

Nelson Bay Road Upgrade – Williamtown to Bobs Farm

Preferred Option Report

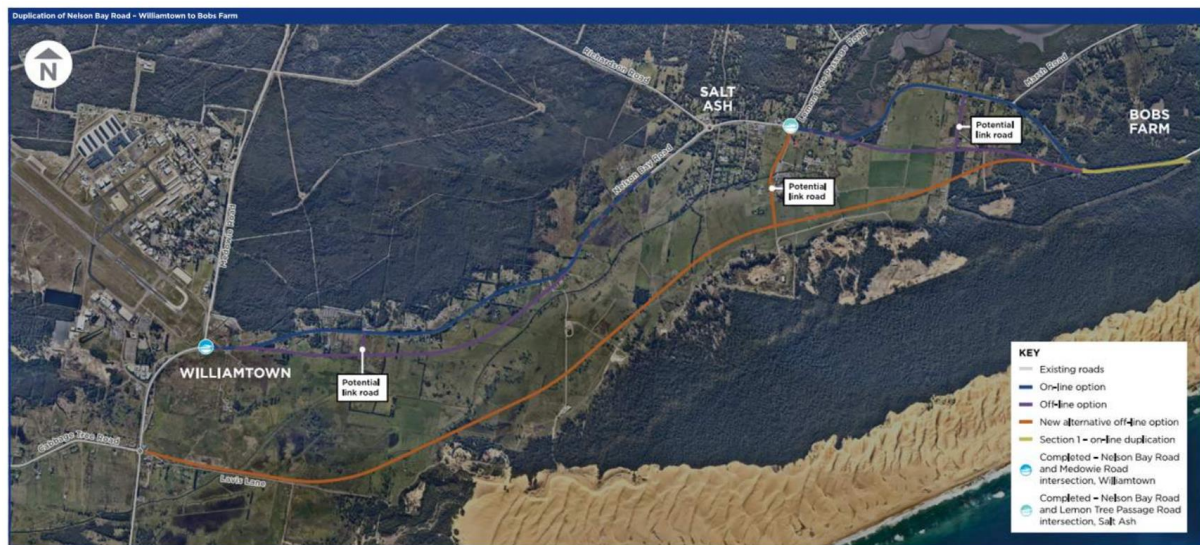
Transport for NSW | November 2021

Executive Summary

Transport for NSW (Transport) is currently planning for the duplication of Nelson Bay Road from Williamtown to Bobs Farm as the next priority for the Nelson Bay Road corridor. We have considered both on-line and off-line route options. The project would provide two lanes in each direction and would improve safety and travel times on Nelson Bay Road.

During 2019 and 2020, Transport consulted with the community on on-line and off-line route options for the duplication.

Transport displayed three route options for community comment in November 2020, including on-line and off-line route options. These options are shown below.



In June 2021, Transport published a Community Consultation Report that summarised the feedback received from the community.

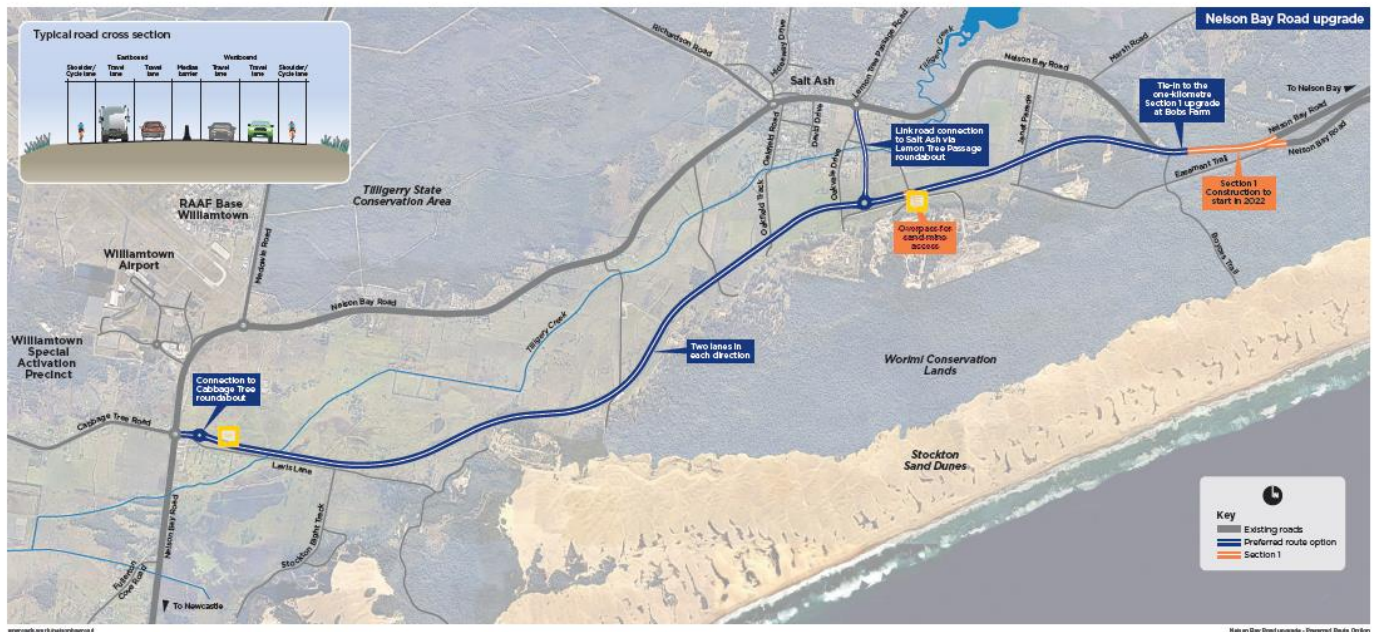
Following the community consultation, Transport undertook further technical investigations to inform the development of potential design and route changes in response to the issues raised by the community.

Transport held multiple options selection workshops with key stakeholders, adopting the multi-criteria analysis assessment approach to quantitatively identify the preferred route based on the agreed project objectives and assessment criteria. The workshops brought together representatives from Transport, Port Stephens Council, Williamtown Special Activation Precinct and a wide range of technical specialists who used the multi-criteria analysis assessment approach to review the three route options.

Transport has considered all feedback received from the community and has determined a preferred route option for the upgrade of Nelson Bay Road from Williamtown to Bobs Farm.

The preferred route is a fully off-line (orange) route that extends from the Bobs Farm (eastern end) of Nelson Bay Road to the Cabbage Tree Road roundabout at Williamtown (western end).

Following consultation and subsequent design investigations, the preferred route has been refined in response to community feedback. The preferred route with refinements is shown on next page.



Key design features of the preferred route are:

- Two lanes in each direction, divided by a median
- Mid-way link road connection to Salt Ash via Lemon Tree Passage roundabout
- At-grade roundabout intersection for link road connection new Nelson Bay Road
- Minimum 80 km/h posted speed with 100 km/h posted speed desirable
- On-road provision for cyclists
- Central rigid median barrier
- Tie-in to the one-kilometre stretch of the Nelson Bay Road upgrade at Bobs Farm (Section 1) that is scheduled for construction
- Connection to Cabbage Tree roundabout at southern end
- Access for sand mine operations
- Access to Lavis Lane.

Key advantages of the preferred route are:

- Significant traffic performance improvements for the network
- Mostly 100km/hr and future proofed to integrate with future projects
- Delivered safely and efficiently
- Best value for money
- Improved amenity for residents and communities
- Creates opportunity for placemaking and active transport improvements for communities along existing corridor, particularly Salt Ash and surrounds
- Strong community support based on number of submissions received during 2020 display of options.

The key next steps in the Nelson Bay Road upgrade project will be:

- Work on the duplication of Section 1 is scheduled to start in early 2022 and is expected to take about 18 months to complete, weather permitting
- Further refinement and assessment of preferred route (see Section 7.2)
- Display Environmental Assessment for the project
- Obtain planning approval for the project
- Start of work for the project (subject to business case approval).

