

NorthConnex

Building for the future

The main cover image shows a large cable-stayed bridge with a metal mesh railing spanning over a multi-lane road. Below the bridge, there is a traffic jam with several vehicles, including a large white truck with a blue tarp, a silver sedan, and a black car. A street sign for "RAILWAY ST" is visible on the right. The sky is blue with some clouds.

Volume 6

Environmental Impact Statement - Volume 6

Appendix K - Technical working paper: Business

Appendix L - Technical working paper: Non-Aboriginal heritage

Appendix M - Technical working paper: Aboriginal heritage

Appendix N - Greenhouse gas methodology and calculations

July 2014

In 2012, the NSW Government received an unsolicited proposal from Transurban and the Westlink M7 Shareholders (Sponsors) to design, construct, operate, maintain and finance a tolled motorway linking the M1 Pacific Highway at Wahroonga to the Hills M2 Motorway at the Pennant Hills Road interchange at West Pennant Hills, known as NorthConnex.

Roads and Maritime Services is the Proponent for the environmental impact statement and lodgement of an application for environmental and planning approval. Roads and Maritime is working with the Sponsors on the community consultation and public exhibition of this environmental impact statement.

Appendix K

Technical working paper:
Business

NorthConnex

Building for the future



Technical working paper: Business

Technical Working Paper: Business

NorthConnex

Client: Roads and Maritime Services

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Table of Contents

Executive Summary	i
1.0 Introduction	1
1.1 Overview	1
1.2 Purpose of this report	5
2.0 Methodology	7
2.1 Economic Multipliers	8
2.2 Definition of the study area	9
2.3 Business Survey	10
2.3.1 Selection of businesses interviewed	10
2.3.2 Interview topics	10
3.0 Existing context	11
3.1 Workforce characteristics	11
3.2 Economic/business environment	12
3.3 Tourism	15
3.4 Travel patterns	15
3.4.1 Passenger vehicles and public transport	15
3.4.2 Freight and commercial travel patterns	16
3.5 Summary	17
4.0 Consultation and key stakeholder issues	19
5.0 Assessment of impact	21
5.1 Construction	21
5.1.1 Increased business turnover and employment	21
5.1.2 Amenity impacts	22
5.1.3 Changes to accessibility	23
5.1.4 Acquisition	24
5.1.5 Cumulative impacts	25
5.1.6 Summary of construction related impacts	25
5.2 Operation	26
5.2.1 Increased business turnover and employment	26
5.2.2 Improved amenity and accessibility	27
5.2.3 Reduced amenity and accessibility	27
5.2.4 Acquisition	28
5.2.5 Reduction in passing trade	28
5.2.6 Changes in visibility	29
5.2.7 Freight and efficiency impacts	30
5.2.8 Cumulative impacts	30
5.2.9 Summary of operational impacts	31
6.0 Mitigation and Management Measures	33
6.1 Construction	33
6.2 Operation	34
7.0 Conclusion	35
8.0 References	37
Appendix A	
Business Questionnaire	B
Appendix B	
Business Indicator Tables	D

List of Figures

Figure 1	The project	3
Figure 2	Businesses within proximity to the project	13

List of Tables

Table 1	Director-General's requirements	5
Table 2	Feedback provided by stakeholders	20
Table 3	Direct, Indirect and total impacts of construction expenditure on the New South Wales economy per year of construction	22
Table 4	Direct, indirect and total impact of operation expenditure on the New South Wales economy per year of operation	27
Table 5	Potential impact of acquisition	28
Table 6	Potential impact of passing trade	29
Table 7	Construction mitigation measures	33
Table 8	Operational mitigation measures	34
Table B-1	Labour force status (Place of work)	B-1
Table B-2	Industry of employment (Place of work)	B-2
Table B-3	Total personal income (Weekly) (Place of work)	B-4
Table B-4	Residential location of workers (Top 5 in study area)	B-5
Table B-5	Journey to work mode (Place of work)	B-6
Table B-6	Businesses by employment sizes	B-6
Table B-7	Businesses by industry, 2012	B-7
Table B-8	Businesses by turnover, 2012	B-8
Table B-9	Industry value add and gross regional product, Hornsby LGA, 2012	B-9

Executive Summary

Roads and Maritime Services (Roads and Maritime) is seeking approval under Part 5.1 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) to construct and operate a tolled motorway linking the M1 Pacific Motorway at Wahroonga to the Hills M2 Motorway at West Pennant Hills in northern Sydney (the project).

The key benefits of the project would include:

- Providing the missing link in Sydney's motorway network and the National Land Transport Network between the Hills M2 Motorway and the M1 Pacific Motorway.
- Future travel time savings of up to 40 minutes compared to without the project.
- Bypassing of 21 sets of traffic lights.
- Improving the efficiencies of intrastate and interstate freight movements through travel time saving and reduced operating costs.
- Improving safety of motorists, cyclists and pedestrians on Pennant Hills Road through the reduction in heavy vehicles.
- Improving local amenity and connectivity for people living, working and traveling along Pennant Hills Road.
- Providing opportunities for future public transport improvements and the reinvigoration of the Pennant Hills Road corridor.

The purpose of this report is to undertake an assessment of the potential positive and negative impacts of the project on local businesses and the regional economy. The Director-General's environmental assessment requirements (DGRs) for the project include a requirement for a socio-economic impact assessment (including the business impact assessment) to address the following:

- Impacts on directly affected properties and land uses, including impacts related to access, land use, property acquisition and amenity related changes.
- Social and economic impacts to businesses along Pennant Hills Road and the Pacific Highway, and the community associated with traffic, access, property, public domain and amenity related changes.

The methodology for this assessment was developed with consideration to the DGRs and the Roads and Maritime Draft Socio-economic Assessment Practice Note (Roads and Maritime, 2012). The assessment includes a review of previous assessments, business profiling of the study area, a survey of indirectly impacted businesses, an assessment of potential positive and negative impacts and an assessment of management and mitigation measures.

Outputs of the strategic transport model for the year of opening (2019) with and without the project, and ten years after opening (2029) with and without the project, have been used to identify the study area for the business impact assessment. It was determined that the study area would include Pennant Hills Road, between the Hills M2 Motorway and the M1 Pacific Motorway, and the Pacific Highway between the M1 Pacific Motorway and Pacific Highway interchange at Wahroonga between Hornsby and Mona Vale Road in Pymble. The regional context of the project has been defined by Hornsby Local Government Area (LGA).

To determine the potential impact of changes in passing trade to businesses in the study area, a survey of businesses has been conducted. The selection of indirectly impacted businesses to be interviewed was based on those that could potentially draw a considerable proportion of their business activity from passing traffic. These businesses included service stations, cafes/restaurants and accommodation establishments. Based on this approach, 31 businesses were identified as potentially being impacted by changes in passing trade. Survey results were captured from 23 of these businesses.

The assessment of impacts has taken into account both construction and operational impacts. The project would be likely to create both positive and negative impacts on local businesses and the regional economy.

The project is likely to result in significant benefits in the form of output and employment to the economy due to construction expenditure. Local business would principally benefit from this expenditure through purchases made by construction businesses and associated workers to build and support the development of the project. Around 1,250 jobs are expected to be created during the peak construction period of the project.

Through economic multipliers it was determined that construction expenditure would contribute a total of \$3.9 billion dollars of output, \$0.7 billion dollars of household income, around 8,700 full-time equivalent (FTE) jobs and \$1.3 billion of value added to the New South Wales economy per year of construction. Operational expenditure was estimated to contribute a total of \$39 million in output, \$9 million in household income, 121 FTE jobs and \$16 million of value added per year of operation.

The majority of construction activity would occur underground, which would limit the extent of amenity impacts to businesses along the corridor. However, surface works would be required at the northern and southern interchanges, along the Hills M2 Motorway and at compound sites. Businesses adjacent to these locations may experience noise, vibration, air quality and visual amenity impacts. During construction, businesses such as outdoor restaurants, cafes and eateries would stand to be the most affected by noise and air quality impacts. The magnitude of the impact of amenity would be largely influenced by the construction hours, length of the construction period, the activity, the proximity to the project, and the nature of the business.

Construction activities would be staged and undertaken in a manner that minimises the disruption to traffic where reasonable and feasible. Construction traffic would also be managed to minimise movements during peak periods where possible. Nonetheless, due to existing capacity constraints along the network, the project would have an impact on the performance of the road network. This may impact businesses that are reliant on deliveries as they may experience longer transit times. Freight and commercial vehicles that use Pennant Hills Road, the Pacific Highway, the Hills M2 Motorway and the M1 Pacific Motorway may also experience longer transit times and decreased efficiencies over the construction period.

During the operation of the project there is the potential for changes to the volumes of traffic on Pennant Hills Road and the Pacific Highway. Potential reductions of traffic on Pennant Hills Road could reduce road congestion along the corridor for vehicles that would continue to use Pennant Hills Road, such as localised trips. Businesses are likely to benefit from the improved accessibility for customers due to reduced congestion. It would also remove a significant proportion of heavy vehicles that travel along Pennant Hills Road, which have considerable adverse impacts on local amenity. Reduced traffic would also likely result in lower travel times along the corridor, which may change the travel and shopping patterns of local residents and may lead to increased turnover for local businesses.

There would be limited amenity impacts on businesses due to the operation of the project. The surface components of the project are in predominately residential areas and outside established and future commercial, industrial and retail centres.

Five (5) businesses would be impacted by full acquisition, leading to potential decreases in employment and economic activity. Under the worst case scenario the acquisition of the properties containing the five businesses would result in a loss of 25 full-time equivalent jobs. Based on the outcomes of the business survey it has been estimated that under the worst case scenario there would be an annual reduction of around \$5.6 million and around 18 full-time equivalent jobs in the region due to impacts on passing trade. The reduction in output or employment as a result of the project represents a worst case scenario and does not account for any increase in turnover due to the changes in local traffic, business adaptation and opportunities, or the benefits to the freight industry due to travel time savings.

The project has the potential to provide benefits to the movement of freight due to the improvement in connections between the M1 Pacific Motorway and the Hills M2 Motorway. The reduced transit times would reduce operational costs associated with fuel and wages and improve safety by reducing the number of times trucks have to stop at traffic lights. Provision of an alternative route for freight transport between the M1 Pacific Motorway and the Sydney Orbital would also lead to improvements in the efficiency and reliability of Sydney's freight network, facilitating more efficient movement of goods through the supply chain and ultimately enhancing productivity.

Cumulative impacts to the local economy and businesses are most likely to result from the construction and operation of the North West Rail Link and Epping to Thornleigh Third Track. Cumulative impacts are likely to intensify both construction and operation impacts of the project. The concurrent construction of these projects is likely to intensify the impacts with regard to employment opportunities for local residents and economic stimulus. The opportunity for local businesses to supply goods or services to the construction of these projects and their construction workforces has the potential to increase business turnover due to high demand from the multiple projects. There is the potential for construction vehicles using the local road network to increase and this may intensify or prolong the impacts on amenity and congestion during the construction period. During operation of the project it is not anticipated that the NWRL would reduce vehicle traffic on Pennant Hills Road or the Pacific Highway and therefore would not impact passing trade. Epping to Thornleigh Third Track may result in additional reduction in freight vehicles on Pennant Hills Road and the Pacific Highway. Any further reduction in freight vehicles would intensify the operational impacts as highlighted above.

The study recommends a number of mitigation measures that are intended to minimise any impacts that would be associated with the construction and operation of the project. These are detailed in **Chapter 6.0** of this report.

On balance, it is considered that the overall impact of the project on businesses would be positive for the region.

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1.0 Introduction

1.1 Overview

Roads and Maritime Services (Roads and Maritime) is seeking approval under Part 5.1 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) to construct and operate a tolled motorway linking the M1 Pacific Motorway at Wahroonga to the Hills M2 Motorway at West Pennant Hills in northern Sydney (the project) (refer to **Figure 1**). Key features of the project would include:

- Twin motorway tunnels up to around nine kilometres in length with two lanes in each direction. The tunnels would be constructed with provision for a possible third lane in each direction if required in the future.
- A northern interchange with the M1 Pacific Motorway and Pennant Hills Road, including sections of tunnel for on-ramps and off-ramps, which also facilitate access to and from the Pacific Highway.
- A southern interchange with the Hills M2 Motorway and Pennant Hills Road, including sections of tunnel for on-ramps and off-ramps.
- Integration works with the Hills M2 Motorway including alterations to the eastbound carriageway to accommodate traffic leaving the Hills M2 Motorway to connect to the project travelling northbound, and the provision of a new westbound lane on the Hills M2 Motorway extending through to the Windsor Road off-ramp.
- Tie-in works with the M1 Pacific Motorway extending to the north of Edgeworth David Avenue.
- A motorway operations complex located near the southern interchange on the corner of Eaton Road and Pennant Hills Road that includes operation and maintenance facilities.
- Two tunnel support facilities incorporating emergency smoke extraction outlets and substations.
- Ancillary facilities for motorway operation, such as electronic tolling facilities, signage, ventilation systems and fire and life safety systems including emergency evacuation infrastructure.
- Modifications to service utilities and associated works at surface roads near the two interchanges and operational ancillary facilities.
- Modifications to local roads, including widening of Eaton Road near the southern interchange and repositioning of the Hewitt Avenue cul-de-sac near the northern interchange.
- Ancillary temporary construction facilities and temporary works to facilitate the construction of the project.

