Palmerston North City Council

ABBY ROAD NOTICE OF REQUIREMENT

7 SEPTEMBER 2020

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ABBY ROAD NOTICE OF REQUIREMENT

Palmerston North City Council

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PART A: FORM 18

NOTICE OF REQUIREMENT FOR A NEW DESIGNATION UNDER SECTION 168 OF THE RESOURCE MANAGEMENT ACT 1991

To:	The General Manager Palmerston North City Council 32 The Square Private Bag 11034 Manawatu Mail Centre Palmerston North
Applicant:	Palmerston North City Council 32 The Square Private Bag 11034 Manawatu Mail Centre Palmerston North 4442

1. *APPLICANT AND PROPOSAL*

To undertake a designation for the purposes of Road at 52 Johnstone Drive, Palmerston North, legally described as LOT 2 DP 484516 LOT 694 DP 500578 LOT 695 DP 509873 LOT 1102 DP 519561. The area to be designated is 0.97 ha.

2. *A DESCRIPTION OF THE ACTIVITY TO WHICH THE APPLICATION RELATES IS:*

The Notice of Requirement application seeks to enable roading access between Abby Road (currently without a formed ending) and Johnstone Drive. The proposed road will be a two-lane local road, approximately 180m long and would extend Abby Road and join with a T intersection to Johnstone Drive.

3. *THE DESCRIPTION OF THE SITE AT WHICH THE ACTIVITY IS TO OCCUR IS:*

The land at 52 Johnstone Drive held in titles LOT 2 DP 484516 LOT 694 DP 500578 LOT 695 DP 509873 LOT 1102 DP 519561 is a 53 ha site of irregular shape. The land has road frontage to Abby Road's unformed end, and to Johnstone Drive, with the relevant roads bisected by a gully system running South/North known as the Abby Road Gully, which incorporates the Manga o Tane Reserve.

4. *THE FULL NAMES AND ADDRESSES OF THE OWNERS AND OCCUPIERS OF THE SITE ARE*

52 Johnstone Drive, legally described as LOT 2 DP 484516 LOT 694 DP 500578 LOT 695 DP 509873 LOT 1102 DP 519561, is owned by Aokautere Land Holdings Limited.

5. *ADDITIONAL RESOURCE CONSENTS ARE REQUIRED IN RELATION TO THE PROPOSAL:*

The earthworks require a land use consent from Palmerston North City Council for a Restricted Discretionary Activity pursuant to Rule R6.3.7.1 of the District Plan.

The earthworks require a regional consent from Horizons Regional Council for a Controlled Activity pursuant to Rule 13-2 of the One Plan

The culvert placement requires a regional consent from Horizons Regional Council for a Discretionary Activity pursuant to Rule 17-23 of the One Plan.

6. *ATTACHED IS RELEVANT INFORMATION RELATING TO THE ACTIVITY, INCLUDING AN ASSESSMENT OF THE ACTIVITY'S EFFECTS ON THE ENVIRONMENT, AS REQUIRED BY SCHEDULE 4.*

7. *THE INFORMATION HAS BEEN PROVIDED IN SUFFICIENT DETAIL TO SATISFY THE PURPOSE FOR WHICH IT IS REQUIRED.*

PART B: PLANNING REPORT AND ASSESSMENT OF ENVIRONMENTAL EFFECTS

1.1 INTRODUCTION

This Notice of Requirement (NoR) seeks to designate an area of land for roading purposes. The land is currently zoned Residential. The road would extend the existing formation of Abby Road and provide a direct link from Abby Road to Johnstone Drive, which then accesses Aokautere Drive, which is part of State Highway 57 (SH 57). The section of SH 57 where Johnstone Drive joins on provides access between the urban area of Palmerston North and the suburb of Aokautere. The extent of the designation is shown below in figure 1.

1.2 BACKGROUND

The area of land subject to this NoR is generally bounded by Aokautere Drive to the north, Johnstone Drive to the east and Pacific Drive to the west. Abby Road is accessed off Pacific Drive. Johnstone Drive has been developed from the north and the south and the formation of Johnstone Drive is in the process of being completed as part of land development and subdivision activity. Residential development currently forms a node around and adjacent to the intersection of Johnstone Drive and Pacific Drive. Further residential development has been undertaken at the southern extent of Pacific Drive.

In 2016 a resource consent (APP-2016200681.00) was granted to Aokautere Land Holdings Limited by Horizons Regional Council to undertake earthworks for creation of a road and to infill the gully within the land associated with residential development at Johnstone Drive. In addition, Aokautere Land Holdings Limited applied for land use consent from Palmerston North City Council for earthworks but it was declined. As a result, the land use consent from Horizons Regional Council has not been implemented.

In 2019 council sought to designate land in the same parcels of land but with a different footprint to this NoR. The 2019 application is to be withdrawn on the basis that the alignment proposed in this NoR secures an optimal road alignment.

Council and the landowner of the subject land were in negotiations for the course of 2019 to reach an agreement to co-fund and deliver the connection road. At the time of finalising this NoR the negotiations have ceased as the landowner has lodged a subdivision application.

1.3 SITE DESCRIPTION

1.3.1 LOCATION

The extent of the NoR is shown in figure 1 below.

Figure 1 Extent of proposed designation.

The NoR is situated on land in single ownership, with titles held together. The land immediately adjacent to Abby Road where the designation begins is generally flat and grassed. The NoR then curves, extending north to connect to the Palmerston North City Council's Adderstone Reserve, before descending the slope of the gully system known as the Abby Road Gully. The proposed road would cross the base of the gully, with proposed batters adjacent to the Manga o Tane Reserve, before ascending the eastern slope of the gully and connecting with Johnstone Drive in a T intersection. The gully area covered by the NoR and to the south is a highly modified gully system with vegetated sides. The embankment at the rear of 27 and 29 Johnstone Drive are long grass, while structured planting has been undertaken at the rear of 14, 22 and 24 Abby Road and 5 and 11 Woodgate Court. Generally, the area of the gully to the south of the Manga o Tane reserve is clad in a mix of long grass and scrub with a grass base.

Figure 2 below shows an aerial of the area with current allotment boundaries.

Figure 2 Aerial image of allotments

1.3.2 SURROUNDING ENVIRONMENT

The area surrounding the subject site is a mix of residential, institutional and recreation uses. The majority of the Institute of the Pacific United Tertiary Institute of New Zealand is located on the western side of Pacific Drive adjacent to Aokautere Drive. There are 4 accommodation units located on the eastern side of Pacific Drive along with grass recreation areas. The eastern boundary of the four accommodation blocks is bounded by a heavily vegetated gully that contains a pond and a public walking track. This area is part of a conservation and amenity area owned by Palmerston North City Council. To the east of the conservation and amenity area/reserve is an area of recreation reserve which is also owned by the Palmerston North City Council.

The southern extent of the triangle formed by the existing roads has been developed in low density residential development. The Northern part of the triangle is characterised by open grassed areas bisected by the two gullies (each of which is identified as Conservation and Amenity reserve). There is a newly constructed school on Johnstone Drive.

Abby Road is accessed from Pacific Drive and is currently a no exit cul-de-sac providing access to Woodgate Court. Johnstone Drive is accessed from Aokautere Drive. Once Johnstone Drive's formation is completed, the road will link with Pacific Drive. The full connection of Johnstone Drive is under construction at the time of this report, and its completion is assumed.

1.3.3 DISTRICT PLAN ENVIRONMENT

Figure 3 District planning maps of the site and surrounding area.

The NoR area is zoned residential. The surrounding environment contains institutional, recreation and conservation and amenity zones along with rural zones. Those areas with diagonal lines are part of the rural residential overlay.

1.3.4 ROAD SPEED ENVIROMENT

The speed environment of the immediately surrounding roads is as follows:

- SH 57/Aokautere Drive has a posted speed limit of 70km/hr east of the intersection with Summerhill Drive. The speed limit increases to 80km/hr where the local environment becomes more rural, approximately 1.5km east of Johnstone Drive.
- All the local roads within the area (Pacific Drive, Johnstone Drive, Abby Road, and Woodgate Court) have posted speed limits of 50km/hr.

At the time of writing the application the two sections of Johnstone Drive have been joined.

1.3.5 EXISTING ROAD CHARACTERISTICS

The city's roading hierarchy is set out in the District Plan road. Aokautere Drive (SH 57) is identified as a Major Arterial road, Pacific Drive a Minor Arterial Road, Johnstone Drive a Collector Road and Abby Road a Local Road. The New Zealand Transport Agency's 'One Network Road Classification' classifies Aokautere Drive as National, Pacific Drive as Primary/Secondary Collector, Johnstone Drive as Unknown and Abby Road as Low Volume.

The standards set out in the District Plan (page 37 of Section 20 – Transportation) for these roads are shown below in figure 4.

TYPE/CRITERIA		MIN RESERVE WIDTH*	MIN CARRIAGEWAY WIDTH*	MIN BERM WIDTH	TYPICAL DESCRIPTION
Urban and or Rural	>300 EDUC	22m	13m	2 x 4.5m	Major Arterial or Minor Arterial
Urban	150 – 300 EDUC	20m	11m	2 x 4.5m	Major Arterial or Minor Arterial
Rural		18m	9m (2 x 3.5m lanes) (2 x 1.0m shoulders)	2 x 4.5m	Major Arterial or Minor Arterial
Urban	EDUC of 60 – 150	18m	9m	2 x 4.5m	Minor Arterial or Collector
Rural		16m	7m (2 x 3m lanes) (2 x 0.5m shoulders)	2 x 4.5m	Minor Arterial or Collector
Urban	EDUC of 12 - 60	17m	8m	2 x 4.5m	Local
Urban	EDUC of 0 - 12	16m	7m	2 x 4.5m	Local
Rural, Rural Residential, Parklands	EDUC of 0 - 60	14m	6.2m (2 x 3m lanes) (2 x 0.1m shoulders	2 x 3.9m	Local
Industrial	EPE of > 150	22m	13m	2 x 4.5m	Local
Industrial	EPE of 0 – 150	17m	11.5m	1 x 4.5m and 1 x x1.0m	Local

*Roads having either a longitudinal gradient steeper than 1:10 or having a horizontal alignment with any curve less than 100metres radius will be subject to specific design and will require approval of the Roading Manager

EDUC Estimated Dwelling Units in the Catchment

EPE Estimated Personnel Employed

Figure 4 Description of Construction Criteria for New Roads and Streets as set out in the PNCC District Plan.

1.3.6 LAND PURCHASE

Land purchase negotiations occurred during 2019 but have now ceased due to the landowner lodging a subdivision application.

1.4 NOTICE OF REQUIREMENT

1.4.1 NOTICE OF REQUIREMENT PURPOSE

The NoR will secure the potential to extend Abby Road so that it joins up with Johnstone Drive for the purpose of:

- Preserving and providing an efficient and logical connection between Abby Road and Johnstone Drive.
- Preserving and providing an efficient and logical access to the eastern side of the Adderstone Reserve from Abby Road, to enable recreational opportunities.

The extent of the NoR is shown in Appendix A.

1.4.2 ASSOCIATED WORKS

The works associated with the proposed NoR will be those required to construct the road, i.e. earthworks for the formation of the road, the placement of a culvert to enable the stormwater from the head of the gully to flow under the road, and the construction of the carriageway. The construction of the carriageway will include a T intersection with Johnstone Drive. Some vegetation will be required to be removed.

1.4.3 OUTLINE PLAN

In dealing with projects such as the placement and construction of roads, the designation phase is normally undertaken during the initial stages of the project cycle. On that basis, it is usually only possible to provide a general and conceptual design at the time of the designation phase with the detailed design undertaken in the latter stages of a project. The designation process under the RMA addresses this issue via a two-phase process. In this respect, a NoR provides the opportunity to lodge a conceptual design in support of the requirement, while outline plans provide the opportunity to confirm and clarify detailed design information at a later stage.

In this instance, while the details provided in this NoR have been developed in accordance with the anticipated operational requirements of the road and the best information available at this time, the design drawings attached to this NoR are indicative plans only to assist with evaluating potential effects on the environment. In effect this stage considers a 'corridor' within which the road would be constructed. Once the specific design of the road is known, and prior to construction, an Outline Plan application will be submitted in accordance with section 176A of the Resource Management Act 1991.

1.5 CONSIDERATION OF ALTERNATIVES

Section 168A (2A)(3)(b) requires consideration of whether adequate consideration has been given to alternative sites, routes or methods of undertaking the work. Three alternative options have been considered; 1) do nothing, 2) extend Abby Road to intersect with Aokautere Drive (SH 57) or 3) extend Abby Road so that it intersects with Johnstone Drive.

1.5.1 DO NOTHING

The do-nothing option would retain the status quo and would not provide connectivity for the residents of the currently developed areas or areas that have been identified for future development in the vicinity. The current roading pattern provides limited opportunities for passing between the collector roads without taking long routes.

1.5.2 EXTEND ABBY ROAD TO INTERSECT WITH AOKAUTERE DRIVE

This option provides the highest level of additional connectivity for existing and proposed development in the area to have quicker access into the centre of Palmerston North and amenities in the vicinity. However, this option also increases the number of intersections on Aokautere Drive

(SH 57) in a short distance of one another. Given the current speed environment it would require improvements to be done to the road to enable a safe intersection. This option would also result in a longer road and less land being available for future development in the immediate vicinity.

In 2019 a Traffic Assessment (TA) was prepared by WSP Opus to inform the assessment of alternatives considered as part of the previous NoR. The report, attached as Appendix B, considers this option and comments that it would result in minor negative effects in terms of efficiency and safety, a moderate positive effect in terms of accessibility and a minor positive effect in relation to resilience. The key conclusions of the 2019 TA are:

- The intersection of the proposed link and Aokautere Drive (SH 57)/Cashmere Drive is expected to have unacceptable performance in future years.
- The performance of the existing intersection and other adjacent intersections on SH57/Aokautere Drive are also expected to be unacceptable in future years.
- The significant delays expected at the intersection with or without the proposed link are expected to result in increased crash risk.
- Intersection improvements along Aokautere Drive (SH 57) will need to be coordinated to ensure traffic patterns remain consistent with the road hierarchy.
- The calculated future crash risk for the proposed intersection is similar to the calculated future crash risk for the intersection with the proposed link.
- The proposed link may result in increased pedestrian and cyclists crossing SH57 Aokautere Drive, the high future traffic volumes on this link are likely to make crossing difficult and unsafe.
- The proposed link provides an alternative connection to SH57 Aokautere Drive for motorists improving the accessibility of the road network in the Aokautere area.
- The proposed link provides additional pedestrian and cyclists access to SH57 Aokautere Drive.
- The proposed link also provides improved access to the recreation areas (including the Adderstone Walkway.
- The option provides an alternative connection to SH57 Aokautere Drive for residents and emergency services, improving the resilience of the road the intersection of the proposed link and Aokautere Drive is expected to have unacceptable performance in future years.

1.5.3 EXTEND ABBY ROAD TO INTERSECT WITH JOHNSTONE DRIVE

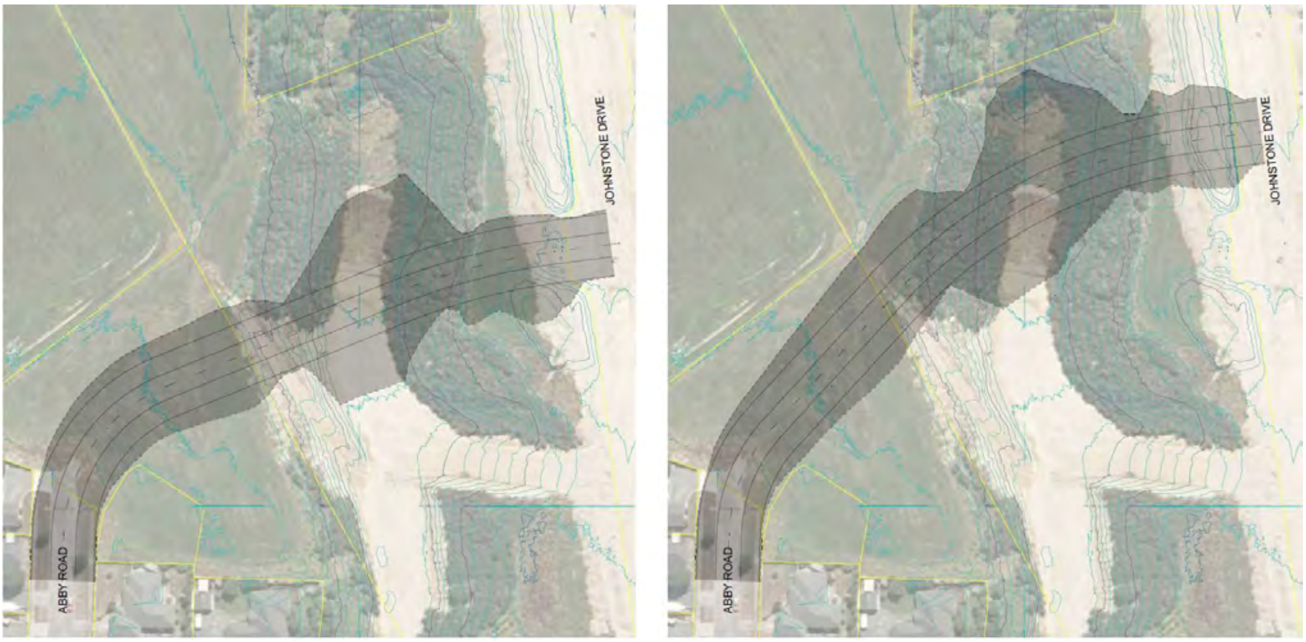
This option, which is the preferred option, provides a level of connectivity between the existing connector roads and provides shorter connection routes to existing amenities and services, without requiring the road infrastructure upgrades that the Aokautere Drive connection and intersection would require. A refreshed TA, prepared for this NoR in 2020 and attached as Appendix C, considered this option. Based on future transport demands and intersection modelling it commented that this proposal would result in a negligible effect on efficiency, a negligible effect in relation to safety, a moderate positive effect in terms of accessibility, and a minor positive effect in relation to resilience. The key conclusions of the 2020 TA are:

- The link has negligible impact on the efficiency of the Abby Road and Pacific Drive intersection.

- The performance of the Abby Road and Johnstone Drive intersection is expected to be very good.
- Safety effects will be negligible as 1) the Abby Road extension and its intersection with Johnstone Drive will be designed and constructed to an appropriate standard for the environment, and 2) the change in performance at the intersection of Abby Road and Pacific Drive is negligible so no reduction in safety is expected.
- The link provides improved access and route choice for some areas, which results in a moderate positive effect in relation accessibility.
- The proposed link provides route redundancy in the local road networks which results in a minor positive effect in terms of resilience.

1.5.3.1 SUB-OPTION ASSESSMENT, NORTHERN ALIGNMENT OR SOUTHERN ALIGNMENT

The alignment proposed in the previously lodged NoR is different to that sought in this one. The difference between the two is that this NoR proposes an alignment that is adjusted north and wider through the middle section. The two options considered are shown in figure 5 below.



SOUTHERN ALIGNMENT (INDICATIVE) NORTHERN ALIGNMENT (INDICATIVE)

Figure 5 Alignment options considered for the NoR.

This NoR, rather than the previous one, is the preferred alignment for the following reasons:

- It provides for better road gradients;
- It provides better connection and integration with the Manga o Tane Reserve;
- It provides sufficient space for the proposed landscaping mitigations; and
- Its expansion of the NoR area allows for the predicted fill works to be undertaken within its boundaries.

1.6 ASSESSMENT OF EFFECTS ON THE ENVIRONMENT

1.6.1 TRAFFIC AND TRANSPORTATION

A TA, mentioned in the previous section and attached as Appendix C, has been prepared to inform this NoR. The report assesses the efficiency, safety, accessibility, and resilience of the proposed link. The assessment outlines the existing traffic environment including the road hierarchy, speed limits, traffic flows, crash records, walking and cycling, public transport and future transport changes specified by council and the New Zealand Transport Agency. In addition, the impact of the future transport environment on efficiency, safety, access and resilience is predicted through intersection modelling.

The key findings of the report are, provided Johnstone Drive is connected,

- The overall effect of the extension on the efficiency of the Abby Road and Pacific Drive intersection is expected to be negligible;
- The performance of the intersection of Abby Road and Johnstone Drive is very good;
- The overall effect on safety is expected to be negligible as the Abby Road and Johnstone Drive intersection will be designed and constructed to an appropriate standard;
- The overall effect on access is expected to be a moderate positive effect as the link provides improved access and route choice for some areas; and
- The overall effect on resilience is expected to be a minor positive as the link provides some route redundancy in the local road network.

Given the above, it is considered the adverse effects on traffic and transportation will be less than minor.

1.6.2 LANDSCAPE AND VISUAL AMENITY

A Landscape and Visual Amenity Assessment, attached as Appendix D, has been prepared to assess the effects of the road extension on landscape character, natural character and visual amenity.

The report states the road extension will introduce a new element into the gully, such as impervious surfaces, earthworks, vehicle movements and fill. All of which will have some effect on the landscape and natural character, and visual amenity of the area. However, it suggests that if mitigated by way of fully revegetating the designation area the gully habitat and visual amenity will be enhanced. This mitigation will also screen and soften the road as well as integrating it with the surrounding gully.

The report concludes as follows:

> *With the recommended mitigation the effects are considered to be as follows:*
>
> - *Natural character - Moderate Low. This is due to the revegetation that can occur and potential for improved biophysical controls.*
> - *Landscape character – Moderate. This is due to the imposition of an earthworks pattern that is not consistent with the natural gully patterns of the area, particularly affecting adjacent parties.*
> - *Visual amenity – Moderate Low. This is due to the positive effects of revegetation of the batters that is recommended which will enhance visual amenity for the nearby*

> *residents but is offset by the negative effect of fill in the gully and the visual effect of traffic crossing this fill.*

In my opinion, these individual effects equate to an overall effect that is minor for adjacent parties and the wider public.

Given the above, I consider the landscape and visual amenity effects will be minor.

