



Upgrade of Jefferys Track

A feasibility study for the Huon Valley Council

November 2020

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Glossary

Acronym	Full name
ABS	Australian Bureau of Statistics
ATAP	Australian Transport Assessment and Planning
Capex	Capital expenditure
CBA	Cost-Benefit Analysis
CBD	Central Business District
DSG	Department of State Growth
FPC	Forest Practices Code
GRP	Gross Regional Product
Km	Kilometre
NPV	Net present value
Opex	Operating expenditure
PWS	Tasmanian Parks and Wildlife Services
RRCA	Russell Ridge Conservation Area
SFM	SFM Environmental Solutions
TfNSW	Transport for New South Wales
Vkt	Vehicle kilometres travelled
VOC	Vehicle operating costs
WPMT	Wellington Park Management Trust
4WD	Four wheel drive

Executive summary

Key findings

- A road between Judbury and Lachlan via Judd Creek Road, White Timber Trail and Jefferys Track which is suitable for heavy vehicles is not viable for reasons including the substantial cost, a lack of support from both the community and industry, the potential environmental impacts, and likely low usage.
- A light vehicle route from Mitchells Road to Lachlan via Jefferys Track will have some benefits, however given the cost and likely usage this route is currently not viable and is unlikely to become so in the medium term. Although this option did have some level of community support there was strong opposition from local residents who would be directly impacted by increased traffic volumes and loss of amenity.
- An all-weather access track / fire trail will enable improved fire and park management and recreation opportunities, has some local community support and has a much lower cost than the other two options. It is recommended that this option be considered further, ideally by a coalition of parties including the Huon and Derwent Valley Councils, the Department of State Growth, Tasmanian Parks and Wildlife Service, Tasmania Fire Service, Wellington Park Management Trust, Lenah Estate and local landowners. Matters to be considered include:
 - How any upgrade to the track should be funded – noting that a range of parties (including both public and private interests) might benefit
 - Responsibility for ongoing management and funding for maintenance of an upgraded Jefferys Track
 - Whether public access to Jefferys Track should be restricted, and if so how and in what circumstances
 - How existing antisocial behaviour such as rubbish dumping and damage by four wheel drive vehicles (4WD) could be prevented
 - Whether an upgrade is likely to be consistent with the statutory objectives of a Conservation Area and/or the Wellington Park Management Plan
 - Tenure issues, notably whether secure tenure over Jefferys Track can be established.

Introduction

Interest in a direct road transport link has led to the Huon Valley and Derwent Valley Councils to commission Deloitte Access Economics to prepare this report to investigate the feasibility of upgrading Jefferys Track. Jefferys Track runs for approximately 13 kilometres (kms) from the intersection of Mitchells Road and Crabtree Road above Crabtree in the Huon Valley, through to the junction with Hydehurst Road above Lachlan in the Derwent Valley.

This feasibility study includes:

- A **civil engineering / road construction** assessment to identify and cost technically feasible routes based on Jefferys Track, for three types of road. This is the subject of a separate report prepared for the Huon Valley Council by GHD.
- **Consultation** to understand the level of community and industry support or otherwise for upgrading Jefferys Track.
- A **cost benefit analysis** based on the routes, costs and benefits identified.

Indicative route designs

GHD considered three routes for three different service level options:

1. An all weather access track / fire trail
2. A light vehicle route (tourist / commuter route)
3. A heavy vehicle route suitable for freight use (industry route).

GHD found the current alignment of Jefferys Track contains steep gradients and minimum radius bends that would be suitable for use by 4WD vehicles, but not 'normal' road use – including both as a light vehicle and heavy vehicle route.

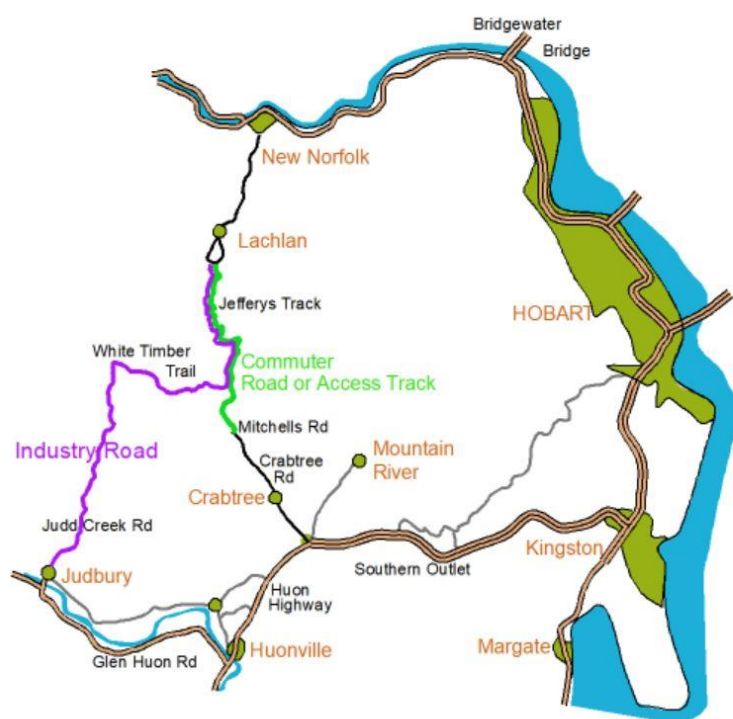
Consequently, for the light vehicle road GHD proposed an indicative route that generally follows the existing Mitchells Road and Jefferys Track alignment, but with deviations in places of steep grades and tight curves.

Due to the steep longitudinal grades along the existing Mitchells Road / Jefferys Track alignment this route was considered unsuitable for heavy vehicle use, even with re-routing. GHD then identified a route to Lachlan, originating in Judbury, and proceeding by way of Judds Creek Road, White Timber Trail, and then Jefferys Track, as a technically feasible heavy vehicle road.

Upgrades to Jefferys Track, White Timber Trail and Judds Creek Road would need to be accompanied by upgrades to Lachlan Road (for both the light and heavy vehicle route) and Crabtree Road (for the light vehicle route).

The alignment of the three indicative routes are shown in Figure i.

Figure i Overview of indicative routes considered



Source: Deloitte Access Economics, using the GHD report.

Consultation

The consultation process consisted of a number of different elements:

- A total of 21 separate discussions with industry representatives and community members. Some of these were one-to-one discussions, while others involved small groups
- Two public meetings at each of Huonville and New Norfolk
- An online survey was developed for interested parties to express their views about the upgrade. 540 survey responses were received.

The online survey also gave respondents the opportunity to express written views on the proposed upgrade to Jefferys Track. Numerous comments were received reflecting personal, community and industry-based views, concerns and suggestions. Several stakeholders took the opportunity to

prepare more extensive submissions to the Study, including local residents as well as those from farther afield.

The Huon Valley Council and Derwent Valley Council used internal promotional resources, such as their websites, social media, community notice boards and newsletters to provide information about the project to the public and advertise opportunities for community members to provide feedback. The Huon Valley and Derwent Valley Councils prepared a mailout to residents likely to be directly impacted by any upgrades or new roads. The Study also attracted coverage in the *Huon News*, *The Mercury* and other newspapers, while the Mayors of the Huon Valley and Derwent Valley Councils participated in radio interviews.

Further, a Change.org petition opposing any upgrades was created by a local community member titled "no highways in Crabtree, Judbury or Lachlan". As of 24 September 2020, the petition had received 2,043 signatures.

Stakeholder views

Given the large number of respondents, stakeholder views were naturally quite diverse. However they can be summarised as follows:

- There was very little support for the indicative heavy vehicle route. From an industry perspective this route is situated too far south and west and would not provide time savings compared to the current route via Hobart. From a community perspective, strong concerns were expressed regarding the impact the route would have on residents and the environment.
- There was some community support for the indicative light vehicle route. However there was strong opposition from those residents who would be directly impacted by increased traffic volumes and reduced amenity. Concerns about environmental impact were also raised.
- There was some support for an all-weather access track / fire trail given the benefits it could provide from a fire management perspective. However, some stakeholders suggested that any upgrade would need to be accompanied by measures to ensure that existing antisocial behaviour at the northern end of Jefferys Track did not become more widespread, and was ideally eliminated.

Analysis

The costs and benefits reflected the costs and travel times of the options set out in Table i below.

Table i Costs and travel times

Indicative routes	Huonville to New Norfolk	Huonville to Bridgewater Bridge	Indicative route cost	Indicative link costs
All weather access track / fire trail	41 mins	54 mins	\$4.5 million	Nil
A sealed road suitable for light vehicle use	(35 kms) 37 mins (car)	(52 kms) 50 mins (car)	\$88.0 million	\$9.7 million
Heavy vehicle road from Judbury to Lachlan	(49 kms) 45 mins (car) 52 mins (heavy vehicle)	(67 kms) 58 mins (car) 65 mins (heavy vehicle)	\$268.0 million	\$8.5 million
No upgrades (travel the current route via Hobart)	(74 kms) 65 mins (car) 79 mins (heavy vehicle)	(57 kms) 52 mins (car) 66 mins (heavy vehicle)	-	-

Heavy vehicle route

It became apparent early on in our study there was little to no support for the indicative heavy vehicle route via Judbury. Industry representatives were concerned that this route will not yield any substantial travel time savings and indicated that if the road were upgraded to an industry level, they would most likely not use it.

The community, particularly residents in Judbury, were also strongly opposed to the heavy vehicle route for a range of reasons.

Given the substantial financial cost of this route, estimated at \$276.5 million, it is clear that this route is not a viable option and it is almost impossible to foresee any circumstances where it might become so.

Light vehicle route

A cost-benefit analysis (CBA) was conducted on this option. The CBA used a range of assumptions and inputs including those recommended by the Australian Transport Assessment and Planning Guidelines, and costs estimated by GHD. It should be noted that specific information on a range of factors (e.g. the impact of the route on the environment) was not available.

Given that most of the benefits of the route that can be quantified relate to travel time and vehicle operating cost savings, the approach taken was to estimate the number of vehicles that would need to travel along Jefferys Track for benefits to equal costs, and then consider whether this number is plausible.

The CBA calculates that 1,314 light vehicles would need to travel daily between Huonville and Bridgewater Bridge / New Norfolk via Jefferys Track for quantified benefits to exceed quantified costs. This compares with data that suggests the current number of light vehicles travelling from the Huon Valley to the Bridgewater Bridge / New Norfolk is probably less than 100. While there are a range of benefits and costs that could not be quantified – for example, the benefits of travel time reliability, fire management and suppression benefits, recreational benefits, amenity costs for local residents, and environmental costs – it is implausible they would be of sufficient magnitude for benefits to exceed costs. This route is therefore not considered economically justifiable and it is unlikely to become so in the medium term.

All weather access track / fire trail

There was some stakeholder support for an all-weather access track / fire trail that will provide the Tasmanian Fire Service and other emergency services with greater access to the Wellington Range for improved fire management and vehicle movement between the Valleys. An all-weather access track / fire trail can also provide residents with an additional escape route if the need was to arise during the fire season. There may also be improved opportunities for recreation.

Fire management and suppression benefits are difficult to quantify, and we have not attempted to do so. Nevertheless, given the potential cost of the upgrade (\$4.5 million) this option appears worthy of further consideration. It is recommended that the Huon Valley and Derwent Valley Councils seek funding from the Tasmanian Government to further develop this option. In doing so issues including responsibility for road management, public access, and the prevention of antisocial behaviour need to be addressed – indeed these issues arguably need to be addressed regardless of whether or not Jefferys Track is upgraded.

Nevertheless, given the impact of existing antisocial behaviour on parts of Jefferys Track and the potential benefits of an upgrade, we consider this option is worth pursuing further. Further consideration of the route would benefit from input from a number of parties including the Huon and Derwent Valley Councils, the Department of State Growth, Tasmanian Parks and Wildlife Services (PWS), Tasmania Fire Service, Wellington Park Management Trust (WPMT), Lenah Estate and local landowners. Matters to be considered include:

- How any upgrade to the track should be funded – noting that a range of parties (including both public and private interests) might benefit

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- Responsibility for ongoing management and funding for maintenance of Jefferys Track
- Whether public access to Jefferys Track should be restricted, and if so how and in what circumstances
- How existing antisocial behaviour such as rubbish dumping and damage by 4WDs could be prevented
- Whether an upgrade is likely to be consistent with the statutory objectives of a Conservation Area and/or the Wellington Park Management Plan
- Tenure issues – there will be limited benefits in any upgrade if secure tenure over Jefferys Track cannot be established.

1 Introduction and Background

1.1 Study background and objective

A safe and direct road transport link between the Derwent and Huon Valleys has long been contemplated. There are potential benefits for residents of both valleys, industry, tourists, and emergency and land management, but an appropriate route at a viable cost has been difficult to identify.

The Southern Explorer Feasibility Study,ⁱ finalised in March 2015, examined the possibility of upgrading the 40 km Plenty Link Road (connecting from Glenora Road in the north to Lonnvale Road in the south) – to improve transport links between the two valleys. At that time, the study found that “upgrading the Southern Explorer is not feasible based on current demand”.

Following the Southern Explorer Study, questions remained regarding whether Jefferys Track – an existing unsealed track running between Crabtree and Lachlan – might be a better option as it is significantly shorter and closer to key transport links. Importantly, and unlike the Southern Explorer, an upgraded Jefferys Track may offer a shorter and faster route for vehicles from the Huon Valley to reach the Bridgewater Bridge (a gateway to the north of the state via the Midland Highway).

Interest in potential development of Jefferys Track has led to the Huon Valley and Derwent Valley Councils to commission a feasibility study which includes:

- A **civil engineering / road construction** assessment to identify and cost technically feasible routes based on Jefferys Track, for three types of road (an upgraded 4WD track (all weather access track / fire trail), sealed tourist / commuter road (light vehicle route), and industry road (heavy vehicle route)). This is the subject of a separate report prepared for the Huon Valley Council by GHD, which is referenced in this report.
- **Consultation** to understand the level of community and industry support or otherwise, and perspectives on the issues and potential costs and benefits, of upgrading Jefferys Track.
- A **cost benefit analysis** based on the routes, costs and benefits identified.

This report addresses the consultation and cost benefit analysis aspects of the feasibility study. It is important to note that the analysis in this feasibility study is high-level and if an option were to be pursued further a range of additional studies would be required – for example detailed environmental impact assessments and engineering route design.

1.2 Jefferys Track

Jefferys Track is defined for this study as the road which runs for approximately 13 kms from the intersection of Mitchells Road and Crabtree Road above Crabtree in the Huon Valley, through to the junction with Hydehurst Road above Lachlan in the Derwent Valley. It is shown in figure 1.1.