The project is an unsolicited proposal from Transurban and the Westlink M7 Shareholders to build, operate and maintain the project. The Australian and State Governments have each committed up to \$405 million to the project. The remainder of the cost of the project would be funded by Transurban and the Westlink M7 Shareholders and would be recouped from tolls on the project and changes to tolling for heavy vehicles on some Sydney motorways.

Construction of the project is anticipated to commence in early 2015 and is expected to take around four years to complete.

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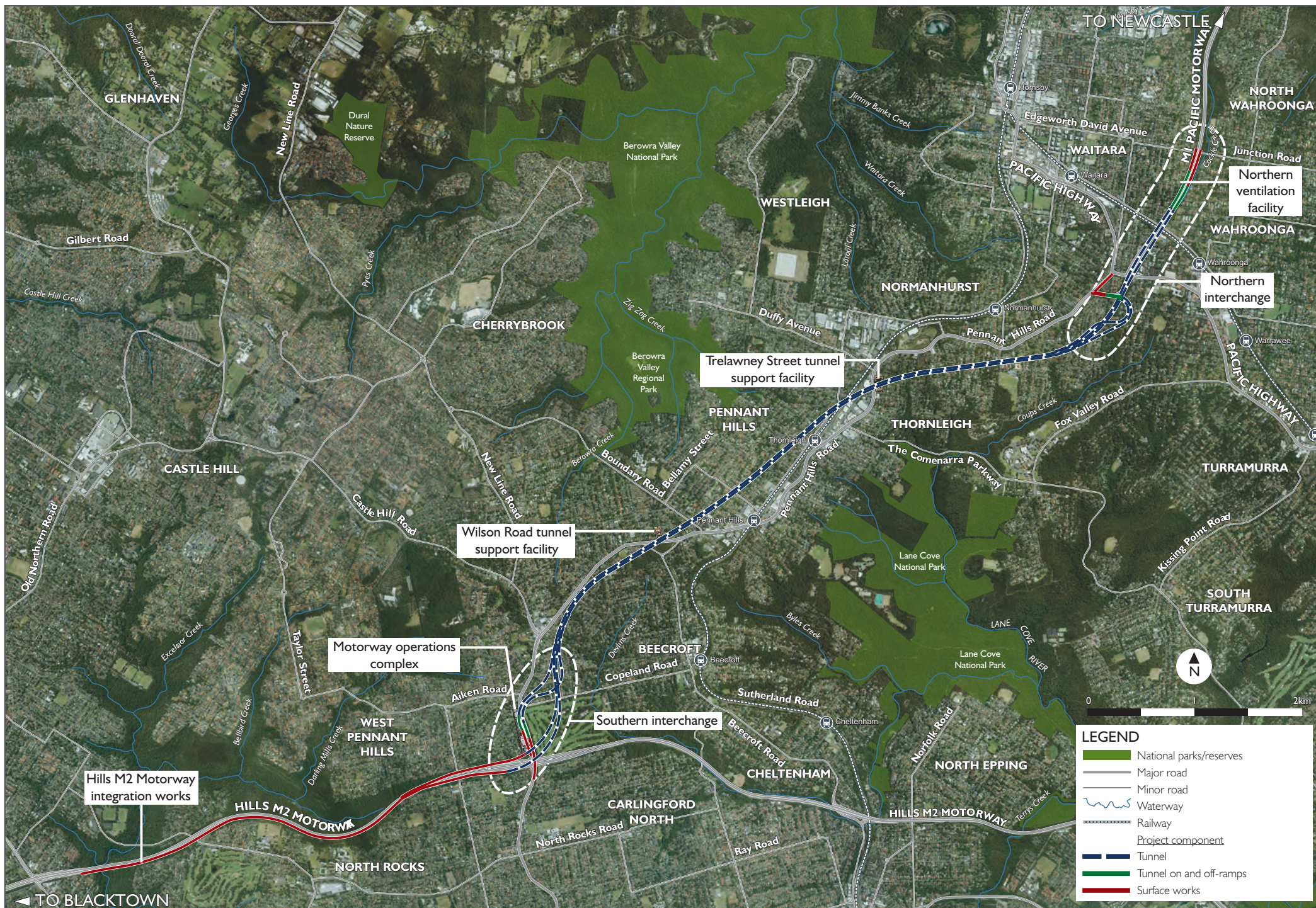


Figure 1 The project

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1.2 Purpose of this report

The Director-General's environmental assessment requirements (DGRs) for the project were issued on 29 October 2013 and re-issued on 11 April 2014 with amendments. The DGRs have informed the preparation of the environmental impact statement for the project. The DGRs include a requirement for a socio-economic impact assessment (including the business impact assessment) to address the following:

- Impacts on directly affected properties and land uses, including impacts related to access, land use, property acquisition and amenity related changes.
- Social and economic impacts to businesses along Pennant Hills Road and the Pacific Highway, and the community associated with traffic, access, property, public domain and amenity related changes.

This assessment specifically considers matters relevant to the potential positive and negative impacts of the project on local businesses and the state economy.

Table 1 outlines where the requirements of the DGR have been addressed within this report. The methodology for this assessment is provided in **Chapter 2.0** of this report.

Table 1 Director-General's requirements

DGR reference	Report section
Impacts on directly affected properties and land uses, including impacts related to access, land use, property acquisition and amenity related changes	Section 5.1 and Section 5.2
Social and economic impacts to businesses along Pennant Hills Road and the Pacific Highway, and the community associated with traffic, access, property, public domain and amenity related changes	Section 5.1 and Section 5.2

The assessment of matters relating to social impacts and land use impacts are considered in Section 7.7 and Section 8.1 of the environmental impact statement for the project.

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2.0 Methodology

The purpose of the business impact assessment is to:

- Determine the impact of the reduction in passing traffic on businesses within the defined study area. For the purposes of this assessment, these are referred to as 'indirectly impacted businesses'.
- Determine the impact of acquisition of businesses on employment and turnover in the region. These businesses are referred to as 'directly impacted businesses'.
- Determine the impact of changes to travel times on businesses reliant on regional and interstate freight movement during construction and operation of the project.
- Determine the impact of amenity, accessibility and parking on businesses during construction and operation of the project.

The methodology for this assessment was developed with consideration to the DGRs and the Roads and Maritime Draft Socio-economic Assessment Practice Note (Roads and Maritime, 2012), and was based on the following steps:

- Review of previous assessments undertaken for the project to provide context and background to the project.
- Definition of a study area for the business impact assessment, considering the components of the project and potential impact during construction and operation, predicted changes in traffic within the surrounding road network. This is discussed further in **Section 2.2**.
- A desk-top analysis of businesses within the study area that may be directly impacted due to acquisition or indirectly impacted by the project (for example, due to losses in passing trade), followed by a site visit to confirm these findings.
- Development of a baseline profile for current businesses within the defined study area using published data sources including the Australian Bureau of Statistics (2012 and 2013), NSW Bureau of Transport Statistics (2013) and Tourism Research Australia (2013).
- Analysis of key stakeholder issues, including a survey of business that were identified as having the potential to be indirectly impacted by the project. The approach to the business survey is provided in more detail in **Section 2.3**.
- Quantification of positive and/or negative impacts on the businesses as a result of the project, such as growth of existing businesses or investment in new enterprises, or the closure of existing businesses or downsizing of businesses due to acquisition or loss of passing trade. The measures used to assess business impacts were:
 - Employment: The projected net change in the number of people employed in local businesses. The change in employment is measured by total employment and full time equivalent (FTE) employment. The latter measure converts the number of full time, part time and casual employees into a unit equivalent to the number of full time employees.
 - Turnover: The projected net change in turnover (\$) generated by local businesses.
 - Other: Additional components of business operations that may be impacted by the project, which are unable to be quantified.

The method of analysis to quantify the potential impacts differed between the indirect and direct business impact assessments:

- Indirect businesses – use of data collected through the business survey conducted in December 2013 and January 2014 to determine the businesses' reliance on passing trade, current employment and turnover.
- Direct businesses – use of industry benchmarking to determine the potential losses in employment.
- Identification of measures to mitigate or manage the potential impacts on businesses.

2.1 Economic Multipliers

Economic multipliers are used to quantify economic impacts, or changes in economic activity resulting from a stimulus such as construction of the project. These multipliers can be calculated from input-output tables. The ABS prepares a national input-output table, the most recent being for 2009/10 (ABS, Australian National Accounts: Input-Output Tables 2009/10, 5209.0.55.001, 20 September 2013). The table describes inter-industry transactions among 114 industries, showing the fixed amounts of inputs that are required to produce a given output at the national level. The table is compiled in accordance with the Australian national accounting system, and international Government accounting standards.

State-level input-output tables can be derived by adjusting the national table to reflect each state's inter-industry transactions and final demand flows, based on information and data at the state level within the Australian national accounting system and on the latest Census data.

Four multipliers are usually used to measure economic impact: output (value of production or turnover), value added (which can be directly compared to gross domestic product and gross state product), household income and employment. Two types of multipliers can be calculated:

- Type 1 multipliers, which measure the direct and production-induced impacts of a stimulus or activity - the latter impacts refer to the subsequent rounds of purchases of inputs by businesses supplying the direct suppliers of the stimulus or activity (industrial flow-on effects).
- Type 2 multipliers, which capture the Type 1 effects and also measure the consumption-induced effects that flow from the expenditure of income that is earned from the production of additional output.

Input-output multipliers are based on a number of assumptions that provide a relative measure (to be compared with other industries) of the interdependence between one industry and the rest of the economy. This interdependence arises solely from the sales and purchase links between industries and is based on estimates of transactions occurring over a recent historical period. The limitations of input-output analysis therefore include:

- *Lack of supply-side constraints* – it is assumed that extra output can be produced in one area without taking resources away from other activities, thus potentially overstating economic impacts. The actual impact is likely to be dependent on the extent to which the economy is operating at or near capacity.
- *Fixed prices* – it is assumed that any change in the demand for productive factors would not induce any change in their cost.
- *Fixed ratios for intermediate inputs and production* – it is assumed that there is a fixed input structure in each industry and fixed ratios for production (as described by fixed technological coefficients).
- *No allowance for purchasers' marginal responses to change* – it is assumed that households consume goods and services in exact proportion to their initial budget shares and that this applies equally to industrial consumption of intermediate inputs and factors of production.
- *Absence of budget constraints* – it is assumed for consumption-induced effects (Type 2 multipliers) that household and government consumption is not subject to budget constraints.

It is preferable to apply Type 1 multipliers, because an input-output model is based on the above simplifying assumptions which have the effect of imposing few constraints to economic expansion. As a result, Type 2 multipliers could overstate potential impacts, particularly where assessing the expansion of an existing activity rather than the contribution of an existing activity.

2.2 Definition of the study area

To define the study area for this assessment, the outputs of the strategic transport model with and without the project for the year of opening (2019) and ten years after opening (2029) were analysed. A detailed description of the strategic transport model is presented in technical working paper: traffic and transport (AECOM, 2014).

This analysis considered changes in traffic on major thoroughfares in the surrounding road network including Castle Hill Road, Boundary Road, Beecroft Road, Pennant Hills Road, the Pacific Highway north to the Berowra interchange, and south to Mona Vale Road, Pymble. As no businesses are situated on the Hills M2 Motorway, this thoroughfare was not included in the assessment.

The results of this analysis indicated that the reduction in traffic flows would be the most significant on Pennant Hills Road. Medium level changes would occur on Beecroft Road and the Pacific Highway both north and south of Pennant Hills Road between Hornsby and Mona Vale Road. Smaller changes were identified to occur on Castle Hills Road and Boundary Road. Further details of this analysis are presented in the technical working paper: traffic and transport.

Geographical statistical areas that encompass these roadways and the wider catchment as it relates to current usage of Pennant Hills Road were therefore considered in the assessment (this is further discussed in **Section 3.1**).

The majority of the study area lies within the Hornsby Local Government Area (LGA). However, small portions of the study area are located outside this LGA, with:

- Areas to the west and north of Pennant Hills Road between Castle Hill Road and the Hills M2 Motorway located in the Hills LGA.
- Areas along the Pacific Highway between the M1 Pacific Motorway and Pacific Highway interchange at Wahroonga and Mona Vale Road located in the Ku-ring-gai LGA.

Businesses within these areas that could be indirectly impacted by the project are considered low when compared to the number of businesses present in the Hornsby LGA. The Hills and Ku-ring-gai LGAs span vast areas where the majority of the commercial, retail and industrial activities occur beyond the road corridor, including ancillary sites, and are beyond the reach of potential direct or indirect impacts of the project. As such, these LGAs have not been considered in this assessment as the data collated on these areas may not correctly represent the business activity that occurs in the study area. For example, The Hills LGA includes agricultural land to the north west of Sydney that does not effectively represent the nature of businesses that have the potential to be impacted by the project.