1.6.3 CULTURAL EFFECTS AND HISTORIC HERITAGE

The site is not identified as a Statutory Acknowledgement area however the Rangitāne o Manawatu Statutory Acknowledgment applies to the Manawatu River and its tributaries are. The unnamed ephemeral stream, which runs through the gully is a tributary of the river. Rangitāne o Manawatū have expressed an interest in the biodiversity and stormwater of the gully systems. The revegetation of the Abby Road Gully (detailed in the mitigation section below) will improve the gully habitat. Further, planting will assist in treatment of stormwater runoff from the road.

The District Plan does not show any historic heritage located in the immediate vicinity of the site. Given the highly modified state of the site due to prior earthworks, and the nature and scale of the proposed works (predominance of fill works rather than cut earthworks) it is considered that the likelihood of discovery of historic heritage in the area is low.

Given the above, it is considered that the potential adverse cultural and historic heritage effects of the proposal will be less than minor.

1.6.4 CONSTRUCTION EFFECTS

As with all construction projects, there are short term construction effects that occur. These construction effects are a temporary increase in truck movements to and from the site to deliver construction materials and during construction works, and a short-term increase in construction related noise and dust effects. These effects are temporary in nature, and can be avoided or mitigated through routine site management measures. For example, construction noise will be managed to not exceed the limits recommended in, and shall be measured and assessed in accordance with NZS 6803:1999 Acoustics – Construction Noise. Construction hours will be kept to between 7am and 5pm Monday to Friday, with no construction work to take place on Sundays or public holidays. In limited circumstances it may also be necessary for construction work to occur on Saturday's, also between the hours of 7am and 5pm. Dust will be managed with water sprinklers should this become necessary due to dry conditions.

Based on the above, the extent of potential construction effects are considered to be less than minor.

1.6.5 NATURAL HAZARDS EFFECTS

The road will traverse the gully onsite and cross the stream within it. Installation of a culvert and the stream being piped under the road will enable this. The stream is an ephemeral stream. Thus, the culvert will be designed to ensure it can carry high rainfall flows. In addition, the road embankments will be designed to ensure that the road takes into account the potential natural hazards, including high rainfall and overflow stormwater discharge.

Given the above, I consider the natural hazard effects to be less than minor.

1.6.6 MITIGATION

As recommended in the Landscape and Visual Amenity Assessment, PNCC will fully revegetate the fill batters on both sides of the road and the Abby Road Gully within the designation area. This will help maintain and increase the sense of naturalness and visual amenity within the area. Further, it will significantly reduce adverse visual amenity effects by screening and softening the road.

1.6.7 ASSESSMENT OF EFFECTS SUMMARY

In summary, effects associated with the NoR include traffic and transportation, landscape and visual amenity, cultural and historic heritage, construction, and natural hazards. Mitigation to address these effects include landscaping and implementing appropriate construction controls. An assessment of each effect has concluded that adverse effects of the NoR will be no more than minor.

1.7 STATUTORY ASSESSMENT

1.7.1 NOTICE OF REQUIREMENT

Section 171 sets out the matters the territorial authority must consider when making a recommendation on a NoR. Section 171(1) states:

> *When considering a requirement and any submissions received, a territorial authority must, subject to Part 2, consider the effects on the environment of allowing the requirement, having particular regard to—*
>
> *(a) any relevant provisions of—*
>
> > *(i) a national policy statement:*
> >
> > *(ii) a New Zealand coastal policy statement:*
> >
> > *(iii) a regional policy statement or proposed regional policy statement:*
> >
> > *(iv) a plan or proposed plan; and*
>
> *(b) whether adequate consideration has been given to alternative sites, routes, or methods of undertaking the work if—*
>
> > *(i) the requiring authority does not have an interest in the land sufficient for undertaking the work; or*
> >
> > *(ii) it is likely that the work will have a significant adverse effect on the environment; and*
>
> *(c) whether the work and designation are reasonably necessary for achieving the objectives of the requiring authority for which the designation is sought; and*
>
> *(d) any other matter the territorial authority considers reasonably necessary in order to make a recommendation on the requirement.*

The following sections provide an assessment of the NoR against the statutory requirements above.

1.7.2 NATIONAL POLICY STATEMENTS

NATIONAL POLICY STATEMENT FOR FRESHWATER MANAGEMENT 2020

The National Policy Statement for Freshwater Management 2020 (NPS-FM) comes into force on 3 September 2020. It sets out objectives and policies for freshwater and its management. Decision makers must have regard to the NPS-FM. The objective of the NPS-FM 2020 is to ensure natural and physical resources are managed in a way that prioritises: first, the health and well-being of water bodies and freshwater ecosystems; second, the health needs of people (such as drinking water); and third, the ability of people and communities to provide for their social, economic, and cultural well-being, now and in the future.

The gully contains a small, highly modified ephemeral stream. The formation of the proposed road will involve the installation of a culvert to allow for stormwater to pass under the road. Any water would feed into the amenity area to the north west of the site. It is considered due to the nature and scale of the proposed works and that they will be able to be carried out with appropriate control methods in place and the proposal is consistent with the objective of the NPS-FM.

NATIONAL POLICY STATEMENT ON URBAN DEVELOPMENT 2020

The National Policy Statement on Urban Development (NPS-UD) came into effect on the 20th of August 2020 and replaces the NPS-UDC 2016. It sets out the objectives and policies for planning well-functioning urban environments under the Act. The policy statement sets out tiers for local authorities throughout New Zealand. Palmerston North City Council is listed as a Tier 2 authority.

The relevant objectives and policies are set out in the table below along with a comment on the NoR's consistency with them.

OBJECTIVE/POLICY	COMMENT
Objective 1: New Zealand has well-functioning urban environments that enable all people and communities to provide for their social, economic, and cultural wellbeing, and for their health and safety, now and into the future.	The road will provide greater connectivity in and out of the area enabling access to social, economic, cultural and environmental wellbeing opportunities in the city.
Objective 4: New Zealand's urban environments, including their amenity values, develop and change over time in response to the diverse and changing needs of people, communities, and future generations.	Once works are completed the gully will be revegetated. It is considered this will enhance the visual amenity associated with the area.
Objective 6: Local authority decisions on urban development that affect urban environments are: (a) integrated with infrastructure planning and funding decisions; and (b) strategic over the medium term and long term; and	The NoR as proposed will provide a roading infrastructure connection desirable to support the existing land uses and potential of the area for residential development.

(c) responsive, particularly in relation to proposals that would supply significant development capacity.	
Policy 1: Planning decisions contribute to well-functioning urban environments, which are urban environments that, as a minimum: (a) have or enable a variety of homes that: (i) meet the needs, in terms of type, price, and location, of different households; and (ii) enable Māori to express their cultural traditions and norms; and (b) have or enable a variety of sites that are suitable for different business sectors in terms of location and site size; and (c) have good accessibility for all people between housing, jobs, community services, natural spaces, and open spaces, including by way of public or active transport; and (d) support, and limit as much as possible adverse impacts on, the competitive operation of land and development markets; and (e) support reductions in greenhouse gas emissions; and (f) are resilient to the likely current and future effects of climate change.	The road will provide greater accessibility for residents between housing, jobs, community services, natural spaces and open spaces. In terms of public and active transport, these will be provided for in the road design as it is anticipated cyclists, pedestrians, cars and potentially buses will be regular users.
Policy 2: Tier 1, 2, and 3 local authorities, at all times, provide at least sufficient development capacity to meet expected demand for housing and for business land over the short term, medium term, and long term.	The road will provide access to further residential allotments in the area, which is a part of the Aokautere Draft Structure Plan.

GOVERNMENT POLICY STATEMENT ON LAND TRANSPORT 2018-2028

The Government Policy Statement on Land Transport 2018 (GPS) sets out strategic priorities for New Zealand's land transport system. The priorities, their corresponding objectives and a comment on the NoR's consistency with them is provided below.

STRATEGIC PRIORTIES	OBJECTIVES	COMMENT
Safety	*A land transport system that is a safe system, free of death and serious injury*	Abby Road user safety will be ensured through standards in the District

		Plan being met when the road is constructed.
Access	*A land transport system that provides increased access to economic and social opportunities* *A land transport system that enables transport choice and access* *A land transport system that is resilient*	The proposed road will provide a greater level of connectivity to residents in the area and ensure they have ease of access to facilities in the area to provide for their social, economic, cultural and environmental wellbeing. As part of the local roading network the road will be designed for its intended function and according to roading hierarchy standards set out in the District Plan. It is anticipated cyclists, pedestrians, cars and potentially buses will be regular users thus it will also be designed for multimodal transport.
Value for money	*A land transport system that delivers the right infrastructure and services to the right level at the best cost*	The design and location of the road as proposed improves access to and from the area. It will provide shorter connections to existing amenities and services without requiring significant and expensive road infrastructure upgrades.
Environment	*A land transport system that reduces greenhouse gas emissions, as well as adverse effects on the local environment and public health*	The NoR if confirmed will result in effects on the environment resulting from earthworks and the culvert being placed in the gully stream. The effects, which have been assessed as less than minor, have been discussed above and it is considered they are not

		contrary to this priority and objective.

1.7.3 NATIONAL ENVIRONMENTAL STANDARDS

NATIONAL ENVIRONMENTAL STANDARD FOR ASSESSING AND MANAGING CONTAMINANTS IN SOIL TO PROTECT HUMAN HEALTH 2011

The National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health (NES) seeks to protect human health from contaminants in soil when land is disturbed, subdivided or land use changes. No activities are known to have occurred, or are more than likely to have occurred on the land which would cause it to be a 'piece of land' under this legislation. Thus, the NES is not considered relevant to the NoR and consequent road formation.

1.7.4 HORIZONS REGIONAL COUNCIL ONE PLAN

The Horizons Regional Council One Plan became operative in 2014. It combines the Regional Policy Statement (RPS) and Regional Plan into one document. It sets out the significant resource management issues for the region and objectives and policies for managing them. The consistency of the NoR with relevant objectives and policies in both is assessed below.

REGIONAL POLICY STATEMENT

The relevant objectives and policies in the Regional Policy Statement (RPS) are identified in the table below.

OBJECTIVE/POLICY	COMMENT
Objective 3-1: Infrastructure and other physical resources of regional or national importance *Have regard to the benefits of infrastructure and other physical resources of regional or national importance by recognising and providing for their establishment, operation, maintenance and upgrading.*	The NoR as proposed avoids adding another intersection onto Aokautere Drive, which is part of SH 57 and identified as regionally important infrastructure.
Objective 3-3: The strategic integration of infrastructure with land use *Urban development occurs in a strategically planned manner which allows for the adequate and timely supply of land and associated infrastructure.*	The proposed road will provide a roading connection that is desirable to support the existing land uses and development potential of land that is zoned residential, demonstrating the strategic integration of land use with development infrastructure.
Policy 3-2: Adverse effects of other activities on infrastructure and other physical resources of regional or national importance *The Regional Council and Territorial Authorities must ensure that adverse effects on infrastructure and other physical resources of regional or national importance from other activities are avoided as far as reasonably*	As discussed above, the NoR as proposed avoids another intersection on SH 57, thereby avoiding a potential adverse effect on current infrastructure. It will also permit thoroughfare to accesses onto SH 57 that are not currently available in turn distributing cars from the area to the intersections more evenly.

practicable, including by using the following mechanisms: *a. ensuring that current infrastructure, infrastructure corridors and other physical resources of regional or national importance, are identified and had regard to in all resource management decision-making, and any development that would adversely affect the operation, maintenance or upgrading of those activities is avoided as far as reasonably practicable,* *b. ensuring that any new activities that would adversely affect the operation, maintenance or upgrading of infrastructure and other physical resources of regional or national importance are not located near existing such resources or such resources allowed by unimplemented resource consents or other RMA authorisations,* *c. ensuring that there is no change to existing activities that increases their incompatibility with existing infrastructure and other physical resources of regional or national importance, or such resources allowed by unimplemented resource consents or other RMA authorisations,* *d. notifying the owners or managers of infrastructure and other physical resources of regional or national importance of consent applications that may adversely affect the resources that they own or manage,* [...] *ensuring effective integration of transport and land use planning and protecting the function of the strategic road and rail network as mapped in the Regional Land Transport Strategy.*	
Objective 4-2: Regulating potential causes of accelerated erosion *Land is used in a manner that ensures:*	The earthworks that are required for the road will be appropriately controlled during the period of construction, the works will be kept as minimal as practicable to ensure the adverse effects on the environment are limited in footprint.

a. *accelerated erosion and increased sedimentation in water bodies (with resultant adverse effects on people, buildings and infrastructure) caused by vegetation clearance, land disturbance, forestry, or cultivation are avoided as far as reasonably practicable, or otherwise remedied or mitigated, and* *sediment loads entering water bodies as a result of accelerated erosion are reduced to the extent required to be consistent with the water management objectives and policies for water quality set out in Chapter 5 of this Plan.*	
Objective 9-1: Effects of natural hazard events *The adverse effects of natural hazard events on people, property, infrastructure and the wellbeing of communities are avoided or mitigated.*	The road embankments will be designed to ensure that the road is resilient and natural hazards are addressed. Its design will consider the potential natural hazards, including high rainfall to help mitigate the overflow stormwater discharge.
Objective 5-4: Beds of rivers and lakes *The beds of rivers and lakes will be managed in a manner which:* *a.sustains their life supporting capacity* *b.provides for the instream morphological components of natural character* *c. recognises and provides for the Schedule B Values* *d. provides for infrastructure and flood mitigation purposes.* *The land adjacent to the bed of reaches with a Schedule B Value of Flood Control and Drainage will be managed in a manner which provides for flood mitigation purposes.*	So the road can traverse the gully, a culvert will be constructed within the highly modified ephemeral stream. The culvert design and construction methodology will be consistent with objective 5-4. Resource consents would be sought as required.

REGIONAL PLAN

The objectives from the Regional Plan considered relevant to the NoR are contained in the following table.

OBJECTIVE/POLICY	COMMENT
Objective 13-1: accelerated erosion – regulation of vegetation clearance, land disturbance, forestry and cultivation	As stated above, earthworks necessary to form the road would be controlled with appropriate

The regulation of vegetation clearance, land disturbance, forestry and cultivation in a manner that ensures: *A. Accelerated erosion and any associated damage to people, buildings and infrastructure and other physical resources of regional or national importance are avoided as far as reasonably practicable or otherwise remedied or mitigated, and* *B. Increased sedimentation in water bodies as a result of human activity is avoided as far as reasonably practicable, or otherwise mitigated.*	measures. This would ensure they are in line with the above objective.
Objective 17-1: Regulation of structures and activities in artificial watercourses and in the beds or rivers and lakes, and damming *The regulation of structures and activities in artificial watercourses and in the beds of rivers and lakes, and damming, in a manner that:* *a. safeguards life supporting capacity, and recognises and provides for the Values and management objectives in Schedule B, and* *b. has regard to the objectives and policies of Chapter 5 that relate to structures and activities in artificial watercourses and in the beds of rivers and lakes, and damming.*	The proposed road will be constructed to go over the highly modified ephemeral stream located in the area. Potential flows in high rainfall events will be taken into account in terms of the culvert design and size. Further, design of the culvert will respond to the objectives relating to activities in beds of watercourses. Any culvert would take into account rule standards within the plan and consent, if required, would be sought.

1.7.5 PALMERSTON NORTH CITY COUNCIL DISTRICT PLAN

The relevant objectives and policies from the District Council Plan are contained in sections 2, 10, and 20. They are detailed below.

OBJECTIVE/POLICY	COMMENT
Section 2: City view objectives	
2. The provision of infrastructure, particularly within identified growth areas, shall be efficient, timely, environmentally sensitive and economically sustainable.	Taking into account the recommendations of the Landscape and Visual Assessment the disturbed areas of the gully will be revegetated. The purpose of the NoR is to provide an additional roading connection within an area identified for residential development which is considered to be consistent with this objective.
3. The integrated and efficient provision of, and access to, infrastructure, network utilities and local services is facilitated for all residents.	The proposed road will preserve and provide a roading infrastructure connection that is desirable to support the existing land uses and

	development potential, demonstrating the strategic integration of land use with development infrastructure.
5. A variety of high quality residential living environments are provided to satisfy the needs of all residents.	The NoR will enable greater connection within the area and to nearby amenity facilities. This will result in a high quality residential living environment because at present there are few connections available.
9. Subdivisions, buildings and infrastructure are designed and constructed to promote a coordinated, healthy and safe environment.	The road is part of the draft Aokautere Structure Plan, which seeks to achieve more coordinated development of the area. The road will be designed and constructed according to the District Plan requirements thus it is considered it will not be contrary to a safe environment.
11. The principles of good urban design are given effect to for all new subdivisions, urban intensification and major building developments, particularly those located within the City Centre or fronting key transportation routes.	The Abby Road extension is shown on the draft Aokautere Structure Plan, which seeks to implement best practice land use planning techniques. This NoR seeks to protect the route. It is therefore considered the NoR is in line with this objective.
19. The effects of natural hazards are avoided or mitigated taking into account the effects of climate change and the significant social disruption caused by natural hazard events.	The road embankments will be designed to take into account the potential natural hazards, including overflow stormwater discharge. Regarding the culvert, potential flows in high rainfall events will also be considered in terms of the culvert design and size.
23. Infrastructure operates in a safe and efficient manner, and the effects of activities which could impact on the safe and efficient operation of this infrastructure are avoided, remedied or mitigated.	As stated previously, the new road will increase efficiency in the roading network in Aokautere. Regarding safety, the road will be designed and constructed to meet District Plan requirements. This will ensure it is safe for all users. Safety has also been addressed in the TA, which concluded that the impact on safety would be negligible given the new intersection would be formed to council's standards.
Section 10: Residential zone	
Objective 1 *To enable the sustainable use and development of the Residential Zone to provide for the City's current and future housing needs.*	The proposed road will enable further residential development in an area that is zoned Residential and will enable a greater level of connection between existing residential areas to amenities that are in the vicinity and beyond.

Policy 1.4 *To ensure network infrastructure and services are available to support residential development and intensification.*	The proposed road will be able to provide a conduit for services as required. The proposal supports residential development and intensification by allowing for greater access to be provided.
Section 20: Land Transport	
Objective 1 *The City's land transport networks are maintained and developed to ensure that people and goods move safely and efficiently through and within the City.*	The NoR as proposed will permit residents to move efficiently through the area as there will be greater connectivity. Safety has been considered in the NoR and will be addressed by meeting District Plan roading standards when the road and intersection are constructed.
Policy 1.1. *Identify and apply the roading hierarchy to ensure the function of each road in the City is recognized and protected in the management of land use, development and the subdivision of land.*	Abby Road is identified as a local road the new section of the road will be constructed to meet the relevant standards in the District Plan.
Policy 1.2 *All roads in the City have function and design characteristics consistent with their place in the roading hierarchy.*	As stated above, Abby Road will be designed and constructed to meet the relevant District Plan requirements.
Policy 1.3 *Maintain and upgrade the existing roads in the City and provide for new roads to meet the current and future needs of the City.*	The connection between Abby Road and Johnstone Drive is required to provide greater connectivity within the area. The road will also allow land in the area to be further developed.
Policy 1.5 *Require all new public roads, private roads and vehicle accesses to be designed and constructed to meet performance standards relating to the safety and efficiency of vehicle movement, and to ensure the safe use of the road transport network for all users, particularly in respect of:* *(a) Road width and alignment which should be sufficient for two vehicle lanes except where traffic volumes are insufficient;* *(b) The formation and surface sealing of all roads and vehicle accesses to standards*	The road will be designed and constructed to meet the relevant performance standards in the District Plan. This will ensure it is safe and efficient. The TA further supports the conclusions of this NoR that the road will be safe.

appropriate to the volume of traffic expected to be carried; *(c) Provision for necessary network utility facilities within roads; and* *Safe design and construction of roads, road access points and intersections, including alignment, gradient, vehicle parking, manoeuvring and turning requirements.*	
Policy 1.6 *Encourage the development of safe and accessible pedestrian paths and cycleways, as well as convenient and accessible cycle parking, to support the opportunity for people to use active and non-vehicular modes of transport throughout the City.*	The road will be designed for pedestrian and cyclists as it is anticipated both will be regular users of the road.
Policy 1.7 *To support and encourage the provision of public transport and its use throughout the City as an integral part of the transportation system*	The road will be designed for multi modal transport as it is anticipated that buses may be regular users of the road.
Objective 2 *The land transport network is safe, convenient and efficient while avoiding, remedying or mitigating adverse effects in a way that maintains the health and safety of people and communities, and the amenity values and character of the City's environment.*	As stated previously the road will permit greater efficiency both within the area, and when travelling to nearby amenities. It will be constructed to meet District Plan requirements ensuring the health and safety of the community. During construction appropriate methods to control noise, dust, sediment and other effects will be implemented. Further, the culvert design will be sensitive to the environment and such that it does exacerbate natural hazard risks. In relation to amenity and character values, the Landscape and Visual Assessment reported that the overall effect would be minor. Once constructed landscaping by way of fully revegetating either side of the road and the Abby Road Gully within the designation area will be completed.
Policy 2.1 *To restrict the through movement of traffic where the movement has adverse visual, noise and safety effects on adjoining areas by using*	The road will offer greater connection within the area and to nearby amenities. The road extension does not intend to provide for heavy traffic nor for high volumes of traffic. Abby Road is currently identified as a local road and will be

the roading hierarchy to direct higher volume and heavy traffic movements on identified arterial routes and discouraging this traffic from other areas, such as residential areas.	constructed according to the standards set out in the District Plan.
Policy 2.2 *To avoid, remedy or mitigate the impact of roads and parking areas on visual amenity values of the community by requiring the provision of landscaping.*	The Visual and Landscape Assessment stated that effects on visual amenity would be minor for adjacent parties and the wider public. When the road is constructed council will provide landscaping by way of revegetating either side of the road and the Abby Road Gully within the designation area.
Policy 2.4 *Avoid adverse effects on amenity and character by ensuring that new roads are well designed and visually complement the character of the surrounding areas.*	The proposed road will be low profile in nature and is consistent with the surrounding development. As stated above, landscaping will be undertaken once the road is constructed by way of planting the sides of the road and the Abby Road Gully.
Objective 3 *The safety and efficiency of the land transport network is protected from the adverse effects of land use, development and subdivision activities.*	The road will enable further residential development in the area. Safety has been addressed through the TA and will be ensured through standards for roads set out in the District Plan.
Policy 3.1 *Avoid, remedy or mitigate the adverse effects of increased traffic or changes in traffic type, which would compromise the safe and efficient operation of any road or level crossing, or the safe and convenient movement of pedestrians and cyclists on roads or at level crossings.*	The TA, attached as Appendix C, assessed the impact of traffic movements through the intersections once the road is constructed and connected with Johnstone Drive. It concluded that the impact on safety would be negligible as it would be constructed to meet District Plan requirements. Regarding pedestrian and cyclist safety it is anticipated they would be regular users thus the road would be designed to accommodate them.