Contents

Transport for NSW November 2021	1
1. Introduction	6
1.1 Background	6
1.2 Project overview	6
1.3 Project objectives	7
1.4 Purpose of the document and study	7
1.5 Study area	7
1.6 Strategic context	8
2. Project Need	10
2.1 Existing road conditions	10
2.1.1 Investigations	10
2.1.2 Road network	10
2.1.3 Traffic	11
2.1.4 Road condition	11
2.1.5 Historical crash data	11
2.2 Summary of deficiencies	11
2.3 Project benefits	12
3. Environmental and other constraints	13
3.1 Investigations	13
3.2 Key aspects	14
3.2.1 Biodiversity	14
3.2.2 Aboriginal heritage	14
3.2.3 Non-Aboriginal heritage	15
3.2.4 Soils, geology and contamination	15
3.2.5 Hydrology, water quality and groundwater	16
3.2.6 Noise and vibration	16
3.2.7 Socio-economic	16
3.2.8 Landscape character and visual amenity	17
3.2.9 Air quality	17
3.2.10 Utilities	18
3.3 Summary of issues and recommendations	18
4. Project Options	20
4.1 Design criteria	20
4.2 Option development process	20
4.3 Analysis of shortlisted options	23
4.4 Summary performance of shortlisted options	23
5. Community Consultation	26

5.1	Objectives	26
5.2	Approach	26
5.3	Community submissions	26
5.4	Post-display design investigations	27
6.	Selection of Preferred Route	29
6.1	Selection process	29
6.2	Options comparison approach	29
6.3	Option comparison outcomes	31
6.4	Preferred route	33
7.	Next Steps	35
7.1	Next steps	35
7.2	Refinement and assessment of preferred route	35
8.	Appendix A	36
8.1	Have your say community update – November 2020	36
9.	Appendix B	37
9.1	Facebook advertisements – November 2020	37
10.	Appendix C	38
10.1	Newspaper Advertisement: Port Stephens Examiner - 5 November 2020	38

1. Introduction

1.1 Background

The Hunter Region's road network is vital for connecting people, freight, and goods both within the region itself, and more broadly across New South Wales (NSW). Located within the Hunter Region is the Nelson Bay Road corridor. The 43-kilometre-long corridor provides a major road connection between Newcastle, Newcastle Airport, the Royal Australian Airforce (RAAF) base at Williamtown and Nelson Bay on the Tomaree Peninsula. Nelson Bay Road is used by approximately 25,000 vehicles per day and this increases during peak holiday periods.

Transport for New South Wales (Transport) is currently delivering upgrades and planning for future improvements along the Nelson Bay Road in line with the NSW Government strategy for the corridor.

As the next investment priority along the major road corridor, Transport is currently undertaking project development and planning activities for the duplication of Nelson Bay Road from Williamtown to Bobs Farm. The project is being undertaken to improve road safety and traffic efficiency along Nelson Bay Road between Williamtown in the west and Bobs Farm in the east.

In January 2019, the NSW Government announced \$275 million in construction phase funding for the duplication of Nelson Bay Road duplication between Williamtown and Bobs Farm.

A number of other projects relating to the Nelson Bay Road Corridor either have been, or are proposed to be, undertaken by Transport. These include:

- An upgrade of the Nelson Bay Road and Medowie Road intersection was completed in 2019.
- An upgrade of the Nelson Bay Road and Lemon Tree Passage intersection was completed in 2020.
- A one-kilometre section of Nelson Bay Road east of the intersection of Marsh Road to Bobs Farm (Section 1) has been prioritised for duplication as a stand-alone project. Transport has awarded the construction contract to build this section. Work on this section is scheduled to start in early 2022 and is expected to take about 18 months to complete, weather permitting.

1.2 Project overview

Transport is planning for the upgrade of Nelson Bay Road to a four-lane divided carriageway between Williamtown and Bobs Farm. The scope of the project includes an upgrade of Nelson Bay Road to two lanes in each direction, separated by a central median between Williamtown and Bobs Farm. Online and offline route options for the project have been publicly displayed in 2019 and 2020. The key features of the project are:

- Four lane dual carriageway (two lanes in each direction)
- Improved intersection access
- Improved shoulders for cyclists
- Minimum 80km/h design.

1.3 Project objectives

The upgrades to Nelson Bay Road involve a series of projects to improve safety and efficiency on the corridor, which would:

- Provide better connectivity for residents, businesses and the community to Newcastle airport and Williamstown RAAF base
- Improve traffic flow, journey times and safety for motorists on Nelson Bay Road
- Improve pedestrian and bicycle safety by providing enhanced facilities
- Support tourism and local industries as a major economic driver in the Port Stephens area.

The need to improve both road safety and efficiency combined with the strategic planning and economic development imperative to support the growth and expansion of Newcastle Airport and the Williamstown Special Activation Precinct as a regional catalyst for economic development, increases the need for investment in the Nelson Bay Road corridor. Local communities located along and surrounding Nelson Bay Road including Salt Ash would directly benefit from improved emergency services accessibility and road network resilience.

Investment in the project would also help to address the currently limited public and active transport options along the Nelson Bay Road Corridor and would support potential opportunities for local placemaking for Salt Ash and surrounds.

1.4 Purpose of the document and study

The purpose of this report is to describe how the preferred route for the upgrade of Nelson Bay Road project was selected. The report describes the assessment of the strategic options that were assessed following community consultation.

The report summarises the assessment of options against assessment criteria and identifies and recommends a preferred route to be taken forward for further development, community consultation, geotechnical and environmental investigation.

1.5 Study area

Nelson Bay Road is a strategically significant road link in the Hunter Region, with a road corridor that is 42.9 kilometres in length and traverses two local government areas (i.e. Newcastle and Port Stephens). Nelson Bay Road is the primary arterial road connection between the City of Newcastle and the coastal township of Nelson Bay. Typically, between 16,340 and 24,350 vehicles per day use the section of Nelson Bay Road between Williamstown and Bobs Farm. The Project Study Area is identified in Figure 1.1.

Nelson Bay Road provides a key transport connection to the popular tourist destinations of Nelson Bay, Tomaree National Park, and surrounding areas. On and around key public holidays, the traffic volumes significantly increase above the typical volumes. The section of Nelson Bay Road within the project study area has a relatively flat gradient albeit with a winding alignment.

A diverse range of land uses are located either in, or close to, the study area. Key land use features are listed below.

- Worimi National Park and Tilligerry State Conservation Area is also to the north of the study area.

- Stockton Beach Dune System.
- Several sand mining businesses are located along the eastern boundary of the study area.
- Newcastle Airport and Williamtown RAAF Base (part of the planning future Special Activation Precinct) positioned next to the northern boundary of the study area.
- Several tourist operations such as the Murrook Cultural Centre, Oakvale Wildlife Park, Quad Bike King, Sand Dune Adventures and Hellfire Paintball exist along Nelson Bay Road.
- There are five petrol stations located within the study area along Nelson Bay Road, at Lavis Lane (Metro), Williamtown Drive (Metro), Richardson Road (BP Truckstop), west of Janet Parade (The Pit Stop), and west of Marsh Road (Caltex, Salt Ash).
- Salt Ash Corner, also referred to as Pauls Corner, incorporates several small businesses.
- Banksia Grove Village (an over 50's village) and Williamtown Leisure Village.
- Tilligerry Creek intersects the study area from the north, whilst the Tilligerry State Conservation Area is also to the north of the study area.
- Privately owned residential and rural residential properties.
- Agricultural activities (including cattle grazing).

Within the study area, Nelson Bay Road has a posted speed limit of 80 km/h with varying side road speed limits of between 60km/h and 80km/h. The existing road corridor comprises 3.5m wide lanes with generally narrow shoulder widths (zero to 1 meter).

The existing cycle network along the corridor is provided by on-road cycling facilities only (i.e. sealed shoulders). These sealed shoulders generally have insufficient width or are non-existent and thereby fail to promote and support safe and accessible cycling. There are generally no sealed footpaths to connect key land uses or service the Nelson Bay Road bus stops. The bus stop near the Richardson Road roundabout includes a sealed footpath to link with nearby residential catchments, Salt Ash Public School, and local businesses.

1.6 Strategic context

This project is consistent with policy and declared service needs of Government. The project contributes to (or meets) components of the following plans, policies, and outcomes.

- Future Transport 2056 (March 2018). The project aligns with the 'Successful Places' and 'Safety and Performance' outcomes.
- Tourism and Transport Plan – Supporting the Visitor Economy (March 2018)
- Regional NSW Services and Infrastructure Plan (March 2018)
- Road Safety Plan 2021 (February 2018)
- NSW Freight and Ports Plan 2018-2023 (September 2018)
- Greater Newcastle Future Transport Plan (March 2018)
- Greater Newcastle Metropolitan Plan 2036 (September 2018)
- Hunter Regional Plan 2036- Department of Planning and Environment (October 2016)



Figure 1.1 Study area

2. Project Need

2.1 Existing road conditions

2.1.1 Investigations

The following information was relied upon for the analysis of existing conditions:

- Survey
- Traffic surveys, modelling and analysis
- Review of active and public transport routes (and consultation with bus operators)
- Review of crash history
- Road Safety Audits
- Review of asset maintenance records and program.