Unlike social impacts, which occur at a community level, positive and negative impacts to businesses, that manifest themselves in changes to turnover or employment, generally occur at the location of the business activity. This is due to the fact that businesses generally rely on the attractiveness and accessibility of their location to induce business activity. As such, businesses that reside far beyond the boundaries of the project are unlikely to be significantly impacted by the project, unless they rely on the project corridor for freight or delivery purposes. As a result, businesses that reside within The Hills and Ku-ring-gai LGAs have not been included in this assessment, except where they are impacted due to their freight or delivery capacity.

The study area is used as a major thoroughfare for freight and commercial activity linking Sydney and the Central Coast, Newcastle and Brisbane. Therefore, some impacts related to freight and commercial movement would occur beyond the scope of the study, at a state-wide or national level.

2.3 Business Survey

2.3.1 Selection of businesses interviewed

One of the key objectives of the business impact assessment is to assess the potential impact on business operations, turnover and employment as a result of a loss in passing trade. As a result, the selection of indirectly impacted businesses to be interviewed was based on those that could potentially draw a considerable proportion of their business activity from passing traffic. Selected businesses fell into three categories including:

- Service stations: Operations selling fuel to passing motorists and generally including a small retail operation selling convenience goods such as food, drinks, magazines, newspapers and toiletries. The category also includes establishments offering car wash facilities.
- Cafes/Restaurants: Food operations such as cafes, restaurants and takeaway outlets that attract passing trade. The core businesses in this category are national chains that have private car parks, target impulse sales and often have drive-through facilities.
- Accommodation establishments: Hotels, motels and serviced apartments offering short term accommodation. The establishments are located on the Pacific Highway or Pennant Hills Road providing visual access to passing traffic.

Businesses selected to undertake the survey can be categorised as being located in the following precincts:

- Pennant Hills Road: Along Pennant Hills Road between the Hills M2 Motorway and the M1 Pacific Motorway.
- Pacific Highway South: Along the Pacific Highway between the M1 Pacific Motorway and Pacific Highway interchange at Wahroonga and interchange of the Pacific Highway and Mona Vale Road at Pymble.
- Pacific Highway North: Along the Pacific Highway between the M1 Pacific Motorway interchange at Wahroonga and Hornsby.
- Boundary Road: Along Boundary Road between Pennant Hills Road and New Line Road.
- Beecroft Road: Along Beecroft Road between Pennant Hills Road and Cheltenham Road.
- Castle Hill Road: Along Castle Hill Road between Pennant Hills Road and Old Northern Road.

No service stations, cafes/restaurants or accommodation establishments that are normally considered reliant on passing trade were identified on Boundary Road, Beecroft Road or Castle Hill Road.

Based on this approach, 31 businesses were identified as potentially being impacted by changes in passing trade. Survey results were captured from 23 of these businesses. The results of the survey are collated in **Chapter 4.0**.

2.3.2 Interview topics

The purpose of the indirect business survey is to understand business practices within the study area and determine the potential impacts associated with changes in through traffic within the study area as a result of the project. The key interview topics included:

- Business characteristics: The key characteristics of businesses including main activities, number of persons employed in operating the business, business floor space, parking arrangements and business hours. These questions provide an overview of the existing business environment and a baseline to assess the potential business impacts of the project.
- Dependence on through traffic: The dependence of business operations on through traffic travelling to or from the M1 Pacific Motorway or Hills M2 Motorway. This definition of through traffic enabled the survey to capture the passing trade attributable to motorists likely to be diverted due to the project. These questions provide an indication of the existing reliance on passing traffic on businesses and inform the analysis of potential losses that could occur as a result of the project.
- Potential impacts of project: Identification of potential impacts and changes to the business as a result of the project being constructed, such as impacts on local traffic trade, accessibility of the business or amenity.

A copy of the survey instrument is included in **Appendix A**.

3.0 Existing context

3.1 Workforce characteristics

Data for local workforce characteristics have been collated from the 2011 Census of Housing and Population, Place of Work (ABS, 2012), unless otherwise stated. Workforce indicator tables are provided at **Appendix B**.

The study area has been profiled by examining the data for statistical areas defined as Statistical Area 2 (SA2) by the Australian Bureau of Statistics (ABS). The following areas were included:

- West-Pennant Hills SA2 (The Hills Local Government Area (LGA));
- Pennant Hills – Cheltenham SA2 (Hornsby LGA);
- Normanhurst-Thornleigh-Westleigh SA2 (Hornsby LGA);
- Hornsby-Waitara SA2 (Hornsby LGA);
- Wahroonga – Warrawee SA2 (Ku-ring-gai LGA);
- Turramurra SA2 (Ku-ring-gai LGA); and
- Pymble SA2 (Ku-ring-gai LGA).

The geographical areas of comparison are Hornsby LGA and New South Wales. The Hills and Ku-ring-gai LGAs have not been used for comparison as the above SA2s reflect only a small proportion of the vast areas that these LGAs span.

Hornsby LGA spans a considerable area that includes urbanised and non-urbanised areas, commercial, industrial, retail and agricultural lands. The diversity in businesses and employment in the Hornsby LGA may not correctly profile the types of businesses that have the potential to be impacted by the project. In order to correctly identify the types of business that may be impacted by the project, the above SA2s have been used to inform the existing context. As with the justification for the study area in **Section 2.2**, impacts to businesses that manifest themselves in changes to turnover or employment, generally occur at the location of the business activity. The above statistical areas were chosen due to their proximity to the project and their ability to best represent the business profile and geographical location of potentially impacted businesses.

The following indicators provide the key characteristics of people that are employed in businesses within the study area and how they compare against the workforces of Hornsby LGA and New South Wales:

- Businesses in the study area employed around 41,000 people in 2011. The highest employing industries in the study area were health care/social assistance (20 per cent), education/training (13 per cent), professional/scientific/technical services (13 per cent) and retail trade (12 per cent). The study area had a higher proportion of employment in all of these industries than the New South Wales averages.
- Employment in the study area was predominately (57 per cent) on a full-time basis. Part-time employees represented 38 per cent of all employees in the study area. This is higher than the NSW average of 30 per cent part-time employment. Pennant Hills – Cheltenham, Wahroonga - Warrawee and Turramurra had a higher proportion of part-time employment (42, 46 and 51 per cent respectively) than the study area average, Hornsby LGA (39 per cent) and the NSW average (30 per cent) in 2011.
- The total weekly personal income for employees in the study area closely reflected the Hornsby LGA distribution of income. The majority of employees earned a total weekly personal income of less than \$1000 per week (60 per cent). The proportion of employed persons earning less than \$1000 per week was higher in the study area than the NSW average of 55 per cent. Around eight per cent of employees earned under \$200 per week and an additional 13 per cent earned over \$2000 per week.
- Employees in the study area mostly resided in suburbs surrounding their location of employment. In Pennant Hills-Cheltenham, Hornsby-Waitara, Normanhurst-Thornleigh-Westleigh and Wahroonga-Warrawee the workforce was most likely to reside in the Hornsby LGA in 2011. The workforce of West Pennant Hills was most likely to reside in The Hills LGA and the workforce of Turramurra was most likely to reside in Ku-ring-gai LGA in 2011.

- The most common transport mode used by employees in the study area travel to work by car, with 43 per cent of employees driving to work and eight per cent of employees travelling as a car passenger. 16 per cent of people that worked in the study area travel by train.

3.2 Economic/business environment

The Hornsby LGA has a relatively diversified economy and is not heavily reliant on one industry. In 2011-12, the Hornsby LGA had an estimated \$6 billion gross regional product (AECOM GRP Model, 2014). The largest contributing industries to the economy were manufacturing, health care/social assistance, professional/scientific/technical services and education/training all contributing around eight to nine per cent of total industry contribution to the economy (gross sector value added) (AECOM GRP Model, 2014).

There were 14,200 businesses in the study area in 2012 (ABS, 2013). The largest numbers of businesses were in the industries of professional/scientific/technical services, construction and rental/hiring/real estate services. Most of the businesses in the study area were small businesses with 66 per cent of businesses having turnover of less than \$200,000 and 97 per cent of businesses employing less than 20 employees¹ (ABS, 2013).

Upwards of 100 businesses were identified as located on Pennant Hills Road between the interchange of Pennant Hills Road and the M1 Pacific Motorway in the north and the interchange of Pennant Hills Road and the Hills M2 Motorway in the south. These businesses fell within the following industries:

- Retailers, including supermarkets and pharmacies.
- Cafés, restaurants, pubs and bars.
- Accommodation services.
- Service stations and mechanics.
- Car dealerships.
- Other service providers such as funeral homes, gyms, travel agents, real estate agents, physiotherapists, dry cleaners, dentists, beauty and hair salons.

Businesses along Pennant Hills Road are generally clustered around the main transport hubs. Pennant Hills and Thornleigh Stations attracted the majority of business activity along Pennant Hills Road. Clusters of businesses were situated at the following locations:

- Thompson's Corner: A cluster of retail services (including a Coles supermarket), real estate agents, restaurants and cafés, and a service station.
- Pennant Hills Station: A cluster of complementary health service providers, kitchen and homeware retailers, mechanics and car dealers, restaurants and cafés, and the Pennant Hills Hotel.
- Thornleigh Station (Wells Street through to Duffy Avenue, Thornleigh): The cluster of business around Thornleigh Station includes two shopping centres: Thornleigh Marketplace and Central Park Centre. Businesses in this cluster are generally convenience and discretionary retail services.
- Hornsby: A major regional business hub including commercial, retail and industrial businesses. Business activity in Hornsby occurs in a variety of forms including a Westfield Shopping Centre, high street retail, bulk goods, car dealerships and mechanic services along the Pacific Highway and an industrial park.
- Carlingford, Normanhurst, Beecroft, Westleigh, Wahroonga, Warrawee, Turramurra and Pymble: Various clusters of town centres that provide personal services, convenience retail and food services.

Businesses catering for passing trade in the study area include service stations, cafés/restaurants and accommodation establishments. These businesses are generally located along main thoroughfares to provide visual access to passing traffic and capture trade from freight, commercial and tourism activities. These types of businesses are mainly located along Pennant Hills Road and the Pacific Highway in the study area to capture the main bulk of passing trade. **Figure 2** provides an overview of the location of the above business within the context of the project.

¹ The ABS defines a small business as having less than 20 employees.

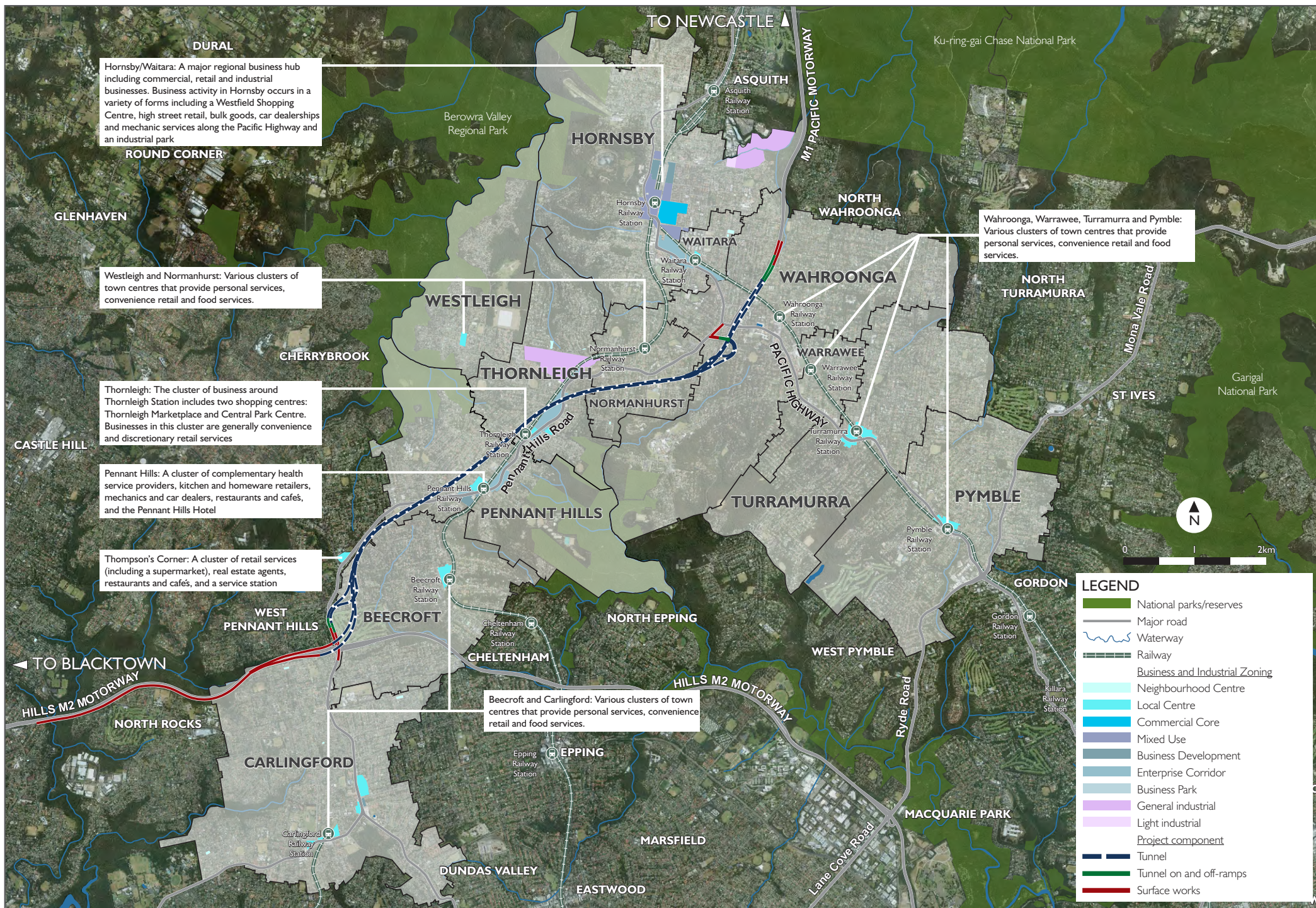


Figure 2 Business areas within proximity to the project

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3.3 Tourism

The total number of day trip visitors to the study area between September 2011 and September 2013 was around 946,000 (TRA, 2013). Hornsby-Waitara was the most popular destination within the study area with around two-thirds of visitors accounted for in these suburbs. The purpose of around half of these day trips was to visit friends or relatives. Visitors with the purpose of holiday or leisure accounted for 20 per cent of all day trips and visitors with a business purpose accounted for 15 per cent.