1.2.1 A brief history of Jefferys Track

Jefferys Track appears to have originally been constructed soon after 1848 and suspected to follow an old Aboriginal trail.ⁱⁱ The Track has formed a rough link between the Huon and Derwent Valleys ever since.

According to a thesis by economist Robert Cotgrove as part of the requirements for a Master of Transport Economics, Jefferys Track is “named in honour of an apparently wealthy and eccentric Oxford-educated Englishman, Molesworth Jeffery, who settled in the Lachlan area after his arrival in Tasmania in the 1830s”.ⁱⁱⁱ

Jefferys Track appears to have been designed originally as a bridle path and has been used as a walking track and (in the late 1800s and early 1900s) a route for livestock as described in a

submission from Jenny Cambers-Smith.^{iv} It has a history of being used by seasonal workers to travel between the two Valleys for fruit and hop picking, wood harvesting and other activities. It also appears to have been used as an access road for logging (particularly at the Crabtree end where remnants of an old sawmill remain). More recently it has served as a 4WD track, but it has never been used for ordinary vehicular traffic.

At least three studies have examined the feasibility of upgrading Jefferys Track. According to a submission to this Study, Forestry Tasmania examined the upgrade of Jefferys Track for use as a minimal logging road in the early 1980s but concluded that it was too costly.^v

Mr Cotgrove's thesis in December 1984 examined the travel cost and time savings from upgrading the road and found that given these savings, as well as "...the additional benefits to existing road users and the secondary effects generated by the project, although not specifically calculated ... justify the conclusion that the upgrading of Jefferys Track as a developmental road and as part of Tasmania's road infrastructure is warranted on social welfare grounds."

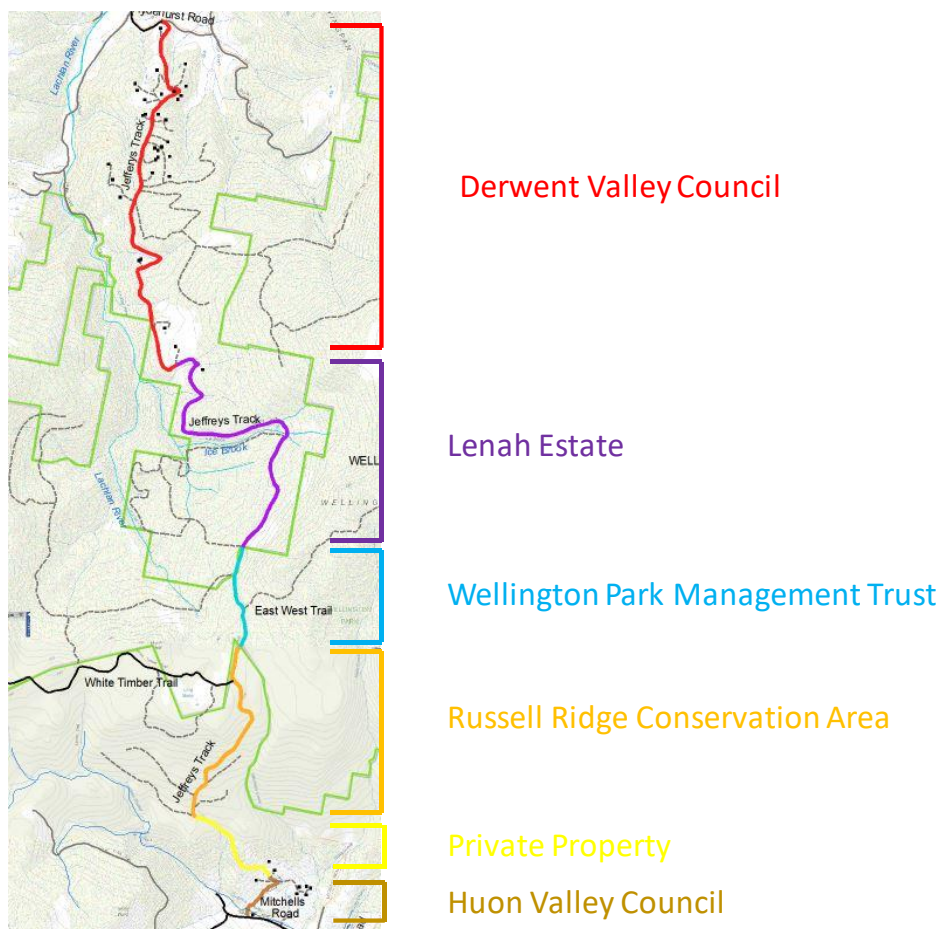
Mr Cotgrove's thesis also referenced a 1979 Derwent Region Transportation Study which reported that "...the cost of an all-weather all vehicle route [along Jefferys Track] (at least \$5.0 m) is too great for the likely resulting benefits".

No formal study of the feasibility of the route appears to have been undertaken since 1984. However, the costs, travel times, traffic volumes, settlement patterns, and commerce and tourism needs (not to mention environmental and social concerns) have changed significantly since this time.

1.2.2 Ownership, management and road condition

Different sections of Jefferys Track are owned and managed by different parties, as shown in Figure 1.1. The fact that no single party has overall responsibility for funding, monitoring and maintenance of the track appears to be one reason for its current poor condition.

Figure 1.1 Jefferys Track land tenure



Council managed

At the southern and northern end of Jefferys Track the road is owned and managed by the Huon Valley Council (0.6 km of Mitchells Road) and Derwent Valley Council (4.4 km) respectively. These sections of the Track are generally in good condition, despite limited spending on maintenance. Dumping of rubbish is an issue at the Derwent Valley end. Both sections service property owners and hence are frequently used by residents.

Private property

The southern 1 km of Jefferys Track above Mitchells Road is located largely on private property. As noted below, there is a road reserve but for the most part the road does not follow this reserve. This section is steep and somewhat rocky.

Russell Ridge Conservation Area and Wellington Park

Coming from the south, Jefferys Track then passes through the Russell Ridge Conservation Area for approximately 2.2 km and Wellington Park for 1 km. These sections are managed by PWS and WPMT. Within Wellington Park Jefferys Track intersects with the East West trail which is used for recreation and park management. White Timber Trail also intersects with Jefferys Track in the northern section of the Russell Ridge Conservation Area.

Both these sections feature steep and rocky gradients in places, as well as some flatter ground at the top of the ridge.

Lenah Estate

Approximately 3.6 km of Jefferys Track is on land owned by Lenah Estate Pty Ltd including pine and eucalypt plantations. The land is managed locally by SFM Environmental Solutions (SFM). Our site visits in August and September 2020 revealed that large portions of this section were impassable to most vehicles and subject to heavy erosion in places. It was clearly the site of much antisocial behaviour including rubbish dumping, illegal off-track 4WD activities, and burnt out cars.

While there is a defined road reserve through this land, Jefferys Track appears to diverge almost entirely from this reserve.

SFM indicated that there is an intention to harvest the plantations at some time in the future, but there are no short term plans to do so. SFM also indicated that the portion of Jefferys Track on its land would need to be upgraded in order to allow harvesting to proceed. The heavy vehicles required to undertake the harvesting would come in from the northern end of Jefferys Track.

1.2.3 Land Tenure issues

As noted above, in many places the physical alignment of Jefferys Track departs from any existing road reserve, with an example being the extract below from *The List* showing the road reserve and track diverging from each other above Crabtree. Similar mis-alignments occur along the entire length of Jefferys Track, including at the northern end above Lachlan.

Figure 1.2 Jefferys Track misalignment of road reserve above Mitchells Road



This misalignment between the road reserve, private property, the road location and actual use of the land also appears on access roads such as Crabtree Road. On this road there are several privately owned structures (typically sheds and fences) located (in part or in full) within the existing road reserve. Some of these structures appear to pre-date the road reserve but some are more recent.

These would not appear to be insurmountable issues to an upgrade and it is not uncommon in Tasmania for existing roads to be misaligned with road reserves. However, these misalignments would add complexity to any future upgrades of both Jefferys Track and connector roads.

1.2.4 Usage

No data is available on the current use of Jefferys Track, and similarly no data is available for traffic on Crabtree Road or Lachlan Road.

However we estimate, based on the number of houses and observations from landowners, there are around 40-50 vehicles travelling on the track each weekday. These are predominately private landowners using either end of the track (mostly the Lachlan end) for property access, but not going all the way through. Landowners suggest that only a handful of vehicles at most travel along the full length of Jefferys Track each day.

The track is used by the PWS for the purpose of accessing parts of Wellington Park, including the East / West Trail.

On weekends the track is used by 4WDs, quad bikes, trail bikes and mountain bikes usually accessing Jefferys Track from the Lachlan end. Estimates suggest that 4WD usage could be around 20 vehicles on an average weekend day, with up to 100 if conditions include snow. The HEMA Australia Road and 4WD Atlas shows Jefferys Track (as well as Judds Creek Road and White Timber Trail track) clearly marked.

Some limited use of Jefferys Track as an access point for (non-4WD) recreation appears to occur, although current user numbers are low.

Much of the 4WD usage is (and at times deliberately) detrimental to the road surface and adjoining land and this has contributed to the degradation of both the track and surrounding facilities.

The Tasmania Trail, a long distance walking, cycling and horse riding trail from Devonport to Dover, runs from Lachlan along Jefferys Track and then down White Timber Trail to Judds Creek Road and beyond. No data is available on the number of persons using it for this purpose, although the Tasmania Trail Association sells around 300 guidebooks each year.

Traffic on White Timber Trail is minimal and includes only infrequent 4WD and management use.

1.2.5 Ecology and environmental issues

Jefferys Track traverses approximately 2.2 km of the Russell Ridge Conservation Area (RRCA) and 1.0 km of Wellington Park. In addition, much of the private land is either plantation or 'bush blocks' with the result that it is generally timbered on both sides for its entire length from Mitchells Road to the junction of Hydehurst Road.

The RRCA was formed in 2013 and forms a wildlife bridge between Wellington Park and Tasmania's World Heritage Areas. Much of White Timber Trail is located within the RRCA.

Stakeholders noted that while there has been limited study of the conservation values in the RRCA and the western portion of Wellington Park, anecdotal evidence suggests it is home to many relatively rare species of Tasmanian fauna including Tasmanian Devils, quolls, bandicoots and various birdlife. These include species listed in the *Tasmanian Threatened Species Protection Act 1995* and the *Commonwealth Environmental Protection and Biodiversity Conservation Act 1999*. A report by the West Wellington Protection Group in August 2010 noted that the region "contains a large landscape level forest containing viable populations of most Tasmanian endemic species – both of flora and fauna".^{vi}

Judds Creek and the Lachlan River respectively provide a water supply for some residents in the Judbury and Lachlan areas respectively.

One submission to this study noted the presence of low to medium rated landslip zones, particularly at the southern end of Jefferys Track and around Mitchells Road.

1.2.6 Weather

Jefferys Track reaches an elevation of around 720 metres and is subject to snow and ice at times of the year. As with other roads at similar altitudes (for example, Pinnacle Road at The Springs on Mt Wellington) it is likely that a commuter or industry road would need to be closed to traffic for safety reasons for a number of days during the year.

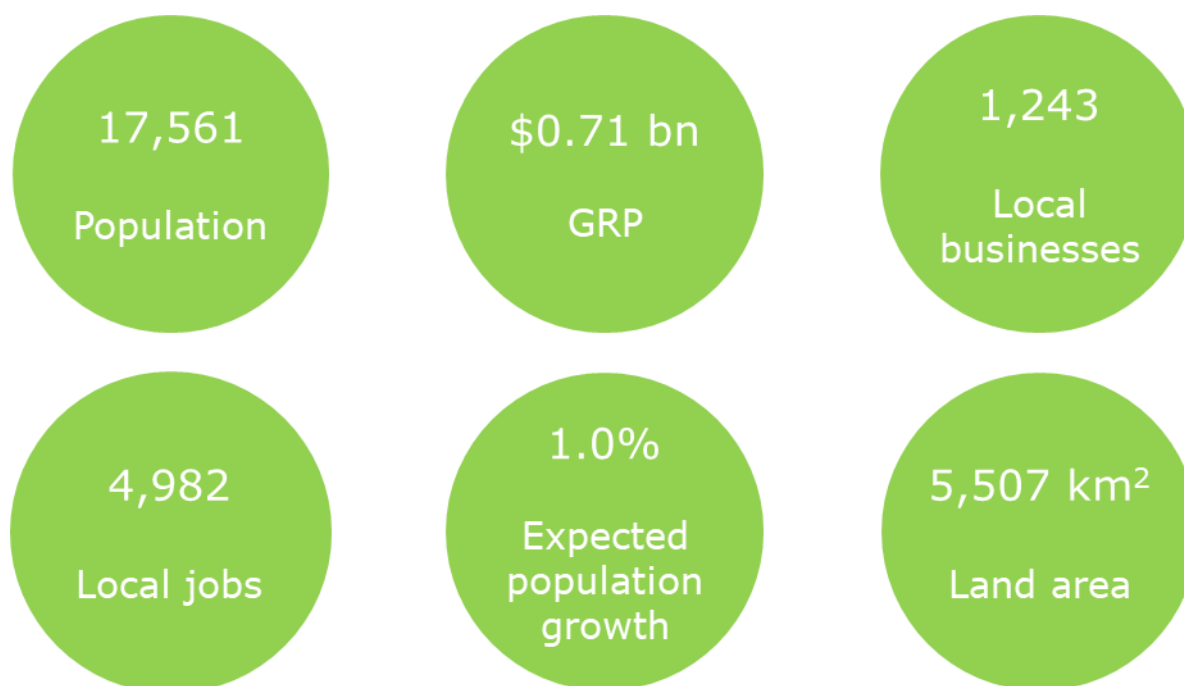
1.3 Huon and Derwent Valley Council areas

1.3.1 Huon Valley

The Huon Valley is a 30-minute drive from Hobart and extends to the southernmost place in Australia. The Huon Valley is known for its agricultural produce, wine, seafood and is bordered by World Heritage-listed national parks.