2.1.2 Road network

Nelson Bay Road is classified as a 4R corridor under the Road Network Management Hierarchy (RNMH) and has fringe urban and rural characteristics. The RNMH is used to classify all roads across the State Road Network according to their relative importance, with class 6 routes of the highest strategic importance and class 1 routes of the lowest strategic importance.

Functionally, the Nelson Bay Road corridor:

- Provides connectivity between Newcastle and Port Stephens for business, tourism, and leisure.
- Provides access to and from Newcastle Airport and the Williamstown RAAF Base and links these destinations with Newcastle and national key transport routes including the Pacific Highway.
- Supports sand mining activities along the Stockton Bight dune system and port related industries located on Kooragang Island and industrial areas at Tomago.
- Enables access to Port Stephens as a popular tourism destination, which experiences seasonal peaks especially during summer holiday periods.
- Provides access to the Stockton sand dunes and adjacent national parks.
- Connects communities between Newcastle, Medowie, Raymond Terrace, Nelson Bay, Lemon Tree Passage, and surrounding suburbs.

In addition to the above existing function of the corridor:

- In 2020, DPIE announced a Special Activation Precinct in Williamstown that will help to create a defence and aerospace hub, boost the local economy, and generate thousands of new jobs for the region. The strategic location of the Williamstown precinct next to the RAAF base, creates opportunities to attract new and existing businesses, in the defence and

aerospace industries. The master planning process is underway with DPIE expected to have Master Plan and Discussion Paper in the near future.

- In 2021, Federal Government announced funding for an upgrade of the Newcastle Airport runway to Code E status to allow wide-bodied, long-haul aircraft to fly in and out of Williamtown. This will accommodate longer range domestic and international passenger services as well as significantly increased large freight capabilities to benefit local exporters. Newcastle Airport estimates these improvements could create around 4,400 full-time jobs, deliver an additional 850,000 visitors to the region, and add \$12.7 billion to the local economy over the next 20 years.

2.1.3 Traffic

Traffic surveys were undertaken by Transport in December 2018, January 2019, and March 2019 for Nelson Bay Road outside of school holidays, with the AM peak between 6-9 AM and the PM peak between 3-6PM to determine the average daily traffic. The survey showed congestion along the corridor with annual average daily traffic (AADT) of 24,500 vehicles per day near the airport at Williamtown and 22,400 vehicles per day at Salt Ash in 2015. It is also subject to peak period congestion with high levels of percentage time spent following (PTSF). This is exacerbated during holiday periods when volumes increase to and from the tourist area of Nelson Bay.

A key issue impacting on the performance of this section of Nelson Bay Road is the overall level of peak period congestion. Congested roads are slower and less efficient, with travel times often less predictable. Consequently, the overall productivity of the transport task is effectively reduced. Without intervention, congestion will increase leading to a further reduction in the average peak hour speeds along the Nelson Bay Road.

2.1.4 Road condition

The existing Nelson Bay Road is generally a thin pavement in relatively poor condition, showing signs of fatigue associated with use of heavy vehicles. The pavement does not meet current design standards for the type of use along the corridor.

2.1.5 Historical crash data

The section of road located between Williamtown and Bobs Farm has significantly higher than average crash rates for a class 4R road type.

Between October 2013 and September 2018, a total of 79 crashes were recorded on Nelson Bay Road between Cabbage Tree Road and Bobs Farm, with one recorded fatality and 14 serious injuries.

These rates are significantly higher than the NSW State average FSI rate for a 4R classification road. The crash rate is expected to continue to rise in line with the overall growth in traffic volumes on Nelson Bay Road.

2.2 Summary of deficiencies

Current asset performance issues that the project is seeking to address and resolve include:

- Elevated crash rates along the length that are significantly higher than average rates for a class 4R road.

- Congestion, particularly in peak periods, along the corridor.
- The existing Nelson Bay Road is generally a thin pavement in relatively poor condition, showing signs of fatigue associated with use of heavy vehicles. The pavement does not meet current design standards for the type of use along the corridor.
- The section of road is narrow and constrained, particularly at the bridge over Tilligerry Creek.
- Ongoing and increasing safety risks for cyclists due to narrow shoulders (i.e., <1.0m wide) and high traffic volumes.

In the absence of the project, the deficiencies and performance issues affecting the existing road asset would continue, and overtime, be exacerbated from the increasing traffic volumes. In 2045, traffic volumes on Nelson Bay Road between Williamtown and Bobs Farm are predicted to increase to 24,800-37,000 vehicles per day, equivalent to about 150% of current traffic volumes. A failure to develop and deliver the project would result in increasing peak period traffic congestion, an elevated level of road safety risks from potential future growth and could inhibit the growth of Newcastle Airport and the Williamtown Special Activation Precinct.

The need to improve both road safety and efficiency combined with the strategic planning and economic development imperative to support the growth and expansion of Newcastle Airport and the Williamtown Special Activation Precinct as a regional catalyst for economic development, increases the need for investment in the Nelson Bay Road corridor.

2.3 Project benefits

Local communities located along and surrounding Nelson Bay Road including Salt Ash would directly benefit from improved emergency services accessibility and road network resilience. Investment in the project would also help to address the currently limited active transport options along the Nelson Bay Road Corridor and would support potential opportunities for local placemaking for Salt Ash and surrounds.

The key benefits of the project include:

- Improved travel times along the existing corridor during peak periods via a new offline corridor
- Improved road safety and crash reductions
- Enhanced public transport services for customers via the provision of an improved express bus service as well as efficiency improvements for existing non-express bus services
- Improved safety for cyclists through provision of sealed shoulders greater than two metres wide
- Improved accessibility to/from the emerging defence, aviation, and technology industries within the Williamtown Special Activation Precinct and Newcastle Airport, thereby supporting future growth and development
- Enhanced liveability for Salt Ash (including safety, accessibility, and amenity) due to a reduction in through traffic volumes on the existing Nelson Bay Road asset and supporting opportunities for local place making for Salt Ash and surrounds.

3. Environmental and other constraints

3.1 Investigations

Transport identified potential natural and built environment constraints on the project. The environmental investigations were preliminary and there will be a detailed assessment during the statutory application phase of the project.

The purpose of the environmental investigations was to:

- Identify potential environmental, social and planning issues and opportunities for the proposal
- Provide recommendations to inform route selection and future stages of proposal development, including the identification of a preferred route
- Integrate environmental, economic and social outcomes into decision making
- Assist in applying the principles of Ecologically Sustainable Development (ESD).

The information and recommendations from the environmental investigations were used to inform the options investigations and ongoing design process for the proposal with an aim to avoid or minimise environmental and social impacts wherever possible.

The following information was relied upon for the analysis of environmental and other constraints:

- Dune stability investigations
- Preliminary biodiversity investigation
- Preliminary heritage investigation
- Preliminary environmental investigations
- Preliminary Flood and Drainage Assessment
- Utility searches
- Property searches
- Land use investigations
- Geology and soils investigations
- Liveability assessment for Salt Ash
- Submissions and consultation associated with the public display of options

3.2 Key aspects

3.2.1 Biodiversity

The presence of threatened species and threatened ecological communities (TECs) is a potential constraint to road projects. Threatened species and TECs are protected under state and federal legislation.

Databases and previous reports on the biodiversity of the area were searched to determine the potential for threatened species and TECs to be present in the study area.

The assessment found that:

- There is potential to impact the following TECs listed under the NSW Biodiversity Conservation Act 2016 (BC Act), NSW Fisheries Management Act 1994 (FM Act) and/or Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act):
 - Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions as listed under BC Act
 - Swamp Sclerophyll Forest on coastal floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions as listed under BC Act
 - Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions as listed under BC Act and EPBC Act
 - Coastal saltmarsh in the NSW North Coast, Sydney Basin and South East Corner bioregions as listed under BC Act and EPBC Act.
- There is potential to impact on coastal wetlands and proximity coastal wetlands defined under State Environmental Planning Policy (Coastal Management) 2018
- The study area is near Tilligerry State Conservation Area, Worimi State Conservation Area and Worimi National Park and could directly and indirectly impact these protected areas
- There is potential habitat for threatened flora species in the study area
- There is potential habitat for threatened fauna species in the study area
- Most vegetation types recorded or predicted to occur are likely to be reliant on surface or subsurface groundwater (groundwater dependent ecosystems)
- The study area is near the Hunter River Estuary, which is a Ramsar listed wetland, and could indirectly impact this waterbody
- The project could impact the Port Stephens and Great Lakes Marine Park requiring consultation with DPI.