1.7.6 OTHER DOCUMENTS

Other relevant non-statutory documents include the Horizons Regional Land Transport Plan, Aokautere Draft Structure Plan, City Development Strategy, and Strategic Transport Plan. These are discussed below.

HORIZONS REGIONAL LAND TRANSPORT PLAN 2015-2025 (2018 REVIEW)

Horizons Regional Council's Regional Land Transport Plan (RLTP) 2015-2025 was adopted in 2015. A reviewed version was released in 2018. It sets out the strategic direction and priorities for land transport in the region for the next ten years. The plan identifies six objectives for achieving the priorities. The following three are considered relevant to the NoR;

1. An optimised road, rail and public transport network that provides efficient, reliable access and movement for people and freight to and from key destinations, within and outside the region.
2. A safe land transport system increasingly free of death and serious injury.
3. A reliable multi-modal transport system with less modal conflict, including walking and cycling, that mitigates potential environmental effects and improves environmental outcomes.

The NoR as proposed will result in a road providing greater connectivity within the area and efficient access to nearby amenities and facilities, which provide for residents' social, economic, cultural and environmental wellbeing.

The road and its intersections will be designed to meet District Plan standards, which address safety.

The road will be designed to provide for multi-modal transport. It is anticipated cyclists, pedestrians, cars and potentially buses would be regular users of the road.

Environmental effects associated with constructing the road include typical construction effects such as noise, dust, sediment release all of which will be managed with appropriate controls. The road will traverse the gully; thus, a culvert will be placed within the ephemeral stream. The design of this will respond to the character of the stream and it will be constructed with appropriate control methods in place.

Given the above, it is considered the NoR as proposed is consistent with the relevant objectives in the RLTP.

AOKAUTERE DRAFT STRUCTURE PLAN

The draft Aokautere Structure Plan guides development and informs infrastructure provision. It sets out the plan for residential development, infrastructure and design in order to create coherency, sense of place and to apply best practice land use planning techniques.

Abby Road and Johnstone Drive are shown as connected on the structure plan. The purpose of this NoR is to preserve land to construct this connection. Thus, it will be a part of achieving the plan and council's aspirations for transport infrastructure in the area.

CITY DEVELOPMENT STRATEGY 2018

The City Development Strategy 2018 is part of a suite of five documents that work to achieve the city's vision; small city benefits, big city ambition and related goals. The strategy has been developed to achieve 'Goal 1: An innovative and growing city'. The strategy sets out two strategies;

1. Create and enable opportunities for employment and growth; and
2. Provide infrastructure to enable growth and a transport system that links people and opportunities.

The proposed road will enable further residential growth and will enable a greater level of connection between existing areas that are developed as residential to social and economic amenities that are in the vicinity and beyond.

STRATEGIC TRANSPORT PLAN 2018/21

Palmerston North City Council adopted the Strategic Transport Plan in 2018. The plan sets out the strategic direction for the city's transport system and contributes to achieving the goal of 'an innovative and growing city'. The purpose of the plan is to 'provide infrastructure to enable growth and a transport system that links people and opportunities, and provides amenity, safety, interconnectivity, accessibility, resilience and reliability'.

As stated above, the NoR will enable further residential growth and shorter connections both within and between the area and existing amenities, which provide for residents' social and economic wellbeing. Regarding safety, the road and intersection will be formed to a standard that meets District Plan requirements, which addresses safety.

1.7.7 PART 2 OF THE RMA

PURPOSE OF THE RMA – SECTION 5

The entirety of Council's evaluation of an NOR pursuant to section 171 of the RMA is subject to consideration of Part 2 of the RMA, the purpose and principles. A discussion of the NoR in relation to Part 2 is provided below.

Section 5 – Purpose of the RMA

Section 5(1) of the RMA sets out the purpose of the Act, which is:

> *To promote the sustainable management of natural and physical resources.*

Section 5(2) of the RMA defines sustainable management as:

> *Managing the use, development and protection of natural and physical resources in a way or at a rate which enables people and communities to provide for their social, economic, and cultural wellbeing and for their health and safety while-*
>
> *(a) Sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations; and*
>
> *(b) Safeguarding the life-supporting capacity of air, water, soil and ecosystems; and*
>
> *(c) Avoiding, remedying or mitigating any adverse effects of activities on the environment.*

The proposed road will be a physical resource within Palmerston North which is being sought to enable greater community connection. In this regard, the provision of a secure and reliable roading network is critical for the social and economic wellbeing of the local community and for their health and safety. This will enhance the community's wellbeing. As described in Section 1.8 of this report, adverse effects are being avoided, remedied or mitigated such that the extent of adverse environmental effects are considered to be less than minor. Further there is no element of the proposal that is contrary to sustaining the potential of natural and physical resources to meeting reasonably foreseeable needs, or any impact on life-supporting capacity of air, water, soil and ecosystems.

Given the above the NoR and associated earthworks and culvert are considered to be consistent with the purpose of the RMA as stated in section 5 of the legislation.

MATTERS OF NATIONAL IMPORTANCE – SECTION 6

Section 6 identifies matters of national importance that all persons exercising functions and powers under the RMA must recognise and provide for. With respect to this NoR, there are no matters of national importance that are relevant.

OTHER MATTERS – SECTION 7

Section 7 of the RMA identifies 'other matters' to be considered in relation to managing the use, development, and protection of natural and physical resources. The relevant 'other matters' are considered to be:

(b) the efficient use and development of natural and physical resources:

(c) the maintenance and enhancement of amenity values:

(f) maintenance and enhancement of the quality of the environment:

Regarding the efficient use and development of natural and physical resources; that is land and roading resources, the road is considered an efficient use of land as it will enable greater connectivity and further residential development of land that is zoned for this type of growth.

In respect of section 7 (c) and (f), the embankment areas of the gully that will be disturbed will be replanted resulting in a less than minor overall effect on amenity and quality of the environment.

Accordingly, the proposal is considered to be consistent with section 7 'other matters'.

TREATY OF WAITANGI – SECTION 8

Section 8 requires all parties to take into account the principles of the Treaty of Waitangi in relation to managing the use, development and protection and natural and physical resources. Consultation with iwi was undertaken as part of developing the draft Aokautere Structure Plan, which this NoR gives effect to. It is therefore considered that the NoR and proposed works will be consistent with the intent of section 8 of the RMA.

SUMMARY

Given the above, it is considered that that NoR as proposed and the associated earthworks and culvert placement are consistent with the purpose and principles of the RMA

1.8 NOTIFICATION

Provisions under the RMA, including section 168A (1A), allow Council to decide whether a NoR should be notified, using sections 168A(1A), 149ZCB(1) to (4), 149ZCC(1) to (4), 149ZCE, and 149ZCF, as a basis for that decision.

The Council must follow the steps outlined under Section 149ZCB – 149ZCE of the Resource Management Act 1991 (RMA) in order to determine whether to notify an application for resource consent. Any reference to the 'Minister' or 'EPA' is the Territorial Authority (PNCC) and any reference to the activity is the designation.

SECTION 149ZCB –PUBLIC OF APPLICATION OR NOTICE	YES	NO
(1) The Minister may, in his or her discretion, decide whether to require the EPA to publicly notify an application or a notice.		X
(2) Despite subsection (1), the EPA must publicly notify an application or a notice if— (a) the Minister decides (under section 149ZCE) that the activity that is the subject of the application or notice will have, or is likely to have, adverse effects on the environment that are more than minor; or (b) the applicant requests public notification of the application or notice; or (c) a rule or national environmental standard requires public notification of the application or notice.	X	

(3) Despite subsections (1) and (2)(a), the EPA must not publicly notify the application or notice if— (a) a rule or national environmental standard precludes public notification of the application or notice; and (b) subsection (2)(b) does not apply.		X
(4) Despite subsection (3), the EPA may publicly notify an application or a notice if the Minister decides that special circumstances exist in relation to the application or notice.		X
SECTION 149ZCC – LIMITED NOTIFICATION OF APPLICATION OR NOTICE	YES	NO
(1) If the Minister decides not to require the EPA to publicly notify an application or a notice, the Minister must, in relation to the activity,— (a) decide if there is any affected person (under section 149ZCF); and (b) identify any affected protected customary rights group or affected customary marine title group		X
(2) The EPA must give limited notification of the application or notice to any affected person unless a rule or national environmental standard precludes limited notification of the application or notice.		X
(3) The EPA must give limited notification of the application or notice to an affected protected customary rights group or affected customary marine title group even if a rule or national environmental standard precludes public or limited notification of the application or notice.		X
(4) In subsections (1) and (3), the requirements relating to an affected customary marine title group apply only in the case of applications for accommodated activities.		X
SECTION 149ZCE – MINISTER TO DECIDE IF ADVERSE EFFECTS ARE LIKELY TO BE MORE THAN MINOR	YES	NO
For the purpose of deciding under section 149ZCB(2)(a) whether an activity will have or is likely to have adverse effects on the environment that are more than minor, the Minister— (a) must disregard any effects on persons who own or occupy— (i) the land in, on, or over which the activity will occur or apply; or (ii) any land adjacent to that land;		X
(b) may disregard an adverse effect of the activity if a rule or national environmental standard permits an activity with that effect; and		X
(c) in the case of a controlled activity or a restricted discretionary activity, must disregard an adverse effect of the activity that does not relate to a matter for which a rule or national environmental standard reserves control or restricts discretion; and		X
(d) must disregard trade competition and the effects of trade competition; and		X
(e) must disregard any effect on a person who has given written approval in relation to the relevant application or notice.		X

SECTION 149ZCE – MINISTER TO DECIDE IF A PERSON IS AFFECTED PERSON	YES	NO
(1) The Minister must decide that a person is an affected person, in relation to an activity, if the adverse effects of the activity on the person are minor or more than minor (but are not less than minor).	X	
(2) The Minister, in making his or her decision,— (a) may disregard an adverse effect of the activity on the person if a rule or national environmental standard permits an activity with that effect; and (b) in the case of a controlled activity or a restricted discretionary activity, must disregard an adverse effect of the activity on the person if the activity does not relate to a matter for which a rule or national environmental standard reserves control or restricts discretion; and (c) must have regard to every relevant statutory acknowledgement made in accordance with an Act specified in Schedule 11.		X
(3) Despite anything else in this section, the Minister must decide that a person is not an affected person if— (a) the person has given, and not withdrawn, approval for the activity in a written notice received by the authority before the authority has decided whether there are any affected persons; or (b) it is unreasonable in the circumstances to seek the person's written approval.		X

In this instance the applicant is seeking public notification of the application. It is anticipated that the application would be served on the landowner and immediately adjoining landowners.

1.9 CONSULTATION

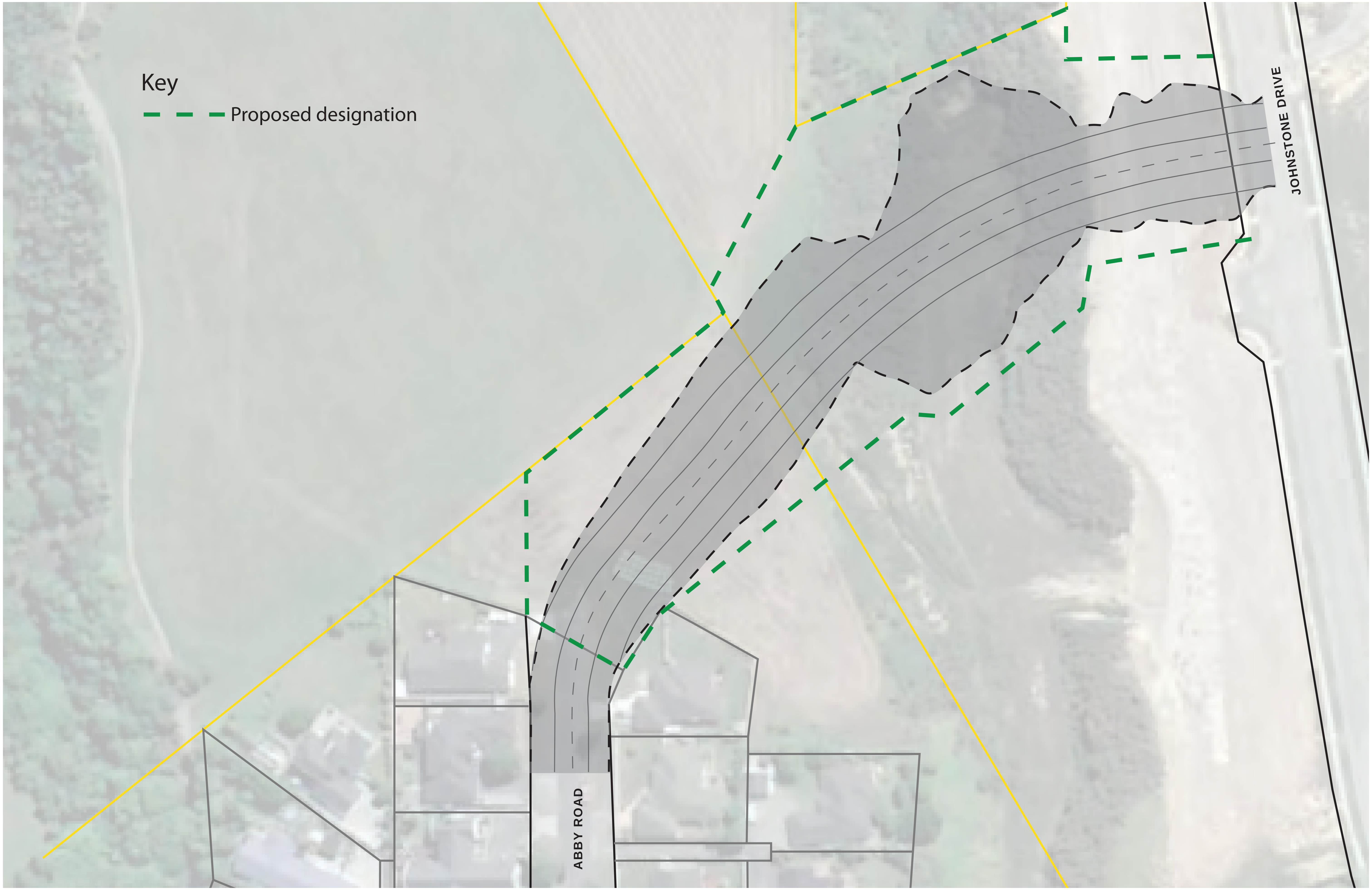
Consultation has been an ongoing process with the landowner. Land purchase negotiations occurred during 2019 but have ceased as the landowner lodged a subdivision application, which has since been declined. No further consultation has been undertaken.

1.10 CONCLUSION

This NoR seeks to designate land as described in this application for the purposes of road. The designation would connect Abby Road and Johnstone Drive, which connects to Aokautere and Pacific Drive. The NoR is required for greater community connection and aiding in providing a resilient roading network, the road also has the potential to provide for social and economic wellbeing. The assessment of potential environmental effects has demonstrated that the proposed road can be established while having adverse effects that are no more than minor on the surrounding environment. The proposal has been assessed against the relevant statutory planning framework and it has been concluded that it is consistent with those provisions.

Based on this it is considered the NoR be confirmed subject to appropriate conditions.

APPENDIX A



HUDSON ASSOCIATES LANDSCAPE ARCHITECTS Ph 021 324 409 john@hudsonassociates.co.nz www.hudsonassociates.co.nz	Abby Road Northern Designation	DWG # 62-003 Revision # C	Date 2/09/2020 Scale @ A3 not to scale Do not scale from plan

APPENDIX B

Aokautere Connection - Notice of Requirement

Transport Assessment

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Document History and Status

Revision	Date	Author	Reviewed by	Approved by	Status
1	25/02/19	ST / FC	ES	ES	Issue 1

Revision Details

Revision	Details
1	Issue 1

1 Introduction

WSP Opus have been commissioned to provide planning inputs to a Notice of Requirement (NOR) application to designate a road link between Abby Road and Aokautere Drive in Aokautere. This Transportation Assessment has been prepared to support the NOR application.

The purpose of the proposed road link is to help provide connectivity and support the structure plan for the surrounding Aokautere area. The location of the area is shown on Figure 1 and Figure 2 below and overleaf.

Figure 1: Context location plan (openstreetmap.org)

Figure 2: Location plan (PNCC District Plan GIS)

2 Land Use

Figure 3 below shows the zoning around the proposed new link. The surrounding land use zoned is primarily residential, although only some of the areas have been developed (where individual lots can be seen).

Other land-uses in the surrounding area include:

- Rural to the south west and north east;
- Institutional around the International Pacific University;
- Conservation / amenity and recreation.

Figure 3: PNCC District Plan zoning map

The surrounding area forms part of the Aokautere Development Area as shown in Figure 4 below. Figure 4 shows which areas are able to be developed.

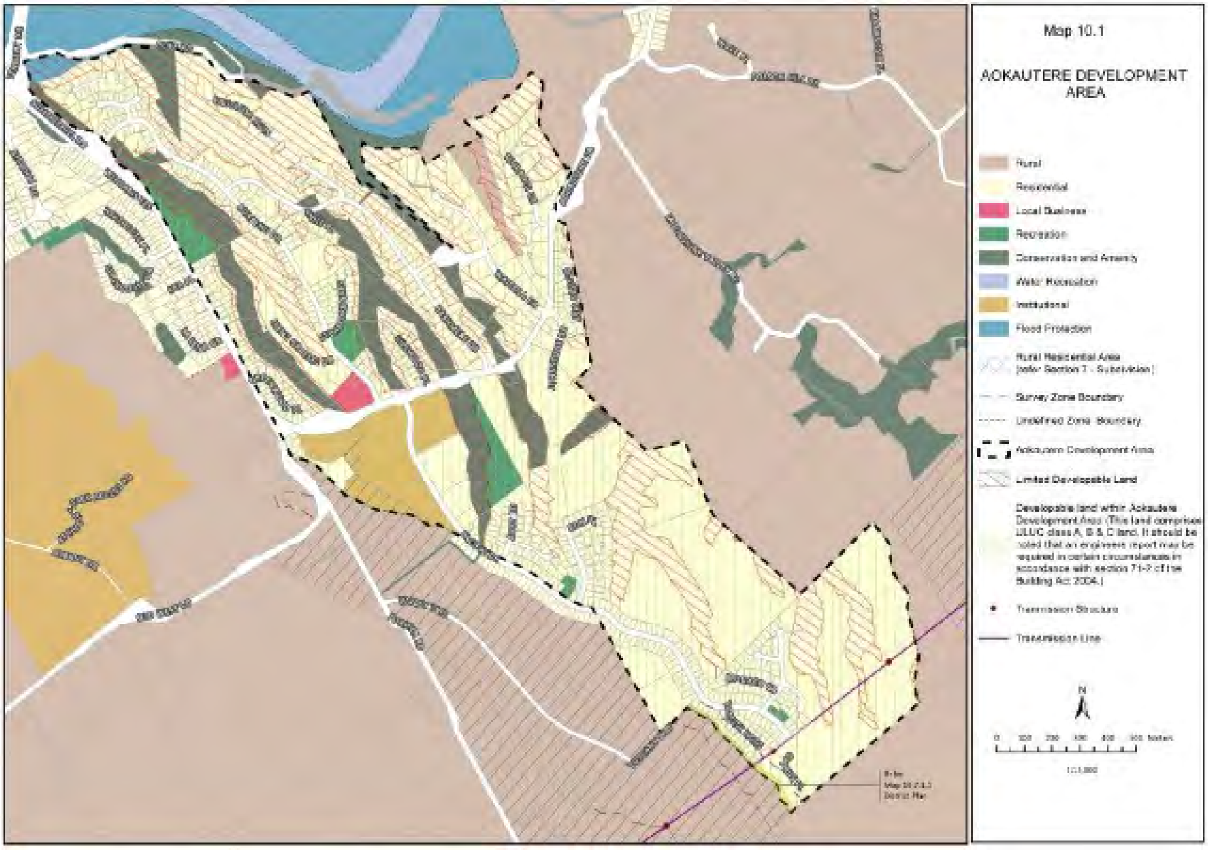


Figure 4: Aokautere Development Area zoning (Planning Map 10.1 from the PNCC District Plan)

3 Transport Environment

3.1 Road Hierarchy

The PNCC District Plan lists the road hierarchy for the site as follows, with the Transport Agency's One Network Road Classification (ONRC) is noted in brackets:

- Aokautere Drive (SH57) – Major Arterial (National)
- Pacific Drive – Minor Arterial (Primary / Secondary Collector)
- Johnstone Drive – Collector (Unknown)
- Abby Road – Local Road (Low Volume)

See Figure 5 below.