The Huon Valley is a large economic contributor to Tasmania. Figure 1.3 outlines key business statistics for the region. The main industry of employment is aquaculture, agriculture and forestry, accounting for 1,298 of 4,982 local jobs, in addition the tourism industry is becoming another important source of jobs in the region. Each year the Huon Valley is estimated to contribute \$0.71 billion towards Tasmania's gross regional product (GRP). In addition, the Huon Valley is becoming an increasingly popular commuter town, with 45% of the region's workforce commuting to other council areas (mostly Hobart) for employment.^{vii}

Figure 1.3 Key business statistics for the Huon Valley



Source: Deloitte Access Economics using data from the ABS,^{viii} Tasmanian Treasury,^{ix} .id.^x

Note: As a whole there are 10,396 employee jobs in the region.^{xi}

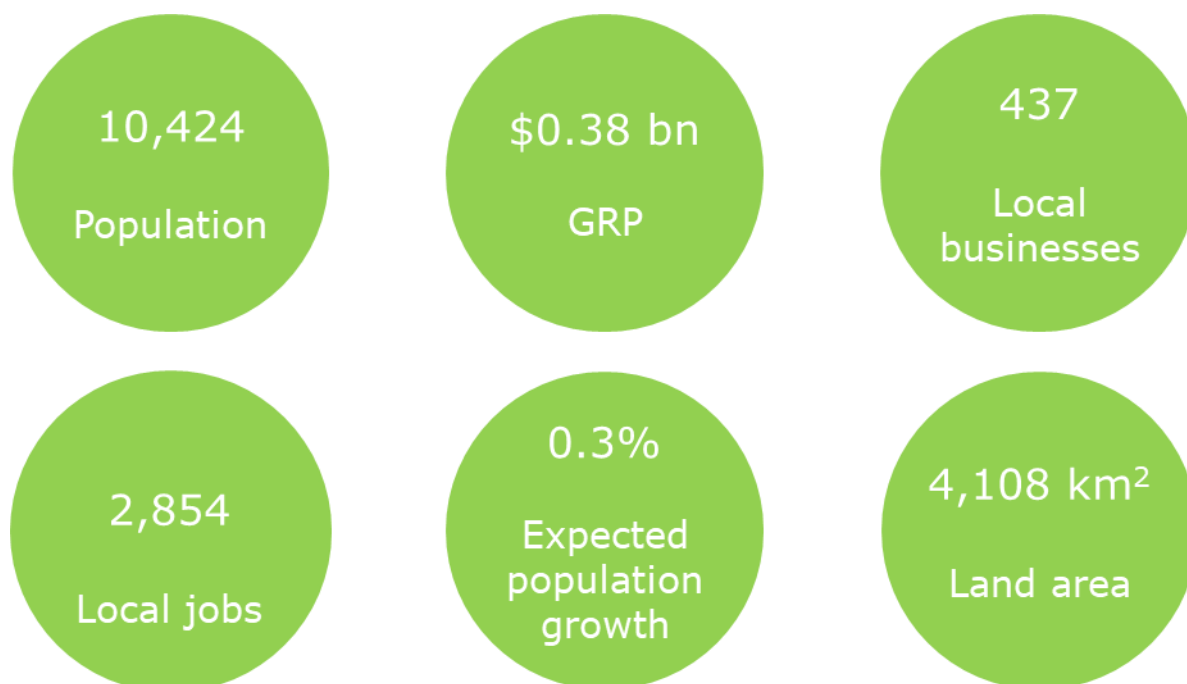
The Huon Valley is a popular tourist route for Southern Tasmania, with attractions such as Tahune Adventures, Hastings Cave and Thermal Springs, the Hartz Mountains National Park, Southwest National Park and Cockle Creek. In the year to March 2020 the region's largest town, Huonville, received 143,571 visitors, while other places such as Cygnet and Cockle Creek received 97,026 and 27,546 visitors respectively.^{xii}

1.3.2 Derwent Valley

The Derwent Valley is just over a 20-minute drive from Hobart, and extends to inland Tasmania. It comprises of many small towns and features a river valley environment with natural areas.

The Derwent Valley is also an important economic contributor to Tasmania. Figure 1.4 outlines key business statistics for the region. The main industry of employment within the region is manufacturing accounting for 444 of 2,854 local jobs. Each year the Derwent Valley is estimated to contribute \$0.38 billion towards Tasmania's GRP.

Figure 1.4 Key business statistics for the Derwent Valley



Source: Deloitte Access Economics using data from the ABS,^{xiii} Tasmanian Treasury,^{xiv} .id.^{xv}

Note: As a whole there are 6,004 employee jobs in the region.^{xvi}

The Derwent Valley has several popular tourist attractions, including the Salmon Ponds, Mt Field National Park, Maydena Bike Park and New Norfolk. In the year to March 2020, New Norfolk, received 141,163 visitors, while the nearby town of Maydena received 33,784.^{xvii}

1.3.3 Traffic flow estimates

An upgrade of Jefferys Track is likely to provide greater benefits for residents of the Huon Valley region, as it is most likely to be used by vehicles commencing their journey in the Huon Valley and travelling to the Midland Highway or to the west of the state.

The Department of State Growth (DSG) publishes traffic counts at various points along the Tasmanian road network. Data from DSG comparing 2014 and 2019 traffic flows at selected number of points on the road network is provided in Table 1-1 below.^{xviii} There has been strong traffic growth across the Huon Valley region in recent years, and the number of heavy vehicles has increased significantly. For example, the average daily number of trucks at Grove increased from 670 in 2014 to 1,060 in 2019.

Table 1-1 Traffic counts

Location	Ave. daily vehicles			% of trucks		Ave daily trucks		
	2014	2019	Annual growth (%)	2014 (%)	2019 (%)	2014	2019	Annual growth (%)
Huon Hwy south of Huonville	5,759	6,332	1.9	8.3	10.7	478	678	7.2
Huon Hwy south of Grove	8,821	10,097	2.7	7.6	10.5	670	1,060	9.6
Southern Outlet south of Tolmans Hill	33,930	39,370	3.0	6.1	8.0	2,070	3,150	8.8
Lyell Hwy west of Bridgewater Bridge	7,928	9,688	4.1	6.7	7.6	531	736	6.7

Source: Department of State Growth.^{xix}

The traffic counts above reflect local traffic, commerce and tourist movements. Tourism visitors to southern Tasmania increased from 832,500 in the year ending March 2014 to 1,036,100 in the year ending March 2020, an average annual increase of 4.5%.

A key issue for this study is the number of vehicles currently travelling between the Huon Valley and the Bridgewater Bridge and New Norfolk, as it is these vehicles that will benefit from the Jefferys Track upgrade.

Unfortunately this data is not readily available. DSG's Greater Hobart Urban Travel Demand Model (the Model) operates using set zones throughout the Greater Hobart region which do not extend to Huonville or New Norfolk, meaning the desired destinations for the project analysis are outside of the bounds of the Model.

However, DSG has extracted data for vehicle origin at Lower Longley (an external zone) and destination zones situated over the Bridgewater Bridge. In addition, several external zones near New Norfolk were examined, however, the Model cannot predict traffic flow between external zones, meaning an estimate of traffic flows between Lower Longley and New Norfolk is not available. Further, DSG has cautioned that the Lower Longley to Bridgewater data is unvalidated.¹

Noting these limitations, the Model predicts that in the year 2027 on a 'normal' day there will be approximately 65 light vehicles that travel between Lower Longley and the Bridgewater Bridge via Hobart.

1.4 Alternative road projects

During consultation a number of stakeholders identified alternative road projects where, in their opinion, road funding could be better spent than on an upgraded Jefferys Track. Many of these stakeholders suggested that the sealing of Plenty Link Road was a priority, but other suggestions included:

¹ In essence, a base year is built into a new traffic model to ensure it reflects existing conditions, before being used for future or scenario forecasting. Ideally the predictions made for traffic volumes across the road network are compared to the traffic volumes from the real-world traffic counts to test how well the model is predicting real-world conditions. Once this occurs and the model predictions are within an acceptable range of real-world counts, it is considered as 'validated'. Given the focus areas of this study are beyond the boundaries of DSG's model, the results have not been through this calibration and validation process, and are hence, 'unvalidated'.

- Upgrading the road between Huonville and Southport, notably in areas where the narrowness of the road can cause conflicts, particularly between salmon industry trucks and other large vehicles
- Upgrading the intersection of the Huon Highway and Mountain River Road at Grove (we note the State Government has committed to undertaking a further Corridor Study between Kingston and Huonville, which will consider the Grove intersection)
- Upgrading the intersection of Mountain River Road and Crabtree Road
- Improving the intersection of the Huon Highway and Sandfly Road at Sandfly (we note the tender for upgrading this intersection has since been advertised on 31 October 2020 with construction planned for the 2020-21 construction season)
- Sealing North Huon Road.

The Circular Economy Huon organisation also provided information suggesting that non-infrastructure solutions (e.g. carpooling) would be a much more cost-efficient solution for addressing mobility issues in the Huon Valley and helping to reduce congestion in Hobart.

The scope of work requested a review of the economic feasibility of a link between the Huon and Derwent Valleys following the alignment of Jefferys Track and hence the elements noted immediately above have not been investigated. Although the Plenty Link Road is out of scope for this project it is discussed below for completeness.

1.4.1 The Plenty Link Road (Southern Explorer) Feasibility study

During both the industry and community stakeholder phase there were numerous suggestions to consider the Plenty Link Road as an alternative to Jefferys Track. Generally, the rationale for this suggestion was based on the Plenty Link Road being already a robust established gravel road for forestry use and it would be an easier option to connect the two Valleys.

It was also noted that upgrading the Plenty Link road would cause much less community disruption as residential areas are less concentrated compared to the north (Lachlan) and south (Crabtree) ends of Jefferys Track.

An analysis of the merits of upgrading Plenty Link road was conducted by engineers Jacobs and released in March 2015.^{xx} It found that while upgrading Plenty Link Road could provide some tourism and freight benefits, there were a number of drawbacks: including

- Risk factors e.g. fire safety, remoteness, lack of mobile coverage
- Impact on forestry operations
- Potential for increased conflict between heavy and light vehicles, particularly tourists who may be unfamiliar with the road
- It would not be a realistic alternative to existing route through Hobart for most freight.

The study concluded that at an estimated cost of \$48.2 million the upgrade was not viable unless more than 250 trucks per day could be diverted onto the road. Given that a number of producers indicated that they would not use the road, and that 250 trucks per day was higher than the existing freight estimates on the Huon and Lyell Highways, the study concluded that the upgrade was not viable.

Since 2015, as noted above, there have been significant increases in traffic flows in southern Tasmania, with traffic volumes greatly exceeding population growth.

2 Options

Route options and road design criteria to be considered as part of this study were developed by engineers GHD. This section of the report outlines the rationale for route selection, design, constraints, costing and travel time savings. Further detail on these matters can be found in the GHD report.

2.1 Selection of indicative routes

Huon Valley Council engaged GHD to undertake feasibility designs to assist in determining the viability of upgrading Jefferys Track. The designs consider three routes for three different service level options:

1. All weather access track / fire trail
2. Light vehicle route
3. Heavy vehicle route suitable for freight use.

GHD adopted the design criteria outlined in Table 2-1 for the feasibility design of each service level option.

Table 2-1 Design criteria for each proposed indicative route

Indicative routes	Vehicle use designed for	Design guidelines	Design criteria
All weather access track / fire trail	Four-wheel drive vehicles	Class 4 minor all weather road, as defined in the Forest Practices Code (FPC) by the Forest Practices Authority, Tasmania, 2015*	Width: 3.7 metres Shoulder width: 0.6 metres Speed: 40km/h Desired max gradient: 15% (absolute max 25%)
Light vehicle route	Light vehicles up to 8.8 metres	Category 4 road, as defined in the State Road Hierarchy and Austroads Class 3 road	Width: 6.0 metres Shoulder: 1.0 metres Verge: 0.5 metres Speed: 60km/h Max gradient (may be steeper in short sections): 12-15%
Heavy vehicle route	Up to a semi-trailer (19 metres)	Category 3 road as defined in State Road Hierarchy, and Austroads Class 2 road	Width: 6.0 metres Shoulder: 1.0 metres Verge: 0.5 metres Speed: 70km/h Max gradient (may be steeper in short sections): 9%

Source: Deloitte Access Economics, using the GHD Report.

* The FPC was adopted for the all weather access track / fire trail design criteria as it meets the design requirements for a broad range of vehicles that GHD anticipate will use the track, including fire trucks and heavy machinery delivery trucks.

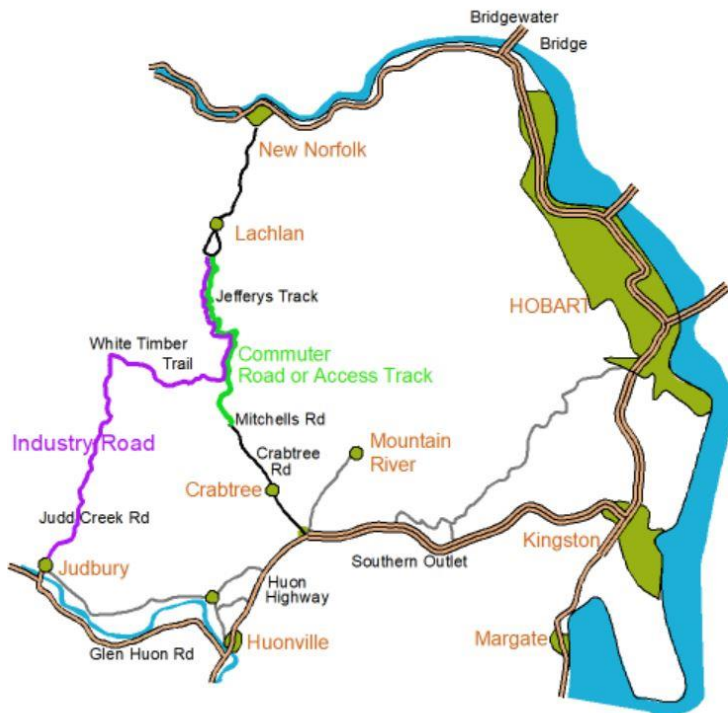
GHD found the current alignment of Jefferys Track contains steep gradients and minimum radius bends that would be suitable for use by four-wheel drive vehicles, but not 'normal' road use – including both as a light) and heavy vehicle route.

Consequently, for the light vehicle road GHD proposed an indicative route that generally follows the existing track alignment, but with deviations in places of steep grades and tight curves.

Due to the steep longitudinal grades along the existing Mitchells Road / Jefferys Track alignment this route was considered unsuitable for heavy vehicle use, even with re-routing. GHD then investigated alternative routes and identified a route to Lachlan, originating in Judbury, and proceeding by way of Judds Creek Road, White Timber Trail, and then Jefferys Track, as a technically feasible heavy vehicle road.

The alignment of the three indicative routes is shown in Figure 2-1.