3.2.2 Aboriginal heritage

There is a significant and rich history of Aboriginal occupation in the study area and broader Port Stephens region. The Worimi people are the traditional owners of the 'Worimi Nation' which extends from the Manning and Hunter River to the north and south and the Allyn and Patterson Rivers to the west. Due to the estuarine environment, the study area is a significant resource area for Aboriginal peoples.

Databases and previous reports on the Aboriginal heritage potential of the area were searched to determine potential project impacts.

Searches identified forty-seven Aboriginal heritage sites were identified in the study area, comprising:

- 14 midden sites
- One open camp site
- 32 artefact sites (one partially destroyed and two destroyed).

The project could impact the above items. Potential impacts will be assessed in detail during the statutory application phase in accordance with Transport (2011) Procedure for Aboriginal Cultural Heritage Consultation and Investigation. It will also involve targeted surveys and extensive consultation with the Aboriginal community, including the Worimi Local Aboriginal Land Council. Transport would work with the Worimi Local Area Land Council to explore opportunities to highlight the location and function of the Murrook Cultural Centre.

3.2.3 Non-Aboriginal heritage

Databases and previous reports on the non-Aboriginal heritage potential of the area were searched to determine potential project impacts. Two locally listed items were identified in the study area. A farm silo (LEP I111) is to the south of the existing road reserve at the western end of the study area. The Stockton Beach Dune System (LEP I34) is in the southern portion of the study area. The following locally listed heritage items are near the study area:

- St Saviour's Anglican Church (LEP I108) – on the western boundary of the study area
- Devon House (LEP I109) – 300 m to the north-west of the study area
- Sabre jet fighter aircraft (LEP110) – 200 m to the north of the study area.

It is unlikely there are any previously unidentified non-Aboriginal heritage items in the study area. The non-Aboriginal heritage constraint analysis was based on the following aspects:

- Location and significance of known non-Aboriginal heritage items
- Likelihood of unidentified non-Aboriginal heritage items.

3.2.4 Soils, geology and contamination

Databases and aerial photographs were searched to determine the environmental setting (including topography, geology, soils, acid sulfate soils, hydrogeology, regional registered groundwater bores and surrounding land uses) and contamination history of the study area.

The assessment found that:

- There is potential for contamination comprising per- and poly-fluoro alkyl substances (PFAS); organochlorine and organophosphate pesticides; nitrates, ammonia and phosphates nutrients; total recoverable hydrocarbons; benzene, toluene, ethylbenzene and xylenes; solvents; polycyclic aromatic hydrocarbons; heavy metals; asbestos and acid sulfate soils (ASS). In particular the following issues are of note:
 - The presence of PFAS in soil, groundwater and surface water, as identified along the northern and north-western site boundaries

- Soils in the Tilligerry Creek estuarine plain have a high probability of occurrence of ASS. The disturbance of ASS, including the lowering of the groundwater table, may have the potential to result in the release of acidic water into the surrounding environment.

The study area is in the Tomago Tomaree Stockton Groundwater Source, which is rapidly recharged high yielding aquifer. Shallow groundwater is likely present across most of the study area, leading to waterlogged soils. This will create a high potential for contaminant migration, with the following considerations:

- As the study area is bounded to the north and south by aquifers used for potable water supply there will be a requirement to ensure a beneficial or neutral effect on water quality.
 - Potential water quality impacts on sensitive ecosystems, particularly coastal wetland and saltmarsh areas in the protected areas
 - Potential requirement for dewatering, which could require off-site disposal or re-injection.
- Soils in the study area may present foundation hazard, wind erosion hazard and/or wave erosion hazard
 - The proposal may alter contaminant exposure pathways and will require management to limit cross contamination, dust generation and erosion.

3.2.5 Hydrology, water quality and groundwater

Hydrology of the study area was characterised by reviewing government sources, aerial photographs/topographic maps and project specific investigations.

The study area is partly in the Hunter River floodplain and the floodplains of the following local catchments:

- The Moors Drain (flowing between the Williamstown RAAF base and Salt Ash into Tilligerry Creek)
- Tilligerry Creek (between Fullerton Cove and Nelson Bay Road, Salt Ash)
- Minor drainage channels (draining to Tilligerry Creek or directly to Fullerton Cove).

The study area is low lying and local catchment runoff mostly drains to the floodplains around Fullerton Cove and Tilligerry Creek. During large floods on the Hunter River some of the flood waters flow eastwards from Fullerton Cove into Port Stephens through the Tilligerry Creek floodplain in the study area. The transfer of water through this floodplain is controlled by topographic features including the physical obstruction of Nelson Bay Road.

3.2.6 Noise and vibration

Noise in the study area is dominated by aircraft from Williamstown RAAF Base and Nelson Bay Road traffic. There are many sensitive residential and commercial receivers in the study area.

3.2.7 Socio-economic

Australian Bureau of Statistics data from the 2016 census and regional summary reports were used to consider social and economic matters in the Port Stephens Local Government Area (LGA) and study area.

The LGA had a population of approximately 72,695 in 2018 and the LGA's gross regional product was approximately \$5.2 billion in 2020, which represented 9.4% of Hunter Gross regional product.

There are businesses in the study area which benefit from passing trade from Nelson Bay Road.

The area is heavily dependent on tourism and tourist traffic accounts for major peaks in school holidays and summer periods. Tourism related businesses may not be impacted as much as customers travel throughout the region to attend the attraction and are likely to continue to do so.

From a regional socio-economic perspective, Nelson Bay Road provides connectivity between Newcastle and Port Stephens, and access to Newcastle Airport, Williamtown RAAF base, extractive industries and other port-based industries and tourism.

3.2.8 Landscape character and visual amenity

Aerial and topographic images were used to characterise the landscape and visual amenity of the study area.

The study area is open and generally flat, with increasing elevation towards the dune system to the east. The land has been modified for residential, agricultural, airport, extractive, industrial and commercial land uses. There are large areas of grassy floodplain zoned RU2 Rural Landscape under the Ports Stephens LEP. Remnant vegetation increases to the east and there are protected areas associated with coastal wetlands in the wider area. Visual receivers in the study area mostly comprise residences along Nelson Bay Road.

The assessment found that:

- Removal of vegetation for road construction could impact visual amenity
- Off-line route options could alter the view across the grassy floodplain towards the sand dunes for residences along the existing Nelson Bay Road
- Temporary ground disturbance in the proposal footprint could impact visual amenity
- Widening and alterations to the current road surface could impact visual amenity
- Alteration of existing intersection and local access roads could impact visual amenity.

3.2.9 Air quality

A desktop assessment and review on the National Pollutant Inventory (NPI) considered the existing airshed and potential impacts from the project. A search of the NPI indicated local air quality is influenced by diffuse industrial sources such as the Tomago Aluminium Smelter, wastewater treatment plants, extractive industries and the Williamtown RAAF Base/airport. Other sources include vehicles and agriculture.

Sensitive receivers are the same as the noise receivers.

The assessment found that:

- Construction could impact air quality by:
 - Disturbing the ground surface and requiring vehicle movements over the disturbed surfaces

- Generating exhaust emissions from operation of plant and equipment
- During operations the new road could enable increased vehicle movements which would result in increased generation of vehicle exhaust over existing levels

3.2.10 Utilities

The following existing utilities in the study area may require protection or relocation, depending on acceptance of the preferred route:

- Hunter Water – potable water main, and water pump station
- DPIE HVFMS assets– drainage channels and floodgates
- Ausgrid
 - Overhead high voltage (HV) cables, poles and transmission lines.
 - HV substations.
 - Overhead Low Voltage (LV) cables, poles and transmission lines.
 - LV substations
- Telstra, NBN Co and Optus fibre optic services.
- Traffic control signals
- Air traffic control lights and signals
- Street Lighting.

3.3 Summary of issues and recommendations

The main issues identified are summarised below:

- Potential impacts to Coastal Wetlands identified under the State Environmental Planning Policy (Coastal Management) 2018. An assessment under Part 4 of the Environmental Planning and Assessment Act 1979 (EP&A Act) would be required, inclusive of preparation of an Environmental Impact Statement (EIS) and development consent by Port Stephens Council for this component of the project.
- Potential impacts on ecological communities listed as endangered under the Biodiversity Conservation Act 2016 (BC Act) (Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions) and the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) (Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland)
- Likely occurrence of BC Act and EPBC Act listed threatened flora and fauna species and migratory species (or their habitats) within the area likely to be affected by the proposal
- Potential impacts to Aboriginal objects and therefore a likelihood to require an Aboriginal Heritage Impact Permit (AHIP) under the National Parks and Wildlife Act 1974 (NPW Act)
- Potential impacts to Commonwealth land and therefore a likelihood of the requirement for additional assessment and potentially a referral to the Federal Department of the Agriculture, Water and the Environment (DoAWE) if the proposal is considered to have a significant impact to Commonwealth land under the EPBC Act

- Likely occurrence of Per-an-poly fluoroalkl substances (PFAS) within the area likely to be affected by the proposal
- Potential impacts to crown land, including one parcel subject to an Aboriginal land claim
- High probability of Acid Sulphate Soils within the area likely to be affected by the proposal
- Potential impacts to adjoining Worimi National Park and Tilligerry State Conservation Area
- Potential impacts to marine vegetation (including mangroves and saltmarsh) under the Fisheries Management Act 1991
- Possible requirement for an environment protection licence (EPL) under the Protection of the Environment Operations Act 1997 (POEO Act) prior to the commencement of construction.