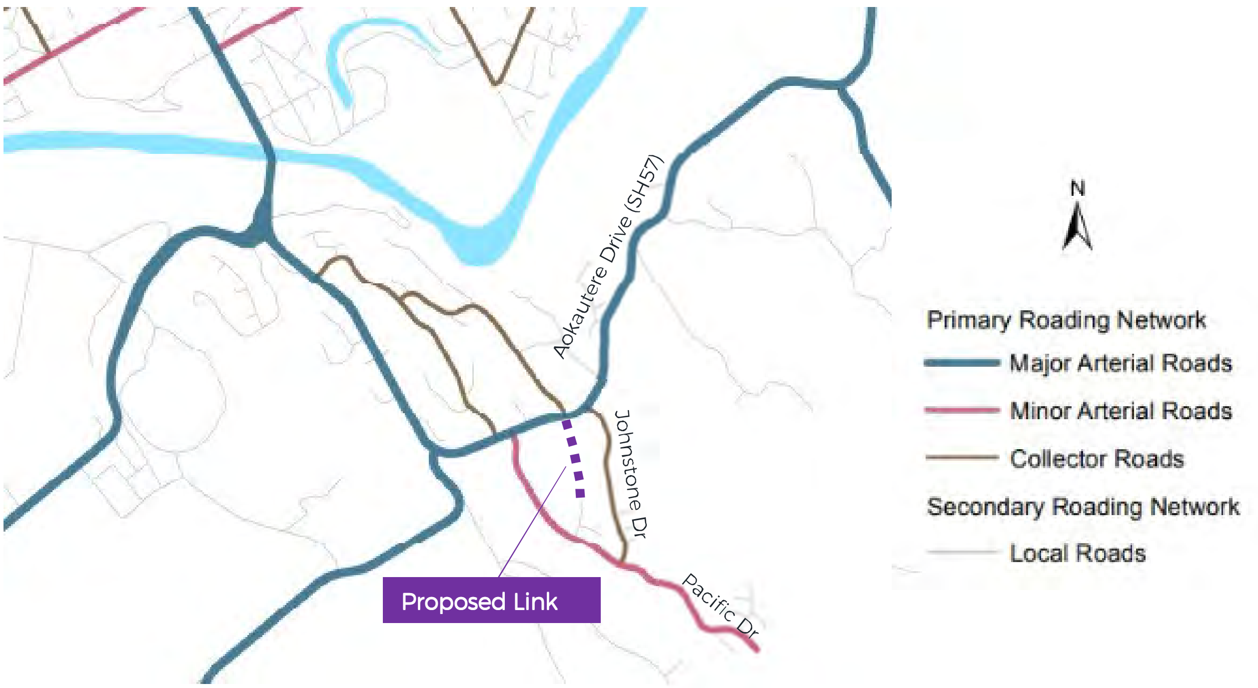


Figure 5: PNCC Road Hierarchy

Johnstone Drive is still under construction and has no certainty of an opening date. The portions adjacent to SH57 / Aokautere Drive and Pacific Drive are completed; however, the middle section is unsealed and not open to through traffic. For the purposes of this assessment, Johnstone Drive is assumed not to be connected.

3.2 Speed Limits

SH57 / Aokautere Drive has a posted speed limit of 70 km/h east of the intersection with Summerhill Drive. The speed limit increases to 80km/h where the local environment becomes more rural, approximately 1.5km east of Johnstone Drive.

All the local roads within the area (Pacific Drive, Johnstone Drive, Abby Road etc.) have a posted speed limit of 50 km/h.

3.3 Traffic Flows

SH57 Aokautere Drive

The Transport Agency have a count site on SH57 (Aokautere Road) near the access to the International Pacific University (IPU) between Summerhill and Ruapehu Drives. The 2017 recorded Average Annual Daily Traffic (AADT) at this site was 11,570 vehicles per day.

Traffic growth between 2013 and 2017 at this location is approximately 8% per annum which is very high compared to typical urban growth rates. This section of SH57 has experienced increased traffic due to the closure of the Manawatū Gorge (which closed in 2017). The growth rate without the 2017 data set is 4.4% per annum. This rate has been used for further assessment and is consistent with other growth rates on the State highway network around Palmerston North.

Figure 6 below shows the average flow profile on SH57 / Aokautere Drive during 2018.

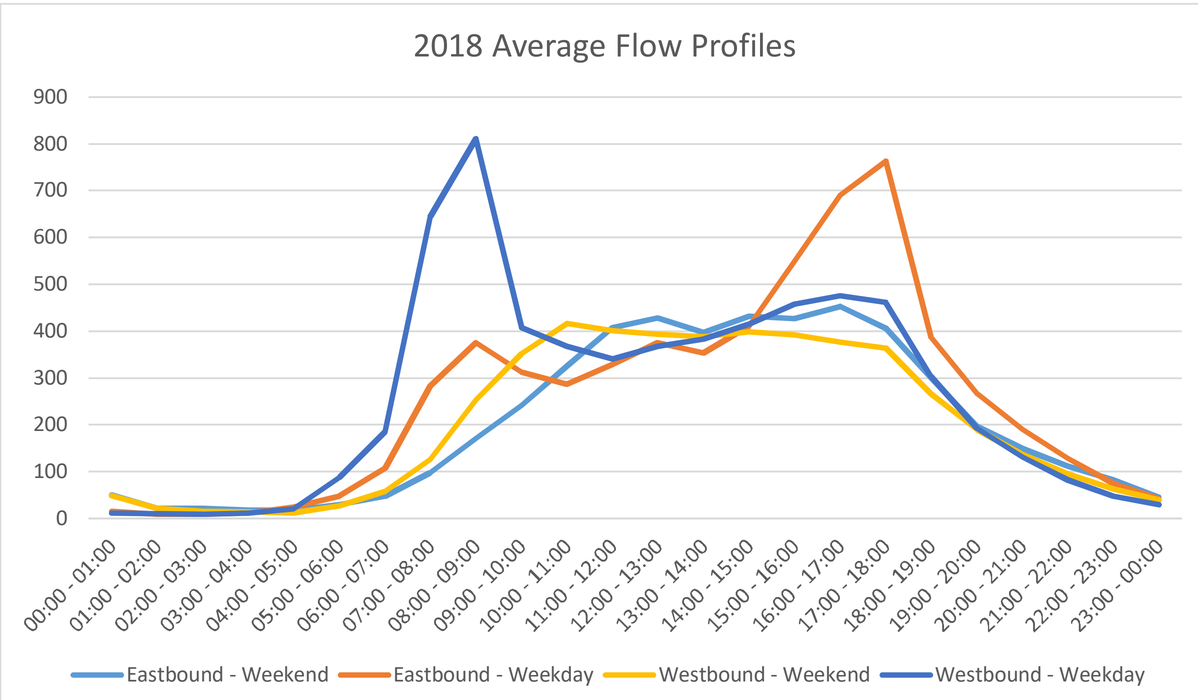


Figure 6: Flow profile on SH57 (average for 2018)

The graph in Figure 6 shows a pronounced weekday morning peak from 8am to 9am with a high proportion of this traffic being in the westbound direction towards Palmerston North. Traffic volumes the lower through the middle of the day and gradually build to a PM peak period from 5pm to 6pm, with a high proportion of this traffic being in the eastbound direction. Weekend traffic has a flatter profile, with the peak traffic volumes being lower and occur in the middle of the day.

Local Roads

Table 1 overleaf summarises the traffic volumes on the roads surrounding the project area. Traffic counts for Pacific Drive and Ruapehu Drive were provided by PNCC and are based on tube counts carried out in September 2017. The Cashmere Drive traffic count was taken from the Mobile Roads website. Traffic counts for the remaining streets are based on known traffic generation on Pacific Drive.

Table 1: Local Road Traffic Count Data

Road	Location	Count Date	ADT (average daily traffic)	Peak hour flow	Dwellings
Pacific Drive	West of Abby Road	September 2017	1930	210	260
	East of Abby Road	Estimate	815*	90*	110
Abby Road	n/a	Estimate	315*	35*	42
Johnstone Drive	North end	Estimate	410*	45*	55
	South end	Estimate	465*	50*	62
Cashmere Drive	n/a	Estimate	400	40	n/a
Ruapehu Drive	North of Kilkenny Place	September 2017	1790	170	n/a
Silkwood Place	n/a	Estimate	200*	22*	27

* Estimates are based on traffic generation rates on Pacific Drive per household.

3.4 Crash Records

The 10 year crash history in the area was exported from the Transport Agency's Crash Analysis System (CAS). In the past 10 years there have been the following reported crashes:

- 4 crashes at the intersection of Pacific Drive and SH57, all non-injury.
- There are no crashes shown at the intersection of Johnstone Drive and SH57, however Johnstone Drive has only been open to the public since 2016 (based on historic google earth aerial images).
- On the stretch of highway between Johnstone Drive and Pacific Drive there has been five crashes; one fatal, two minor and two non-injury. The fatal crash involved a car losing control because of inappropriate speed and crashing head on into an oncoming van. The two minor crashes both involved cyclists.
- There have been four crashes on Pacific Drive, two serious and two minor injury. The minor injury crashes occurred north of Abby Road. These were loss of control type crashes, one involving a motorist who was trying to avoid an animal. The two serious injury crashes occurred south of the intersection with Johnstone Drive. Both were loss of control type crashes that occurred as motorists were heading north on Pacific Drive.
- A number of crashes have occurred at the intersection of Ruapehu Drive and SH57, including one serious, three minor and one non-injury. The serious crash involved a car and motorcycle. Two of the minor crashes involved cyclists.

The crash locations are summarised on Figure 7 overleaf.

Figure 8 overleaf shows the intersection collective risk metric from the Transport Agency's SafetyNET system which indicates that all of the intersections on SH57 the vicinity of the proposed link are low risk (with the exception of the Ruapehu Drive intersection which reflects the crash history at this location identified above).

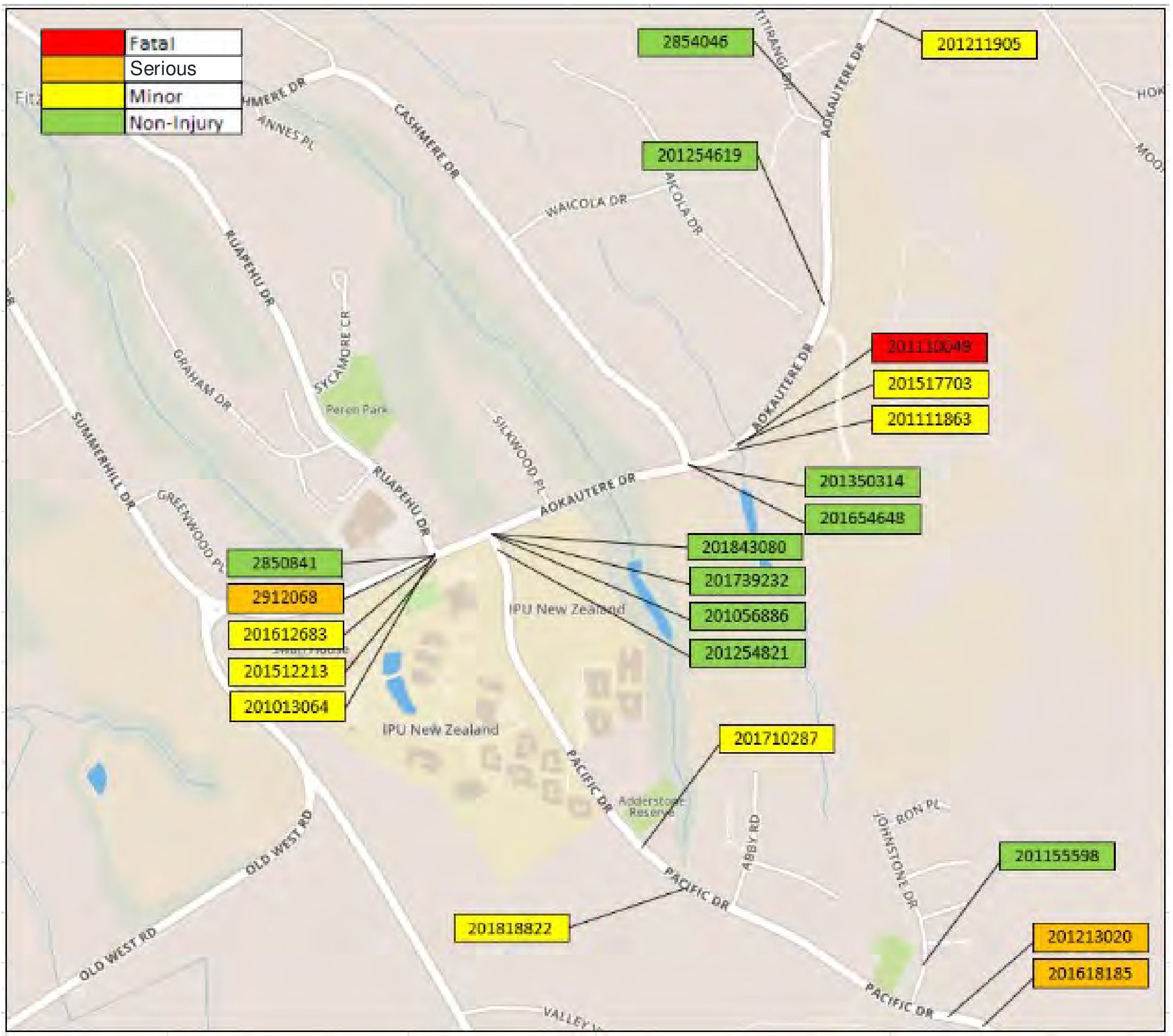


Figure 7: Crash locations (CAS)

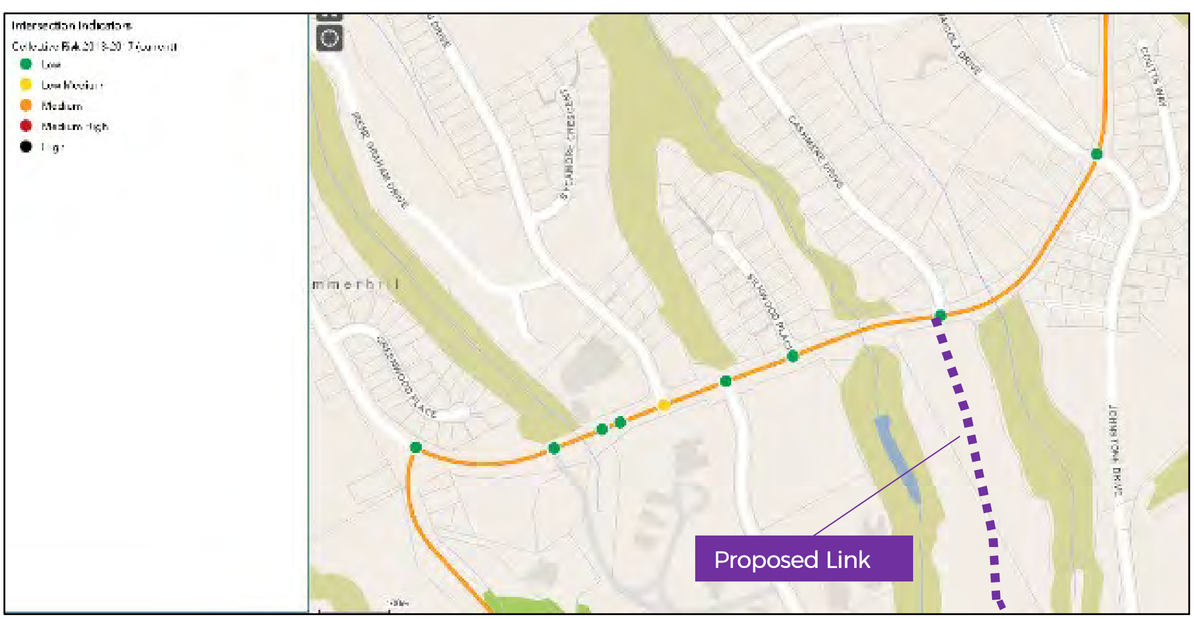


Figure 8: Intersection Collective Risk 2013-2017 (SafetyNET)

3.5 Walking and cycling

Sealed footpaths are provided on both sides of all the local roads in the study area.

Figure 9 below shows the key off-road walkways and on-road cycleways in the area. Key features include cycle routes north west of the area connecting into Palmerston North and a range of off-road walkways including Te Araroa National Walkway.

The Adderstone Walkway runs parallel to the proposed new link and follows the stream through the gully, with connections at Pacific Drive and Aokautere Drive. This walkway forms part of a larger walking track; the Turitea Walkway, which starts at Old West Coast Road and crosses farmland, connecting into the Adderstone Walkway on Pacific Drive.

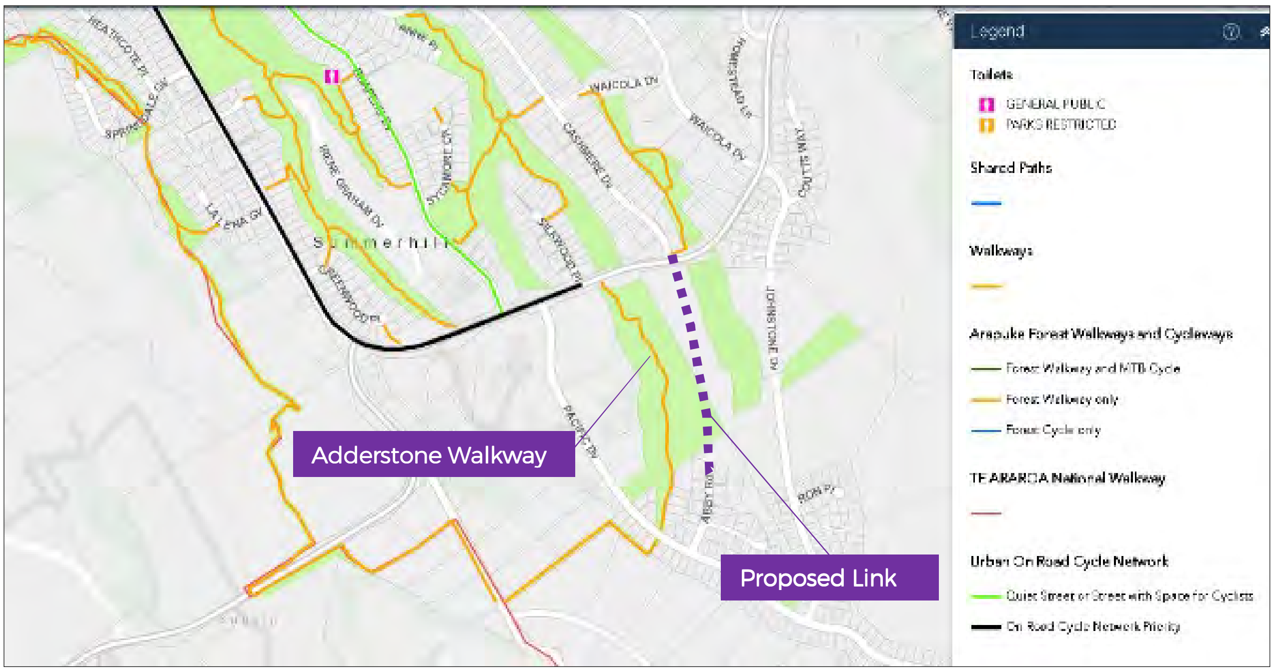


Figure 9: Walking and cycling map (PNCC GIS)

There are no marked cycle facilities on the local roads in the area adjacent to Abby Road.

3.6 Public Transport

The Horizons Regional Council provides bus services in the Palmerston North area. The No. 14 bus connects the International Pacific University (IPU) with the city centre, this is the red line shown on Figure 10 below. There are around 30 buses per day (an average of 2 buses per hour) passing through IPU on a weekday and around 10 buses per day on the weekend.

Figure 10: Bus route map (Horizons Regional Council website)

3.7 Future Transport Changes

The NZ Transport Agency National Land Transport Programme (NLTP) 2018-2021 provides an overview of the investment programme for key transportation projects throughout New Zealand. Projects outlined in the NLTP for the Manawatu-Whanganui region are shown overleaf on Figure 11.

Figure 11: Key NLTP 2018-2021 Projects for Manawatu-Whanganui (Transport Agency website)

The proposed Te Ahu a Turanga route (replacement for the Manawatū Gorge) may lead to changes in the amount of traffic on SH57 Aokautere Road as traffic from Palmerston North using this link to reach the Paihiatua Track diverts to the new route via SH3.

The Transport Agency and PNCC are considering a Ring Route around Palmerston North which could impact traffic volumes on SH57 but no information is currently available about the route or its effects,

The Transport Agency website includes a map[1] indicating that the on-road cycle network priority is expected to be extended along SH57 to Titirangi Drive (east of Johnstone Drive) by June 2018.

A number of cycle improvements are proposed in the wider area such as the He Ara Kotahi shared pathway, which will link Massey University and Linton Military Camp with Palmerston North City. The pathway will connect with the existing off road pathways on both sides of the Manawatu River and will include a cycle/pedestrian bridge across the river itself. The project is scheduled for completion in April 2019.

[1] https://www.nzta.govt.nz/assets/Walking-Cycling-and-Public-Transport/docs/urban-cycleways/Palmerston-North-urban-cycleways-map.pdf

4 Proposal

PNCC intends to designate and construct a new road link between Abby Road and Aokautere Drive.

4.1 Link function

The purpose of the new link is to:

- Improve connectivity and accessibility at a local level;
- Provide improved access to the recreation area west of the proposed link;
- Support growth through the adjacent areas zoned as residential; and
- Provide resilience for residents and users of Pacific Drive (and its dependent streets) by providing an alternative connection to Aokautere Drive.

Figure 12 below shows the function of the proposed link.