Figure 2-1 Overview of routes considered



Source: Deloitte Access Economics, using the GHD report.

2.2 Indicative routes

2.2.1 All weather access track / fire trail

As noted, GHD found that the current Jefferys Track alignment would be suitable for upgrading to allow 4WD vehicles to pass at most times of the year. Key aspects of the improved access track/file trail include:

- Mitchells Road bridge may need to be upgraded to meet the standard cross section that has been proposed
- Steep slopes at the Crabtree end of Jefferys Track would need particular attention.

Given the nature and number of vehicles that would use this road, no upgrades to connecting roads, including Crabtree Road and Lachlan Road, would be required.

2.2.2 Indicative light vehicle route

The indicative light vehicle route would follow the existing Jefferys Track alignment for much of the route, however GHD noted that re-alignment would be required at places including:

- Some re-routing at the end of Mitchells Road and the start of Jefferys Track.
- Some comparatively lesser re-alignment would be required at the mid-northern end of Jefferys Track to increase the radius of some of the corners

The entirety of the length of the route from Mitchells Road bridge to the junction with Hydehurst Road would need sealing, the construction of appropriate drainage, addition of barriers, and widening in many places.

GHD also identified the following link roads will require upgrading:

- Huon Highway to Mitchells Road (by way of Crabtree Road)
- Hydehurst Road to New Norfolk (at the junction of Humphrey Street and George Street).

From the Huon Highway to Mitchells Road GHD's initial view is that these upgrades may include:

- Relocation of approximately 58 power poles
- Removal of approximately 50 trees
- Upgrade and/or replacement of three bridges, including Mitchells Road bridge
- Shoulder widening and sealing of shoulders along most of the road
- Property acquisition for six properties plus for 680 metres in places between 190 metres and 2720 metres from the Huon Road junction, and for 800 metres between 6160 metres and 7630 metres. This property acquisition would be limited to a maximum of a few metres
- Sealing of the unsealed portion of the road, which commences at 4580 metres from the Huon Highway
- Additional stormwater drainage culverts along the length of the road.

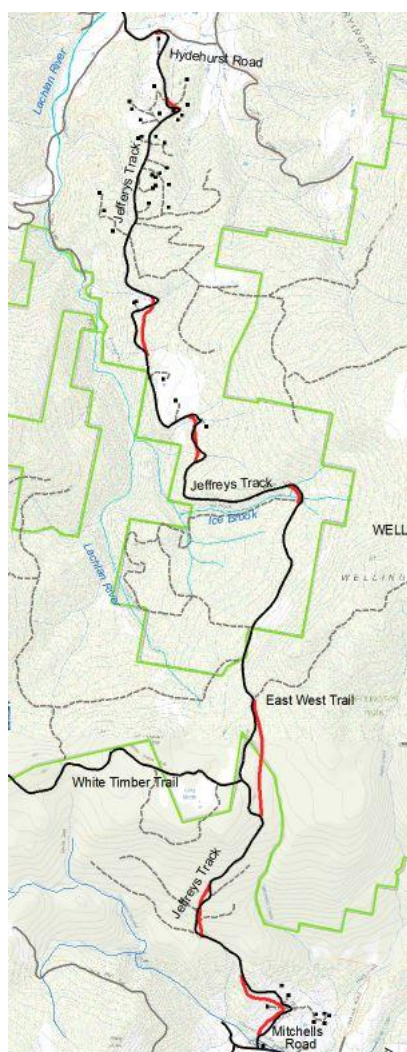
GHD assumed that the Huon Highway/Mountain River Road junction will need upgrading whether Jefferys Track is upgraded or not, and did not include the cost of this upgrade in its analysis. (The State Government's Corridor study between Kingston and Huonville may identify additional upgrades required for this road section.)

From Hydehurst Road to New Norfolk GHD's initial view is that upgrades may be required to:

- Upgrade the Hydehurst Road/Jefferys Track intersection
- Seal Hydehurst Road above Lachlan to the Jefferys Track intersection
- Replace the bridge on Hydehurst Road
- Widen and seal road shoulders along much of Lachlan Road
- Property acquisition would vary, but would likely be limited to two properties near the intersection of Hydehurst Road and Jefferys Track and a single property near Lachlan
- Upgrade of two bridges on Lachlan Road
- Relocation of approximately 54 power poles.

The light vehicle route indicative design is set out in Figure 2.2 below. Possible realignments from the existing Mitchells Road / Jefferys track alignment are shown in red.

Figure 2-2 Diagram of the indicative light vehicle route



Source: Deloitte Access Economics using *The List* and the GHD Report.

2.2.3 Indicative heavy vehicle route

Given the steep longitudinal grades along the existing Mitchells Road / Jefferys Track alignment, GHD determined that the existing Mitchells Road / Jefferys Track route would not be suitable for heavy vehicles and more favourable terrain was sought. GHD subsequently identified that a route from Judbury to Lachlan by way of Judds Creek Road, White Timber Trail and Jefferys Track was more likely to meet the design criteria outlined in Table 2-1.

The most notable constraints affecting the indicative heavy vehicle route are the following:

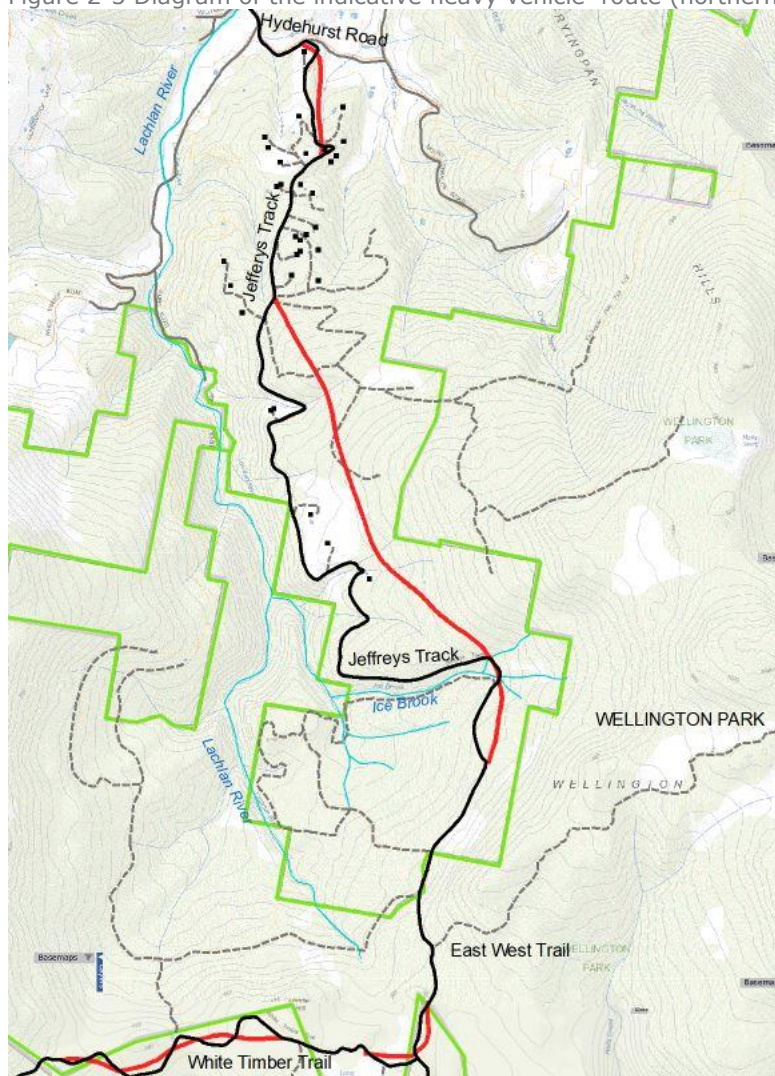
- The route requires significantly more construction with a new route of 27 km. The entire route from Judbury to Hydehurst Road will need to be sealed and widened
- A large amount of drainage infrastructure will be required
- There will still be some steep longitudinal gradients which exceed the required maximum gradient of 9%.
- There may need to be some substantial realignment along Jefferys Track in order to meet the design criteria.

For the indicative route the following link roads will require upgrading to meet the design standards:

- Huonville to Judds Road (at the junction of Judds Creek Road and Woodward's Road) by way of Glen Huon Road
- Hydehurst Road to New Norfolk (Lyell Highway by way of Lachlan and Glebe Road).

The northern section of the heavy vehicle route indicative design is set out in Figure 2-3 below. Possible realignments from the existing Jefferys track alignment are shown in red. Realignments would be much more significant than for the light vehicle option, and would have a much greater environmental impact and impact on property owners along the existing track.

Figure 2-3 Diagram of the indicative heavy vehicle route (northern section)



Source: Deloitte Access Economics using *The List* and the GHD Report.

2.2.4 Indicative costing and travel time savings

GHD estimated P50 costing (50 percent likelihood that this cost will not be exceeded) for each service level. The cost estimate considers the more expensive construction project items that can be quantified at this time and uses assumed values for other items that may be required prior to the projects operational phase, such as:

- Earthworks cut and fill
- Pavement construction
- Stormwater crossings (bridges and culverts).

In addition, GHD has included a 30% contingency allowance for other construction items / expenses not noted in each cost estimate.

Indicative costings for each indicative route (including the link roads requiring an upgrade to meet the design standards) and the potential travel time savings that may eventuate from the proposed upgrade are outlined in Table 2-2. Note that the travel times differ from those shown in the GHD report for two key reasons:

- An error in GHD’s calculations of travel time between northern Hobart and New Norfolk was identified
- Slightly slower times for the commuter road and industry road routes were adopted following stakeholder feedback. For example, it has been assumed the commuter route from Huonville to New Norfolk will take 37 minutes rather than 34 estimated by GHD.

Table 2-2 Costing and travel time savings by indicative route

Indicative routes	Huonville to New Norfolk	Huonville to Bridgewater Bridge	Indicative route cost	Indicative link costs
All weather access track / fire trail	41 mins	54 mins	\$4.5 million	Nil
A sealed road suitable for light vehicle use	(35 kms) 37 mins (car)	(52 kms) 50 mins (car)	\$88.0 million	\$9.7 million
Heavy vehicle road from Judbury to Lachlan	(49 kms) 45 mins (car) 52 mins (heavy vehicle)	(67 kms) 58 mins (car) 65 mins (heavy vehicle)	\$268.0 million	\$8.5 million
No upgrades (travel the current route via Hobart)	(74 kms) 65 mins (car) 79 mins (heavy vehicle)	(57 kms) 52 mins (car) 66 mins (heavy vehicle)	-	-

Source: Deloitte Access Economics, using the GHD report.

In total the all-weather access track / fire trail is estimated to cost \$4.5 million, the light vehicle route is estimated to cost \$97.7 million and the heavy vehicle route is estimated to cost \$276.5 million. The indicative costings largely reflect the different design criteria required to meet each service level.

Estimates of travel times are considered high-level and are based on consultation with stakeholders and online mapping software. More precise travel times may be estimated from detailed traffic modelling; however, detailed modelling is not considered at this stage. The indicative light vehicle route is expected to reduce the travel time for cars between Huonville and New Norfolk from 65 minutes to 37 minutes. In comparison the indicative heavy vehicle route is expected to reduce travel times for cars between Huonville and New Norfolk from 65 minutes to 45 minutes and for heavy vehicles from 79 minutes to 52 minutes.

The time savings are expected to be much smaller for the Huonville to Bridgewater Bridge route. For light vehicles the current travel time is 52 minutes, the indicative light vehicle route is expected to reduce the journey to 50 minutes, whereas the heavy vehicle route would increase the journey to 58 minutes. In comparison, for heavy vehicles the current travel time is 66 minutes which is expected to be reduced to 65 minutes via the heavy vehicle route.

3 Stakeholder and Community Engagement

Consultation with the community, industry and other stakeholders formed a critical component of the feasibility study. The objectives of the consultation process were to:

- Communicate and seek feedback on the possibility of development of Jefferys Track
- Understand community and industry opinions, concerns and ideas, including potential benefit, costs, opportunities and impacts.

3.1 Overview of the consultation process

The consultation process consisted of a number of different elements:

- A total of 21 separate discussions with industry representatives and community members. Some of these were one-to-one discussions, while others involved small industry groups
- Two public meetings at each of Huonville and New Norfolk
- An online survey was developed for interested parties to express their views about the upgrade. Overall, 540 survey responses were received.

The online survey also gave respondents the opportunity to express written views on the proposed upgrade to Jefferys Track. Numerous comments reflecting personal, community and industry-based views, concerns and suggestions were received. Several stakeholders took the opportunity to prepare more extensive submissions to the Study, including local residents as well as those from farther afield.

The Huon Valley Council and Derwent Valley Council used internal promotional resources, such as their websites, social media, community notice boards and newsletters to provide information about the project to the public and advertise opportunities for community members to participate in the consultation process. The Huon Valley and Derwent Valley Councils prepared a mailout to residents likely to be directly impacted by any upgrades or new roads. The Study also attracted coverage in the *Huon News*, *The Mercury* and other newspapers, while the Mayors of the Huon Valley and Derwent Valley Councils participated in radio interviews.

Further, a Change.org petition opposing any upgrades was created by a local community member titled "no highways in Crabtree, Judbury or Lachlan". The petition sought the following: (a) *Scrap the current road and track upgrade proposals through Crabtree, Judbury, Lachlan and the high conservation areas of West Wellington; b) protect the natural values of West Wellington and Wellington Park for generations to come; and c) instead re-evaluate the cheaper and less contentious development of the Plenty-Link Road.* As of 24 September 2020, the petition had received 2,043 signatures of which 797 were from Tasmania. In some instances, signatories also made comments about the study.

Overall, support for upgrading Jefferys Track varied and was largely dependent on the type of road proposed and the level of disruption it may cause residents. Key takeaways are listed below with further detail in sections 3.3 and 3.4:

- Community members who reside in Crabtree, Judbury and Lachlan, were in most part strongly opposed to the development of Jefferys Track both as a heavy vehicle or light vehicle route. This is due to the disruption it may cause to the current way of life for residents, particularly in terms of an increased volume of traffic and direct impacts such as potential land acquisition. Environmental impacts including the effects on flora and fauna, and noise were also raised. While opposition to the proposed heavy vehicle route was ubiquitous, in some limited instances support from Crabtree, Judbury and Lachlan residents was shown for the light vehicle route or the all-weather access track / fire trail.