4. Project Options

4.1 Design criteria

In consideration of the need for the project, the strategic context and current road standards, Transport established the following key design criteria for development of route options:

- Two 3.5 m lanes in each direction, divided by a median
- Wide (minimum 2 m) shoulders with provision for cyclists
- Minimum 80 km/h posted speed (100 km/h desirable).

The design team investigated both on-line widening options that duplicated the existing alignment and retained the existing pavement where possible, as well as off-line options. The off-line options would retain the existing road as a local road, providing access to businesses and dwellings.

4.2 Option development process

The following information was relied upon for development of the design options:

- Existing conditions and project need (see Section 2)
- Environmental and other constraints (see Section 3)
- Community consultation (see Section 5)

The strategic assessment process for the project was undertaken over two phases, including:

- Potential off-line and on-line duplication options were developed and placed on public display in 2019. Mixed community feedback was received by Transport for the options displayed in 2019 and stakeholders requested Transport to consider additional off-line options
- Following the display of options in 2019, additional options were developed and a second public display period was conducted by Transport in 2020, which included an additional off-line route option.

The shortlisted route options developed and presented to the community for consultation in 2020 are shown in Table 4.1 and Figure 4.2. The three short listed route options were:

- The fully online option (shown in blue in Figure 4.1)
- The partially offline option (shown purple in Figure 4.1)
- The fully offline option (shown in orange in Figure 4.1)

The key features of all options are:

- two lanes in each direction
- improved intersection access
- improved shoulders for cyclists
- minimum 80km/h design.

Table 4.1 Shortlisted route options

On-line option blue	Partially off-line option purple	Fully off-line option orange
<p>Duplication of the existing road over two sections. Williamtown to Salt Ash section:</p> <ul style="list-style-type: none"> Starts at Medowie Road, Williamtown roundabout Duplication of existing road for about 5 km including widening of the road corridor Ends about 800m from Richardson Rd roundabout <p>Salt Ash to Bobs Farm section:</p> <ul style="list-style-type: none"> Starts at Lemon Tree Passage Road roundabout Duplication of existing road for about 4.5 km including widening of the road corridor Ends at the existing dual carriageway through the sand hills. 	<p>Build new road over two sections. Williamtown to Salt Ash section:</p> <ul style="list-style-type: none"> Starts at Medowie Road, Williamtown roundabout Build new off-line road for about 5 km Ends about 800m from Richardson Rd roundabout <p>Salt Ash to Bobs Farm section:</p> <ul style="list-style-type: none"> Starts at Lemon Tree Passage Road roundabout Build new off-line road for about 4km including widening of the road corridor Ends at the existing dual carriageway through the sand hills. 	<p>Build new road over one longer section.</p> <ul style="list-style-type: none"> Starts at Cabbage Tree Road roundabout (Lavis Lane) Build new off-line road for about 11 km Ends at the existing dual carriageway through the sand hills Midway intersection at Salt Ash connecting to local network via link road (Oakvale Drive)

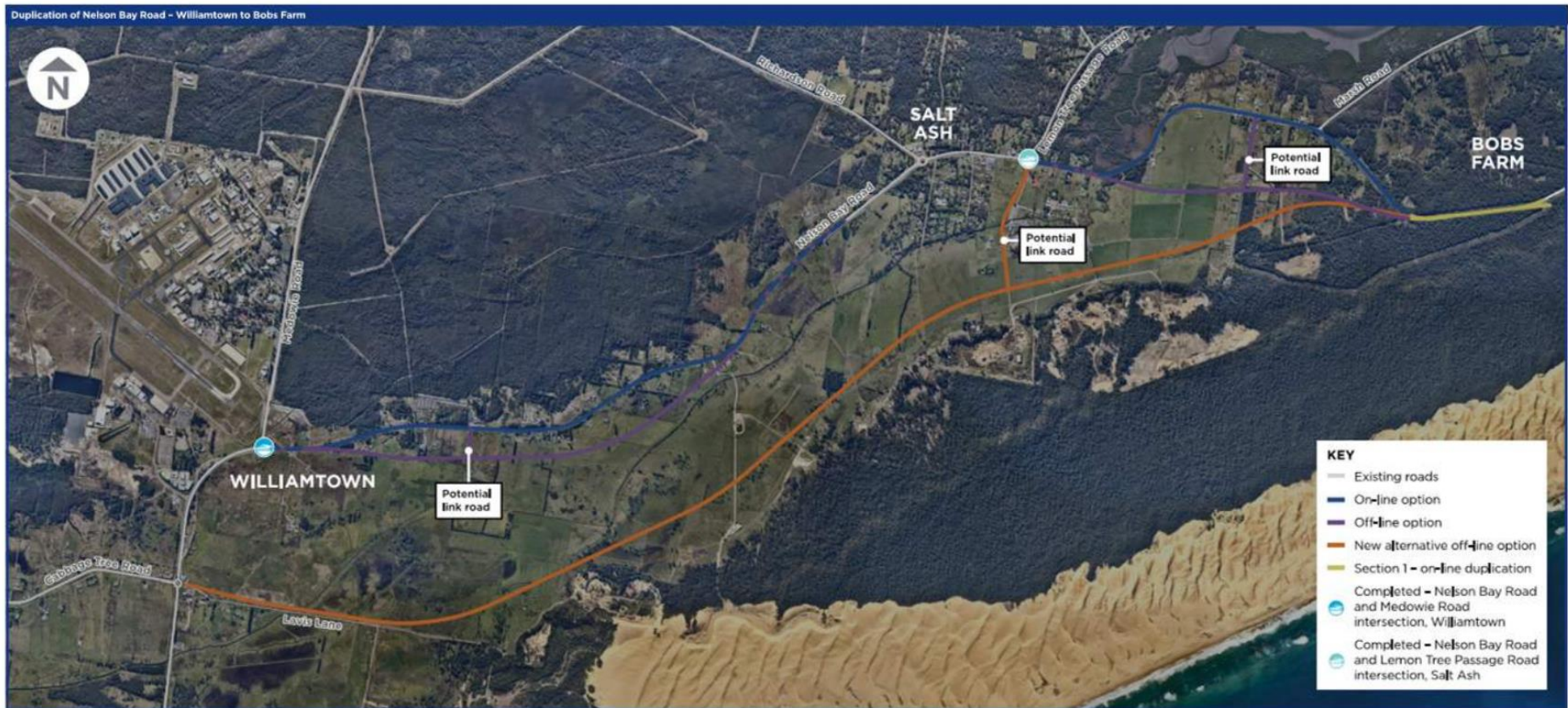


Figure 4.1 The shortlisted options presented to stakeholders and the community for consultation in November 2020

4.3 Analysis of shortlisted options













The following information was relied upon for the preliminary analysis of the performance of the design options:

- Analysis against project need (See Section 2)
- Analysis against environmental and other constraints (See Section 3).
- Road Safety Audits of design options
- Traffic modelling
- Cost estimates and cost benefit analysis of design options
- Crash reduction analysis of design options
- Safe Systems Analysis of design options
- Health and Safety in Design
- Submissions and consultation associated with the 2019 public display of options.

4.4 Summary performance of shortlisted options

Prior to selection of the preferred route, Transport undertook preliminary investigation to compare the shortlisted route options and then sought community feedback on the route options. These preliminary investigations to compare options are shown in Table 4.2 and the community consultation is described in Section 5.