Day trips to the study area accounted for around 1.6 per cent of all day trips within Sydney (TRA, 2013). The study area is generally not a tourist destination and its significance in the industry is in its provision of services to tourists passing through the study area on their way to or from the M1 Pacific Motorway. These services are provided by businesses including cafes, restaurants and fast food establishments, service stations and accommodation. There are currently:

- Five accommodation venues that cater for holiday and leisure as well as businesses trips along Pennant Hills Road and the Pacific Highway near the M1 Pacific Motorway interchange;
- Sixteen service stations along Pennant Hills Road and the Pacific Highway near the M1 Pacific Motorway interchange; and
- Eight cafés and fast food restaurants.

The NSW North Coast, Central Coast and Hunter Regions are all very popular tourist destinations for domestic and international tourists. These areas attracted around 37 million day trips between September 2011 and September 2013 (TRA, 2013). In addition to day trips, around 20 million overnight trips were conducted by domestic tourists over the same period (TRA, 2013).

As the major arterial route for the NSW North Coast, Central Coast and Hunter Region, the M1 Pacific Motorway provides access for tourists to these destinations. Additionally, the Hills M2 Motorway provides tourists from the north of Sydney access to the Sydney Orbital Network and tourist destinations in Sydney and the NSW South Coast.

3.4 Travel patterns

3.4.1 Passenger vehicles and public transport

Pennant Hills Road is a major arterial route that provides access between the Hills M2 Motorway in the south to the M1 Pacific Motorway in the north, travelling through suburbs including West Pennant Hills, Beecroft, Pennant Hills, Thornleigh, Normanhurst and Wahroonga.

The M1 Pacific Motorway is the major route for road traffic between Sydney and the NSW North Coast, including Newcastle, Gosford and the Hunter Region, for both passenger and freight road transport.

Pennant Hills Road and the Pacific Highway are currently used as feeder roads to enter and exit the M1 Pacific Motorway from or to the wider Sydney road network. Access to and from the wider Sydney road network most commonly uses the Hills M2 Motorway, Westlink M7 Motorway and M5 South-West Motorway.

Private vehicles are the predominant mode of transport in the study area, which is reflected in high levels of household vehicle ownership in the Hornsby LGA (1.7 vehicles per household) in comparison to the Sydney Greater Metropolitan Region (1.6 vehicles per household). The 2011/12 Household Travel Survey (NSW Bureau of Transport Statistics, 2013) shows that 71 per cent of total trips on a typical weekday made in the Hornsby LGA are car-based, compared to an average of 68 per cent in the Sydney Greater Metropolitan Area.

Rail passengers represent nine per cent of average weekday travel mode share in the project area (NSW Bureau of Transport Statistics, 2013). Since the completion of the Epping to Chatswood rail link in 2009, services on the Northern Line operate from Hornsby and Epping and onward to Macquarie Park, North Sydney and the Sydney central business district via Chatswood and North Sydney. Public transport patronage is likely to change upon the completion of the North West Rail Link, which would provide train services into the north west. Along with the addition of train services, bus routes are likely to change to feed passengers into the stations, providing fast and efficient transport to Macquarie Park, Chatswood and the Sydney central business district.

Bus passengers represent four per cent of average weekday travel mode share in the project area (NSW Bureau of Transport Statistics, 2013). Pennant Hills Road is an important corridor with a number of bus services operating in the project area. Bus stops are located at regular intervals in both directions, with these services operating in the project area. Bus stops are located at regular intervals in both directions, with these services providing connections between a number of centres, including Pennant Hills, Beecroft, Castle Hill, Parramatta and the Sydney central business district via the Hills M2 Motorway. The Hills M2 Motorway provides quick access to the Sydney central business district, although service levels and reliability of bus operations are dependent on traffic conditions on Pennant Hills Road, the motorway itself and surrounding local road network.

Pedestrian footpaths are provided along the length of Pennant Hills Road, with regular crossings via signalised intersections as well as four pedestrian overpasses. With the exception of a short section around the Pennant Hills Road and Castle Hill Road intersection and the Pennant Hills Road interchange with the Hills M2 Motorway, there are no dedicated cyclist facilities along this section of Pennant Hills Road.

3.4.2 Freight and commercial travel patterns

Pennant Hills Road between the M1 Pacific Motorway and the Hills M2 Motorway forms part of the National Road Network. The National Road Network is based on national and inter-regional transport corridors including connections through urban areas, links to ports and airports, rail, road and intermodal connections that together are of critical importance to national and regional economic growth, development and connectivity. The M1 Pacific Motorway is the main strategic highway linking Sydney, the Central Coast, Newcastle and Brisbane. Pennant Hills Road and the Pacific Highway play a major part in connecting the M1 Pacific Motorway to Sydney and to wider freight and commercial vehicle destinations.

As the links between the M1 Pacific Motorway and the Hills M2 Motorway, Westlink M7 Motorway and M5 South-West Motorway, Pennant Hills Road and the Pacific Highway carry a high volume of freight and commercial vehicles on a daily basis.

Pennant Hills Road carries large volumes of traffic with two-way annual average daily traffic (AADT) in 2011 of about 80,000 vehicles per day (Infrastructure NSW, 2011). Traffic surveys completed for the project in December 2013 found a high proportion of heavy vehicles that use both the M1 and M2 Motorways to transport goods around Sydney, with the M1 near Pennant Hills Road recording around 21 per cent heavy vehicles and Hills M2 Motorway west of Pennant Hills Road recording around 14 per cent heavy vehicles across the weekday (referred to as average weekday daily traffic (AWDT)) (refer to technical working paper: traffic and transport (AECOM, 2014)). Linking these two motorways, Pennant Hills Road is also subject to high volumes of heavy vehicles, with around 14 per cent of the AWDT recorded north of the Hills M2 Motorway interchange. Pacific Highway recorded lower percentages of heavy vehicles, with around three to six per cent of the AWDT comprising of heavy vehicles.

The 2007 Sydney Urban Corridor Strategy developed by the NSW and Australian Governments found that congestion on Pennant Hills Road directly affects performance of the National Highways network. The F3-M2 connector: Supporting research undertaken by PWC in 2012 also highlights the 'bottleneck' caused by Pennant Hills Road that restricts the movement to, from and through Sydney.

The completion of the Westlink M7 Motorway has resulted in significant industrial development in Western Sydney due to improved transport connectivity and available and affordable land. Investment has included major warehouse and distribution operations at Eastern Creek and Moorebank that has facilitated the transport of goods throughout Sydney and Australia. The majority of long distance traffic on the M1 Pacific Motorway north of Sydney has an origin or destination within Sydney. Industrial investment in Western Sydney has increased the importance of the corridor to the transport of freight at both a regional and interstate level.

Service stations along the Pacific Highway and Pennant Hills Road are likely to have located there to capture the freight and commercial vehicle movement between Sydney and the Central Coast, Newcastle and Brisbane. Freight and commercial trade is likely to represent a higher proportion of trade for these businesses than those located elsewhere in the study area.

3.5 Summary

The study area is used as a major thoroughfare for freight, commercial and tourist activity linking Sydney and the Central Coast, Newcastle and Brisbane. On a local level, the road network serves the needs of the local residents and the local workforce.

The road network within the study area is generally congested due to the high dependency of the local workforce on transportation by car and the movements associated with tourist, freight and commercial vehicles through the study area. The local economy has grown to cater for both these markets with a mixture of discretionary retail and services for the local residents, as well as a high number of service stations and fast food restaurants catering for passing trade.

Businesses that have been identified as potentially relying on passing trade include service stations, cafés and fast food restaurants and accommodation providers. Service stations along the Pacific Highway and Pennant Hills Road which are likely to cater for freight and commercial activity, are potentially reliant on a higher proportion of passing trade than other roads in the local network.

The economy of the region is generally reliant on services that cater to local residents such as health and education services and does not appear to be significantly dependent on industries that rely on passing trade. However, 12 per cent of the local workforce is employed in retail services highlighting the importance of this industry to the local economy.

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4.0 Consultation and key stakeholder issues

Consultation with potentially impacted businesses and business stakeholder groups has been undertaken as part of the business impact assessment.

Consultation with potentially impacted business owners occurred in conjunction with the business survey. These businesses were asked to provide comments on the potential impacts (both positive and negative) that they believed might affect their businesses. The results received highlighted some of the concerns of businesses owners and managers with regard to their business. The results also highlighted some of the potential positive effects business owners believed may arise due to the project.

In addition to consultation with the potentially impacted businesses, AECOM concurrently consulted with business stakeholder groups. Representative business and industry key stakeholders were invited to participate as part of the project's Business and Industry stakeholder group. The purpose of consulting with this group as part of the business impacts assessment is to capture feedback on perceived impacts of the project, both positive and negative, on local businesses and freight movements. A business and industry stakeholder briefing session on the project was held on 2 April 2014, which was attended by:

- NSW Business Chamber.
- Hornsby Business Alliance (formerly Hornsby and District Chamber of Commerce)
- Sydney Hills Business Chamber
- Parramatta City Chamber of Commerce.
- Epping Chamber of Commerce
- Ku-ring-gai Chamber of Commerce.
- Ryde Business Forum.
- Hornsby Business Alliance.
- Westfield.
- Woolworths.
- McDonalds.
- Bunnings.

The aim of consultation with business and industry key stakeholders was to capture industry views on:

- The potential impact of changes in travel times for businesses reliant on regional and interstate freight movement.
- The potential impact of the project on passing trade to local businesses.
- The potential impact of the project on local trade (increase or decrease in local trade due to changes in traffic and parking).
- The potential impact of changes in amenity to businesses.

The feedback that emerged during consultation with businesses and industry stakeholders, and the location where this has been addressed in this report, are summarised in **Table 2**.

Table 2 Feedback provided by stakeholders

Issue	Detail	Report section
Construction		
Business and economic issues	<p>Potential increases in turnover due to increased patronage from construction workers.</p> <p>Potential changes in employment (positive and negative) due to changes in turnover.</p> <p>Potential acquisition of businesses directly impacted by the project footprint.</p> <p>Opportunities for local businesses in terms of supply of goods and services during construction of the project.</p>	Section 5.1.1 and 5.1.4
Amenity	Potential amenity implications to businesses during the construction of the project and the potential impact to trade.	Section 5.1.2
Traffic and access arrangements	<p>Impacts to accessibility during construction.</p> <p>The ability to make and receive deliveries during the construction of the project.</p> <p>Potential decrease in parking due to construction vehicles.</p> <p>Cumulative traffic impacts of other major projects in the area.</p>	Section 5.1.3
Operation		
Traffic and access arrangements	<p>The ability to make and receive deliveries during the operational stage of the project.</p> <p>Impact of the reduction in heavy vehicles on the road.</p>	Section 5.2.1 and 5.2.3
Business and economic issues	<p>Potential loss of trade due to reduction in passing traffic.</p> <p>Impact to advertising and attracting passing traffic.</p> <p>Impact on employment due to reduction in passing trade.</p> <p>Impacts to local businesses due to acquisition.</p> <p>Opportunities to local or new businesses along the corridor as result of the project in terms of improved access and amenity.</p>	Section 5.2.5, Section 5.2.3, Section 0 and Section 5.2.5.