- Discussions with industry groups (including agriculture, forestry, aquaculture, transport and tourism) produced more mixed views. Generally, businesses within industry groups were supportive of an improved commuter transport link between the two Valleys and acknowledged the benefits it may provide. But in most instances industry representatives did not support a heavy vehicle route via Judbury.
- Discussions with the broader Huon and Derwent Valley communities yielded mixed results. Community members were generally supportive of upgrading Jefferys Track to a tourist / commuter standard on the basis that it might provide economic benefits and employment and tourism opportunities. At the same time, a general theme of feedback was that any available funding could be allocated to more urgent projects in the Valleys.

Full details of consultation activities and participants are provided in Appendix A.

3.2 Online survey submissions

The online survey gave community members, organisations and businesses the opportunity to express their views for the potential upgrade of Jefferys Track.

Of the 540 survey submissions, 30% were on behalf of community members, businesses and organisations from the broader Huon Valley region, 23% from Crabtree, 10% from the broader Derwent Valley, 11% from Lachlan and 27% from other areas. Almost all respondents (95%) answered either on behalf of themselves or their household, compared to 3% on behalf of business and 1% on behalf of community organisations.

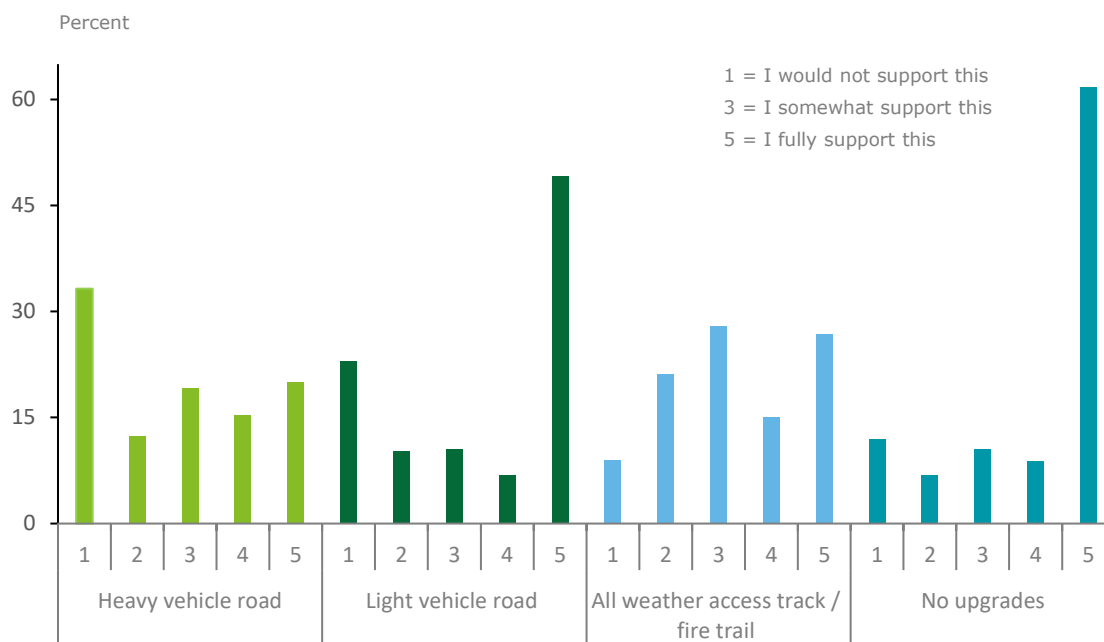
Survey submissions provide a high-level overview of community and industry sentiment for the potential upgrade of Jefferys Track. While the results are not necessarily representative of the entire community, they provide a strong indication of stakeholder support or otherwise for each indicative route option.

Chart 3-1 shows survey respondents' support for each road type. Respondents were given the opportunity to say to what extent they would support each of the road upgrade options (from 1 = *I would not support this*, to 5 = *I fully support this*). When looking at respondents from all regions (and who answered this question), 62% *would fully support* no upgrades to Jefferys Track, while only 12% *would not support* this option. This suggests a clear desire from the overall community for no upgrades to occur.

Of the three upgrade options, there was support for the light vehicle route, with roughly half (49%) of respondents saying they *would fully support* this option and 23% who *would not support this* option. More broadly respondents were supportive of the all-weather access track / fire trail. Although only one quarter of respondents said they *would fully support this* option, most other respondents still indicated some level of support. Minimal support was shown for the heavy vehicle route.

Commercial-in-confidence

Chart 3-1 Survey responses to the question 'to what extent would you support each of these options?'



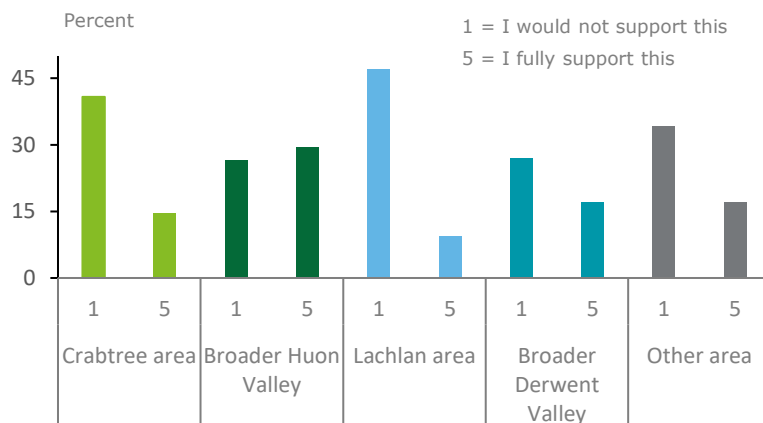
Source: Deloitte Access Economics survey.

Charts 3-2 to 3-5 examine the same question as Chart 3-1, disaggregated by region and showing the proportion of respondents who either answered *I would not support* or *I fully support this*. They show that support for the upgrades generally increases the further away the respondent lives from the Track. Over 80% of respondents who reside in each Crabtree and Lachlan *fully support* no upgrades, however, this figure dwindles to less than half of those in the broader Valleys.

Significant support from the broader Valleys (and to an extent Lachlan) exists for the light vehicle route, with roughly 60% of respondents in each the broader Huon / Derwent Valleys *fully supporting this option*.

Overall, of the three upgrade options, the most support is shown for the all-weather access track / fire trail. Residents in Crabtree were generally the most supportive of this option with roughly 40% of respondents indicating they *fully support* this option.

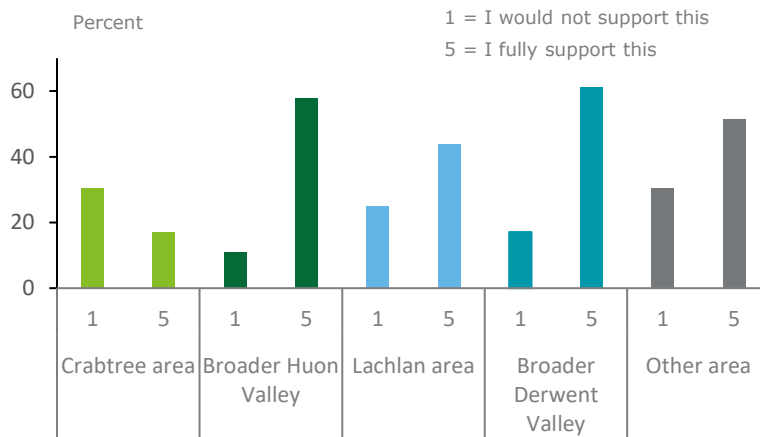
Chart 3-2 Survey responses by region to the question 'to what extent would you support each of these options?', Heavy vehicle route



Source: Deloitte Access Economics survey.

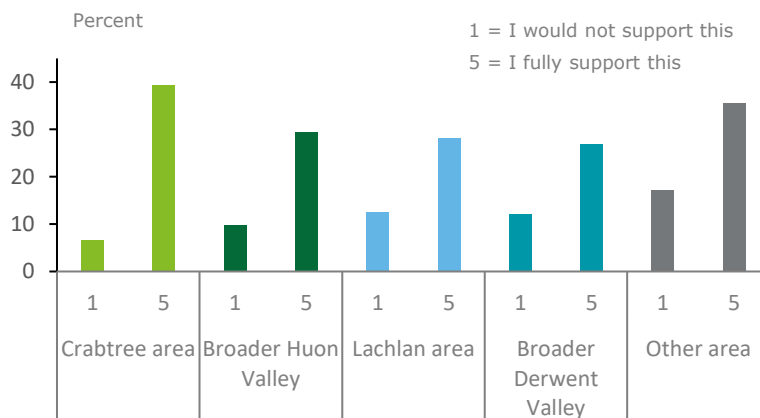
Commercial-in-confidence

Chart 3-3 Survey responses by region to the question 'to what extent would you support each of these options?', Light vehicle route



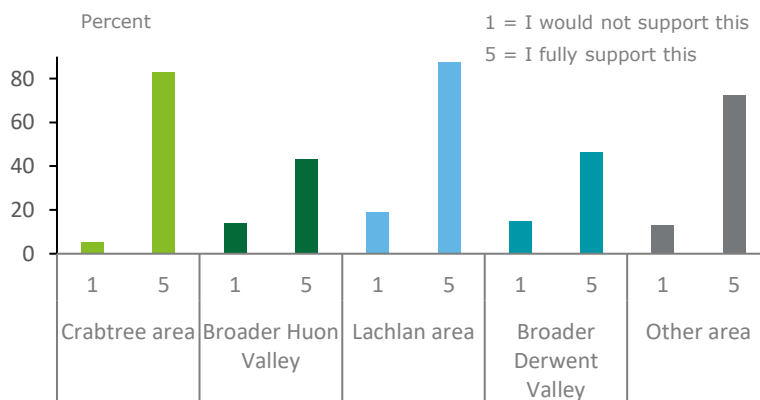
Source: Deloitte Access Economics survey.

Chart 3-4 Survey responses by region to the question 'to what extent would you support each of these options?', All weather access track / fire trail



Source: Deloitte Access Economics survey.

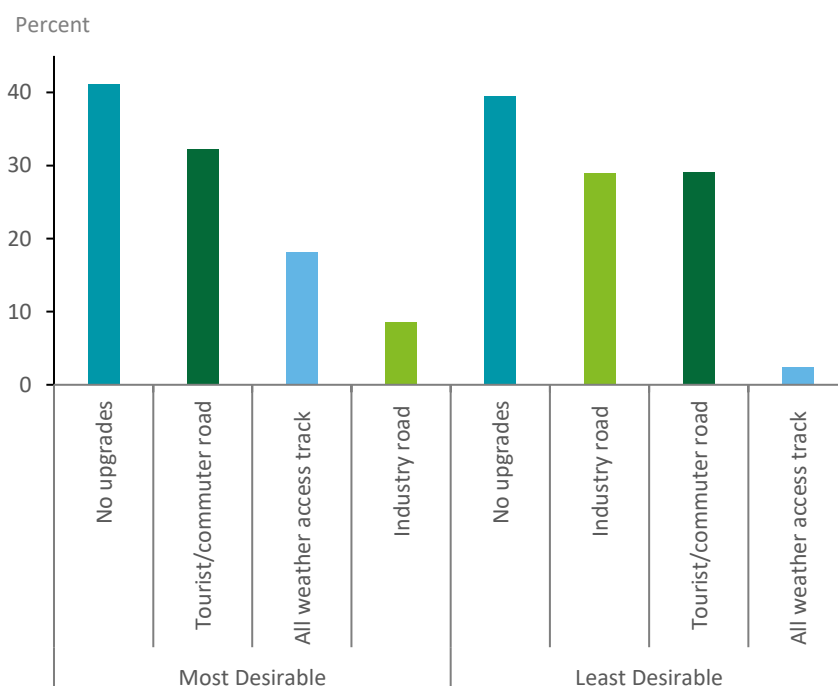
Chart 3-5 Survey responses by region to the question 'to what extent would you support each of these options?', No upgrades



Source: Deloitte Access Economics survey.

Chart 3-6 shows how desirable survey respondents consider each road type. Respondents were given the opportunity to answer by ranking each of the road types from *most desirable* to *least desirable* (generally respondents answered in between). Of those who answered this question, respondents ranked no upgrades as both the most and least desirable outcome, indicating a division of sentiment. Similar can be said for the indicative light vehicle route with roughly an equal portion of residents ranking the route as both the most and least desirable option. Only 9% of respondents ranked the heavy vehicle route as the most desirable outcome, while 29% said it is the least desirable outcome. Greater support was shown for the all-weather access track / fire trail, with only 2% of respondents ranking this option as the least desirable outcome.

Chart 3-6 Survey responses to the question 'rank the following options from most to least desirable'



Source: Deloitte Access Economics survey.

3.3 Themes identified – reflecting what people said to us

Key themes established from the written submissions and discussions are summarised below, along with some quotations from submissions.² Note that these key themes are a high level summary and will not necessarily represent the views of all stakeholders in a particular stakeholder cohort.

3.3.1 Strategic case for a link between the two Valleys

Creating a viable and safe link between the two Valleys was generally agreed to be a positive goal.

"Having a faster alternative to access the Derwent Valley would open up more employment opportunities for us in the Huon Valley."

"Having a way to link the two Valleys, decrease traffic flow through Hobart, and enable easier access to the midlands would be fantastic for locals and tourists alike."

However, it did not necessarily follow that stakeholders considered that Jefferys Track should be that link.

² Some quotations have been edited for spelling, grammar and clarity.

3.3.2 Impacts on local communities and property

In most instances' residents live in the areas of Crabtree, Judbury and Lachlan for reasons such as the peaceful way of life and the environmental amenity the areas have to offer.

Residents were concerned an upgrade to Jefferys Track will encroach on this way of life for an array of reasons including increased traffic volume, disruption to their current lifestyle and land acquisition on feeder roads. Residents were concerned that upgrading Jefferys Track would remove the local charm and character from the region.

"We are concerned about landslides, noise pollution, increased traffic along our quite community."

"[We are] concerned about extra traffic and the potential impact it will have on Crabtree and Mountain River."

Landowners along Crabtree Road are particularly concerned about the potential compulsory acquisition of their land and/or buildings.

3.3.3 Role in Hobart traffic congestion

Creating a transport link between the two Valleys may help to ease traffic congestion in Hobart. It is the view of community members that removal of both light and heavy vehicles would provide benefits for congestion and safety through Hobart.

"The better the access road the greater the benefits would be to the economy and reducing traffic congestion in Hobart."

3.3.4 Road conditions and reliability

Concerns were raised regarding road conditions and the reliability of Jefferys Track. Several stakeholders identified that snow and ice may force its closure for part of the year.