Table 4.2 – Preliminary comparison

























Characteristic	On-line blue option	Off-line purple option	Off-line orange option	Preliminary Investigations
Landscape Character				<ul style="list-style-type: none"> On-line blue is a road along an existing road corridor. Off-line purple and orange involve building a new road within a landscape that does not currently have this type of development
Construction safety and efficiency				<ul style="list-style-type: none"> On-line blue option would require extensive relocation of utilities, working amongst live traffic, whilst providing access for residents and business. This would cause significant disruption to motorists during construction and would add extensive time, cost and safety risk to the project. Off-line purple option would be mostly off-line, significantly reducing the work within the existing road corridor. Off-line orange option would enable almost all construction to be off-line, which is the safest, most efficient and least disruptive option.
Value for Money				<ul style="list-style-type: none"> On-line blue option is the most expensive due to construction inefficiencies, and provides the least benefit. Off-line purple option is the least expensive option. Off-line orange option is the most efficient to build and provides the greatest benefit.
Transport network resilience				<ul style="list-style-type: none"> On-line blue option provides increase traffic capacity within the existing road corridor. Off-line purple option provides alternative routes for short sections of the corridor. Off-line orange option provides alternative routes that have connections to the broader road network.

Best



Worst

Characteristic	On-line blue option	Off-line purple option	Off-line orange option	Preliminary Investigations
Travel time savings				<ul style="list-style-type: none"> On-line blue option would save motorists up to 2 minutes travel time during peak hours. Off-line purple option would save motorists up to 3 minutes travel time during peak hours. Off-line orange option would save motorists up to 6 minutes travel time during peak hours. This option provides greatest benefit to tourism for Nelson Bay and surrounding areas.
Support Willamtown Special Activation Precinct (Including Newcastle Airport and RAAF Base Willamtown)				<ul style="list-style-type: none"> On-line blue option and off-line purple option provide improvements to the road network that will provide better connectivity for motorists travelling to and from the Special Activation Precinct. Off-line orange would provide the most support for the Special Activation Precinct as it would remove through traffic from the precinct, reducing congestion and increase the capacity of the road network to support growth of the Special Activation Precinct. Off-line orange also avoids conflict with the airport light landing towers that cross Nelson Bay Road at Willamtown.
Improved road safety				<ul style="list-style-type: none"> All options would exceed current road safety standards, allowing the community to travel on a better standard of road. Off-line purple and off-line orange options would provide a road with a safer alignment, and with fewer intersections and direct access points. The off-line alignments would also result in fewer cars on the existing Nelson Bay Road leading to a safer road environment for local residents, cyclists and pedestrians with major through traffic directed offline due to better travel time.
Pedestrian / walking				<ul style="list-style-type: none"> Works have already been undertaken to improve pedestrian facilities at the roundabouts along the existing corridor. On-line blue results in continued traffic growth along the existing corridor, along with road widening, which constrains opportunities for improved walking safety and amenity. Off-line purple and off-line orange would remove some traffic from the existing network, providing opportunities for improvement to pedestrian facilities.
Cycling				<ul style="list-style-type: none"> Works have already been undertaken to improve cycling facilities at the roundabouts along the existing corridor. All options would improve cyclist safety by providing a road design with minimum 2m wide roadside shoulders. Off-line purple would improve cyclist safety along the existing corridor by removing some traffic from the existing network. Off-line orange would remove the greatest amount of traffic from the existing network, creating the safest environment for cycling.
Public transport services				<ul style="list-style-type: none"> All options would enable the continuation of the existing bus services along the existing corridor. Off-line orange provides greatest potential to improve efficiency of bus services along the existing corridor. Off-line purple provides greatest potential to improve efficiency of bus services along the existing corridor.
Opportunities for improved residential amenity and liveability of Salt Ash and surrounds				<ul style="list-style-type: none"> On-line blue option retains high traffic volumes along Nelson Bay Road, retaining its primary purpose as a movement corridor for commuters and heavy vehicles. Off-line purple option would generally improve the amenity of residents living along Nelson Bay Road. Off-line orange option would provide the greatest opportunity for urban amenity improvements and place-making enhancements to communities' along the corridor as it would remove the greatest amount of traffic from the existing network. This option has the greatest potential to improve access to community services such as schools and day care. This option has the greatest potential for removing heavy vehicles from the residential areas along existing Nelson Bay Road.

				Best					Worst
Characteristic	On-line blue option	Off-line purple option	Off-line orange option	Preliminary Investigations					
Residential Property Impacts				<ul style="list-style-type: none"> On-line blue option requires widening of the road that would result in the partial acquisition of property frontages, including possible demolition of about 11 dwellings. This would include acquiring land from residents affected by PFAS. Off-line purple option requires full and partial acquisition to create a new road corridor, including possible demolition of about 7 dwellings. This would include severing some parcels of residential land. This option would include acquiring land from residents affected by PFAS. This option improves accessibility of the properties fronting the existing road. Off-line orange option requires full and partial acquisition to create a new road corridor, including possible demolition of about 4 dwellings. This alignment is located away from residential areas to reduce the potential for severing of residential land. This is not likely to include acquiring land from residents affected by PFAS. This option improves accessibility of the properties fronting the existing road. 					
Agricultural Impacts				<ul style="list-style-type: none"> On-line blue option is not expected to have significant impact on agricultural land use. Off-line purple option requires acquisition of agricultural land including property severance. Off-line orange option requires acquisition of agricultural land, directly impacting on a larger area than the other alignment options. 					
Impacts to existing Business				<ul style="list-style-type: none"> All options have potential to provide access for sand mining vehicles to the new road. A Business Impact Assessment would be undertaken during the environmental assessment to better understand the impacts and opportunities. On-line blue option retains traffic along the existing road. Safety barriers and traffic growth will result in restricted access for some businesses. Off-line purple option would reduce the amount of traffic on some sections of the existing road and some business would be impacted by a loss of passing trade to different degrees. This option would sever some productive land and affect agricultural businesses. Off-line orange option would reduce the amount of traffic on the existing road and some business would be impacted by a loss of passing trade (as above), and also those at Salt Ash. This option would have the least business impacts during construction. 					
Flooding and drainage				<ul style="list-style-type: none"> All options would be designed to improve the flood immunity of the final road and would meet the same design criteria. On-line blue option would require widening of the road which would impact on local drainage. The constrained corridor makes it complex to resolve local drainage which would likely require works on private land. Off-line purple and orange both involve building within the floodplain. Preliminary flood studies have been conducted to identify hydrology patterns near the route alignment options. Additional flooding and hydrology studies would be conducted to inform the design and minimise impacts of flooding and drainage once the preferred option is selected. 					
Impacts to community facilities				<ul style="list-style-type: none"> On-line blue option retains traffic growth along the existing road and has limited options for improving access to community amenities. Off-line purple option would reduce the amount of traffic on some sections of the existing road and some community amenities would have better access. Off-line orange option would reduce the amount of traffic on the existing road. It would also reduce traffic through the Salt Ash area and have a generally positive outcome providing safer access to community amenities (e.g. school, child care). All options would maintain access to the Worimi conservation lands. 					
Biodiversity Impacts				<ul style="list-style-type: none"> All options avoid work within National Parks and State Conservation Areas, however, they are likely to have some impact on threatened species and ecological communities. On-line blue and Off-line purple options would have impact to coastal wetlands associated with Tilligerry Creek. Off-line orange option avoids impact to coastal wetlands. 					
Aboriginal heritage Impacts				<ul style="list-style-type: none"> All options have potential to impact on Aboriginal heritage. Further investigations are required to determine how impacts can be avoided or minimised. 					
PFAS Contamination				<ul style="list-style-type: none"> On-line blue and off-line purple option both require building about 5 km of road with the mapped PFAS secondary management zone, which includes residential land. Off-line orange mostly avoids PFAS mapped land. 					

5. Community Consultation

5.1 Objectives

Transport consulted with the community and key stakeholders on the proposal to:

- Inform the community and stakeholders of the proposal and possible impacts
- Seek feedback on the proposal and issues of concern for consideration in developing alternative route options
- Build a database of interested and concerned community members with whom to continue engagement during option development.

5.2 Approach

In September 2019, Transport consulted with the community on on-line and off-line route options. During this consultation the community suggested that Transport consider an alternative off-line route option. Transport investigated the alternative off-line route that was suggested by the community and in November 2020 a second “Have your say” was published seeking community feedback on the following three short listed route options:

- The fully online option (shown in blue in Figure 4.1)
- The partially offline option (shown purple in Figure 4.1)
- The fully offline option (shown in orange in Figure 4.1)

The consultation approach is summarised in the Community Consultation Report published in June 2021.

5.3 Community submissions

The Community Consultation Report provides a summary of all issues raised in the submissions received and Transport’s responses.

Key stakeholder issues and comments received by Transport included the following:

- The fully off-line (orange) option would have less impact on existing residents due to its location and the fewer number of properties that would need to be acquired compared to the other route options.
- The fully off-line (orange) option would be easier to construct with less impact on existing residents compared to the other route options.
- Concern was expressed about the potential for reduced economic activity through the loss of agriculture and trade. It was noted the fully off-line (orange) option would bypass some existing businesses and divide some agricultural land, thereby impacting some farming operations.
- The fully off-line (orange) option would alleviate traffic congestion and sand mining heavy vehicles would be removed from the existing road network.
- The fully off-line (orange) option would improve road safety.