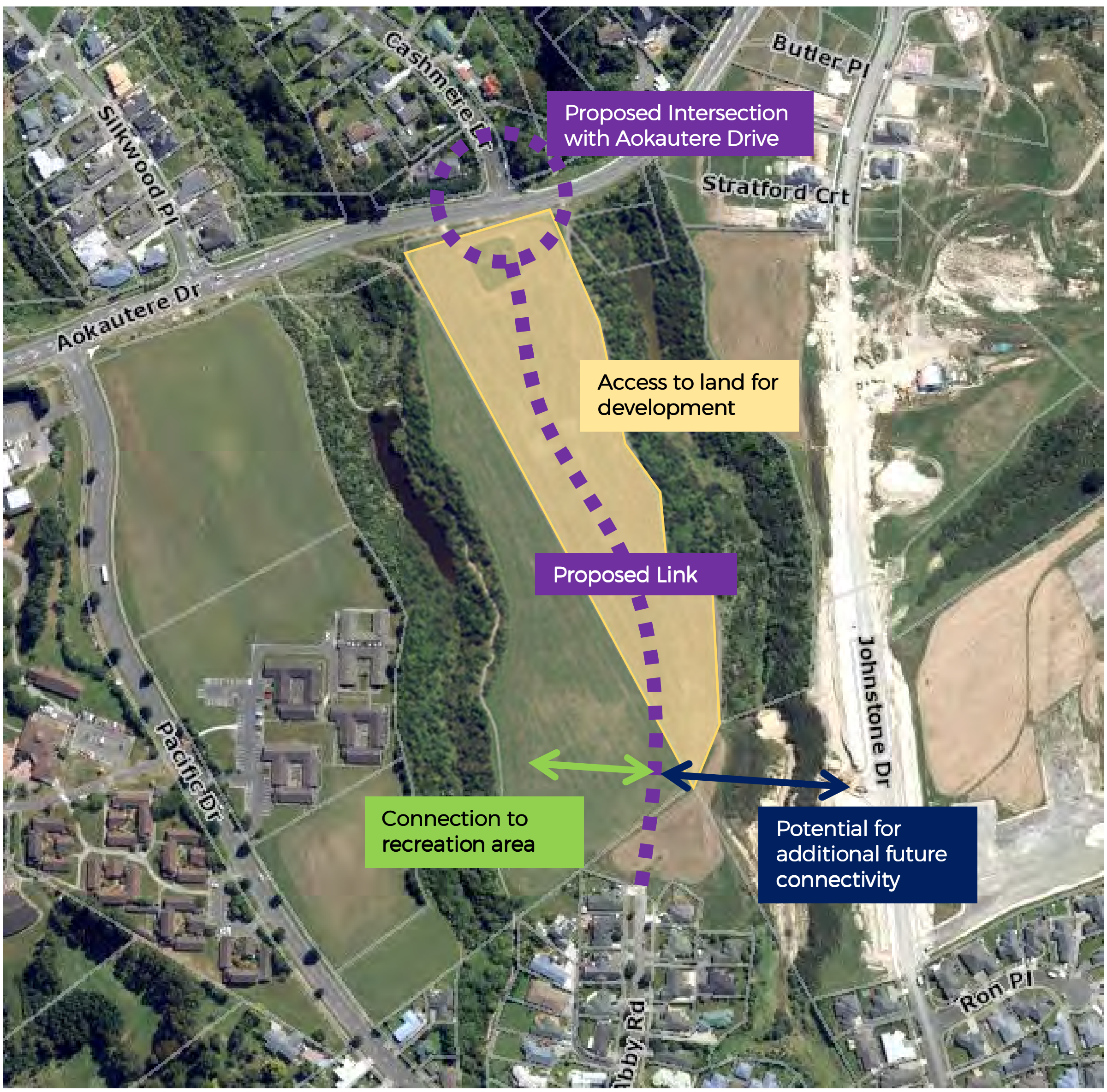


Figure 12: Function of proposed link (PNCC GIS)

4.2 Link form

The purpose of the new link is not to provide a high capacity link and the form of the proposed link will be sympathetic to existing section of Abby Road which may or may not need to be upgraded.

Figure 13 below shows the cross-section of the existing section of Abby Road. The existing carriageway cross-section width (8m) is consistent with a residential – cul-de-sac / local road classification from the Palmerston North City Council Engineering Standards for Land Developments[2] (engineering standards). However, the road reserve width (20m) is wider than required by the engineering standards (13.5m)

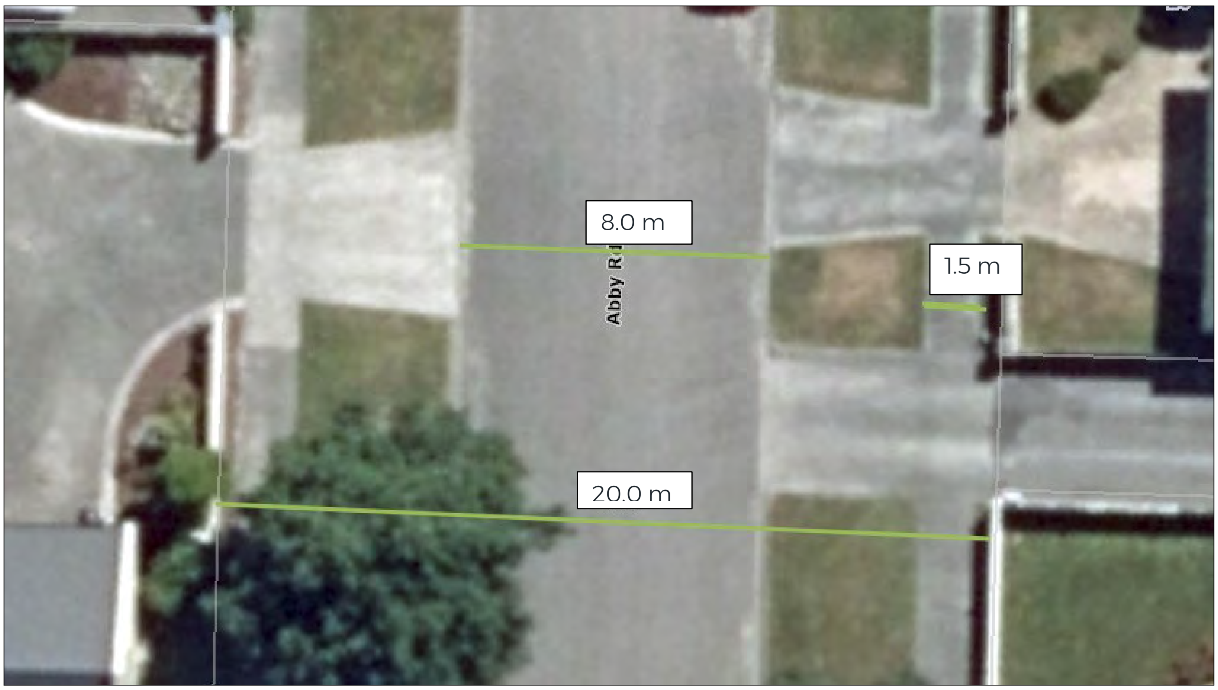


Figure 13: Current width of Abby Road (PNCC GIS)

Based on the engineering standards and the Palmerston North City Council Street Design Manual[3] (design manual) the form of the new link is proposed to be that of a Local Road. The design manual describes a Local Road as follows:

- Provide access and connectivity within local residential area.
- Significant contribution to character of residential area.
- Low vehicle speeds.
- Typical traffic flow up to 3,000vpd.
- High volumes of pedestrian movement.
- High number of vehicle access to residential properties.
- Streets function as both access / movement.
- Limited public transport route.

Figure 14 overleaf indicates the form of the proposed link.

[2] Table 3.1 https://www.pncc.govt.nz/media/3131292/engineering-standards-2018-2019-final.pdf
[3] https://www.pncc.govt.nz/media/2867364/pncc_street_design_manual_2013.pdf

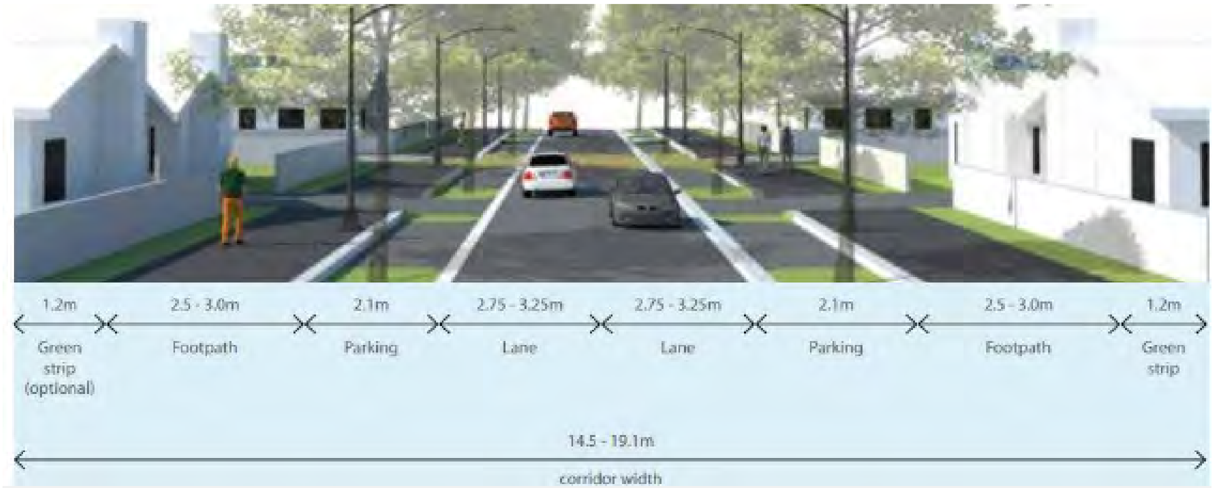


Figure 14: Local Road Cross Section (PNCC design manual)

Some minor widening of the carriageway on the existing section of Abby Road may be required to provide space for on-street parking on both sides of the road (expected to be via inset parking bays fitting around the existing trees and accesses.

4.3 Intersection with SH57/Aokautere Drive

Regarding the intersection of the proposed link with SH57 / Aokautere Drive, the Palmerston North City Council District Plan[4] requires a minimum distance between successive intersections of 400m on a major arterial (such as SH57) with a posted speed limit of 70km/h.

Figure 15 below shows that the spacing of existing intersections is less than 400m.

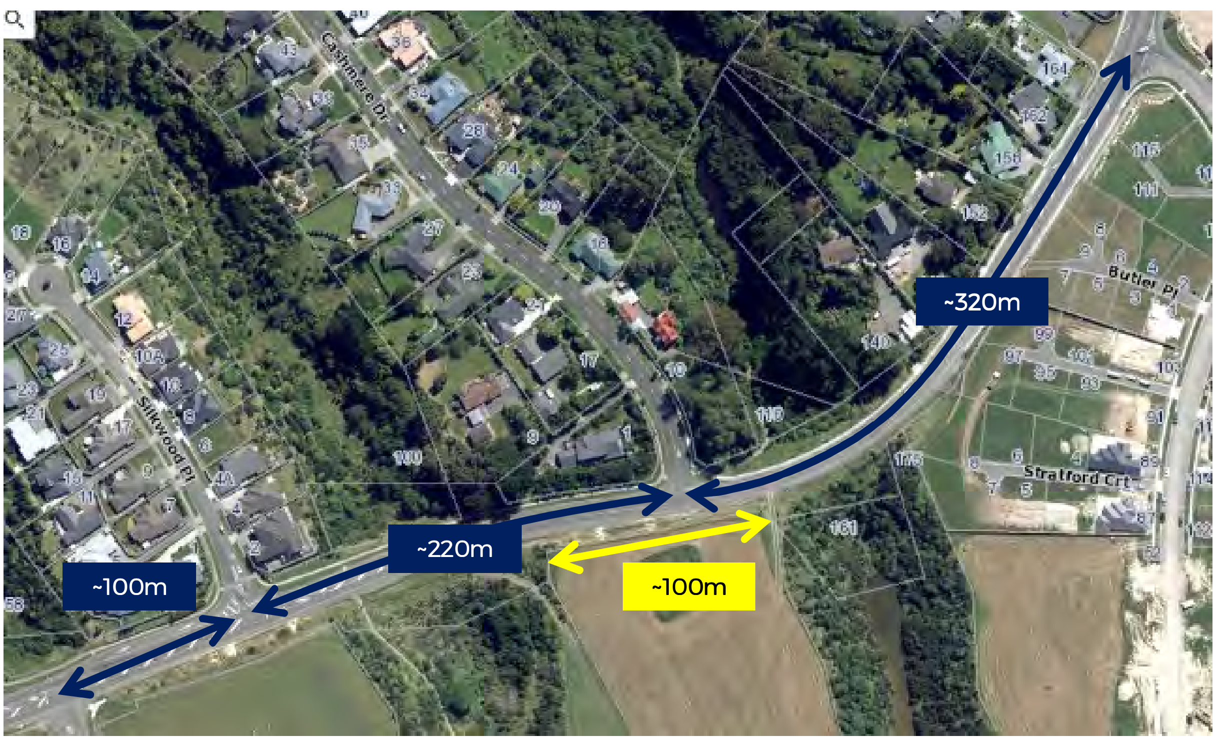


Figure 15: Intersection Spacing on SH57 / Aokautere Drive (PNCC GIS)

[4] Figure 20.3 https://www.pncc.govt.nz/media/3130866/section-20-transportation-may-2018.pdf

From an intersection spacing perspective, connecting the proposed link into the existing Cashmere Drive intersection (forming a cross-roads intersections) is the best outcome. However, cross-roads intersections are generally undesirable in high speed environments as they have high crash risks due to the number of conflict points.

Crash analysis in the Transport Agency's High Risk Intersection Guide[5] notes that over 50% of fatal and serious crashes at priority controlled crossings (both urban and rural) are crossing movements (not turning). This movement is unlikely if a cross-roads intersection was to be formed in this location as there is expected to be little demand to connect the residential areas on each side of SH57 / Aokautere Drive.

For the purposes of this Transportation Assessment it has been assumed that a cross-roads intersection will be formed between the proposed link at the existing intersection of Cashmere Drive and SH57 / Aokautere Drive. As a minimum, the following changes are expected to be required to the existing intersection:

- Cashmere Drive converted to Stop control.
- SH57 / Aokautere Drive widened (as necessary) to extend the existing flush median from Silkwood Place to Johnstone Drive including construction of right turn bays into Cashmere Drive and the proposed link.
- Earthworks to ensure the approach of the new link is at an appropriate grade with suitable visibility for the form of intersection control (the land south of the current intersection is currently 3-5m higher than the existing road level).

Conceptual design and modelling and engagement with PNCC and the Transport Agency will be required to determine whether a cross-roads intersection can be safely formed.

[5] Appendix 2 https://www.nzta.govt.nz/assets/Uploads/High-risk-intersections-guide-July-2013.pdf

5 Future Transport Environment

This section seeks to outline the future transport demands on the proposed link and the adjacent network and understand the impact of the new intersection with SH57 / Aokautere Drive.

5.1 Future Transport Demands

Two scenarios have been considered for the future transport demands:

- Typical demands; and
- Demands in the event of a closure on Pacific Drive.

Typical Demands

The typical demands are expected to be those who live in the area shown in Figure 16 below which includes the existing residents of Abby Road and Woodgate Court, those potential future residents in the as yet undeveloped areas adjacent to the proposed link and any users accessing the recreation areas.

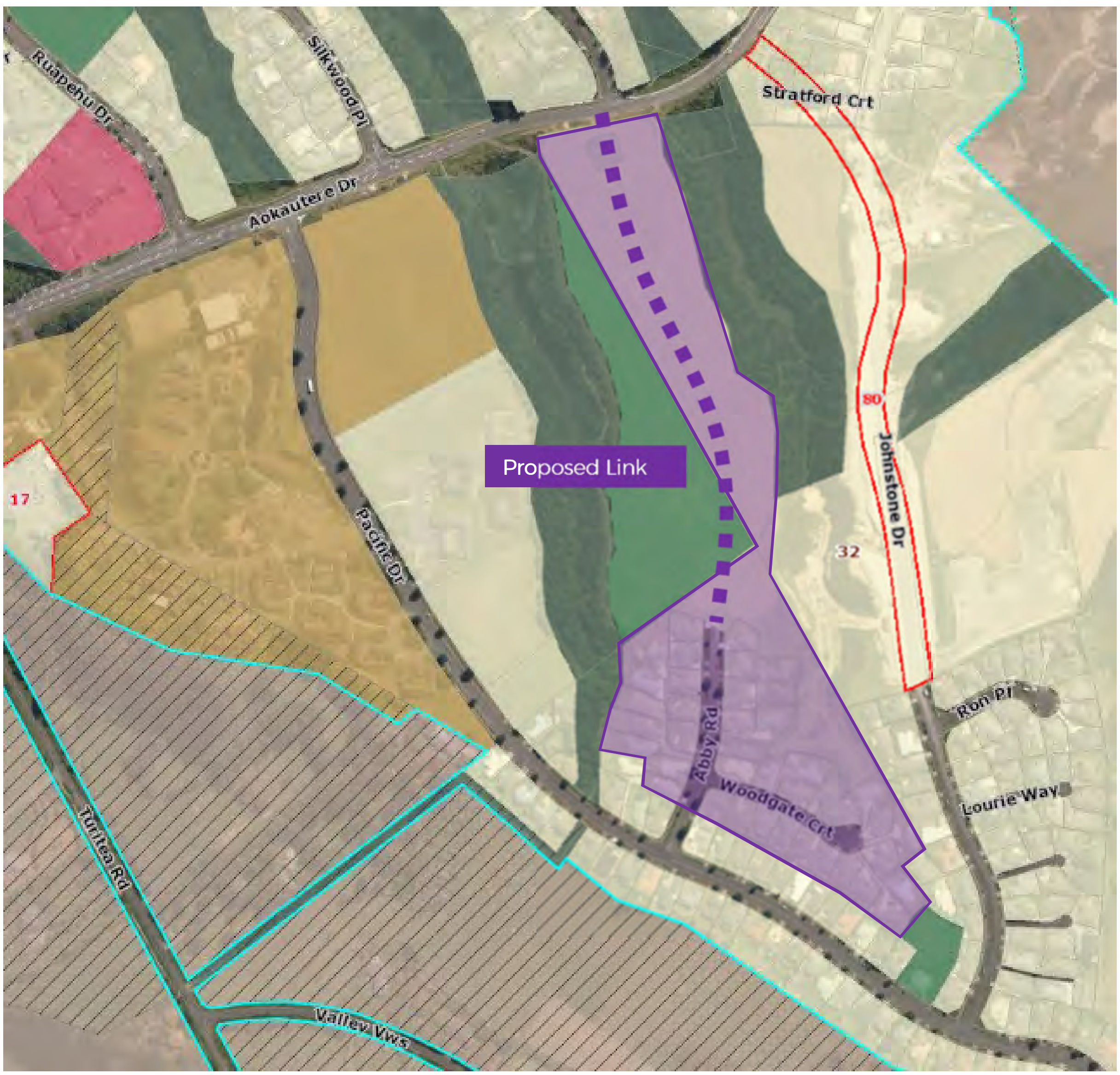


Figure 16: Typical demand area (PNCC District Plan GIS)

Existing users

The existing user demands are captured in the traffic count on Abby Road as noted in section 3.3 (315 vehicles per day).

Future residents

The Trips Database Bureau contains trip and parking information for various types of developments around New Zealand. The information is based on traffic surveys; trip rates for residential developments are calculated per dwelling. Pacific Drive was surveyed in 2007.

Within the residential category there are two land use activities that could fit with the Aokautere Development Area; these are Dwelling (traditional detached housing) and Lifestyle Dwelling (residential in a rural area, with larger lot sizes than a normal residential suburb). Average trip generation per dwelling (for both Dwelling and Lifestyle Dwelling) are summarised on Table 2 below.

Table 2: Trip rates from the trips database bureau

Location	Date of survey	Average AM trip generation	Average PM trip generation	Average daily trip generation
Pacific Drive – 190 dwellings	October 2007	0.91	0.86	7.4
Other Palmerston North sites	Various – 1995 to 2014	0.83	1.06	9.2
NZ wide	Various – 1995 to 2015	0.89	1.05	9.9

The NZ Transport Agency Research Report 453: Trips and parking related to land use (2011) includes an estimated NZ wide trip generation rate of 10.7 trips per day or 1.3 per hour. These trip rates have been used to provide a measure of conservatism to the results.

The area of land to be developed is approximately 35,000m^2. Assuming that a road will be constructed along the centre of this parcel of land with a 17m wide corridor (District Plan requirement for an urban local road with 12 to 60 dwellings in the catchment), the road corridor will be 6,300m^2, leaving 28,700m^2 to be built on.

The minimum lot size allowed in the District Plan is 400m^2 for land within the Aokautere Development Area (Section 10 Residential Zone, 10.6 Dwellings and Accessory Buildings, 10.6.1 Rules: Permitted Activities, R10.6.1.1 Dwellings and Accessory Buildings, (d) Site Area, Site Coverage and Number of Buildings). Potentially there could be as many as 71 residences.

An additional rule states that "the average area of lots available for residential purposes shall be at least 600m^2. In calculating the average lot area, no lots over 1000m^2 shall be included." If all lots were 600 m^2 then the number of dwellings would be 47.

Surrounding residential land that has been developed has lot sizes larger than the minimum. Based on an average lot size of 750m^2, there would be 38 dwellings.

Table 3 below shows the range of traffic generated based on the possible number of lots.

Table 3: Trip generation estimates

Average Lot Size	Number of Dwellings	Traffic generated per day	Traffic generated at peak hour
400 m^2	71	760	92
600 m^2	47	503	61
750 m^2	38	407	49

The worst case scenario had been assumed for this assessment (71 lots).

Recreation users

The potential future use of the recreation area is unknown. An allowance of 100 vehicles per day / 10 vehicles per hour has been assumed.

Summary of typical users

The total future traffic demands along the proposed route is estimated to be 1,175 (315 + 760 + 100) vehicles per day or 144 (42 + 92 + 10) vehicles per hour.

Event demands

In the event of a closure on Pacific Drive, traffic would be able to use the proposed link to reach SH57/Aokautere Drive. The catchment area for a potential event is shown in Figure 17 below.