The steep gradients, heavy rainfall and low mobile coverage of Jefferys Track were also identified as a concern. Currently, some residents near the Track assist 4WD enthusiasts when they become stuck due to the difficult terrain. Concern was expressed that this may increase with higher traffic volumes.

"Jefferys Track is dangerous in the winter and there is the potential for accidents in the snow and ice."

3.3.5 Environmental issues including noise and landslips

Environmental concerns including increased noise and landslip potential were raised by community members, particularly residents of Crabtree, Judbury and Lachlan.

As noted, Jefferys Track, White Timber Trail and nearby areas are home to species listed in the Tasmanian Threatened Species Protection Act 1995 and the Commonwealth Environmental Protection and Biodiversity Conservation Act 1999. Many submissions expressed concern that upgrading Jefferys Track would cause significant disruption to these native species and damage natural habitats.

In addition to potential environmental impacts, increased noise and landslip potential near residential properties were highlighted as a concern.

"The environmental damage would be catastrophic."

"I'm concerned about landslips, noise pollution, increased roadkill and litter."

3.3.6 Current condition and use of the track

Jefferys Track is one of the more well-known and accessible 4WD trails in the greater Hobart region. Several 4WD enthusiasts expressed desire for the Track to remain in its current state, continuing to service the 4WD community in southern Tasmania.

However some users of Jefferys Track currently participate in illegal and anti-social behaviour. Stakeholders noted illegal wood cutting, rubbish dumping and vandalism along the Track, as well as deliberate degradation by 4WDs in some sections.

"If Jefferys Track is sealed it may be easier to monitor illegal behaviour."

3.3.7 Emergency service access

It was observed that upgrading Jefferys Track would provide emergency services greater access between the two regions to assist each other during emergencies. Residents have also expressed the benefit of having an escape route if required due to an approaching fire.

"It is important to have a properly maintained all weather access track / fire trail for firefighting and safety during fire season as an alternative route in emergency situations."

3.3.8 Funding priorities

Although no funding has been allocated for upgrading Jefferys Track, many stakeholders expressed a desire that any potential funds to be spend on more crucial road infrastructure in the Huon and Derwent Valleys. Examples of suggestions from community members include sealing the road to Cockle Creek, fixing potholes and degraded local roads, upgrading dangerous intersections (such as the Grove turn-off from the Huon Highway) and other infrastructure projects.

"The money could be much better spent on tourism infrastructure."

"I believe the money should be better spent on other needs, such as housing and health care."

3.3.9 Plenty Link Road as an alternative link

As discussed in section 1, many stakeholders suggested Plenty Link Road would be a better link between the two Valleys and should be revisited. Community members expressed that upgrading the Plenty Link Road would result in less community and environmental disruption and be of a lower cost given that it is a gravel road currently used by the forestry industry.

"Plenty Link Road is a suitable road given the gradient and it does not cause problems for small communities in terms of traffic congestion."

3.4 Stakeholder groups

Various stakeholder groups were consulted during the community and industry engagement phase of the study. This section discusses the key themes identified by these representatives.

3.4.1 Community groups

Community consultation predominantly included holding the four public meetings and several one-to-one discussions with residents, community and recreational groups.

Nearby residents

Nearby residents were, in the most part, strongly opposed to the upgrade of Jefferys Track and other connecting roads due to the disruption it may cause residents, particularly in terms of increased traffic volume, disruption to the current way of life and potential land acquisition from the increased road infrastructure required.

While opposition to a heavy vehicle road was universal, there was some limited support from Crabtree, Judbury and Lachlan residents for the light vehicle route and a slightly higher level of support for an all-weather access track / fire trail.

Recreational users

A large number of 4WD users, plus (much less frequently) horse riders, bushwalkers and mountain bikers use Jefferys Track. Recreational users generally expressed a desire for the Track to remain in its current condition to allow continued recreational use. Representatives from the Tasmanian Trail expressed a desire that any upgrades should allow walkers, cyclists and horse riders to traverse the trail in safety.

3.4.2 Industry groups

Businesses and organisations from different industries were invited to participate in either an industry workshop or a one-to-one discussion with Deloitte Access Economics. Key themes are summarised below.

Agriculture

Representatives from the agricultural industry expressed strong need for a shorter route between the two Valleys that by-passes Hobart. Easier transportation and removal of heavy vehicles from the Hobart Central Business District (CBD) – with congestion and safety benefits – were the main benefits. However, little support for the indicative heavy vehicle route via Judbury was shown, mainly due to the added length of the route which will reduce the potential travel time savings compared to travelling the current Jefferys Track alignment.

Transport

An upgrade to Jefferys Track would provide benefits to the transport industry through a more direct route to the Bridgewater Bridge and have the added benefit of removing congestion from the Hobart CBD.

Forestry

Businesses in the forestry industry stated interest in a potential time saving route between the two Valleys and to the Bridgewater Bridge. However, representatives noted that the indicative heavy vehicle route via Judbury would not necessarily be the optimal link given the high gradients and disruption to the local community.

Aquaculture

Industry representatives from the aquaculture industry generally did not support the indicative heavy route via Judbury. Reasons cited include the remoteness of the route, the likely lack of meaningful travel time savings (except in circumstances where vehicles were travelling to the west coast) and the disruption that the road upgrade would cause to the local community.

Tourism

Tourism representatives broadly articulated support for a tourism link between the Huon and Derwent Valleys via Jefferys Track. They suggested a link would allow tourists to embark on a circular trip rather than back track through Hobart, creating a more positive visitor experience. However, several representatives suggested that upgrading Plenty Link Road would provide greater tourism benefits for the region.

3.4.3 Other organisations

Consultations were also held with other key organisations who may be affected by an upgrade to Jefferys Track.

Parks and Wildlife Service and Wellington Park Management Trust

Currently, PWS does not monitor recreational activity on Jefferys Track, noting that antisocial and illegal behaviour does occur. PWS was uncertain whether an upgrade would help or hinder current behaviour, given it would allow greater access by vehicles. However an upgrade would allow better access by staff from PWS / WPMT to the Wellington Range and could form a crucial part of infrastructure from a fire management perspective. It was noted that the complex ownership of Jefferys Track is one of the reasons why it is in its current degraded state.

Tasmanian Fire Service

Upgrading Jefferys Track would provide the Tasmanian Fire Service with the ability to move resources between the two Valleys more efficiently during the fire season. The shorter route would make it more feasible to provide support to different brigades, particularly those far south. Upgrading the Track would provide residents with an escape route if required due to an approaching fire and would provide the Fire Service with greater access to the Wellington Range for fire management. However, an upgrade to Jefferys Track would not act as a fire break for Hobart during the fire season.

City of Hobart

Being able to deliver safe and high amenity streets is important for the City of Hobart. Hence any actions that remove traffic from the city will help this cause. The City of Hobart acknowledged the

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benefits which may transpire from upgrading the Track, including fire management, emission avoidance and a link between the Huon and Derwent Valleys for commuters and tourists.

A firm view was expressed, based on experience with other similar roads, that greater traffic volumes on Jefferys Track would be likely to reduce antisocial and illegal behaviour.

4 Cost benefit analysis

A CBA aims to identify and express in monetary terms (where possible) expected benefits and costs generated by an investment to society and to derive indicators to assess the economic merit of the investment.

A CBA is the preferred method for economic appraisals to assess the merits of infrastructure investments, as mandated by the Tasmanian Treasury and Infrastructure Australia's Assessment Framework.

This section outlines the economic framework and principles that have been used to guide the development of the CBA, as well as the assumptions, parameters and data used in the analysis.

4.1 Cost benefit analysis overview

An important component of a CBA is defining the Base Case (the 'business as usual' scenario) which is compared to the Project Case (the project or upgrade options).

4.1.1 Base Case

The Base Case is considered as the current vehicular route between Huonville and the Bridgewater Bridge / New Norfolk by way of Huon Highway, Southern Outlet, Davey / Macquarie Street, Brooker Highway and Lyell Highway. Under this option Jefferys Track is not upgraded and current traffic volumes on Jefferys Track remain unchanged. The base case can be considered as the 'without project' case.

In total the Base Case (Huonville to New Norfolk) is 74 km in length and is assumed to take 65 minutes on average by car and 79 minutes by heavy vehicle, equating to an average speed of 68 km/h for cars and 57 km/h for heavy vehicles.

For vehicles that travel over Bridgewater Bridge, the trip is 57 km in length and is estimated to take 52 minutes by car and 66 minutes by heavy vehicle.

4.1.2 Project Case

Each of the three different levels of roads outlined in section 2 is considered as a separate Project option:

1. All weather access / fire trail route
2. Light vehicle route
3. Heavy vehicle route.

Heavy vehicle route

Based on stakeholder discussions with industry representatives and community members it became apparent early on in our study that there was little to no support for the indicative heavy vehicle route via Judbury.

Industry representatives were concerned route will not yield any substantial travel time savings for businesses, providing no incentive to deviate from the current route via Hobart. Businesses indicated that if the road were upgraded to an industry level, they would most likely not use it.

The community, particularly residents in Judbury and Lachlan, were strongly opposed to the industry route for reasons discussed in section 3.

In addition, the cost for the industry road is substantial, at \$276.5 million. This is much more than the annual Tasmanian Government road budget (excluding special major projects) and roughly half the cost of upgrading the Bridgewater Bridge, which is part of Tasmania's major arterial road network and currently carries over 22,000 vehicles per day, including more than 2,000 trucks.

There is therefore no prospect of the industry road being viable and hence we have not conducted any further analysis on this option.

Light vehicle route

Hereafter, the 'Project Case' refers to Project option 2 (the light vehicle route). Given the mixed support for this option during the stakeholder consultation and the lower level of capital expenditure compared to the industry route, it is necessary to carry out a CBA for this option. We assume that no heavy vehicles will travel route on the Project Case, thus, the CBA only considers light vehicles. Table 4-1 outlines the Project Case in terms of road network segments, route length and travel time.

Table 4-1 Project Case details

Route segments	Route Length (km)	Vehicle Speed (km/h)*	Travel time (minutes)
Huonville to intersection of the Huon Highway and Mountain River Road	6	68	5
The Huon Highway to Mitchells Road (by way of Crabtree Road)	8	60	8
The proposed road approximating Jefferys Track (Mitchells Road to Hydehurst Road)	13	50	16
Hydehurst Road to New Norfolk (intersection Humphrey and George Streets)	8	60	8
Total – Huonville to New Norfolk	35	57 (ave)	37
New Norfolk (intersection Humphrey and George Streets) to Bridgewater Bridge	17	77	13
Total – Huonville to Bridgewater	52	62 (ave)	50

Source: Deloitte Access Economics, based on the GHD report.

* The travel time estimates are not based on maximum speed limits, but rather reasonable speed average speed estimates to provide a conservative travel time estimate.

4.2 Demand analysis

Currently, traffic volumes over Jefferys Track are very low given that it is generally only accessed by well-equipped 4WD vehicles or residents using a short section to access their properties.

DSG has provided 2027 traffic predictions for the number of vehicles that are likely to travel between Huonville and the Bridgewater Bridge (via the current route). As outlined in section 1.3.3 these estimates should be treated with some caution as they extend to traffic zones outside of the DSG Model. The DSG traffic model estimates that 65 light vehicles will travel between Lower Longley and the Bridgewater Bridge on a 'normal' day in 2027.

The 2016 Australian Bureau of Statistics (ABS) Census provides an estimate of how many residents live in one Valley (usual place of residence) and work in the other Valley (place of work).^{xxi} In 2016, 11 residents in the Huon Valley commuted to the Derwent Valley for work, while an additional 54 commuted to a region accessible via the Bridgewater Bridge (although it is likely these residents didn't undertake a commute of this distance on a regular basis). In comparison 11 residents in the Derwent Valley commuted to the Huon Valley for work.

In addition to current travellers, an upgraded Jefferys Track may create additional demand for traveling between the two Valleys. This travel may arise in response to increased employment, tourism and leisure opportunities afforded by the shorter travel distance.

Due to the discussed limitations and lack of meaningful traffic modelling results between Huonville and New Norfolk, it is difficult to conclude on the existing demand for the Project Case (based on current traffic volume) and the potential demand it may create (the induced effects of the new link road).

Therefore, to assess the viability of the Project Case at this feasibility stage we have instead estimated the number of vehicles required for the quantifiable benefits and costs to breakeven. That is, have determined the number of vehicles required to breakeven in Year 1 of the project evaluation. We have then considered the other benefits and costs that could not be quantified.

We have not attempted to adjust the traffic growth rate for the effects of COVID-19.

4.3 Key assumptions

The following assumptions outlined in Table 4-2 have been adopted for the economic appraisal.

Table 4-2 Key parameters and assumption

Key parameters	Cost-Benefit Analysis
Base case	Defined here as the scenario under which the existing journey between Huonville and New Norfolk (via Hobart) continues to provide the most feasible route between the two Valleys.
Accounting for inflation	<ul style="list-style-type: none"> All values are expressed in 2020-21 price terms, i.e. inflation effects were removed
Real discount rate	<ul style="list-style-type: none"> 7% real (central case), that results in a discount factor of 0.93 in the first year of discounting, i.e. T1 Other cases are explored through a sensitivity analysis.
Evaluation period	30 years. Under the project case, this includes a 28-year period of operations for the upgraded tourist / commuter route (following assumed completion of construction works in Year 2).
Stakeholder coverage	The Tasmanian community.
Road conditions	Due to seasonal factors it is expected that the tourist / commuter route will experience closures for parts of the year. We have assumed the tourist / commuter route will be closed for 25 days.
Type of road	For the purposes of the benefit calculations, we have assumed both the Base Case and the Project Case road networks are 'urban'.
Percentage of vehicles that continue their journey across the Bridgewater Bridge	For the purposes of the benefits calculations, we have assumed that 80% of vehicles that travel from Huonville (via Hobart) to New Norfolk will continue their journey across the Bridgewater Bridge with the remaining 20% continuing to New Norfolk.
Percentage of vehicles that undertake a return trip	For the purposes of the benefit calculations, we have assumed that 80% of vehicles that travel between Huonville and the Bridgewater Bridge / New Norfolk will undertake a return trip. For the remaining 20% it is assumed they travel via Hobart for one of the trips.

Source: Deloitte Access Economics.

4.4 Quantified project costs

4.4.1 Capital Costs

Capital expenditure (capex) represents the financial outlay for the cost of labour, equipment and materials required to deliver the physical infrastructure assumed under the Project Case.

Base case

No capital costs are assumed for the Base Case.

