriginal cultural heritage significance of the Yarra River and the Banyule Flats.

## **8.3 Consultation to date**

NELA commenced consultation on the project in May 2017, engaging with a range of stakeholders through activities including:

- Online engagement forums, surveys and social media discussion
- Project newsletters delivered to letterboxes and community outlets
- Fact sheets and other information materials in hard copy and online
- Videos and interviews to enhance project understanding
- Scheduled community display sessions and drop in sessions hosted by NELA, local government and other interested groups
- Face to face, phone and email discussions.

During project initiation, NELA facilitated early engagement (as the Business case was being developed) with a very wide study area to:

- Explain the transport problem, opportunities and challenges
- Outline the planning and approvals process
- Seek feedback on project objectives and evaluation of corridor options.

Feedback received from the community between August and October about early strategic planning work for the project has been reported back to the community and is available on the project website:

[https://northeastlink.vic.gov.au/\\_data/assets/pdf\\_file/0019/140149/NorthEastLink-CommunityEngagementReport-Aug-Oct-2017.pdf](https://northeastlink.vic.gov.au/_data/assets/pdf_file/0019/140149/NorthEastLink-CommunityEngagementReport-Aug-Oct-2017.pdf)

## **8.4 Future consultations**

Consultation would be ongoing from the preparation of the EES documentation through to construction and operation of the project. Activities would continue to be timed to coincide with the planning and delivery program and in line with feedback from stakeholders.

The planned high level phases are:

- EES investigations – early to late 2018 (indicative only)
- Statutory exhibition – early 2019 (indicative only)
- Approval and construction – from mid-2019 onwards (indicative only).



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## 9. Conclusion

North East Link is a proposed new freeway link between the M80 and the Eastern Freeway that would generate improvements in transport network efficiency in Melbourne’s north-east and reduce congestion on arterial road through residential areas. In addition, it would provide greater resilience and redundancy in the transport network.

A significant benefit of the project will be the contribution to a more liveable Melbourne, particularly by removing a significant volume of heavy vehicle movements from residential streets in the north-east.

A project of this scale does have the potential for significant environmental, social and economic impacts. These will occur both in the construction and operational phase, and unavoidable adverse effects would need to be managed in accordance with Victorian legislation.

It is submitted that the potential effects of North East Link, when considered in their totality, could reasonably be considered to be capable of having a significant effect on the natural, physical and social environment. Accordingly, NELA recommends that the Minister of Planning declare North East Link to be “public works” under Section 3(1) of the *Environment Effects Act 1978*.