The Business and Industry stakeholder group would continue to be consulted at key project stages, providing high level insights that would be strategic and holistic in nature. Engagement with this group also has the potential to raise project awareness, sanction project support and advocates and seek broader inputs by leveraging their existing business contacts.

5.0 Assessment of impact

During the construction and operation of the project, there is the potential for positive and negative impacts on local businesses and the regional economy. An assessment of the potential impacts has been undertaken to determine the type, direction and magnitude of the potential impacts.

The potential impact to businesses due to the project varies depending on the location and type of business. These factors also influence the magnitude of the impact.

Further details of impacts are presented in the following sections, with potential impacts during construction and operation discussed separately.

5.1 Construction

The following potential impacts during project construction have been identified:

- Increase in output, industry value added, household income and employment from direct and indirect impacts due to construction expenditure and employment.
- Amenity impacts, resulting in a reduction in trade due to construction activities in proximity to individual businesses, or commercial / retail centres.
- Changes in accessibility due to traffic congestion due to construction traffic, or reductions in car parking availability due to construction.
- Acquisition of industrial-zoned land for the Pioneer Avenue compound, which is currently vacant.
- Cumulative impacts due to concurrent construction activities associated with other major infrastructure projects in the region, specifically North West Rail Link and Epping to Thornleigh Third Track.

This reflects the consultation undertaken with local businesses, as discussed in **Chapter 4.0** and listed in **Table 2**.

5.1.1 Increased business turnover and employment

The construction expenditure of the project would be of significant benefit to the economy. This expenditure would inject economic stimulus benefits into the local, regional and state economies. Local business would principally benefit from this expenditure through purchases made by construction businesses and associated workers to build and support the development of the project. The analysis assumes that four per cent of labour, plant and equipment, materials or other inputs would be sourced from interstate and six per cent of equipment, materials and other inputs would be sourced from overseas.

Around 1,250 jobs are expected to be created during the peak construction period of the project (classified as 'initial' employment in this assessment). There may be employment opportunities for local residents as part of the construction workforce. As a result, the overall wealth and/or disposable income of the community are expected to grow. Wages also have the potential to increase due to the increase in demand for construction workers.

Table 3 presents the direct, indirect and total impacts of construction expenditure on the New South Wales economy per year of construction.

Direct impacts (including employment) are the initial and 'first-round' effects of construction expenditure where 'first round' effects refer to the impacts on businesses supplying directly to the construction of the project. Business that may directly benefit from construction of the project may include local construction contractors and those businesses who service or supply goods to the construction industry such as food and beverage retailers, accommodation providers, and other retail outlets that would cater to the day-to-day needs of the construction workforce. The increase in turnover may subsequently lead to increased employment opportunities and incomes for those businesses (and employees) providing goods and services.

The expenditure would also have flow-on effects to other businesses in the area. Indirect effects refer to flow-on effects to the wider state economy.

The assessment of direct, indirect and total impacts of construction expenditure has been conducted using the economic multiplier methodology presented in **Section 2.1**.

Table 3 shows that for New South Wales:

- Construction expenditure, in terms of output, contributes an estimated \$2.9 billion directly, with flow-on (indirect) effects of \$1 billion, giving an estimated total impact of \$3.9 billion.
- Household income generated by the construction of the project is estimated to be \$0.5 billion, with flow-on effects of \$0.2 billion, giving an estimated total household income contribution of \$0.7 billion.
- Direct employment (initial and 'first round') supported by the construction of the project is estimated to average 5,060 FTE positions per year for four years. Flow-on employment is estimated to average 3,649 FTE positions per year for four years, giving a total of around 8,700 annual FTE positions over the four year construction period.
- Value added attributable to the construction of the project is estimated to be around \$0.9 billion directly, with flow-on effects of around \$0.4 billion, giving an estimated total value added contribution of \$1.3 billion. This is the estimated contribution to Gross State Product (GSP).

Table 3 Direct, Indirect and total impacts of construction expenditure on the New South Wales economy per year of construction

Impact	Increase in industry output	Increase in household income	Increase in employment	Increase in value added
	\$ million (2014 prices)	\$ million (2014 prices)	Full time equivalent positions ^(a)	\$ million (2014 prices)
Direct	2,853	519	5,060	873
Indirect	1,061	240	3,649	430
Total^(a)	3,914	759	8,709	1,302

Source: AECOM (2014)

Notes:

(a) Average number of FTE positions supported for four years.

5.1.2 Amenity impacts

Amenity has an impact on a customer's decision on where to shop. The impact of amenity on a business could potentially result in loss of trade as customers shop elsewhere to avoid adverse conditions. A place that has 'amenity' is regarded as pleasant and attractive, as well as convenient and comfortable.²

Amenity impacts include any factors that affect the ability of customers, employees or business owners to enjoy their workplace and daily activities such as noise, vibration, detrimental changes to views or changes to air quality.

Amenity impacts during the construction of the project have been discussed in detail in Section 7.2 (Noise and vibration), Section 7.3 (Air quality), Section 7.5 (Urban design, landscape character and visual amenity) and Section 7.7 (Social and economic) of the environmental impact statement.

With reference to those assessments, the potential impact to businesses during construction within the study area as a result of changes in amenity would occur as a result of:

- Increases in noise and vibration, including increases in road traffic noise and periods when night time works would be required.
- Potential changes in local air quality due to increased dust emissions associated with surface disturbance and/or the handling, transport and disposal of spoil.
- Changes in visual amenity due to construction compounds or activities close to businesses.

² Handy, S. Amenity and Severance 2002.

The majority of construction activity would occur underground, which would limit the extent of amenity impacts to businesses along the corridor. However, surface works would be required at the northern and southern interchanges, along the Hills M2 Motorway and at compound sites. The transport of spoil and other construction materials would also increase road traffic noise along key routes or in proximity to construction sites and compounds.

Construction activities or construction compounds that would be close to businesses within study area include:

- Muirfield Golf Course, which is located near the Hills M2 Motorway integration works.
- The southern interchange and the Hills M2 Motorway integration works. Activities at the southern interchange would be undertaken directly opposite to the Pennant Hills Golf Course and close to a strip of retail shops near Carmen Drive at Carlingford.
- Wilson Road compound, which is located in an area that is predominately residential. However, some businesses occur in proximity, namely a veterinary clinic and a funeral home located around 200 metres and 300 metres away respectively.
- Trelawney Street compound, which is located opposite a number of businesses along Pennant Hills Road, Phyllis Avenue and Central Avenue. This includes hotel accommodation, retail, food outlets and service stations. Heavy vehicles associated with this compound would utilise Phyllis Avenue roundabout to undertake u-turn movements.
- Pioneer Avenue compound at Thornleigh, which is located adjacent to a number of businesses and passive and active recreational areas.
- The northern interchange. Construction activities would be undertaken around 200 metres from a hotel on Ingham Road, Wahroonga, and a serviced apartment business along Pacific Highway in Wahroonga.

During construction, businesses such as outdoor restaurants, cafes and eateries would stand to be the most affected by noise and air quality impacts. It should be noted that those businesses, located on Pennant Hills Road and the Pacific Highway, would already experience reduced amenity from traffic along those roads.

The magnitude of the impact of amenity would be largely influenced by the construction hours, length of the construction period, the construction activity, proximity to the project and the nature of the business.

The construction noise assessment (refer to technical working paper: noise and vibration (AECOM, 2014)) identifies that there is the potential for exceedances of the recommended Noise Management Levels during certain activities that would be conducted in standard construction hours and out-of-hours activities. Feasible and reasonable mitigation measures would be implemented to reduce noise emissions as low as possible. However, the potential for residual impacts remains and consultation strategies would be required for affected businesses that are sensitive to changes in noise amenity.

As detailed in technical working paper: air quality (AECOM, 2014), the potential for dust to be emitted from above-ground construction works would be managed through standard mitigation measures identified within that technical report.

5.1.3 Changes to accessibility

As the project would be largely constructed underground in tunnel, potential disruptions to property accesses or the performance of the road network would be attributed to:

- Works on existing surface roads that require modification to accommodate the project or to connect to the project.
- Connections to the motorways.
- Establishment and use of ancillary construction compounds.
- Increased congestion along the network due to construction traffic.
- Reduced traffic lanes or travel speeds due to construction zones.

Construction activities would be staged and undertaken in a manner that minimises the disruption to traffic where reasonable and feasible. Construction traffic would also be managed to minimise movements during peak periods where possible. Nonetheless, due to existing capacity constraints along the network, the construction phase of the project would have an impact on the performance of the road network (refer to technical working paper: traffic and transport (AECOM, 2014) found in Appendix E of the environmental impact statement). This may impact businesses that are reliant on deliveries as they may experience longer transit times. Freight and commercial vehicles that use Pennant Hills Road, the Pacific Highway, the Hills M2 Motorway and the M1 Pacific Motorway may also experience longer transit times and decreased efficiencies over the construction period.

Businesses that rely on deliveries from and to their premises may experience some increases in transit times due to increased traffic on the road network from construction vehicles. Delivery times may be increased, which may increase delivery costs, particularly fuel and labour costs. An increase in the cost base may increase prices and could potentially decrease demand for these services.

The maintenance of access to businesses is vital to the viability of businesses. Excluding works along the two motorways, road works that would impact surface roads are largely concentrated at the northern and southern interchanges. There are no businesses located along these roads.

Temporary works are proposed at various stages of construction, such as temporary diversions for road, cycle and pedestrian traffic near work areas, and alternative arrangements would be provided where property accesses may be temporarily disrupted. In the event that accesses to businesses are unavoidable, consultation would be undertaken with the property owner and/or tenant to develop an appropriate alternative access arrangement. This may involve provision of a temporary access point or signage.

It is anticipated that the Trelawney Street compound would attract significant additional heavy vehicle trips to the road network, particularly the Pennant Hills Road intersections with Loch Maree Avenue and Trelawney Street and the northbound construction movements on Phyllis Avenue. Pioneer Avenue compound movements are expected to peak during shift change and would add significant additional light vehicle demand to the local road network. While the additional traffic may cause congestion at these two locations, access to businesses is not anticipated to be significantly impacted.

It is not proposed to remove off- or on-street car parking near businesses along the project corridor. To minimise construction vehicles or construction workers using on- or off- street parking, construction vehicles and workers accessing the construction compound sites would be provided with an employee parking transfer facility at Pioneer Avenue compound or within the construction facilities. Public transport options are also available along the construction corridor, and construction workers would also be encouraged to use these options to travel to and from the project, or to car pool.

Despite these initiatives, there remains the potential for construction workers to park along local streets that are used by customers of local businesses. However, this would likely be limited to those areas near compound sites, such as Trelawney Street compound. Mitigation and management measures are recommended to mitigate this potential impact.

5.1.4 Acquisition

Where the project requires acquisition of a land that a business occupies, it has the potential to impact on the economic productivity and the viability of that business. Where possible, the location of businesses along the corridor has been considered during the design of the project so that impacts to businesses would be minimised. There are five properties that contain private businesses that would be fully acquired, and one property that would be partially acquired at Pioneer Avenue compound that contains an unoccupied malt works facility as a result of the project.

All private land acquired for construction and/or operation would occur prior to the commencement of construction. While the acquisition would occur prior to the commencement of construction, the acquisition of five properties containing private businesses would be permanently required for the project. As such, the assessment of the short to long term economic impacts of that acquisition has been discussed in **Section 0** of this report.

The site at Pioneer Avenue would be temporarily required for construction and would function as a centralised parking facility for construction workers. The site currently accommodates an unoccupied malt works facility and an unoccupied site managers residence. To cater for the compound, the majority of the existing buildings within the site would be demolished. When the required use of the Pioneer Avenue compound concludes, it is intended that the site would be rehabilitated if necessary to enable a future use that is consistent with the land use zoning of the site under *Hornsby Local Environmental Plan 2013*.

5.1.5 Cumulative impacts

Cumulative impacts to the local economy and businesses are most likely to result from the construction of the North West Rail Link (NWRL) in the Hornsby, the Hills and Blacktown local government areas. The NWRL is estimated to support more than 16,200 jobs (NSW Government, 2011) during construction and inject \$25 billion (directly and indirectly) into the NSW economy (NSW Government 2011).

Epping to Thornleigh Third Track (ETTT) is the construction of six kilometres of new rail track between Epping and Thornleigh and is likely to be a significant employer of construction workers from 2014 until completion of construction.

Cumulative impacts are likely to intensify the impacts identified above, particularly with regard to employment and economic stimulus. The demand for labour for major projects such as this project, the NWRL, ETTT and other similar projects in the area would increase employment opportunities for local residents. There is potential for wages to increase due to high demand for construction workers.

The opportunity for local businesses to supply goods or services to the construction of these projects and their construction workforces has the potential to increase business turnover due to high demand from the multiple projects.