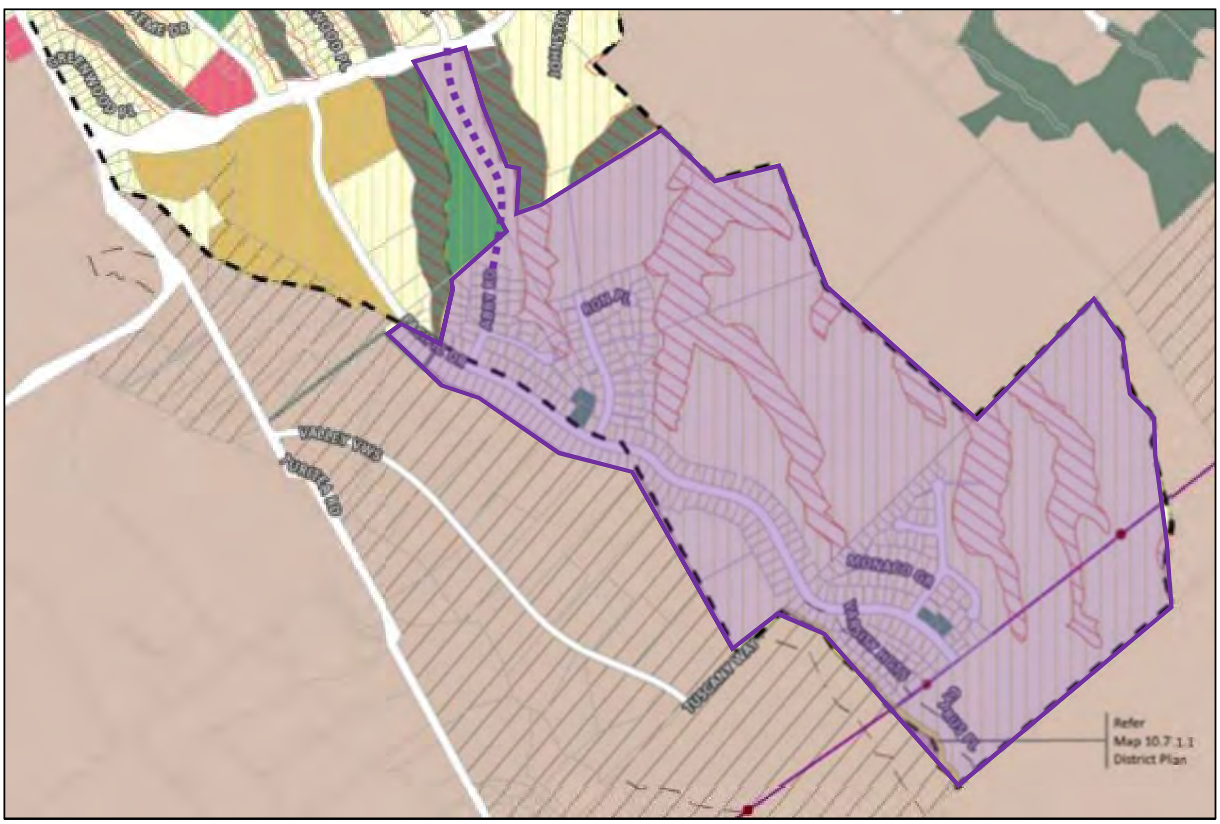


Figure 17: Potential event demand catchment (extract from Aokautere Development Area zoning (Planning Map 10.1 from the PNCC District Plan))

The estimated demand on the link is the typical demands plus the current and future demand on Pacific Drive. The current demands on Pacific Drive are 1,930 vehicles per day / 210 vehicles per hour.

Based on the above figure, approximately 40% of the useable development area in the catchment area has been developed. Assuming 100% development occurs, the future demands on Pacific Drive are estimated to be 4,830 vehicles per day / 530 vehicles per hour.

Information provided by PNCC[6] indicates that the potential development area is greater than that shown in the figure above and the current area could be approximately 20% of the total potential development area. The information provided indicates multiple links to SH57 Aokautere Road, therefore the 40% assumption is assumed to be appropriate for this assessment noting that additional links are likely to be required to facilitate the maximum possible development.

When combined with the typical demands, the expected demands on the proposed link in the event of a closure on Pacific Drive are estimated to be 6,000 vehicles per day / 670 vehicles per hour.

Summary of demands

Figure 18 and Table 4 overleaf summarises the link flows now and in the future.

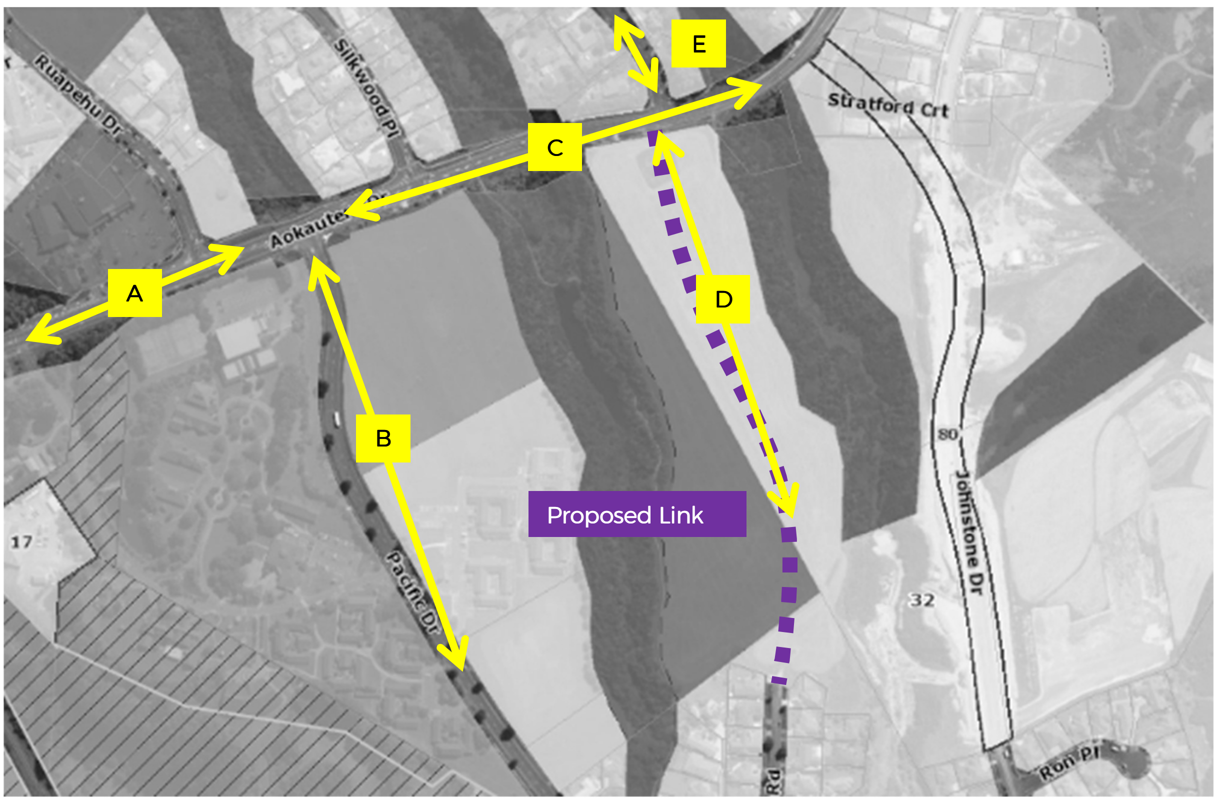


Figure 18: Summary of traffic flows (PNCC District Plan GIS)

[6] Mark Read, 15 January 2019

Table 4: Estimate two-way link demands

Location	2018 count data	2038 (no link)	2038 count data (typical)	2038 count data (event)
A	12,290	23,100	23,100	23,100
B	1,930	4,830	4,830	0
C[7]	10,750	19,240	19,240	23,100
D	n/a	n/a	1,175	6,000
E	400	560	560	560

5.2 Link Capacity

As noted in section 4.2 the proposed link is expected to be designed to the Local Road standard as defined in the PNCC design manual. Local Roads are expected to have typical traffic flow up to 3,000 vehicles per day.

5.3 Intersection Modelling

An uncalibrated SIDRA[8] intersection model has been prepared to understand the current and future intersection performance with and without the proposed link.

Estimated demands

The following assumptions have been used to estimate the demands at the intersection:

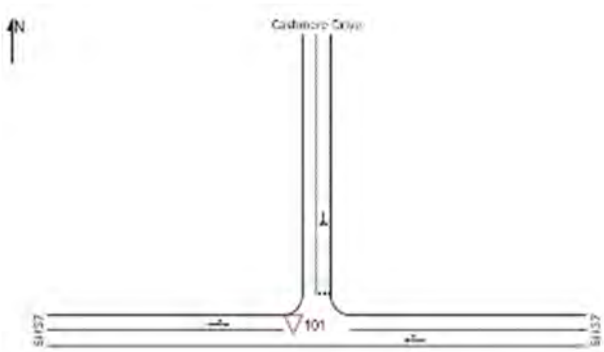
- 5% of vehicles are heavy commercial vehicles (HCV);
- Peak flow factor of 0.95
- 80% of traffic on Cashmere Drive and the proposed link is traveling to/from the west (Palmerston North)
- 5% of traffic on Cashmere Drive and the proposed link is traveling north-south between the two residential areas.
- Traffic growth on Cashmere Drive is 1% per annum.
- Traffic growth on SH57 is 4.4% per annum.
- The future performance year is 2038 (20 year horizon).
- 70%/30% split for inbound/outbound direction flows in the peak hour where information not available.

Intersection layouts

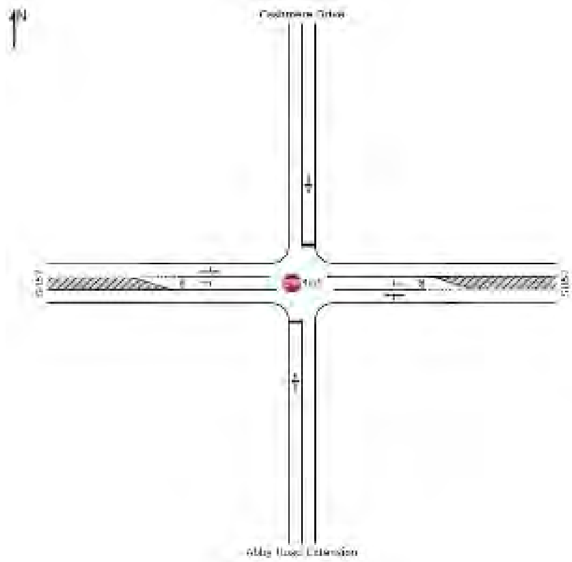
Figure 19 below shows the intersection layouts used for the modelling.

[7] Assumed C= A – Bx80%

[8] Intersection modelling software, SIDRA version 7



No link



with Abby Road link

Figure 19: Intersection layouts

Intersection performance

Table 5 below summarises the intersection performance. Level of service (LOS) has been used as a performance metric. LOS is a function of intersection delay on a scale from LOS A to LOS F. Generally LOS D or better is considered acceptable performance with LOS E and F unacceptable. Traffic flows are highest in the AM peak hour, so that is the time period when delays are most likely to occur.

LOS is not provided for the left and through movements on SH57/Aokautere Drive as they have priority at the intersection.

Table 5: Intersection Performance (AM Peak)

Movement / approach	2018	2038 (no link)	2038 (typical)	2038 (event)
SH57 east right turn movement	LOS A	LOS C	LOS A	LOS A
Proposed link overall approach	n/a	n/a	LOS F	LOS F
SH57 west right turn movement	n/a	n/a	LOS D	LOS F
Cashmere Drive overall approach	LOS B	LOS F	LOS F	LOS F

The modelling results show that the SH57/Aokautere Drive / Cashmere Drive intersection functions satisfactorily with current traffic volumes. The 2038 model shows that the motorists exiting Cashmere Drive experience considerable delays. This is due to the increase in highway traffic; from 10,750 vpd in 2018 to 19,240 vpd in 2038, and the resulting reduction in available gaps for motorists pulling out of Cashmere Drive. Traffic delays are further increased with the addition of the Abby Road connection. Queue lengths and average delays in the future years for motorists are summarised in Table 6 below.

Table 6: Intersection Queue's and Delays (AM Peak)

Movement / approach	2038 (no link)		2038 (typical)		2038 (event)	
	Queue length (m)	Average Delay	Queue length (m)	Average Delay	Queue length (m)	Average Delay
SH57 east right turn movement	0.8 m	16 sec	0.1 m	9 sec	0.1 m	9 sec
Proposed link overall approach	n/a	n/a	473 m	61 min	2523 m	322 min
SH57 west right turn movement	n/a	n/a	5 m	29 sec	110 m	3 min
Cashmere Drive overall approach	24 m	3.3 min	260 m	75 min	315 m	97 min

5.4 Crash Risk

The Transport Agency's Economic Evaluation Manual includes a Crash Estimation Compendium[9] which enables calculation of crash rates based on road characteristics such as intersection type and traffic volumes. The product of flow model has been used in this situation.

The crash risk has been calculated for the SH57 Aokautere Drive / Cashmere Drive intersection, comparing the current expected crash rates to the future rates with and without the Abby Road connection. The expected crash rate based on 2018 traffic volumes has been compared to the actual historic rate from CAS and is summarised in Table 7 below. The assessment indicates that the proposed crossroads intersection does not have a significantly higher crash risk than the existing intersection in the future.

Table 7: Modelled and actual crash rates

Intersection type	Year	Expected annual injury crash rate	Expected number of injury crashes in a 10 year period	Historic number of injury crashes in a 10 year period
T intersection (SH57 Aokautere Drive / Cashmere Drive)	2018	0.19	2	0
T intersection (SH57 Aokautere Drive / Cashmere Drive)	2038	0.31	3	n/a
Crossroads (SH57 Aokautere Drive / Cashmere Drive / Abby Road Extension)	2038	0.32	3	n/a

[9] https://www.nzta.govt.nz/assets/resources/economic-evaluation-manual/economic-evaluation-manual/docs/crash-risk-factors-guidelines-compendium.pdf

6 Assessment of Effects

This assessment of effects has considered the following impacts which are assessed in the subsequent sub-sections:

- Efficiency
- Safety
- Accessibility
- Resilience

6.1 Efficiency

The modelling results show that the SH57 Aokautere Drive / Cashmere Drive intersection currently operates at an acceptable level of service.

The 2038 model shows that the increase in traffic volumes on the highway reduce the opportunity for motorists to turn out of Cashmere Drive, resulting in an unacceptable level of service on that approach.

The modelling results show that average delays and queue lengths for side roads increase markedly with the addition of the proposed Abby Road link. Motorists exiting Abby Road and Cashmere Drive in the AM peak hour face average delays of over an hour. In reality, delays of over an hour would not occur because traffic would divert or delay travel. However, these results do indicate that the intersection does not function adequately and may result in dangerous behaviour as drivers take risks in order to enter the highway.

The addition of the new Abby Road link does not impact through flows on the highway.

The closure of Pacific Drive (the “event”) and additional traffic on Abby Road results in even greater delays for motorists, particularly those exiting Abby Road, with the model showing delays of over five hours. In reality this would not occur because traffic would divert or delay travel.

The overall effect on efficiency is expected to be **minor negative** (as the do-minimum performance of the intersection is unacceptable.

6.2 Safety

The 2018 actual historic crash rate at the T intersection (SH57 Aokautere Drive / Cashmere Drive) is lower than the expected crash rate, indicating that there does not appear to be a higher than expected safety risk at the intersection.

The 2038 expected crash rate for the T intersection is 0.31 injury crashes per year (do minimum). The addition of the Abby Road extension (with the accompanying increase in traffic volumes) results in an annual crash risk of 0.32 injury crashes per year. This is not considered to be a significant increase in crash risk at this intersection.

However, the poor performance expected at the intersection could lead to poor driver behaviour resulting in crashes.

There are limited pedestrian facilities crossing SH57 Aokautere Drive in the vicinity of the site (there is a pedestrian refuge located on SH57 Aokautere Drive, 40 m west of the intersection with Ruapehu Drive). The proposed link may result in an increased demand for pedestrian movements across SH57 Aokautere Drive. Crossing SH57 Aokautere Drive is expected to become more difficult and less safe as the traffic volumes increase.

The overall effect on safety is expected to be **minor negative**.

6.3 Accessibility

Residents on Abby Road and at the southern end of Pacific Drive currently have limited connectivity to the wider transport network with the only available road to this area being Pacific Drive. This means people travelling to and from this area by motor vehicle must use Pacific Drive, with the majority of these vehicles travelling through the Pacific Drive / SH57 Aokautere Drive intersection.

Pedestrians and cyclists have the option of using the Adderstone Walkway to connect with SH57 Aokautere Drive, or the Turitea Walkway to the west of Pacific Drive. However, the walking track in the reserve has limited passive surveillance over its length which may deter some users. The lack of lighting in the walkway may also make it unsuitable for night time use.

The provision of a connection from Abby Road would include pedestrian footpaths on both sides which would provide good alternative access for pedestrians and mobility impaired people through to SH57 Aokautere Drive. It will also include street lighting, making it a safer pedestrian / cyclist route than the Adderstone Walkway. The Abby Road link will connect to the existing pedestrian paths on both Abby Road and Aokautere Drive and will provide a faster travel route for those travelling from Pacific Drive and its connecting roads west along SH57 Aokautere Drive.

The proposed connection from Abby Road would also provide improved access to the recreation areas (including the Adderstone Walkway.

The overall effect on access is expected to be **moderate positive**.

6.4 Resilience

Currently all of the residents that live along Pacific Drive and connected roads (south of the IPU) have only one road connection to SH57 Aokautere Drive. If Pacific Drive is blocked / closed for any reason, then there is no access to/from the area by vehicle.

The proposed link provides an alternative connection to SH57 Aokautere Drive for residents and emergency services, improving the resilience of the road network in the Aokautere area.

The overall effect on resilience is expected to be **minor positive**.

7 Compliance with statutory documents

7.1 Palmerston North City Council District Plan

Section 20.3 of the Transportation portion of the District Plan has the following objectives:

- Objective 1. To maintain and enhance the safe and efficient functioning of the roading network. This objective includes the following policies:
    - To ensure all roads have function and design characteristics consistent with the roading hierarchy.
    - To have regard to the particular safety needs of cyclists and pedestrians.
- Objective 2. To protect the roading network, as identified in the roading hierarchy, from the potential adverse effects of all land use activities. This objective has the following policies:
    - To ensure safe and efficient vehicle access is provided to and from activities.
    - To manage and control vehicle access crossing points onto Major and Minor Arterial roads.

The proposed link is generally consistent with objective 1. The proposed link is expected to be a Local Road and meet the Council's minimum standards which includes appropriate provision for pedestrians and cyclists. Alignment with objective 1 would be improved if a safe crossing facility of SH57 Aokautere Drive was provided adjacent to the proposed link.

Objective 2 is not directly relevant to the proposed NOR.

8 Potential Mitigation

8.1 Intersection Performance

The SIDRA modelling indicates that the SH57 Aokautere Drive / Cashmere Drive intersection will result have an unacceptable level of service for the Cashmere Drive approach in 2038 without the proposed link. The addition of the proposed link is expected to reduce the performance slightly.

Other intersection forms have been investigated to determine whether an alternative layout will provide an intersection with an appropriate level of service with or without the proposed link.

Roundabout

Austroads' *Guide to Road Design Part 4B: Roundabouts* provides guidance on the geometric design of a roundabout. Due to the constraints of the area (property and topography), the smallest appropriate roundabout was modelled. The single lane roundabout has a central island radius of 18 m (suitable for a design speed of 70 km/h, Table 4.1) and lane widths of 7 m (suitable for a 19 m semi-trailer Table 4.3), with an overall roundabout diameter of 50 m (excluding shoulders). The modelled intersection is shown below on Figure 20.

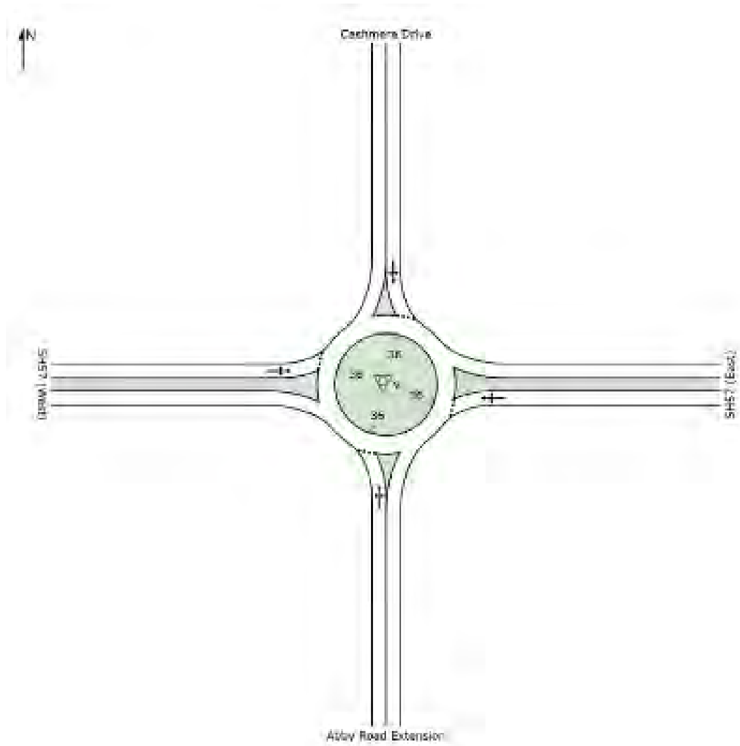


Figure 20: Intersection layout

Table 8 below shows the SIDRA model outputs for a roundabout.

Table 8: Roundabout Performance (AM Peak)

Movement / approach	2038 (no link)	2038 (typical)	2038 (event)
SH57 east right turn movement	LOS B	LOS B	LOS E
SH57 east through movement	LOS A	LOS A	LOS E
Proposed link overall approach	n/a	LOS C	LOS F
SH57 west right turn movement	n/a	LOS B	LOS B
SH57 west through movement	LOS A	LOS A	LOS A
Cashmere Drive overall approach	LOS A	LOS B	LOS B
Average LOS for all vehicles through the intersection	LOS A	LOS A	LOS F

The model results show that under typical conditions (with or without the proposed link) the roundabout performs better than the stop/give way controlled crossroad intersection. Highway traffic delays remain low, both east and west approaches have a LOS A rating.