- For all options, there was some concern about the potential for per-and polyfluoroalkyl substances (PFAS) to be uncovered.
- For all options, there was some concern regarding potential environmental impacts (i.e. biodiversity loss and fragmentation) and heritage impacts on land owned by the Worimi Local Aboriginal Land Council (WLALC).

There were 140 submissions received in total. The majority of submissions received by Transport during the consultation period nominated the fully off-line (orange) option as being preferred. Of the 105 respondents that nominated a clear preference, 80 preferred the fully off-line (orange) option and 19 conveyed support for the on-line option (blue). Transport also acknowledges the receipt of two petitions which were coordinated by the business at Paul's corner and supported the on-line option.

A number of design option suggestions were made by the community. The design option suggestions and the key issues raised in the submissions have been carefully considered by Transport in the preferred route option decision-making process.

5.4 Post-display design investigations

Following the consultation, Transport investigated a number of design options in response to community concerns or suggestions. These have included:

- Various hybrid route options that are part off-line and part on-line that aim to:
 - maintain all traffic passing Pauls Corner businesses on existing Nelson Bay Road.
 - maintain all traffic passing Williamtown Rd intersection (Newcastle Airport) on existing Nelson Bay Road.
 - maintain all traffic passing Murrook Cultural Centre on existing Nelson Bay Road.
- All of the hybrid route options suggested by community result in significant reduction of the traffic performance, increased construction costs, and greater property or amenity impact to existing residences along Nelson Bay Road. All of the options above are considered inferior to the displayed routes and are not proposed by Transport as part of the preferred route.
- For the fully off-line option, route and design changes have been investigated that ensure the connection to Lavis Lane enables the current heavy vehicle and 4WD use. These have been adopted within a refined design for the fully off-line option.
- For the fully off-line option, an alternate link road location has been investigated that avoids significantly impacting the current operation planned development of the Oakvale Wildlife Park. This change has been adopted within a refined design for the fully off-line option.
- For the fully off-line option, a route has been investigated that reduces the agricultural land severance by being located closer to existing powerline easement. This change has been adopted within a refined design for the fully off-line option.
- For both of the off-line options, multiple alternative routes have been investigated for the eastern end of the project to try and reduce the need for acquisition of the four residential dwellings. These included:
 - An alternative route to the north of the dwellings was investigated with multiple route options. The alternatives present inferior design solutions that introduce unacceptable road safety risk for a road with posted speed of 100km/hr. The

alternatives do not avoid the need to acquire residential land, and it is likely that several residences would still need to be acquired due to close proximity to the proposed road. The alternatives introduce new residential amenity impacts (noise, vibration, drainage, access) during construction and operation and are not proposed by Transport as part of the off-line options.

- An alternative route to the south of the dwellings was not further explored as it would traverse through Worimi National Park and there is inadequate justification for the revocation of the national park.

In addition to the above, Transport have been consulting the NSW Department of Planning, Industry and Environment to ensure that project best supports the development of the Williamstown Special Activation Precinct.

6. Selection of Preferred Route

6.1 Selection process

The process to select a preferred route involved the following key tasks:

- Establish study area and define project objectives
- Identify project constraints
- Identify extensive list of options
- Refinement to short list of options (see Section 4)
- Display of preferred route options and their preliminary performance (refer Table 4.2) to seek community feedback on the options, including direct consultation with individuals to better understand issues raised by community. The community consultation is summarised in Section 5.
- Subsequent further technical investigations of potential design/route changes to better responded to issues raised by community.
- Hold multiple options section workshops with specialists and stakeholders, adopting a multi-criteria analysis assessment approach to quantitatively identify the preferred route based on the project objectives.

6.2 Options comparison approach

A multi-criteria analysis was used to identify the most appropriate route option. The key result areas adopted for the multi-criteria analysis were:

1. Reduce peak period congestion (including seasonal peaks) along Nelson Bay Road
2. Provide a resilient network that can accommodate growth in the Williamstown Special Activation Precinct
3. Improve safety for all road users, constructors and maintainers
4. Improve liveability and amenity for local communities
5. Minimise community amenity impacts
6. Minimise impact on heritage and the natural environment
7. Value for money

The indicators were established to enable specific indicators relative to the key result areas and objectives for the project to be assessed and scored. These generally correspond to key constraints or performance measures. They are framed in a way that can be realistically measured (either qualitatively or quantitatively).

Table 6.1 Key result areas and measurable Indicators

Key result areas	Measurable Indicators
1. Reduce peak period congestion (including seasonal peaks) along Nelson Bay Road	1.1 Reduce peak period congestion
	1.2 Improve intersection Level of Service

2. Provide a resilient network that can accommodate growth in the Williamtown Special Activation Precinct	2.1 Support an improvement in network resilience
	2.2 Improve traffic resilience of key Intersections
3. Improve safety for all road users, constructors and maintainers	3.1 Minimise construction and maintenance safety risks
	3.2 Improve road safety
4. Improve liveability and amenity for local communities	4.1 Support an increase in active transport
	4.2 Support an increase in public transport
	4.3 Improve urban amenity and placemaking opportunities through traffic reduction
5. Minimise community amenity impacts	5.1 Minimise residential property impact
	5.2 Minimise agricultural impact
	5.3 Minimise impact on businesses
	5.4 Minimise construction disruption to the community
6. Minimise impact on heritage and the natural environment	6.1 Minimise impact on biodiversity
	6.2 Minimise impact on non-Aboriginal and Aboriginal heritage
	6.3 Minimise contamination risk
	6.4 Minimise Impact on landscape character
	6.5 Minimise Impacts on flooding and drainage
7. Value for money	7.1 Cost estimate
	7.2 Benefit cost ratio

Transport held multiple options selection workshops with key stakeholders, adopting the multi-criteria analysis assessment approach to quantitatively identify the preferred route based on the agreed project objectives and key result areas. The workshops brought together representatives from Transport, Port Stephens Council, Williamtown Special Activation Precinct and a wide range of technical specialists who used a multi-criteria analysis assessment approach to review the three route options.

6.3 Option comparison outcomes

Outcomes from the community consultation were relied upon to inform the workshop decision-making process. The outcome of the multi-criteria analysis is shown Table 6.2, with green 'showing the better performing option against each indicator.

Table 6.2 Multi-Criteria Analysis

Key Result Areas	Measurable Indicator	Blue (Fully On-line)	Purple (Partially Off-line)	Orange (Fully Off-line)
1. Reduce peak period congestion (including seasonal peaks) along Nelson Bay Road	1.1 Reduce peak period congestion			
	1.2 Improve intersection LoS			
2. Provide a resilient network that can accommodate growth in the Williamstown Special Activation Precinct	2.1 Support an improvement in network resilience			
	2.2 Improve traffic resilience of key intersections			
3. Improve safety for all road users, constructors and maintainers	3.1 Minimise construction and maintenance safety risks			
	3.2 Improve road safety			
4. Improve liveability and amenity for local communities	4.1 Support an increase in active transport			
	4.2 Support an increase in public transport			
	4.3 Improve urban amenity and placemaking opportunities through traffic reduction			
5. Minimise community amenity impacts	5.1 Minimise residential property impact			
	5.2 Minimise agricultural impact			
	5.3 Minimise impact on existing businesses in study area			
	5.4 Minimise construction disruption to the community			
6. Minimise Impact on heritage and the natural environment	6.1 Minimise impact on biodiversity			
	6.2 Minimise impact on non-Aboriginal and Aboriginal heritage			
	6.3 Minimise contamination risk			
	6.4 Minimise Impact on landscape character			

Key Result Areas	Measurable Indicator	Blue (Fully On-line)	Purple (Partially Off-line)	Orange (Fully Off- line)
	6.5 Minimise Impacts on flooding and drainage			
7. Value for Money	7.1 Cost estimate			
	7.2 Benefit cost ratio			

At the conclusion of the assessment process, there was a unanimous consensus that the fully offline option (orange) best met the project objectives and should proceed as the preferred route for the Nelson Bay Road Upgrade.