There is the potential for construction vehicles for ETTT and NWRL to contribute further to congestion on the road network, however, the majority of construction vehicles associated with the project would be using Pennant Hills Road with minimal use of local roads. The major civil works for ETTT, such as earthworks, spoil removal and structures, are programmed for completion by the end of 2014. Therefore, the potential for overlap with the peak period of this project during late 2015 and early 2016 would be related to station works for the ETTT project, the installation of track, signalling, overhead wires and communications. To minimise impacts on the surrounding road network, ETTT Vehicle Movement Plans General Procedure indicates that where feasible, construction material is to be delivered via rail and attempt to use the rail corridor to move materials and machinery and will plan delivery and haulage outside of school zones and peak hour periods. It is therefore considered that while there may be some cumulative impacts between the two projects, it is likely to be short-term (2015 – 2016) and not significant.

Three NWRL construction sites would be in the general vicinity of the project at Cherrybrook, Cheltenham and Epping. The NWRL Construction Traffic Management Plan also notes that the bulk of the construction-related trucks will be scheduled to arrive and depart from each site outside of the AM peak period (7 am – 9 am) and PM peak period (3 pm – 6 pm), with any truck movement after 6 pm subject to approval. This may intensify or prolong the impacts on amenity and congestion during the construction period. As discussed in the technical working paper: traffic and transport (AECOM, 2014), that due to the anticipated timeframe for the construction of NWRL, any cumulative impacts between the NWRL and this project would be minimal and not significant.

5.1.6 Summary of construction related impacts

During the construction of the project, there is the potential for a boost in the economy due to construction expenditure in the region. Local business would principally benefit from this expenditure through purchases made by construction businesses and associated workers to build and support the development of the project.

Employment opportunities would grow in the region through the potential increase in business patronage and through the increase in demand for construction workers. The increase in demand for labour may increase wages in the region, particularly for construction workers who would be in high demand.

Through economic multipliers it was determined that construction expenditure would contribute a total of \$3.9 billion dollars of output, \$0.7 billion dollars of household income, around 8,700 full-time equivalent jobs and \$1.3 billion of value added to the New South Wales economy per year of construction.

There is the potential for businesses to experience impacts to amenity due to the project in the form of increases in noise and vibration, potential increases in dust and changes in visual amenity. The majority of construction activity would occur underground, which would limit the extent of amenity impacts to businesses along the corridor. Businesses such as outdoor restaurants, cafes and eateries would stand to be the most affected by noise and air quality impacts.

It is anticipated that the construction phase of the project has the potential to impact on the performance of the road network. As a result, businesses that are reliant on deliveries may experience longer transit times. Freight and commercial vehicles that use Pennant Hills Road, the Pacific Highway, the Hills M2 Motorway and the M1 Pacific Motorway may also experience longer transit times and decreased efficiencies over the construction period.

One property would be acquired for the Pioneer Avenue compound. This property is currently vacant, and its use for the project would not preclude the future use of the site that is consistent with its land use zoning. The acquisition of this property would occur prior to the commencement of construction.

5.2 Operation

The following potential impacts during the operation of the project have been identified.

- Increased output, household income, value added and employment from the operation of the project.
- Improvements in amenity and accessibility for businesses due to reduced congestion and traffic volumes along Pennant Hills Road.
- Reductions in amenity and accessibility for businesses in proximity to above ground elements of the project.
- Losses associated with the acquisition of business (employment, turnover).
- Loss in trade and employment due to changes in volumes of passing traffic.
- Changes in visibility.
- Improvements to freight transport efficiencies.
- Cumulative impacts associated with other major infrastructure projects in the region, specifically North West Rail Link and Epping to Thornleigh Third Track.

This reflects the consultation undertaken with local businesses, as discussed in **Chapter 4.0** and listed in **Table 2**.

5.2.1 Increased business turnover and employment

The assessment of direct, indirect and total impacts of operational expenditure has been conducted using the economic multiplier methodology presented in **Section 2.1**.

Table 4 presents the direct, indirect and total impacts of operational expenditure on the New South Wales economy per year of operation:

- Operation of the project, in terms of output, is estimated to contribute around \$32 million directly, with flow-on (indirect) effects of around \$17 million, giving an estimated total impact of around \$39 million.
- Household income generated by operation of the project is estimated to be around \$7 million, with flow-on effects of around \$2 million, giving an estimated total household income contribution of around \$9 million.
- Direct employment supported by the operation of the project is estimated to average 93 FTE positions per year of operation. Flow-on employment is estimated to average 28 FTE positions per year of operation, giving a total of 121 annual FTE positions.
- Valued added attributable to the operation of the project is estimated to be \$13 million directly, with flow-on effects of \$3 million, giving an estimated total value added contribution of \$16 million. This is the estimated contribution to Gross State Product (GSP).

Table 4 Direct, indirect and total impact of operation expenditure on the New South Wales economy per year of operation

Impact	Increase in industry output	Increase in household income	Increase in employment	Increase in value added
	\$ million (2014 prices)	\$ million (2014 prices)	Full time equivalent positions	\$ million (2014 prices)
Direct	32	7	93	13
Indirect	17	2	28	3
Total	39	9	121	16

Source: AECOM

Note: The numbers presented in Table 4 have been rounded.

5.2.2 Improved amenity and accessibility

The project would remove a significant proportion of heavy vehicles that travel along Pennant Hills Road as well as a proportion of light vehicle through movements, which have considerable adverse impacts on local amenity. The performance of Pennant Hills Road would improve at certain locations as a result of the project, however, background growth caused as a result of local trips would mean that some key intersections would experience congestion irrespective of the project. Reduced traffic would also likely result in lower travel times along the corridor. A northbound journey on Pennant Hills Road is expected to take around 13 minutes less during the PM peak in 2019 and 21 minutes less in 2029 when compared to travel times for a similar journey in the absence of the project. This may change the travel and shopping patterns of local residents.

5.2.3 Reduced amenity and accessibility

Decreases in amenity or accessibility have the potential to impact on the viability of a business, depending on the type of business and the ability of that business to respond to any changes.

Amenity impacts could include decreased visual amenity due to the presence of new infrastructure, increased noise levels which would impact the ambience of the business (such as cafes) or decreased air quality.

Reduced accessibility would occur if access arrangements for individual businesses or retail centres change as a direct result of the project. There are no proposed changes to access arrangements for individual businesses or retail centres. Therefore this has not been considered further.

There would be limited potential for amenity impacts on businesses due to the operation of the project. The surface components of the project are in predominately residential areas and outside established and future commercial, industrial and retail centres, with the following exceptions:

- At the Trelawney Street tunnel support facility, located to the east of an established commercial centre at Thornleigh.
- At the Pennant Hills Golf Course, this is located to the east of the southern interchange. At this location, on- and off-ramps portals, as well as the motorway control centre, the southern ventilation facility and other supporting ancillary infrastructure would be located.
- At a small retail strip at Carmen Drive, Carlingford. This retail strip is located to the south of the Hills M2 Motorway near the Oakes Road underpass.

Noise and vibration and air quality impacts were assessed as part of Section 7.2 (Noise and vibration) and Section 7.3 (Air quality) of the environmental impact statement. The air quality assessment determined that the expected pollutant concentrations resulting from the project are low and within the relevant criteria. No noise exceedances are predicted at operational ancillary facilities, and feasible and reasonable noise mitigation measures (such as low noise pavement and noise barriers) have been identified for road traffic noise which would provide benefit for non-residential receivers.

5.2.4 Acquisition

As discussed in **Section 5.1.4**, five properties that contain businesses would be fully acquired for the project prior to the commencement of construction. This has the potential to impact on the economic productivity and the viability of those businesses. The acquisition of the property would occur under the Roads and Maritime Land Acquisition Information Guide (Roads and Maritime, 2012) and under the terms of *Land Acquisition (Just Terms Compensation) Act 1991*.

The five (5) businesses that would be directly impacted due to property acquisition comprise:

- One landscaping business, which is located within the operational footprint of the southern interchange.
- Four businesses located within the footprint of the Trelawney Street tunnel support facility, comprising two retail and two service-based businesses.

While the acquisition of land would occur prior to the commencement of construction, the impact of acquisition would have both short term impacts (during construction of the project) and medium to long term impacts (during operation of the project) on the economy through the loss of employment and turnover.

These businesses may choose to relocate to another site within the region and continue trading. However, for the purposes of this assessment, the worst-case scenario has been considered which assumes a permanent loss of contribution of those businesses to the economy. As such, the results of this assessment may overstate the loss of turnover, employment and economic activity in the region.

Based on relevant industry averages of employment and turnover, and applying the methodology described in **Chapter 2.0**, it has been estimated that there would be a reduction of around 25 full-time equivalent jobs in the region annually (refer to **Table 5**). The reduction in employment of 25 full-time-equivalent positions is equivalent to less than 0.1 per cent of total jobs in the Hornsby LGA. As the directly impacted businesses may differ from the averages due to size and location, the results presented in **Table 5** should be used as an indicator only.

Table 5 Potential impact of acquisition

Number of businesses	Annual potential loss of employment (FTE positions)
5	25

Note: A PV factor of seven per cent over 30 years has been applied to obtain a permanent loss of business activity. 30 years is assumed to be the life of a business.

5.2.5 Reduction in passing trade

While the reduction in traffic volumes along Pennant Hills Road would improve amenity of the local centres, reduced traffic volumes can negatively impact those businesses reliant on passing trade. The tunnel would mean that businesses that were previously visible to passing trade would no longer be seen to vehicles passing through the tunnel and vehicles may no longer patronage these businesses. Studies of bypass impacts in NSW³ have shown that the most affected businesses are those directly serving the needs of the motorist such as motor services, particularly service stations, food and beverage outlets and, to a lesser extent, accommodation establishments.

The strategic traffic model (refer to technical working paper: traffic and transport (AECOM, 2014)) provided estimates in the projected changes in traffic volumes in 2019 and 2029 with and without the project across the broader road network. For the purposes of this assessment, the changes in traffic volumes as predicted in the strategic model for key major roads were reviewed.

³ Assessments reviewed include: NSW RTS and University of Sydney (2009), *Evaluation of the Economic Impacts of Bypass Roads on Country Towns: Final Report* and NSW RTA and University of NSW (2011), *Economic Evaluation of Town Bypasses: Review of Literature*.

The potential change in value of passing trade has been estimated based on changes in volumes of traffic and the results of the business survey (refer to **Chapter 4.0**). This provides an estimate in the direct loss of employment and turnover after the opening of the project and represents a worst case scenario in so far as it does not take account of an increase in turnover due to changes in local traffic and business adaptation. The linkages with other businesses supplying goods and services to those businesses directly impacted were not quantified. These would be indirect or second round impacts on employment and turnover resulting from the diversion of through traffic and are likely to be minor.

A total of 31 businesses were identified as potentially being impacted by a reduction in passing trade, which include hotels, cafes, and service stations. Survey responses were received from 23 out of 31 businesses. For the businesses that did not provide response to the survey, the average number of employees and the estimated reliance of passing trade was calculated as the average of the responses in the corresponding category of establishment.

Output (or business turnover) was estimated using employment to output ratios published by the ABS (1991-92) and inflated to 2013 prices. Therefore, the assessment has assumed that the businesses assessed were representative of the 'average' business in Australia in their classified type of business. This does not take into account efficiencies or deficiencies within the businesses that could reflect higher or lower turnover estimates.

Based on the outcomes of the business survey, and applying the methodology described in **Chapter 2.0**, it has been estimated that there would be an annual reduction of around \$5.6 million in output and around 18 full-time equivalent jobs due to loss in passing trade (refer to **Table 5**). This equates to a loss of 7.8 per cent of total output and 6.4 per cent of full-time equivalent employment of the businesses surveyed.

This is a worst case scenario analysis of the impact of the reduction of passing trade based on industry averages and the results presented in **Table 6** should be used as an indicator only. It should also be considered in the context of the travel time improvements and the associated benefits to the freight industry as discussed in **Section 0**, and the employment opportunities generated by the project, as discussed in **Section 5.2.1**.

Table 6 Potential impact of passing trade

Type of business	Number of businesses	Annual potential loss of output (\$)	Annual potential loss of employment (FTE positions)
Hotels	5	42,000	0
Cafés and fast food restaurants	9	913,000	6
Service stations including those with car wash facilities	17	4,626,000	12
Total	31	5,580,000	18

Source: ABS Consumer Price Index, All groups, Sydney, ABS Retailing in NSW 1991-92, Catalogue Number 8623.1, ABS Australian National Accounts: Input-Output Tables 2009-10, Catalogue Number 5209.0

5.2.6 Changes in visibility

Several businesses including KFC, McDonalds and Ibis hotels currently advertise along Pennant Hills Road and/or the M1 Pacific Motorway to attract passing trade to their operations. With the potential reduction in traffic along Pennant Hills Road and the Pacific Highway, the visibility of these businesses to through traffic would be reduced. Visibility is important to businesses that rely on passing trade. Customers for these types of businesses are generally impulse or convenience purchasers. The likely change in through traffic may necessitate potential changes to advertising operations to continue to draw customers to some businesses.