The effect of the "event" on the traffic conditions is significant, with both westbound highway traffic and Abby Road traffic experiencing significant delays. The average delays to highway traffic increase from six seconds (typical situation) to one minute. The average delay for motorists exiting Abby Road is 18 minutes. However, these events are likely to have a very low recurrence interval, so poor performance during the events are likely to be acceptable.

Signalised Intersection

Figure 21 below shows the configuration of the signalised intersection that was modelled.

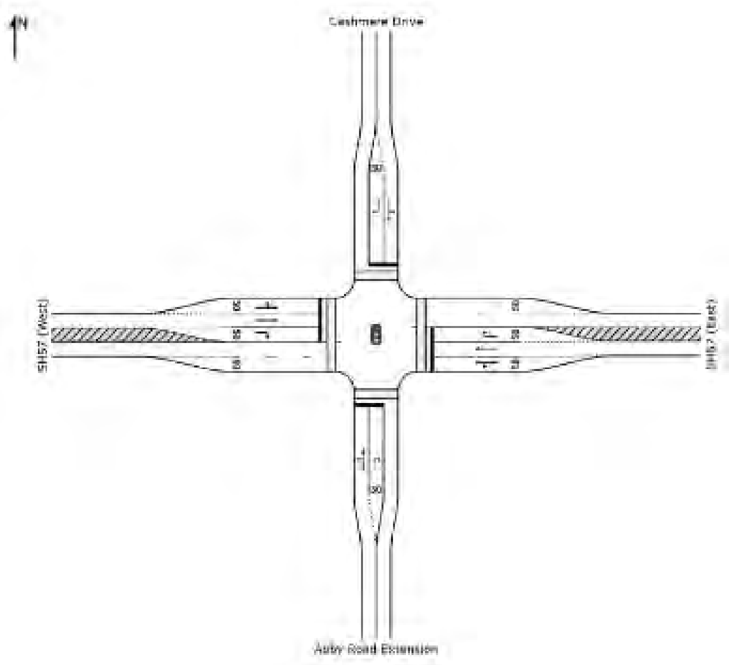


Figure 21: Intersection layout

Table 9 below summarises the intersection performance.

Table 9: Signalised Intersection Performance (AM Peak)

Movement / approach	2038 (no link)	2038 (typical)	2038 (event)
SH57 east right turn movement	LOS A	LOS B	LOS B
SH57 east through movement	LOS A	LOS A	LOS D
Proposed link overall approach	n/a	LOS D	LOS F
SH57 west right turn movement	n/a	LOS B	LOS F
SH57 west through movement	LOS A	LOS A	LOS A
Cashmere Drive overall approach	LOS D	LOS D	LOS D
Average LOS for all vehicles through the intersection	LOS A	LOS A	LOS E

The SIDRA results show that for the typical situation (with or without the proposed link) the signalised intersection performs acceptability with 2038 traffic volumes. Highway traffic delays remain low, both east and west approaches have a LOS A rating (similar to the roundabout). Cashmere Drive and the new Abby Road link both result in a LOS D which is slightly worse than the roundabout (LOS B and C respectively).

The signals do not perform well in the “event” situation, with an overall intersection LOS of E. However, the signals do perform better than the roundabout, which received a LOS F for the intersection. However, as noted above, these events are likely to have a very low recurrence interval, so poor performance during the events are likely to be acceptable. It also should be noted that the current speed limit (70km/h) is the upper limit of acceptable speed environments for a signalised intersection and the speed limit would desirably be reduced. This is particularly relevant as there are not currently any adjacent intersections with a form of control on the main approaches.

Summary

The intersection modelling shows that it is possible to reduce delays on Cashmere Drive and the proposed new link to acceptable levels by upgrading the intersection to a roundabout or signals. However, it should be noted that this upgrade is not required as a result of the proposed link and is required to address expected delays in the future without the proposed link.

It should also be noted that the other intersections with SH57 Aokautere Drive in the area are also likely to have unacceptable performance in the future due to the predicted development (and associated traffic) in the area. If the proposed link was constructed with an upgraded intersection with SH57 Aokautere Drive and nothing done at the existing intersection with Pacific Drive then significantly more traffic could be expected to use the proposed link.

8.2 Safety

Consideration could be given to installation of appropriate pedestrian facilities to allow for safer movement of pedestrians across SH57 Aokautere Drive. This could include a pedestrian refuge or a signalised pedestrian crossing.

8.3 Travel Demand Management

Travel Demand Management (TDM) measures to reduce single occupancy vehicle travel in the area could minimise the expected traffic growth and reduce the need for intersection or other improvements.

TDM measures could include safer and more connected cycleways throughout the area, new or extended bus routes and travel planning with relevant businesses and institutions.

9 Conclusions

The assessment of the proposed link has identified the following:

9.1 Efficiency

- The intersection of the proposed link and SH57 Aokautere Drive / Cashmere Drive is expected to have unacceptable performance in future years.
- The performance of the existing intersection and other adjacent intersections on SH57 Aokautere Drive are also expected to be unacceptable in future years (without the proposed link).
- Upgrading the existing intersection of SH57 Aokautere Drive / Cashmere Drive (or other adjacent intersections) to a roundabout or signalised intersection could provide acceptable performance with or without the proposed link.
- Intersection improvements along SH57 Aokautere Drive will need to be coordinated to ensure traffic patterns remain consistent with the road hierarchy.
- Travel Demand Management (TDM) measures in the area could minimise the expected traffic growth and reduce the need for intersection or other improvements.

The overall efficiency assessment (with no intersection improvements) is **minor negative**.

9.2 Safety

- The calculated future crash risk for the proposed intersection is similar to the calculated future crash risk for the intersection with the proposed link.
- The significant delays expected at the intersection with or without the proposed link are expected to result in increased crash risk.
- The proposed link may result in increased pedestrian and cyclists crossing SH57 Aokautere Drive, the high future traffic volumes on this link are likely to be make crossing difficult and less safe.
- Improved crossing facilities across SH57 Aokautere Drive could help to mitigate some of the risk for pedestrians and cyclists.

The overall safety assessment (with no improvements) is **minor negative**.

9.3 Accessibility

- The proposed link provides an alternative connection to SH57 Aokautere Drive for motorists improving the accessibility of the road network in the Aokautere area.
- The proposed link provides additional pedestrian and cyclists access to SH57 Aokautere Drive.
- The proposed link also provides improved access to the recreation areas (including the Adderstone Walkway.

The overall effect on access is expected to be **moderate positive**.

9.4 Resilience

- The proposed link provides an alternative connection to SH57 Aokautere Drive for residents and emergency services, improving the resilience of the road network in the Aokautere area.

The overall effect on resilience is expected to be **minor positive**.

APPENDIX C

Project Number: 5-C4104.00

Abby Road Notice of Requirement

2 September 2020

CONFIDENTIAL

Transportation Assessment

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2	DRAFT for revised NoR application in 2020
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Disclaimers and Limitations

This report ('**Report**') has been prepared by WSP exclusively for Palmerston North City Council ('**Client**') in relation to a transportation assessment of a proposed Notice of Requirements for the extension of Abby Road in Aokautere, Palmerston North ('**Purpose**') and in accordance with the Short form Agreement with the Client dated 24 March 2020. The findings in this Report are based on and are subject to the assumptions specified in the Report. WSP accepts no liability whatsoever for any reliance on or use of this Report, in whole or in part, for any use or purpose other than the Purpose or any use or reliance on the Report by any third party.

1 Introduction

WSP have been commissioned to provide a Transportation Assessment to support a Notice of Requirement (NOR) application to designate a road link between Abby Road and Johnstone Drive in Aokautere.

The location of the area is shown on Figure 1 and Figure 2 below and overleaf.

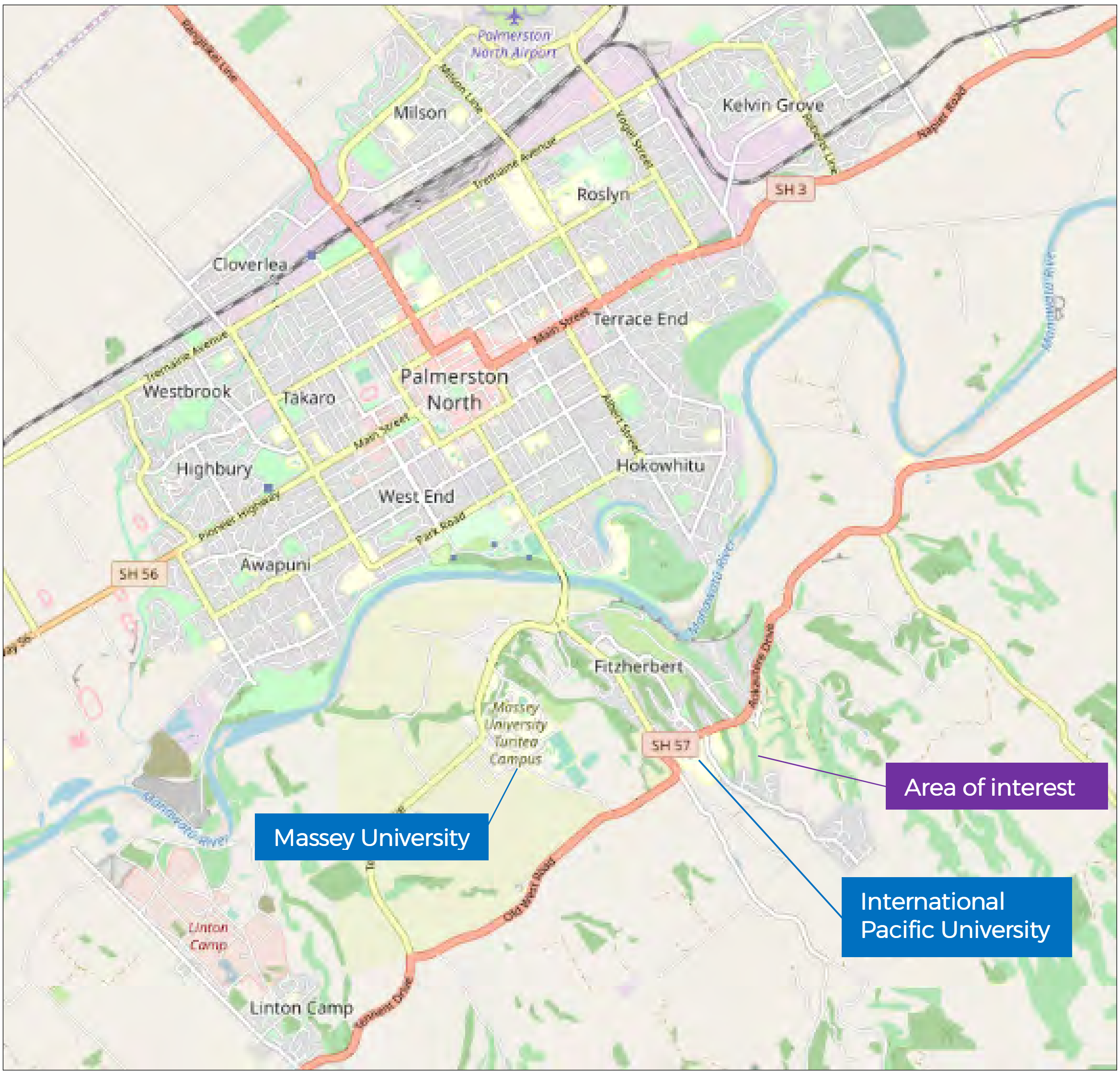


Figure 1: Context location plan (openstreetmap.org)

Figure 2: Location plan (PNCC District Plan GIS)

2 Land Use

Figure 3 below shows the zoning around the proposed new link. The surrounding land use zoned is primarily residential, although only some of the areas have been developed (where individual lots can be seen).

Other land-uses in the surrounding area include:

- Rural to the south west and north east;
- Institutional around the International Pacific University;
- Conservation / amenity and recreation.

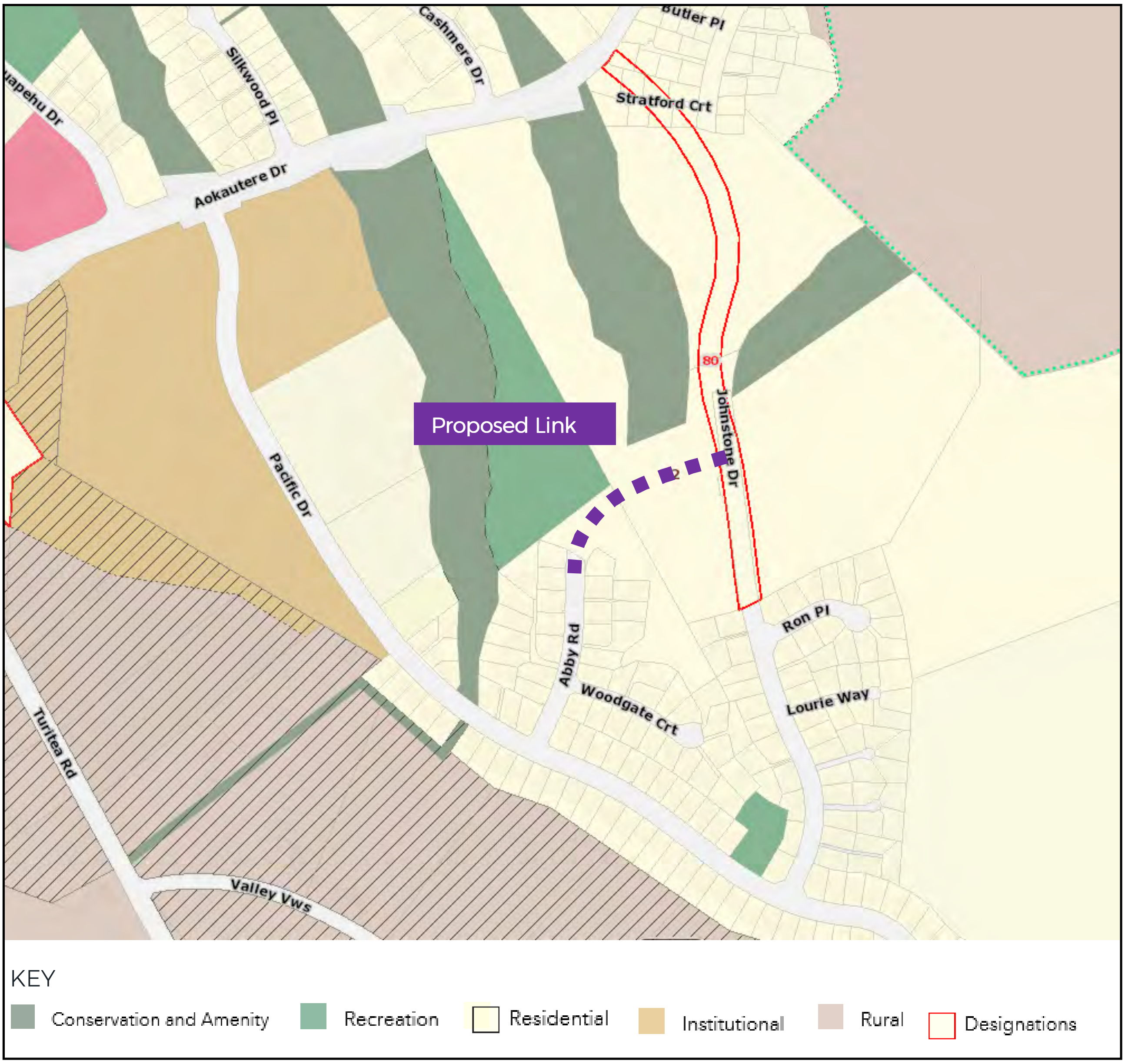


Figure 3: PNCC District Plan zoning map

The surrounding area forms part of the Aokautere Development Area as shown in Figure 4 below. Figure 4 shows which areas are able to be developed.

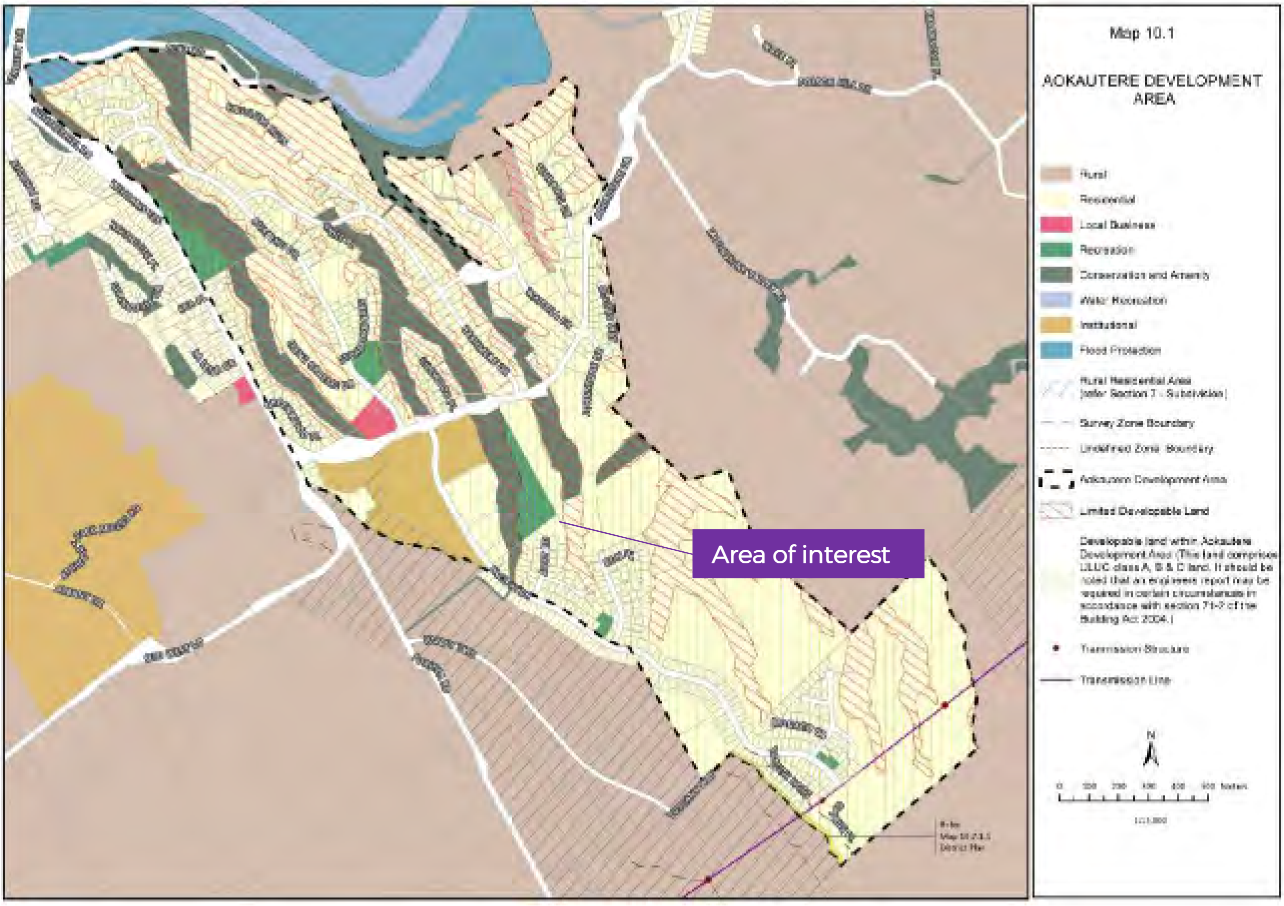


Figure 4: Aokautere Development Area zoning (Planning Map 10.1 from the PNCC District Plan)

A proposed Draft Aokautere Structure Plan[1] has been developed for the area as shown in Figure 5 below. The Abby Road extension (circled in red) forms part of the Draft Aokautere Structure Plan and supports development to the north of Abby Road and provides access and connectivity to the ongoing development along Johnstone Drive.

[1] https://www.pncc.govt.nz/media/3132024/aokautere-draft-structure-plan-august-2019.pdf

Figure 5: Proposed Draft Aokautere Structure Plan

3 Transport Environment

3.1 Road Hierarchy

The PNCC District Plan lists the road hierarchy for the site as follows, with the Transport Agency's One Network Road Classification (ONRC) is noted in brackets:

- Aokautere Drive (SH57) – Major Arterial (National)
- Pacific Drive – Minor Arterial (Primary / Secondary Collector)
- Johnstone Drive – Collector (Unknown)
- Abby Road – Local Road (Low Volume)

See Figure 6 below.