Project case

Under the Project Case, construction of the indicative light vehicle route is scheduled to commence in the first period of the project evaluation (Year 1) and is assumed to take two years to complete. In addition, the capital costs are assumed to be evenly spread across the first two years.

The total capital costs estimated by GHD are summarised in Table 4-3 below. Costs are P50 estimates and include a contingency allowance of 30%.

Table 4-3 Project case capital costs

Capital costs	NPV (in 2020-21 prices)	Year 1	Year 2
Capital cost (\$ million)	94.6	48.9	48.9

Source: GHD Report.

4.4.2 Operating Costs

Operating expenditure (opex) comprises routine and periodic maintenance costs under the Base Case and Project Case.

The opex figures presented below are indicative and provide an estimate of the likely expenditure that may be incurred over the next 30 years.

Base Case

No operating costs are considered for the Base Case. We understand that minimal spending occurs at the moment.

Project Case

Annual opex estimates in Table 4-4 below are based on the Tasmanian Government State Grants Commission Annual Report and recommendations of financial assistance for local government authorities in Tasmania.^{xxii} The values are presented as a cost per kilometre per annum.

We assume that 29 km of the 35 km Project Case will require additional ongoing maintenance as a consequent of higher traffic volumes in the region. The other 6 km is the travel along the Huon Highway from Huonville to intersection of the Huon Highway and Mountain River Road, which is assumed to not require additional repairs over what is currently undertaken.

Table 4-4 Project Case operating costs

Road class	Cost of road preservation (\$/km)
Urban sealed roads	21,578
Rural sealed roads	9,037
Unsealed roads (urban and rural)	7,027

Source: Tasmanian Government.^{xxiii}

Note: 2016-17 unit values have been escalated to 2020 dollars using CPI.

4.5 Quantified project benefits

Project benefits are broken down into user benefits and 'externalities'. Benefits to the Project Case are estimated as the difference between the Base Case and Project Case.

4.5.1 User Benefits

User benefits reflect improvements in the welfare of road network users generated by the new investment. These benefits include travel time savings, savings in vehicle operating costs, and reduction in crash costs.

Road travel time savings

Travel time saving are generally the major component of user benefits of road transport projects. The theoretical basis for the treatment of travel time savings as an economic benefit is that travellers can divert avoided travel time to other activities such as income-generating work or leisure.

There are standard 'value of person time' parameters that are available for monetisation of travel time savings. These have been sourced from the Australian Transport Assessment and Planning (ATAP) Guidelines, hereafter 'ATAP Guidelines'.^{xxiv} The latest parameter values available pertained to 2013 and have been escalated to current values using the ABS index of average weekly earnings, in accordance with the ATAP Guidelines.

Both (weighted) occupancy rates and values of time for light vehicles used in the CBA are shown in Table 4-5 below.

Table 4-5 Travel time saving assumptions

Vehicle type	Occupancy rate (persons/vehicle)*	Value of time parameter (\$/person-hour in 2020/21 price terms)*
Passenger cars	1.55	26.05

Source: Deloitte Access Economics, using the ATAP Guidelines.

* ATAP provides alternative parameters for passenger cars based on vehicle use (i.e. private or business). Weighted averages have been estimated by Deloitte Access Economics, assuming 77% of passenger car trips are for private use and 23% are for business use in line with Australian Bureau of Statistics Survey of Motor Vehicle Use.^{xxv}

The value of travel time savings is calculated as a product of:

- The difference in vehicle hours travelled between the Base Case and the Project Case (i.e. the difference in travel time multiplied the number of trips)
- Value of travel time per person-hour
- Vehicle occupancy rate
- The annualisation factor (330).³

Vehicle operating costs (VOC)

Vehicle operating costs include the cost of fuel and lubricating oil consumption, tyre consumption, and repairs and maintenance. A change in vehicle operating cost could result from either a change in the distance travelled and/or a change in travel conditions (driving through free-flow versus stop-start traffic conditions).

The Transport for NSW (TfNSW) depreciation-adjusted version of the ATAP Vehicle Operating Cost Model (ATAP Guidelines) is used to determine the operating costs that eventuate under the Base Case and Project Case.^{xxvi} This model prescribes costs for both the stop-start and free-flow forms of traffic movement. The stop-start model is typically adopted where average journey speeds are at or

³ An annualisation factor (conversion from days to year) of 330 days is consistent with the factor adopted on previous major road infrastructure projects, including the North-East Link Project, the Metro Tunnel Project, Bridgewater Bridge Upgrade and the Suburban Roads Upgrade Project.

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below 60km/h, whereas the free-flow model is better suited to account for journey speeds above 60 km/h.

When modelling VOCs, we look at the average speed across the entire vehicle network. We have estimated traffic flow using the following VOC models:

Stop-start model

$$c = A + \frac{B}{V} + \left(D * \frac{60}{V} \right) + E$$

where: A, B, D, E are model coefficients

c = vehicle operating costs (cents/km)

V = average travel speed (km/h).

Free-flow model

$$c = C_0 + C_1V + C_2V^2 + D + E$$

where: C_0, C_1, C_2, D, E are model coefficients

c = vehicle operating costs (cents/km)

V = average travel speed (km/h).

The model coefficients are outlined in Table 4-6 and Table 4-7 below.

Table 4-6 VOC model coefficients for stop-start model

Vehicle type	A	B	D	E
Passenger car	14.25	1,436.89	-14.98	3.57

Source: TfNSW.

Note: 2018-19 unit values have been escalated to 2020 dollars based on CPI growth.

Table 4-7 VOC model coefficients for free-flow model

Vehicle type	C_0	C_1	C_2	D	E
Passenger car	38.52	-0.19	0.00	-14.98	3.57

Source: TfNSW.

Note: 2018-19 unit values have been escalated to 2020 dollars using CPI.

VOC savings are calculated as the product of:

- The difference in vehicle kilometres travelled (vkt), between the Base Case and Project Case
- Vehicle operating cost per km
- The annualisation factor.

Avoided crash costs

Road crash costs refer to the economic value of damages caused by road vehicle crashes, and include:

- Human costs (e.g. medical treatment costs, value of statistical life, long-term care, and lost income)
- Vehicle costs (e.g. towing and repairs)

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- General costs (e.g. travel delays, police services and insurance administration).

Reductions in crash costs are an important road user benefit associated with road improvements and could result from a change in the distanced travelled and/or a change in the type of road travelled on (i.e. freeway or other).

The Project Case is expected to generate a lower vkt relative to the Base Case. Hence, road crash costs, on the basis of distanced travelled, will likely decrease under the Project Case.

A 2017 report by Deloitte Access Economics, commissioned by the Australasian Railway Association, outlines a value for crash costs from road transport in Australia. The results of this report are summarised in Table 4-8 below.^{xxvii} While this is a national value for the crash rate per kilometre travelled it provides an indication of the potential crash cost savings for the Project Option. We consider it is reasonable – while under the Project Case vehicles on Jefferys Track might be susceptible to accidents due to relatively steep grades and more remote terrain, the alternative under the Base Case involves both high speeds and much higher traffic volumes (on the Southern Outlet, northern part of the Brooker Highway and Lyell Highway) or slower speeds but high pedestrian and traffic volumes (through Hobart).

Table 4-8 Crash cost parameter

Unit	Road parameter (\$/km in 2020/21)
Average crash cost per km (\$)	0.12

Source: Deloitte Access Economics.^{xxviii}

Note: 2015-16 unit values have been escalated to 2020 dollars based on CPI growth.

Crash cost differences is calculated as a product of:

- The difference in vkt between the Base Case and the Project Case
- Average crash rate cost per vkt
- The annualisation factor.

4.5.2 Environmental Externalities

Environmental externalities are the impacts on the environment (air, water, greenhouse gases, noise, landscape etc.) resulting from use of a new asset. The term 'externality' captures the impact on third parties 'external' to the network, i.e. impacts on the broader society.

Under the Project Case there will be decrease in vkt relative to the Base Case, which in most instances will cause a reduction in environmental externalities to society more broadly. The environmental costs outlined in Table 4-9 are included in this report, as per guidance from Austroads.^{xxix}

Table 4-9 Description of environmental externalities

Externality type	Description
Air pollution	Cost to community of air pollution.
Greenhouse	Greenhouse externality cost refers to avoidance costs for climate change as a result of the releasing of greenhouse gases (carbon dioxide, methane, carbon monoxide, etc.) from vehicle use.
Noise pollution	The impact of noise of vehicles to the broader community.
Soil and water	Water and soil pollution includes organic waste or persistent toxicants run-off from roads generated from vehicle use: engine oil leakage and disposal, road surface, particulate matter and other air pollutants from exhaust and tyre degradation.
Biodiversity	Airborne emissions from air pollutants that can have negative effects on natural ecosystems (eutrophication and acidification).
Nature and landscape	Nature and landscape impacts that are driven by habitat loss, loss of natural vegetation or reduction in visual amenity due to vehicle use.
Additional urban/ barrier effects	An urban impact that accounts for, among other things, time loss due to separation for pedestrians, and visual intrusion due to building of a new road or increased travel speeds on a given road.
Upstream and downstream costs	Upstream and downstream costs that refer to the indirect costs of transport including energy generation, vehicle maintenance and infrastructure construction and maintenance.

Source: Austroads.

The unit values for the various external costs associated with road usage are presented in Table 4-10 below. We acknowledge that although there will be a reduction in vkt relative to the Base Case, given the natural terrain of Jefferys Track there will likely be no benefit to the 'soil and water', 'biodiversity' and 'nature and landscape' externalities under the Project Case. Consequently, we have excluded these as benefits to the project.

Table 4-10 Externality parameters (urban)

Externality type	Cars (\$/1,000 vkt)
Air pollution	13.76
Greenhouse	7.29
Noise	3.29
Soil and water	Assumed zero for this project
Biodiversity	Assumed zero for this project
Nature and landscape	Assumed zero for this project
Additional urban/barrier effects	2.36
Upstream and downstream costs	8.98
Total	37.22

Source: Austroads.

Note: 2013/14 unit values have been escalated to 2020/21 dollars based on CPI growth.

Externality avoidance benefits have been estimated as a product of:

- The difference in vkt between the Base Case and the Project Case
- The externality parameter (total)
- The annualisation factor.

4.6 Appraisal results

The most commonly used indicators generated using a CBA are the net present value (NPV) and the benefit cost ratio (BCR), which are defined as follows:

- The NPV is the difference between the present value of benefits and the present value of costs
- The BCR is the ratio of the present value of benefits and the present value of costs. If the BCR is above one, the investment is economically viable, i.e. society as a whole will be better off.

Generally, NPV and BCR results are guided by traffic flow data that compares the Base Case and Project Case. As discussed above we have determined the number of vehicles required to travel the route each day such that the quantifiable benefits under the Project Case equal the quantifiable costs (i.e. when the NPV is equal to zero and the BCR is equal to one).

Table 4-11 Economic appraisal (Years 1 to 30) (NPV in 2020-21 prices, discounted at 7%)

Economic appraisal	Project Option
Capital costs (\$ million)	94.6
Operating costs (\$ million)	7.1
Total costs (\$ million)	101.7
Travel time savings (\$ million)	56.8
Vehicle operating cost savings (\$ million)	23.0
Avoided crash costs (\$ million)	16.9
Environmental externalities (\$ million)	5.0
Total benefits (\$ million)	101.7
Vehicles required to achieve breakeven	1,314

Source: Deloitte Access Economics.

4.7 Costs and benefits that are not quantifiable

4.7.1 Costs

Social impact

Community members from Crabtree, Judbury and Lachlan, were in most part opposed to the development of Jefferys Track for a light vehicle road. Concerns of increased traffic, additional stress and loss of character to the rural landscape in which they reside were cited. This represents a clear cost to the community in terms of welfare.

Environmental impact

There will be a range of impacts on the environment if Jefferys Track is upgraded to a light vehicle route. These will include:

- Some impact during construction
- Reduced sedimentation from the unmade road and the erosion and sedimentation caused by illegal 4WD activities
- If an upgrade does reduce antisocial behaviour (as discussed below) a reduction in damage to flora and fauna from illegal activities, less risk of a fire from burning vehicles, and less rubbish dumping
- Harm to wildlife who may be struck by passing vehicles.

In addition, PWS suggested that the main biodiversity impacts will come from weed invasion, both from seeds carried by vehicles and weeds from wind-blown seeds that establish on road verges and batters.

Some stakeholders were concerned that the impact on the environment would be severe. While we note these concerns, our initial view is that some of the negative impacts could be ameliorated through, for example, good road design and careful construction techniques. A light vehicle route would largely (although not entirely) follow the existing Jefferys Track alignment and hence not require significant habitat destruction during construction.

There would also be some environmental benefits from taking traffic away from other roads. For example, there will be fewer vehicles on the Southern Outlet travelling at a relatively high speed, likely reducing the harm to wildlife for that area. Given the indicative light vehicle route provides a shorter journey between the Valleys and to the Bridgewater Bridge, there will be less distance travelled and hence lower emissions from vehicles overall.

On balance the environmental impact is likely to be negative, but perhaps may not be as significant as some stakeholders have suggested. Ultimately the extent of the environmental impacts could only be established through a detailed environmental study, which has not been carried out as part of this project.

4.7.2 Benefits

Travel time reliability

It has been widely recognised that travellers do not only take travel time into account, but also travel time reliability. When travel times are unreliable, travellers typically allow more time for trips in order to reduce the possibility of arriving late at a destination. Reducing the unreliability of travel time means that this extra time allowance could be decreased or avoided completely, resulting in a user benefit. Given the variability in travel time through Hobart, this could be a significant benefit for the Project Case.

Although some economic evaluation studies attempt to quantify this benefit by using the mean and standard deviation, due to a lack of data we have not attempted to do so here. The ATAP Guidelines outline the travel time reliability as an outstanding issue and key focus area of future research.

Residual asset value

For long-lasting capital assets, some economic life may remain following the conclusion of the evaluation period. Where this is the case, current guidelines from ATAP requires residual value of assets to be reported as a benefit in the last year of the evaluation.

TfNSW prescribe the economic life of road pavement (concrete) as 60-80 years and road pavement (asphalt) as 30-40 years. Given the road design is not final for Jefferys Track, we have not attempted to quantify the residual asset value.

Employment opportunities

Upgrading Jefferys Track is expected to present new economic opportunities for the regions, particularly in terms of employment opportunities. Currently, commuting for work between the two Valleys is considered undesirable by many residents given the distance and travel time. Unlocking a

direct route between the Huon and Derwent Valleys may make commuting more attractive, allowing residents to seek new employment opportunities and employers to reach a new labour market pool.