5.2.7 Freight and efficiency impacts

Long distance freight traffic on the M1 Pacific Motorway is forecast to increase significantly over the next 20 years as the population of South Eastern Australia continues to grow. The F3-M2 connector: Supporting research highlights the increased congestion on Pennant Hills Road as a result of the significant population growth projected for North West Sydney. This would further reduce the efficiency of freight movement over time, and would place increased stress on road infrastructure along Pennant Hills Road and the Pacific Highway.

As travel speeds along major road corridors decrease, road freight productivity and commuter efficiency is being impacted, presenting an economic cost to the State. There are 21 sets of traffic signals between the Pennant Hills interchange at Hills M2 Motorway and the M1 Pacific Motorway interchange at Wahroonga that would be bypassed as a result of the project. When compared with travel time on Pennant Hills Road, the project would offer travel time savings of around six to 15 minutes in 2019 and nine to 25 minutes in 2029 (see technical working paper: traffic and transport (AECOM, 2014)). When compared to travel time on Pennant Hills Road without the project, the project would offer travel time savings of around 10 to 25 minutes in 2019, and 12 to 40 minutes in 2029. This travel time saving would not only be of benefit to commuters and other private vehicles, but also commercial and freight vehicles transporting goods on the regional and state road network. Transport for NSW valued the travel time for freight movement at \$57.84 per vehicle per hour in 2013, demonstrating a significant benefit of reduced travel times for freight movement (TfNSW, 2013a). The NSW Freight and Ports Strategy estimated that a one per cent increase in freight efficiency saves the national economy \$1.5 billion (TfNSW, 2013b).

The reduced transit times would reduce operational costs associated with fuel and wages and improve safety by reducing the number of times trucks have to stop for traffic lights. It would also improve the efficiency of freight movements given the improvements in connections between the M1 Pacific Motorway with the Hills M2 Motorway, and beyond. Provision of an alternative route for freight transport between the M1 Pacific Motorway and the Hills M2 Motorway would also lead to improvements in the efficiency and reliability of Sydney's freight network, facilitating more efficient movement of goods through the supply chain and ultimately enhancing productivity. In order to boost productivity, grow the economy and create new jobs, improvements to the NSW urban road network needs to occur.

5.2.8 Cumulative impacts

Cumulative impacts to the local economy and businesses are most likely to result from the concurrent operation of the North West Rail Link (NWRL) in Hornsby, the Hills and Blacktown LGAs and the Epping to Thornleigh Third Track (ETTT). Cumulative impacts are likely to intensify the impacts identified above through any changes in traffic on Pennant Hills Road and the surrounding road network from transport mode shifts from private vehicles or freight to rail. This would intensify the impacts on amenity, accessibility and changes in passing trade highlighted above.

It is not anticipated that the NWRL would reduce vehicle traffic on Pennant Hills Road or the Pacific Highway and therefore would not impact passing trade.

The ETTT project is one of four projects that form the Northern Sydney Freight Corridor Program, an initiative to improve the capacity and reliability for freight trains on the main North Line between Sydney and Newcastle. As detailed in the technical working paper: traffic and transport (AECOM, 2014), it is likely that any future capacity increase as a result of the ETTT project would be taken up by the projected freight growth by 2031, and is unlikely to impact on the heavy vehicle movements on Pennant Hills Road.

As such, ETTT project may result in additional reduction in freight vehicles on Pennant Hills Road and the Pacific Highway as it would absorb some of the predicted increase in freight transport volumes. Any further reduction in road freight may intensify the impacts on amenity, accessibility and changes in passing trade highlighted in **Section 5.2.2.**

5.2.9 Summary of operational impacts

The project has the potential to change the volumes of traffic on Pennant Hills Road and the Pacific Highway. For Pennant Hills Road, this would reduce congestion at key locations along Pennant Hills Road. However, background traffic growth associated with local movements would mean that some intersections would be congested irrespective of the project. It would also remove a significant proportion of heavy vehicles that travel along Pennant Hills Road, which currently have considerable adverse impacts on local amenity. Reduced traffic would also likely result in lower travel times along the corridor, which may change the travel and shopping patterns of local residents and benefit local businesses.

Reduced traffic would improve access and connectivity for businesses and make it easier for businesses to make and receive deliveries, including local takeaway and home delivery establishments. This has the potential to reduce businesses costs, particularly fuel and labour costs. A decreased travel time for deliveries has the potential to increase demand for these businesses as their operations become more efficient.

Provision of an alternative route for freight transport between the M1 Pacific Motorway and the Hills M2 Motorway would also lead to improvements in the efficiency and reliability of Sydney's freight network, facilitating more efficient movement of goods through the supply chain and ultimately enhancing productivity.

Operational expenditure was estimated to contribute a total of \$39 million in output, around \$9 million in household income, 121 FTE jobs and \$16 million of value added per year of operation.

Under the worst case scenario five (5) businesses would be acquired resulting in a loss of 25 FTE jobs. In addition, it has been estimated that there would be an annual reduction of around \$5.6 million in output and around 18 full-time equivalent jobs due to loss in passing trade

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6.0 Mitigation and Management Measures

6.1 Construction

The recommended measures to mitigate or manage impacts generated during the construction of the project are summarised in **Table 7**.

Table 7 Construction mitigation measures

Impact	Detail
Amenity	
Noise and vibration	Mitigation measures specific to construction noise and vibration can be found in section 7.2 of the environmental impact statement for this project.
Air quality	Mitigation measures specific to construction air quality can be found in Section 7.3 of the environmental impact statement for this project.
Traffic and access arrangements	
Accessibility	<p>Implement a community involvement plan to provide timely, regular and transparent information about changes to access and traffic conditions, details of future work programs and general construction progress throughout the construction phase of the project. Information to be provided in a variety of ways including letter box drops, media releases, internet site, signage and a hotline.</p> <p>Provision of appropriate signage to ensure motorists' understanding of access to local businesses adjacent to construction works.</p> <p>Mitigation measures specific to Traffic and Transport can be found in Section 7.1 of the environmental impact statement for this project.</p>
Parking	<p>Workers are to be directed to use parking at the Pioneer Avenue compound, public transport or parking facilities within construction compound sites to minimise the impact on public parking availability for customers and staff along the corridor.</p> <p>Monitor the need for time parking restrictions near the Trelawney Street compound.</p>
Business and economic issues	
Acquisition	Carry out the acquisition of property in accordance with the Roads and Maritime Land Acquisition Information Guide (Roads and Maritime, 2012) and under the terms of <i>Land Acquisition (Just Terms Compensation) Act 1991</i> .
Other business impacts	<p>Maintain of a toll free number and website to enable business owners and/or operators to receive prompt responses to their concerns, access information and view assistance measures in place during construction related work.</p> <p>Maintain a business impact risk register to identify and manage the specific impacts associated with construction related works for individual businesses.</p> <p>Maintain and continue the business stakeholder forum during detailed design and throughout construction to ensure business concerns are addressed. Further information about consultation can be found in Chapter 6 of the environmental impact statement for this project.</p>

6.2 Operation

The recommended measures to mitigate or manage impacts generated during the operation of the project are summarised in **Table 8**.

Table 8 Operational mitigation measures

Impact	Detail
Amenity	
Noise and vibration	Mitigation measures specific to operational noise and vibration can be found in Section 7.2 of the environmental impact statement for this project.
Visual amenity	Mitigation measures specific to operational visual amenity impacts Section 7.5 of the environmental impact statement for this project.
Business and economic issues	
Acquisition	Carry out the acquisition of property in accordance with the Roads and Maritime's Land Acquisition Information Guide (Roads and Maritime, 2012) and under the terms of <i>Land Acquisition (Just Terms Compensation) Act 1991</i> .
Passing trade	Advertising and signage opportunities along the M1 Pacific Motorway and Hills M2 Motorway would be considered to inform motorists of businesses and services that can be accessed at the next exit.
Traffic and access arrangements	
Accessibility	<p>The traffic and access arrangements associated with the operation of the tunnel are expected to be primarily positive due to reduced traffic, particularly heavy vehicles. As such, there is unlikely to be any significant required mitigation measures.</p> <p>Any required changes to traffic and access arrangements would be supported by the provision of appropriate signage to ensure motorists understand the changes.</p> <p>Mitigation measures specific to traffic and transport can be found in Section 7.1 of the environmental impact statement.</p>

7.0 Conclusion

This report has identified and assessed the potential impacts to businesses associated with the construction and operation of the project. This assessment has been conducted with regard to the existing business environment, a survey of indirectly impacted businesses, an assessment of potential positive and negative impacts and an assessment of management and mitigation measures.

The project has aimed to minimise potential negative impacts through the project design.

During the construction of the project, there is the potential for a boost in the economy due to construction expenditure in the region. Local business would principally benefit from this expenditure through purchases made by construction businesses and associated workers to build and support the development of the project.

Around 1,250 jobs are expected to be created during the peak construction period of the project. Employment opportunities would grow in the region through the potential increase in business patronage and through the increase in demand for construction workers. The increase in demand for labour may increase wages in the region, particularly for construction workers who would be in high demand.

Amenity impacts during construction are anticipated to be limited as the majority of construction activity would occur underground. Amenity impacts are likely to be limited during construction to the northern and southern interchanges, along the Hills M2 Motorway and at compound sites. Noise and vibration impacts may occur from construction vehicles and from tunnelling where the tunnel passes under businesses.

As the project would be largely constructed underground in tunnel, potential disruptions to property accesses or the performance of the road network would be limited to surface works during construction of the northern and southern interchanges, the establishment and use of ancillary construction compounds and due to increased congestion and/or reduced travel speeds and reduced traffic lanes.

It is anticipated that five (5) businesses would require acquisition due to the construction and operation of the project. These properties would be acquired under the Road and Maritime's Land Acquisition Information Guide (Roads and Maritime, 2012) and under the terms of *Land Acquisition (Just Terms Compensation) Act 1991*. An additional property would be acquired for temporary use during the construction period. The use of this land would not preclude its use for industrial purposes following the completion of construction.

It has been identified that businesses trading as service stations, takeaway restaurants and accommodation providers along Pennant Hills Road and the Pacific Highway between Hornsby and the interchange of the Pacific Highway and Mona Vale Road at Pymble have the potential to be impacted by a reduction of passing trade. Under the worst case scenario this annual reduction would be in the magnitude of around \$5.8 million and around 18 full-time equivalent jobs, or four per cent loss in output and employment in businesses reliant on passing trade.

The project is expected to significantly benefit freight transport in New South Wales. The project provides a solution to the increased congestion and decreased travel times along Pennant Hills Road, which forms part of the National Road Network. Road freight productivity and commuter efficiency is expected to increase, potentially boosting productivity, economic growth and creating new jobs. The reduced transit times would also reduce operational costs associated with fuel and wages and improve safety by reducing the number of times trucks have to stop for traffic lights. Improving connections between markets promotes the efficient movement of goods through the supply chain and ultimately has the potential to enhance productivity.

Where necessary, a number of mitigation measures have been proposed to minimise any impacts that would be associated with the construction and operation of the project.

Overall the positive impacts on businesses and the economic benefit of the project is expected to outweigh any negative impacts that cannot be satisfactorily mitigated.

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Appendix A

Business Questionnaire



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M1-M2 Business Survey Interview Proforma

As part of the M1-M2 (formerly the F3-M2) proposal, this survey is being carried out on behalf of Transurban. The purpose of the survey is to understand business practices within the project area and determine the potential impacts (both positive and negative) resulting from changes in through traffic to Pennant Hills Road and the Pacific Highway. For further details on the M1-M2 project, please see the community update provided with this survey or visit the project website at www.rms.nsw.gov.au/m1tom2.

Business Name: _____

Interviewee's Name: _____

Address: _____

Status (please circle): Owner / Manager / Employee Other _____

Contact address: _____

(if different from above) _____

Contact phone number: _____

Interview date and time: _____

Location (please circle): At premises / Telephone

Other (please state): _____

Interviewer(s): _____

1) Please describe the main activities of your business:

2) How many persons are employed (including family members) in operating this business?

Full Time

Part Time

Casual

3) What is the area of retail floor space in your business premises (square metres)?

4) Please indicate the type of current parking arrangements and number of spaces available to your customers:

On-street parking

Private car park

Public (shared) car park

5) Please indicate the current operational businesses hours of the business:

6) Would you please rate how dependent your business operations are on the through traffic (ie. Traffic passing to and from the M1 Pacific Motorway, or Hills M2 Motorway)?

Very Dependent

Not Very Dependent

5

4

3

2

1

(Please circle appropriate rating)

7) Can you please estimate approximately what percentage of your current annual turnover is derived from passing through traffic (ie. Traffic passing to and from the M1 Pacific Motorway, or Hills M2 Motorway)? _____%

8) Do you have any additional comments in relation to the potential changes to your business as a result of the project (ie. Impact on local traffic trade, accessibility of business, amenity)?