Key advantages of the fully offline option (orange) compared to the fully online (blue) and partially offline (purple) options are:

- Significantly faster travel times
- Safer construction (greenfield) and safer operation (less property access / intersections)
- Reduced congestion and better access to Newcastle Airport precinct
- Improved constructability (utilities, live traffic, airport landing towers)
- Avoids majority of PFAS contamination
- Avoids Coastal Wetland and the Tilligerry Creek habitat
- Improved amenity for residences / communities
- Creates opportunity for placemaking and active transport improvements for communities along the existing corridor, particularly Salt Ash and surrounds
- Best value for money
- Strong community support based on number of submissions received during 2020 display of options.

Key disadvantages of the fully offline option (orange) are:

- Reduced passing traffic for existing businesses
- Requires partial acquisition of cattle grazing land
- Potential impact on landscape character of areas zoned as RU2 Rural Landscape
- Potential impact on unknown Aboriginal objects, noting that all route options potentially impact Aboriginal objects and that the level of impact for all route options cannot be determined at this time. Potential impacts will be assessed in detail during the concept phase in accordance with the TfNSW Procedure for Aboriginal Cultural Heritage Consultation and Investigation.

6.4 Preferred route

Based on community display and the multi-criteria analysis, the preferred route is a fully off-line (orange) route that extends from the Bobs Farm (eastern end) to the Cabbage Tree Road roundabout at Williamtown (western end). Following consultation and subsequent post-display design investigations, the preferred route has been refined in response to community feedback. The refined design for the preferred route is shown in Figure 6.1. Based on the stakeholder engagement, the following design features have been incorporated into the preferred route:

- Re-locate proposed location of the Link Road to eastern side of Oakvale Wildlife Park to avoid impact on park operations
- The design is likely to include roundabout as intersection with link road
- Adopting a more sinuous / curved route that more closely follows the interface between the sand dunes and the grazing land (and also the powerline easement)
- Design will include provisions for access to existing sand mine operations
- Route further offset from existing Lavis Lane and provision for intersection with better access for large vehicles.

Key design features of the preferred route are:

- Two lanes in each direction, divided by a median
- Mid-way link road connection to Salt Ash via Lemon Tree Passage roundabout
- At-grade roundabout intersection for link road connection new Nelson Bay Road
- Minimum 80 km/h posted speed with 100 km/h posted speed desirable
- On-road provision for cyclists
- Central rigid median barrier
- Tie-in to the duplication of Section 1 at Bobs Farm that is scheduled for construction commencing in early 2022
- Connection to Cabbage Tree roundabout at southern end
- Access for sand mine access operations
- Access to Lavis Lane.

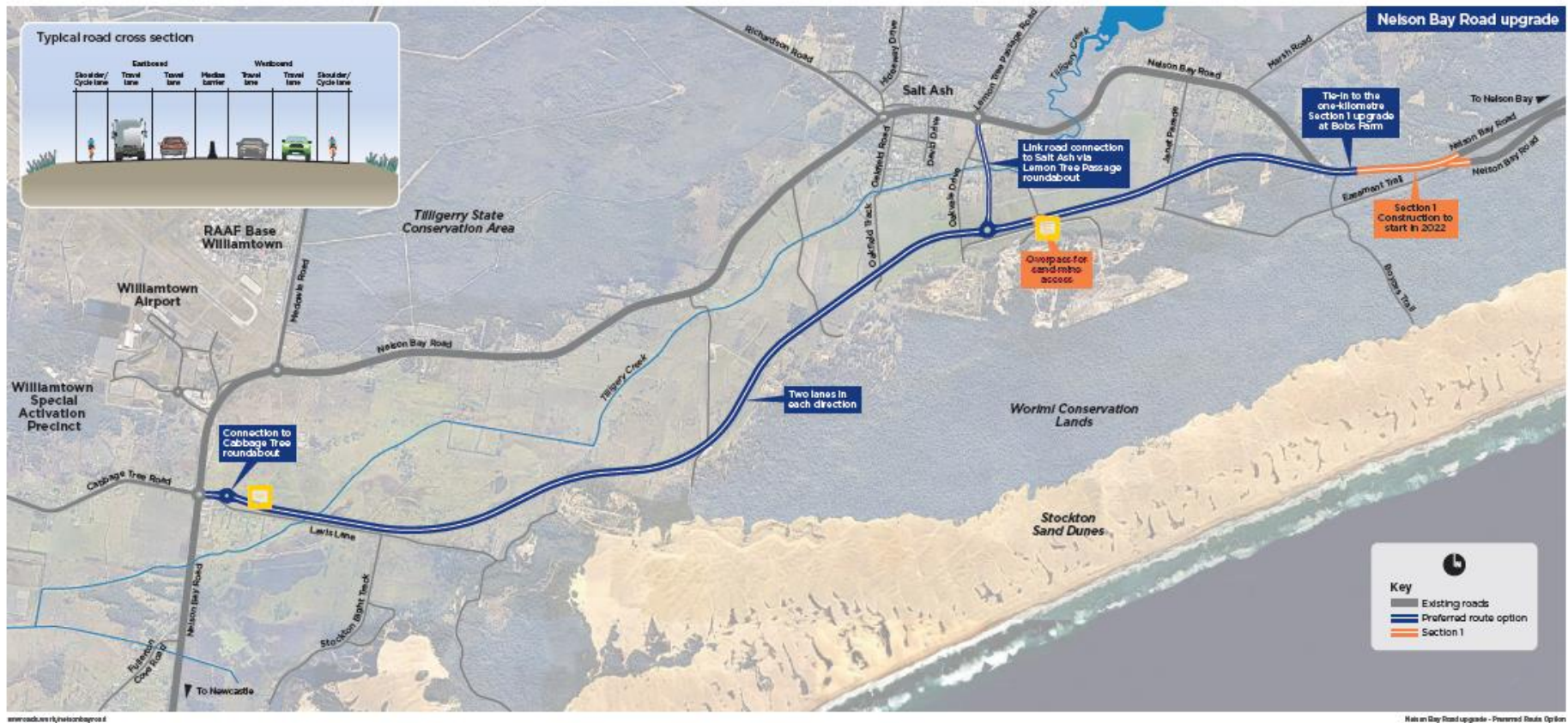


Figure 6.1 Preferred route (including refinements following 2020 display)

7. Next Steps

7.1 Next steps

The key next steps in the Nelson Bay Road upgrade project will be:

- Work on the duplication of Section 1 at Bobs Farm is scheduled to start in early 2022 and is expected to take about 18 months to complete, weather permitting
- Further refinement and assessment of preferred route (see Section 7.2)
- Display Environmental Assessment for the project
- Obtain planning approval for the project
- Start of work for the project (subject to business case approval).

7.2 Refinement and assessment of preferred route

The following key aspects are to be further investigated during refinement and assessment of the preferred route:

- Further consider the issues raised during community consultation, including completion of Business Impact Assessment to ensure impact on businesses is better understood, assessed and minimised
- Access for properties (general)
- Access for sand mining operations and other businesses
- Opportunities to reduce impacts on agricultural activities
- Identify opportunities to consult and work with Registered Aboriginal Parties including the Worimi Local Aboriginal Land Council, and other Aboriginal community stakeholders to identify opportunities to highlight Aboriginal cultural heritage associated with the study area
- Work with stakeholders to identify opportunities for placemaking and active transport improvements for communities along existing Nelson Bay Road corridor
- Integration with infrastructure requirements of the Special Activation Precinct and Newcastle Airport
- Investigate geotechnical/drainage/utility constraints along the preferred route
- Integration with the potential future duplication of Nelson Bay Road to the south of Cabbage Tree Road.

8. Appendix A

8.1 Have your say community update – November 2020




9. Appendix B

9.1 Facebook advertisements – November 2020



10. Appendix C

10.1 Newspaper Advertisement: Port Stephens Examiner - 5 November 2020



Have your say – Nelson Bay Road upgrade – Williamtown to Bobs Farm route alignment options

Community and stakeholders are invited to comment on three route alignment options for the upgrade of Nelson Bay Road from Williamtown to Bobs Farm.

Visit nswroads.work/nelsonbayroad to find out more information and view maps of the route alignment options.

Please send your feedback to our project team at:
nelsonbayroad2@transport.nsw.gov.au or:

Nelson Bay Road project team
Transport for NSW
Locked Bay 2030
Newcastle NSW 2300

Comments are invited until **5pm on Friday 27 November 2020** and will be considered in finalising the preferred route option.

This proposal is part of the NSW Government's \$275 million investment to improve safety and travel times on Nelson Bay Road.

For more information contact the project team on **(02) 1800 512 277** (during business hours) or email nelsonbayroad2@transport.nsw.gov.au

BLZ 581916



nswroads.work



13 22 13



Customer feedback

Transport for NSW
231 Elizabeth Street
Sydney NSW 2000

December 2021
TfNSW 21.345
ISBN: 978-1-922549-56-3