Tourism opportunities

Tourism operators and experts suggested Jefferys Track would allow tourists to embark on a circular trip between the two Valleys rather than back track through Hobart, creating a more positive visitor experience. It would open the possibility for cross-promotional opportunities for tourist attractions in the regions. A direct link between the two Valleys may also promote greater visitation from residents in the Valleys and greater Hobart more broadly.

Recreation opportunities

There is potential for greater use of the area as a recreation destination. A report by the West Wellington Protection Group in August 2010 noted that *"the potential for extending responsible recreation and tourist activities in the [West Wellington] region is huge, particularly if directed towards providing facilities, signage and maps for bushwalkers. Local tourist operators are keen to promote a Judbury to Hobart walk, for instance..."*.^{xxx}

While some investment would be required, recreational benefits are likely to exist.

Emergency services access

Upgrading Jefferys Track would provide the Tasmanian Fire Service with the ability to move resources between the two Valleys more efficiently during the fire season and provide greater access to the Wellington Range for fire management.

Although the same is the case for the all-weather access track / fire trail, the benefits would be considered greater under the Project Case as a sealed light vehicle route would provide the Tasmanian Fire Service more reliable access to Jefferys Track, shorter travel times and potentially cater for vehicles of greater firefighting capabilities. Similarly, a sealed road would be more reliable and suited to residential vehicles if an escape route is required during the fire season.

Illegal and anti-social behaviour

Stakeholder consultation and discussion with experts suggests that on balance a light vehicle route is likely to reduce the illegal and anti-social behaviour that currently occurs along Jefferys Track as groups partaking in these activities may disperse to other areas or cease behaviour entirely if the route is more frequently travelled.

4.8 Sensitivity analysis

Given that the assumptions and parameters underpinning the economic appraisal of the options are subject to change, a series of sensitivity tests have been undertaken to investigate the impacts of these potential changes on the conclusions drawn from the appraisal.

The analysis considers potential changes in the assumptions and parameters used to generate the core economic appraisal results to assess the impact on the 30-year NPV and BCR under each scenario. The following sensitivity tests have been performed on the results of the core analysis:

- **Discount rates:** 4% and 10% discount rates have been tested
- **Traffic growth:** rather than using the historic growth rate in traffic volume in the Huon Valley, the historic growth rate of population is used, which is 1.6% over the past five years
- **Variation in capital cost:** A variation in capital costs of +/- 25%
- **Variation in travel time:** A variation in travel time of + 25% and -10%

The results of the sensitivity analysis are shown in Table 4-12. They show a high sensitivity to the travel times – for example if the travel time for the Base Case were to increase by 25% the number of vehicles required almost halves. Although an average travel time of 65 minutes is assumed, it is common for the trip duration to fall to 60 minutes during less congested parts of the day and increase to over 80 minutes during more congested parts of the day. Results also indicate that if the light vehicle route could be provided at a lower cost envelope that the vehicle breakeven point improves substantially.

Table 4-12 Sensitivity analysis (Years 1 to 30) (in 2020-21 prices, discounted at 7%)

Scenario	Vehicle breakeven point
4% discount rate	925
10% discount rate	1,781
Population growth (1.6%) used as an alternative to traffic growth (2.7%)	1,517
Higher capex cost (+25%)	1,620
Lower capex cost (-25%)	1,009
Higher Base Case travel time (+25%)	645
Lower Base Case travel time (-10%)	2,244

Source: Deloitte Access Economics.

4.9 Conclusion on light vehicle route

To achieve a breakeven point between the quantifiable costs and benefits 1,314 vehicles will be required to travel daily between Huonville and the Bridgewater Bridge / New Norfolk using Jefferys Track. As noted above, current estimates are that fewer than 100 vehicles make this journey via Hobart. On this basis, and regardless of the value of the non-quantified costs and benefits, the project is clearly unviable.

4.10 All weather access track / fire trail

In general, there was some community support for this option given it is less disruptive to residents and will provide benefits to emergency services.

An all-weather access track / fire trail will likely provide the Tasmanian Fire Service and other emergency services with greater access to the Wellington Range for improved fire management. In addition, the route will likely assist with resources between fire brigades, currently strained due to the travel time between the regions. The all-weather access track / fire trail will also provide residents with an additional escape route if a situation were to exist when such an escape was required during the fire season.

There will also be benefits for PWS and WPMT in terms of assisting with park management – for example it will assist with routine management works and ensure easier access for fire mitigation works such as slashing and fire trail maintenance.

Although it is difficult to conclude definitively, an all-weather access / fire trail may also reduce the illegal and anti-social behaviour that currently occurs along Jefferys Track (outlined in section 3.3.6). With increased usage, groups that partake in this behaviour may disperse to other areas or cease behaviour entirely, reducing the unsustainable damage inflicted on the Track and surrounding environment, and helping to better maintain the environmental asset.

Although these benefits exist they cannot be easily quantified and therefore it is difficult to weigh them against the estimated upgrade cost of \$4.5 million. It may be that increased fire access prevents or reduces the severity of a major bushfire; in which case benefits would exceed \$4.5 million many times over. On the other hand there may be no impact on fires at all.

Nevertheless, given the impact of existing antisocial behaviour on parts of Jefferys Track and the potential benefits of an upgrade, we consider this option is worth pursuing further. This would benefit from input from a number of parties including the Huon and Derwent Valley Councils, the Department

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of State Growth, PWS, Tasmania Fire Service, WPMT, Lenah Estate and local landowners. Matters to be considered include:

- How any upgrade to the track should be funded – noting that a range of parties (including both public and private interests) might benefit
- Responsibility for ongoing management and funding for maintenance of Jefferys Track
- Whether public access to Jefferys Track should be restricted, and if so how and in what circumstances
- How existing antisocial behaviour such as rubbish dumping and damage by 4WDs could be prevented
- Whether an upgrade is likely to be consistent with the statutory objectives of a Conservation Area and/or the Wellington Park Management Plan
- Tenure issues – there will be limited benefits in any upgrade if secure tenure over Jefferys Track cannot be established.

5 References

- ⁱ Jacobs, *Southern Explorer Feasibility Study* (report commissioned by the Derwent Valley Council, March 2015) <
https://www.derwentvalley.tas.gov.au/__data/assets/pdf_file/0032/376367/Southern-Explorer-Feasibility-Study-Report.pdf>.
- ⁱⁱ 'West Wellington Regional Development Proposal', West Wellington Protection Group (March 2012).
- ⁱⁱⁱ Robert Cotgrove, *The upgrading of Jefferys Track: A methodological investigation into the application of cost-benefit analysis to development roads* (1984) University of Tasmania Dissertation.
- ^{iv} Written submission from Jenny Cambers-Smith to Deloitte Access Economics, 16 September 2020
- ^v Ibid
- ^{vi} 'West Wellington High Conservation Value Submission', West Wellington Protection Group (August 2010).
- ^{vii} Australian Bureau of Statistics, *Census of Population and Housing, 2016*, (TableBuilder, 2018).
- ^{viii} Australian Bureau of Statistics, *Data by Region, 2014-19* (Catalogue No 1410.0, 28 July 2020)
- ^{ix} Tasmanian Treasury, *2019 Population projections for Tasmania and its Local Government Areas (May 2019)* <treasury.tas.gov.au/economy/economic-data/2019-population-projections-for-tasmania-and-its-local-government-areas>.
- ^x 'State Growth Tasmania | economic profile', .id (01 October 2020) <
<https://economy.id.com.au/tasmania/about?WebID=170>>.
- ^{xi} Australian Bureau of Statistics, *Data by Region, 2014-19* (Catalogue No 1410.0, 28 July 2020)
- ^{xii} 'Tasmanian Visitor Survey', *Tourism Tasmania* (07 October 2020) <
<http://www.tvsanalyser.com.au>>.
- ^{xiii} Australian Bureau of Statistics, *Data by Region, 2014-19* (Catalogue No 1410.0, 28 July 2020)
- ^{xiv} Tasmanian Treasury, *2019 Population projections for Tasmania and its Local Government Areas (May 2019)* <treasury.tas.gov.au/economy/economic-data/2019-population-projections-for-tasmania-and-its-local-government-areas>.
- ^{xv} 'State Growth Tasmania | economic profile', .id (01 October 2020) <
<https://economy.id.com.au/tasmania/about?WebID=170>>.
- ^{xvi} Australian Bureau of Statistics, *Data by Region, 2014-19* (Catalogue No 1410.0, 28 July 2020)
- ^{xvii} 'Tasmanian Visitor Survey', *Tourism Tasmania* (07 October 2020) <
<http://www.tvsanalyser.com.au/>>.
- ^{xviii} Department of State Growth, 'RoadsTas Traffic Stats', *Geo Counts* (07 October 2020) <
<http://geocounts.com/traffic/au/stategrowth>>.
- ^{xix} Ibid
- ^{xx} Jacobs, *Southern Explorer Feasibility Study* (report commissioned by the Derwent Valley Council, March 2015) <

https://www.derwentvalley.tas.gov.au/__data/assets/pdf_file/0032/376367/Southern-Explorer-Feasibility-Study-Report.pdf>.

^{xxi} Australian Bureau of Statistics, *Census of Population and Housing, 2016*, (TableBuilder, 2018).

^{xxii} Tasmanian State Grants Commission, *State Grants Commission Annual Report for 2016-17* <<https://www.treasury.tas.gov.au/Documents/State-Grants-Commission-Annual-Report-2016-17-and-2017-18-Financial-Assistance-Grant-Distributions-PDF-Version.pdf>>.

^{xxiii} Ibid

^{xxiv} Transport and Infrastructure Council, *Australian Transport Assessment and Planning Guidelines – PV2 Road Parameter Values* August 2016 <https://www.atap.gov.au/sites/default/files/pv2_road_parameter_values.pdf>.

^{xxv} Australian Bureau of Statistics, *Survey of Motor Vehicle Use, Australia, 12 months ended 30 June 2018* (Catalogue No 9208.0, 20 March 2019).

^{xxvi} Transport for NSW, *TfNSW Economic Parameter Values* June 2020 <<https://www.transport.nsw.gov.au/news-and-events/reports-and-publications/tfnsw-economic-parameter-values>>.

^{xxvii} Deloitte Access Economics, *The contribution of rail in Australia* (report commissioned by the Australasian Railway Association, November 2017) <<https://www2.deloitte.com/content/dam/Deloitte/au/Documents/Economics/deloitte-au-economics-value-rail-contribution-australia-161117.pdf>>.

^{xxviii} Ibid

^{xxix} Austroads, *Updating Environmental Externalities Unit Values*, December 2014, <<https://austroads.com.au/publications/environment/ap-t285-14>>.

^{xxx} 'West Wellington High Conservation Value Submission', West Wellington Protection Group (August 2010).

Appendix A Stakeholder Consultation

Table A.1 Community awareness and engagement

Activity	Purpose	Stakeholder	Date
DVC letter mailed to around 500 residents	Communicate the study with residents	Local residents - Lachlan	Mid July 2020
HVC letter to 6 private landowners	Communicate the study with residents	Private landowners - Crabtree	22 July 2020
Media release #1 announcing the study and inviting people to register their interest	Communicate the study and maximise the time available for the community to become aware of the information	All	24 July 2020
Deloitte email to registered individuals	Advise details of online survey and public meetings	All	14 August 2020
Information published on Councils website and social media	Advise details of online survey and public meetings	All	14 August 2020
Advertisements by Councils in local newspapers	Advise details of online survey and public meetings	All	19 August 2020
Media release #2 addressing frequently asked questions	Address frequently asked questions and the latest findings of the study	All	26 August 2020
HVC letter to approximately 113 Judbury residents	Communicate the study with residents	Local residents - Judbury	20 August 2020
HVC letter to approximately 220 Crabtree residents	Communicate the study with residents	Local residents - Crabtree	26 August 2020
Ongoing Council updates to social media	Communicate the study with residents	All	

Deloitte directly contacted, and subsequently spoke to four private landowners in Crabtree who would be directly affected by an upgrade to Jefferys Track	Communicate the study with private landowners and answer any concerns	Private landowners - Crabtree	Prior to 3 September 2020
Deloitte directly contacted, and subsequently spoke to several private landowners in Lachlan who would be directly affected by an upgrade to Jefferys Track	Communicate the study with private landowners and answer any concerns	Private landowners - Lachlan	After 9 September 2020

Table A.2 Community and industry consultation and engagement

Activity	Purpose	Stakeholder	Date
Initial contact via email and phone calls to an extensive list of community organisations, industry groups and other interested parties to arrange one-to-one discussions and industry workshops	Communicate the study with community organisations, industry groups and other interested parties	Community organisations, industry representatives and other interested parties	August 2020
One-to-one discussion key organisations	Understand the views of key organisations of the potential upgrade to Jefferys Track	Tasmanian Fire Service Parks and Wildlife, Wellington Park Management Trust Department of State Growth	August 2020
Agriculture workshop	Understand the views of the agricultural industry of the potential upgrade to Jefferys Track	Hansen Orchards Westerway Raspberry Farm Tasmanian Beekeepers Association	18 August 2020
Forestry workshop	Understand the views of the forestry industry of the potential upgrade to Jefferys Track	New Forests Norske Skog	19 August 2020

		SFM Environmental Solutions	
		Sustainable Timbers Tasmania	
Tourism workshop	Understand the views of the tourism industry of the potential upgrade to Jefferys Track	Far South Tasmania Tourism Association Tassie Bound Adventure Tours Huon Valley Tourism Working Group Derwent Experience Destination Southern Tasmania Basecamp Tasmania Tahune Adventures	19 August 2020
Public meetings	Understand the views and concerns of community members of the potential upgrade to Jefferys Track	Huon Valley community engagement	3 September 2020
Public meetings	Understand the views and concerns of community members of the potential upgrade to Jefferys Track	Derwent Valley community engagement	9 September 2020
One-to-one discussion with other industry representatives, organisations and community groups	Understand the views of other industry representatives, organisations and community groups of the potential upgrade to Jefferys Track	Huon Aquaculture Tassel SRT Logistics 4WD Tasmania Tasmanian Trail Association Community members who missed the opportunity to attend the public meetings City of Hobart Circular Economy Huon SFM Environmental Solutions	Aug-Sept 2020

Online survey including written submissions (a hard copy survey was also available via the Huon and Derwent Valley Council's premises	Provide the opportunity for community members, organisations and industry representatives to express their views of the potential upgrade to Jefferys Track	All	14 August – 16 September 2020
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