☐ I would like to register for community updates on the Project

Appendix B

Business Indicator Tables

Appendix B Business Indicator Tables

Table B-1 Labour force status (Place of work)

Labour force status	West Pennant Hills (SA2)	Pennant Hills – Cheltenham (SA2)	Hornsby- Waitara (SA2)	Normanhurst-Thornleigh-Westleigh (SA2)	Wahroonga – Warrawee (SA2)	Turrumurra (SA2)	Pymble (SA2)	Study area	Hornsby LGA	New South Wales
Worked Full-time	71%	54%	57%	59%	50%	44%	66%	57%	56%	65%
Worked Part-time	24%	42%	38%	36%	46%	51%	30%	38%	39%	30%
Away from work	4%	4%	4%	4%	4%	4%	3%	4%	4%	4%
Hours worked not stated	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Total	2,908	4,849	14,514	4,942	5,211	3,406	5,309	41,139	41,501	3,033,526

Source: ABS (2012), 2011 Census of Housing and Population, Place of Work

Table B-2 Industry of employment (Place of work)

Industry	West Pennant Hills (SA2)	Pennant Hills - Cheltenham (SA2)	Hornsby- Waitara (SA2)	Normanhurst -Thornleigh- Westleigh (SA2)	Wahroonga - Warrawee (SA2)	Turrumurra (SA2)	Pymble (SA2)	Study area	Hornsby LGA	New South Wales
Agriculture/Forestry/Fishing	3%	0%	0%	0%	0%	0%	0%	0%	1%	2%
Mining	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%
Manufacturing	1%	2%	8%	12%	2%	2%	6%	6%	8%	9%
Electricity/Gas/Water/Waste Services	0%	0%	1%	0%	0%	0%	1%	0%	1%	1%
Construction	5%	4%	3%	8%	3%	6%	6%	4%	6%	7%
Wholesale Trade	2%	2%	5%	5%	1%	3%	12%	5%	5%	5%
Retail Trade	3%	18%	17%	11%	4%	13%	5%	12%	14%	11%
Accommodation/Food Services	2%	5%	6%	13%	4%	5%	3%	6%	7%	7%
Transport/Postal/Warehousing	1%	1%	3%	3%	0%	1%	4%	2%	3%	5%
Information Media/Telecommunications	1%	2%	1%	1%	2%	2%	1%	1%	1%	2%
Financial/Insurance Services	2%	3%	2%	1%	2%	3%	3%	2%	3%	5%
Rental/Hiring/Real Estate Services	2%	2%	1%	2%	2%	3%	3%	2%	2%	2%
Professional/Scientific/Technical Services	63%	9%	6%	12%	7%	12%	18%	13%	8%	8%
Administrative/Support Services	3%	2%	2%	3%	2%	3%	3%	2%	2%	3%
Public Administration and Safety	2%	2%	5%	2%	0%	1%	4%	3%	3%	6%
Education/Training	2%	20%	10%	12%	21%	13%	15%	13%	13%	8%

Industry	West Pennant Hills (SA2)	Pennant Hills - Cheltenham (SA2)	Hornsby- Waitara (SA2)	Normanhurst -Thornleigh- Westleigh (SA2)	Wahroonga - Warrawee (SA2)	Turrumurra (SA2)	Pymble (SA2)	Study area	Hornsby LGA	New South Wales
Health Care/Social Assistance	6%	17%	22%	10%	45%	27%	8%	20%	16%	12%
Arts/Recreation	0%	2%	1%	1%	1%	1%	1%	1%	1%	2%
Other Services	2%	6%	5%	4%	3%	4%	3%	4%	5%	4%
Inadequately described/Not stated	1%	1%	1%	1%	1%	1%	2%	1%	1%	1%
Total Employed Persons	2,908	4,849	14,515	4,944	5,207	3,406	5,308	41,137	41,501	3,033,526

Source: ABS (2012), 2011 Census of Housing and Population, Place of Work

Table B-3 Total personal income (Weekly) (Place of work)

Total weekly personal income	West Pennant Hills (SA2)	Pennant Hills – Cheltenham (SA2)	Hornsby- Waitara (SA2)	Normanhurst- Thornleigh- Westleigh (SA2)	Wahroonga – Warrawee (SA2)	Turrumurra (SA2)	Pymble (SA2)	Study area	Hornsby LGA	New South Wales
Negative/ Nil income	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
\$1-\$199	2%	9%	8%	9%	6%	9%	5%	7%	9%	5%
\$200-\$299	2%	5%	5%	5%	5%	6%	3%	5%	5%	4%
\$300-\$399	2%	6%	6%	6%	5%	8%	4%	6%	6%	6%
\$400-\$599	5%	12%	13%	12%	12%	14%	7%	11%	13%	12%
\$600-\$799	6%	12%	15%	13%	13%	15%	9%	13%	14%	15%
\$800-\$999	8%	10%	13%	11%	12%	10%	11%	11%	12%	13%
\$1,000-\$1,249	11%	11%	12%	12%	11%	10%	12%	12%	12%	12%
\$1,250-\$1,499	11%	8%	8%	8%	9%	6%	10%	8%	8%	9%
\$1,500 - \$1,999	22%	13%	10%	12%	13%	10%	15%	12%	11%	11%
\$2,000 or more	30%	12%	8%	11%	12%	9%	22%	13%	9%	11%
Personal income not stated	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Total	2,249	4,847	14,515	4,943	5,208	3,407	5,308	40477	41,501	3,033,526

Source: ABS (2012), 2011 Census of Housing and Population, Place of Work

Table B-4 Residential location of workers (Top 5 in study area)

Residential location of workers (LGA)	Hornsby – Waitara (SA2)	Normanhurst - Thornleigh – Westleigh (SA2)	Pennant Hills – Cheltenham (SA2)	Pymble (SA2)	Turramurra (SA2)	Wahroonga – Warrawee (SA2)	West Pennant Hills (SA2)	Study area
Hornsby	10%	13%	13%	7%	12%	12%	11%	11%
Ku-ring-gai	5%	4%	3%	7%	13%	8%	3%	6%
The Hills	7%	8%	11%	5%	7%	8%	12%	8%
Gosford	9%	7%	7%	7%	8%	9%	4%	7%
Parramatta	5%	5%	8%	4%	5%	5%	7%	6%
Blacktown	5%	7%	7%	4%	5%	3%	6%	5%
Wyong	7%	4%	4%	5%	4%	6%	3%	5%
Ryde	4%	4%	4%	4%	4%	4%	5%	4%
Other	48%	48%	43%	56%	43%	47%	50%	48%

Source: BTS (2012), 2011 Journey to Work Data

Table B-5 Journey to work mode (Place of work)

Mode	West Pennant Hills (SA2)	Pennant Hills – Cheltenham (SA2)	Hornsby – Waitara (SA2)	Normanhurst - Thornleigh – Westleigh (SA2)	Wahroonga – Warrawee (SA2)	Turramurra (SA2)	Pymble (SA2)	Study Area
Train	8%	15%	21%	14%	14%	17%	19%	16%
Bus	3%	3%	2%	2%	3%	1%	2%	2%
Vehicle Driver	48%	42%	34%	50%	42%	47%	44%	43%
Vehicle Passenger	6%	10%	10%	8%	8%	8%	8%	8%
Walked Only	1%	1%	2%	1%	4%	1%	1%	2%
Other	8%	7%	12%	10%	6%	8%	11%	9%
Worked at home or did not go to work	26%	22%	19%	16%	24%	18%	14%	20%

Source: BTS (2012), 2011 Journey to Work Data

Table B-6 Businesses by employment sizes

Employing businesses	West Pennant Hills (SA2)	Pennant Hills – Cheltenham (SA2)	Hornsby – Waitara (SA2)	Normanhurst - Thornleigh – Westleigh (SA2)	Wahroonga – Warrawee (SA2)	Turramurra (SA2)	Pymble (SA2)	Study area
Non Employing	912	1,231	1,690	929	1,269	1,155	1,271	8,457
1-4 employees	438	601	863	503	583	603	601	4,192
5-19 employees	83	176	362	159	130	129	151	1,190
20-199 employees	32	44	106	41	31	29	52	335
More than 200 employees	3	0	0	6	3	0	12	24
Total	1,468	2,052	3,021	1,638	2,016	1,916	2,087	14,198

Source: ABS (2013), Counts of Australian Businesses, including entries and exits, June 2012

Table B-7 Businesses by industry, 2012

Industry	West Pennant Hills (SA2)	Pennant Hills – Cheltenham (SA2)	Hornsby – Waitara (SA2)	Normanhurst - Thornleigh – Westleigh (SA2)	Wahroonga – Warrawee (SA2)	Turramurra (SA2)	Pymble (SA2)	Study area
Agriculture/Forestry/Fishing	23	46	22	24	60	51	53	279
Mining	0	3	9	0	0	6	3	21
Manufacturing	31	60	135	58	27	42	45	398
Electricity/Gas/Water/Waste Services	0	0	3	0	3	3	3	12
Construction	175	189	297	234	143	153	162	1,353
Wholesale Trade	88	72	187	85	73	53	78	636
Retail Trade	84	112	221	90	95	104	92	798
Accommodation/Food Services	41	81	108	28	37	40	43	378
Transport/Postal/Warehousing	45	62	127	45	18	32	34	363
Information Media/Telecommunications	19	27	38	30	31	34	29	208
Financial/Insurance Services	164	207	242	147	327	246	282	1,615
Rental/Hiring/Real Estate Services	207	242	298	157	249	223	292	1,668
Professional/Scientific/Technical Services	300	470	586	415	474	532	528	3,305
Administrative/Support Services	44	81	145	78	78	64	67	557
Public Administration and Safety	3	0	8	6	3	3	10	33
Education/Training	29	33	58	31	44	40	40	275
Health Care/Social Assistance	118	224	241	64	242	165	187	1,241
Arts/Recreation	8	26	31	15	23	35	41	179
Other Services	44	50	160	66	34	43	38	435
Inadequately described/Not stated	45	67	105	65	55	47	60	444
Total	1,468	2,052	3,021	1,638	2,016	1,916	2,087	14,198

Source: ABS (2013), Counts of Australian Businesses, including entries and exits, June 2012

Table B-8 Businesses by turnover, 2012

Business turnover	West Pennant Hills (SA2)	Pennant Hills – Cheltenham (SA2)	Hornsby – Waitara (SA2)	Normanhurst - Thornleigh – Westleigh (SA2)	Wahroonga – Warrawee (SA2)	Turramurra (SA2)	Pymble (SA2)	Study area
Zero to \$50,000	539	690	884	507	687	661	669	4,637
\$50,000 to less than \$100,000	211	346	520	303	338	322	352	2,392
\$100,000 to less than \$200,000	266	358	512	297	321	339	318	2,411
\$200,000 to less than \$500,000	262	383	514	271	389	340	404	2,563
\$500,000 to less than \$2,000,000	158	217	429	181	236	195	242	1,658
More than \$2,000,000	32	58	162	79	45	59	102	537
Total	1,468	2,052	3,021	1,638	2,016	1,916	2,087	14,198

Source: ABS (2013), Counts of Australian Businesses, including entries and exits, June 2012

Table B-9 Industry value add and gross regional product, Hornsby LGA, 2012

Industry	Hornsby	Sydney SD	NSW
Agriculture, forestry and fishing	\$17.6	\$432.5	\$6,764.0
Mining	\$16.7	\$2,265.7	\$14,436.0
Manufacturing	\$523.0	\$24,360.9	\$35,154.0
Electricity, gas, water and waste services	\$99.3	\$6,782.2	\$11,834.0
Construction	\$350.2	\$15,051.5	\$22,403.0
Wholesale trade	\$320.8	\$17,030.8	\$20,321.0
Retail trade	\$387.1	\$12,674.6	\$18,729.0
Accommodation and food services	\$187.6	\$8,376.1	\$13,052.0
Transport, postal and warehousing	\$238.6	\$16,285.0	\$21,420.0
Information media and telecommunications	\$116.3	\$16,749.5	\$18,314.0
Financial and insurance services	\$424.2	\$57,956.4	\$64,316.0
Rental, hiring and real estate services	\$151.3	\$8,567.5	\$11,236.0
Professional, scientific and technical services	\$489.5	\$28,787.4	\$33,649.0
Administrative and support services	\$162.0	\$10,311.1	\$13,182.0
Public administration and safety	\$140.2	\$13,361.1	\$20,118.0
Education and training	\$483.9	\$13,149.0	\$20,170.0
Health care and social assistance	\$552.4	\$17,611.7	\$27,232.0
Arts and recreation services	\$56.3	\$3,334.5	\$4,266.0
Other services	\$152.6	\$5,658.2	\$8,292.0
Ownership of dwellings	\$654.7	\$27,319.1	\$36,675.0
Gross Sector Value Add	\$5,524.3	\$306,064.9	\$421,563.0
<i>Taxes Less Subsidies</i>	\$441.8	\$24,475.7	\$33,712.0
Gross Regional Product	\$5,966.0	\$330,540.6	\$455,275.0

Source: AECOM (2013), AECOM In-house GRP Model



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