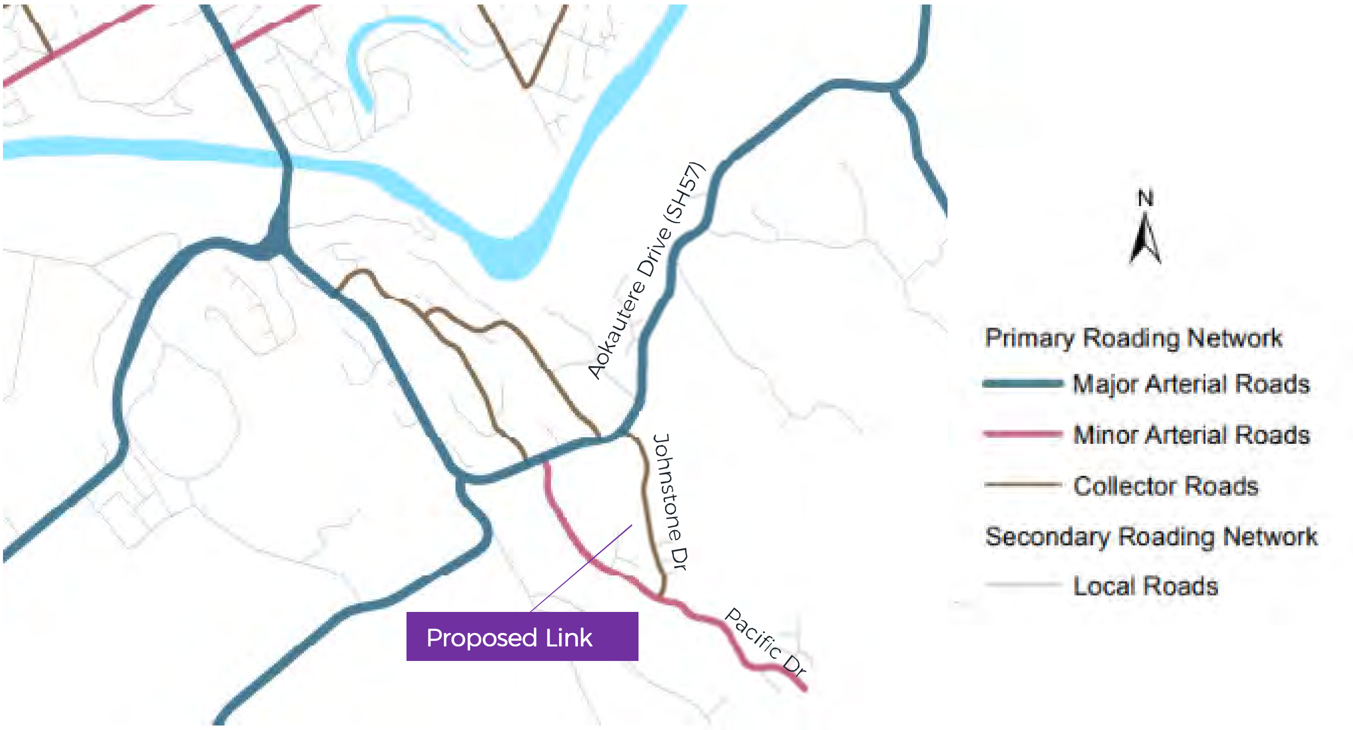


Figure 6: PNCC Road Hierarchy

Johnstone Drive is still under construction. The portions adjacent to SH57 / Aokautere Drive and Pacific Drive are completed; however, the middle section is unsealed and not open to through traffic.

This assessment considers scenarios where Johnstone is and isn't connected, but the assumption is that it will be connected.

3.2 Speed Limits

SH57 / Aokautere Drive has a posted speed limit of 70 km/h east of the intersection with Summerhill Drive. The speed limit increases to 80km/h where the local environment becomes more rural, approximately 1.5km east of Johnstone Drive.

All the local roads within the area (Pacific Drive, Johnstone Drive, Abby Road etc.) have a posted speed limit of 50 km/h.

3.3 Traffic Flows

SH57 Aokautere Drive

Waka Kotahi (NZ Transport Agency) have a count site on SH57 (Aokautere Road) near the access to the International Pacific University (IPU) between Summerhill and Ruapehu Drives. The 2018 recorded Average Annual Daily Traffic (AADT) at this site was 11,570 vehicles per day[2].

Traffic growth between 2014 and 2018 at this location is approximately 8% per annum which is very high compared to typical urban growth rates. This section of SH57 has experienced increased traffic due to the closure of the Manawatū Gorge (which closed in 2017). The growth rate without the 2017 data set is 4.4% per annum. This rate has been used for further assessment and is consistent with other growth rates on the State highway network around Palmerston North.

Figure 7 below shows the average flow profile on SH57 / Aokautere Drive during 2018.

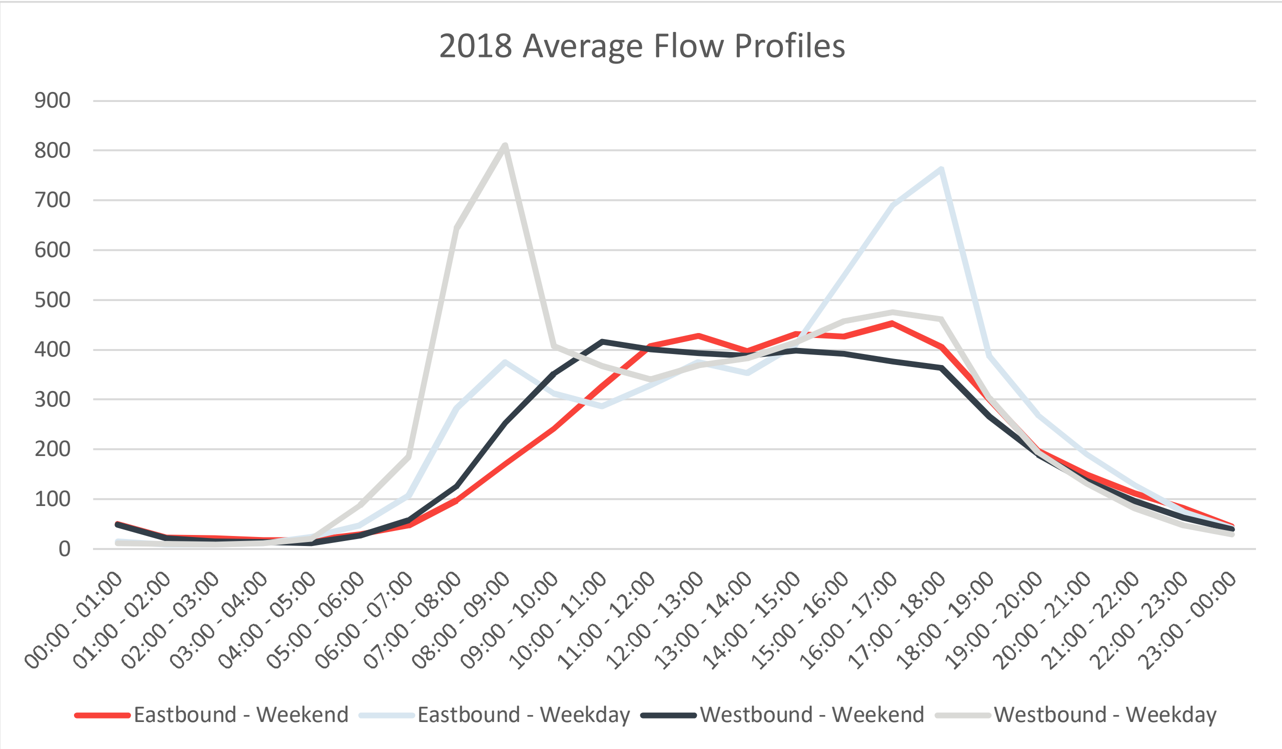


Figure 7: Flow profile on SH57 (average for 2018)

The graph in Figure 7 shows a pronounced weekday morning peak from 8am to 9am with a high proportion of this traffic being in the westbound direction towards Palmerston North. Traffic volumes the lower through the middle of the day and gradually build to a PM peak period from 5pm to 6pm, with a high proportion of this traffic being in the eastbound direction. Weekend traffic has a flatter profile, with the peak traffic volumes being lower and occur in the middle of the day.

Local Roads

Table 1 overleaf summarises the traffic volumes on the roads surrounding the project area. Traffic counts for Pacific Drive and Johnston Drive were provided by PNCC and are based on tube counts carried out in February 2020. Traffic counts for the remaining streets are based on known traffic generation on Pacific Drive (estimated in early 2019).

[2] A PNCC count in February 2020 on Aokautere Drive between Ruapehu Drive and Pacific Drive was 11,950 average daily vehicles.

Table 1: Local Road Traffic Count Data

Road	Location	Count Date	ADT (average daily traffic)	Peak hour flow	Dwellings (2019 estimate)
Pacific Drive	West of Abby Road	February 2020	2580[3]	290	260
	East of Abby Road	Estimate	1450^	160^	110
Abby Road	n/a	Estimate	315*	35*	42
Johnstone Drive	North end	Estimate	410*	45*	55
	South end	February 2020	480[4]	60*	62

* Estimates are based on traffic generation rates on Pacific Drive per household.
^ Estimates are based on traffic generation rates on Pacific Drive per household + change in actual traffic counts on Pacific Drive between 2017 and 2020

[3] Based on vehicle classes 1-3 only, full vehicles count was approximately 2920 (other vehicles assumed to be associated with ongoing development in the area)
[4] Based on vehicle classes 1-3 only, full vehicles count was approximately 530 (other vehicles assumed to be associated with ongoing development in the area)

3.4 Crash Records

The five year crash history in the area was exported from the Transport Agency's Crash Analysis System (CAS). In the past five years (2015-2020[5]) there have been the following reported crashes:

- Three crashes at the intersection of Pacific Drive and SH57, one minor injury, two non-injury.
- There are no crashes shown at the intersection of Johnstone Drive and SH57, however Johnstone Drive has only been open to the public since 2016 (based on historic google earth aerial images).
- On the stretch of highway between Johnstone Drive and Pacific Drive there has been two crashes; one minor-injury crash occurred where a cyclist was forced off the road by a following truck. A non-injury loss of control crash occurred with a Police vehicle (emergency situation) turning left into Cashmere Drive.
- Two minor injury crashes occurred at the intersection of Ruapehu Drive and SH57, both involving cyclists.
- There have been two crashes on Pacific Drive, both minor injury. The minor injury crashes occurred north of Abby Road. These were loss of control type crashes, one involving a motorist who was trying to avoid an animal and the other involving a hitting a parked vehicle.

The crash locations are summarised on Figure 8 below.

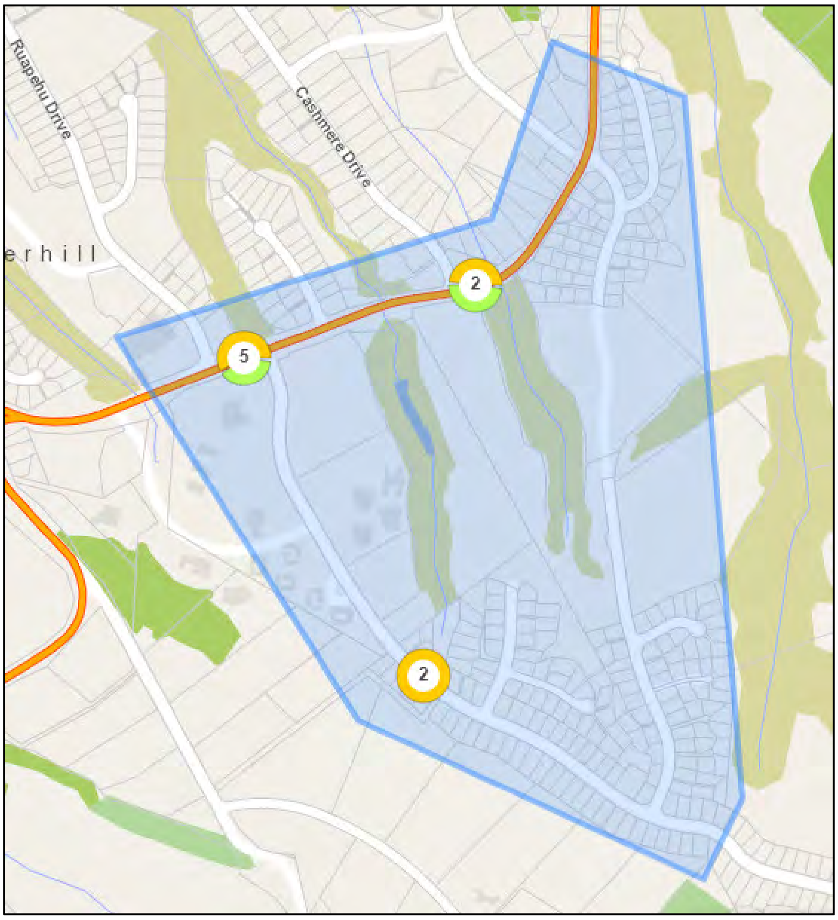


Figure 8: Crash locations (CAS)

[5] 2015-2019 plus 2020 to date, retrieved on 6 July 2020

3.5 Walking and cycling

Sealed footpaths are provided on both sides of all the local roads in the study area.

Figure 9 below shows the key off-road walkways and on-road cycleways in the area. Key features include cycle routes north west of the area connecting into Palmerston North and a range of off-road walkways including Te Araroa National Walkway.

The Adderstone Walkway runs parallel to the proposed new link and follows the stream through the gully, with connections at Pacific Drive and Aokautere Drive. This walkway forms part of a larger walking track; the Turitea Walkway, which starts at Old West Coast Road and crosses farmland, connecting into the Adderstone Walkway on Pacific Drive.

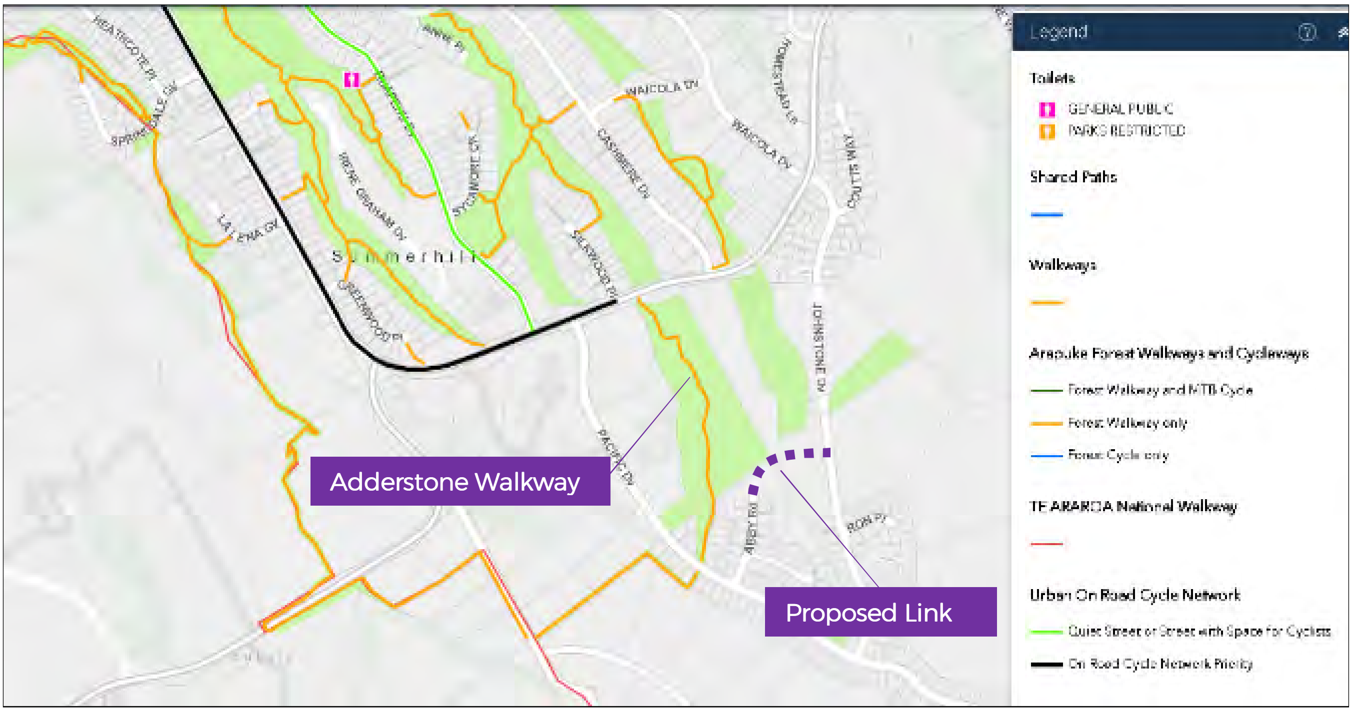


Figure 9: Walking and cycling map (PNCC GIS)

There are no marked cycle facilities on the local roads in the area adjacent to Abby Road.

3.6 Public Transport

The Horizons Regional Council provides bus services in the Palmerston North area. The No. 14 bus connects the International Pacific University (IPU) with the city centre, this is the red line shown on Figure 10 below. There are around 30 buses per day (an average of 2 buses per hour) passing through IPU on a weekday and around 10 buses per day on the weekend.

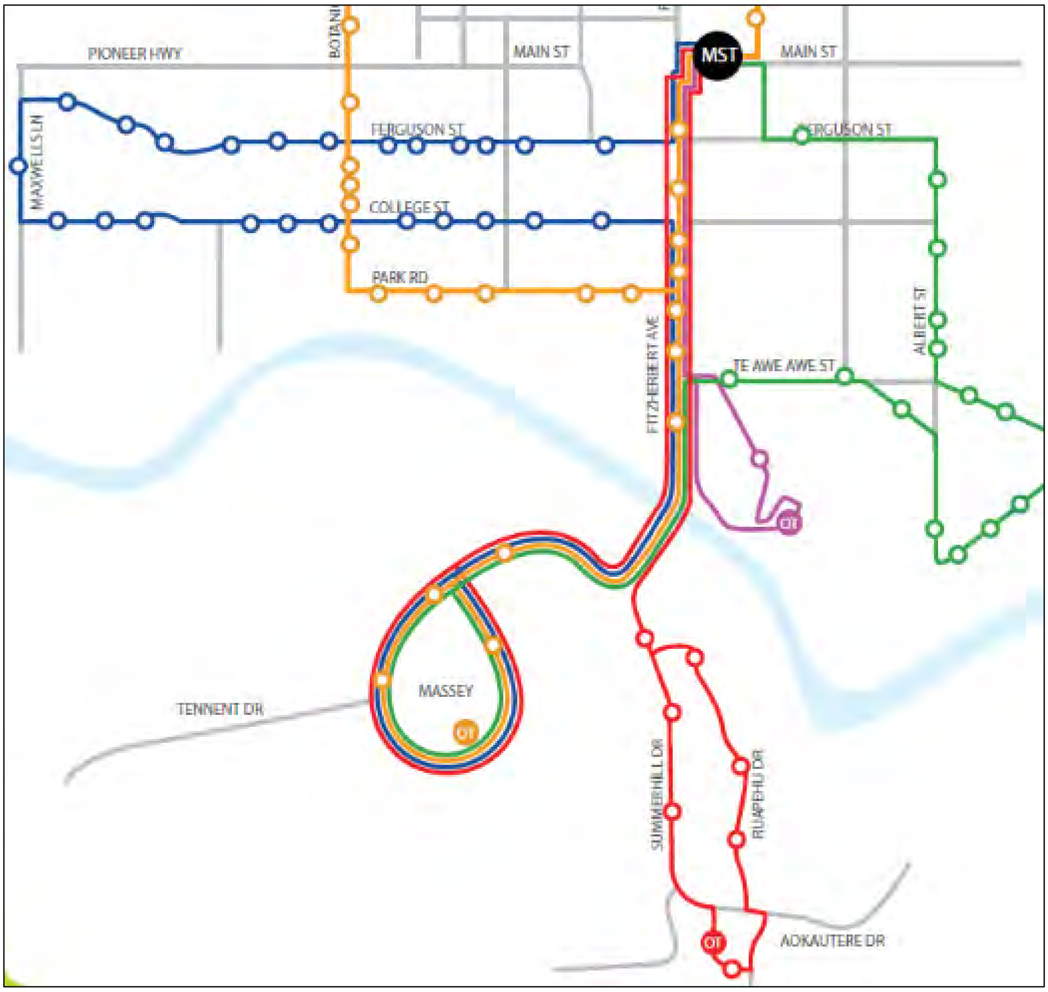


Figure 10: Bus route map (Horizons Regional Council website)

3.7 Future Transport Changes

The Waka Kotahi NZ Transport Agency National Land Transport Programme (NLTP) 2018-2021 provides an overview of the investment programme for key transportation projects throughout New Zealand. Projects outlined in the NLTP for the Manawatu-Whanganui region are shown overleaf on Figure 11.

Figure 11: Key NLTP 2018-2021 Projects for Manawatu-Whanganui (Waka Kotahi website)

The proposed Te Ahu a Turanga route (replacement for the Manawatū Gorge) may lead to changes in the amount of traffic on SH57 Aokautere Road as traffic from Palmerston North using this link to reach the Paihiatua Track diverts to the new route via SH3.

The Transport Agency and PNCC are considering a Ring Route around Palmerston North which could impact traffic volumes on SH57 but no information is currently available about the route or its effects,

The Transport Agency website includes a map[6] indicating that the on-road cycle network priority is expected to be extended along SH57 to Titirangi Drive (east of Johnstone Drive) by June 2018.

A number of cycle improvements are proposed in the wider area such as the He Ara Kotahi shared pathway, which will link Massey University and Linton Military Camp with Palmerston North City. The pathway will connect with the existing off road pathways on both sides of the Manawatu River and will include a cycle/pedestrian bridge across the river itself. The project is scheduled for completion in April 2019.

[6] https://www.nzta.govt.nz/assets/Walking-Cycling-and-Public-Transport/docs/urban-cycleways/Palmerston-North-urban-cycleways-map.pdf

4 Proposal

PNCC intends to designate and construct a new road link between Abby Road and Johnstone Drive with a new intersection between Abby Road and Johnstone Drive.

4.1 Link function

The purpose of the new link is to improve connectivity and accessibility at a local level.

The Notice of Requirement will provide access between Abby Road and the Adderstone Reserve. It proposes to achieve this by connecting Johnstone Drive with the existing unformed end of Abby Road, and by preserving an opportunity for further legal connection through Adderstone Reserve.

No public vehicle access or off-street parking is intended to be provided to the Adderstone Reserve as part of the Notice of Requirement. On-road parking is expected to be possible on the new link in the vicinity of the Reserve.

It should be noted that the extension of Abby Road is only a first step in improving access to the Reserve. It is currently uncertain how the reserve will be developed as part of the Draft Aokautere Structure Plan but the proposed NoR facilitates opportunity for further development.

4.2 Link form

The purpose of the new link is not to provide a high capacity link and the form of the proposed link will be sympathetic to existing section of Abby Road which may or may not need to be upgraded.

Figure 12 below shows the cross-section of the existing section of Abby Road. The existing carriageway cross-section width (8m) is consistent with a residential – cul-de-sac / local road classification from the Palmerston North City Council Engineering Standards for Land Developments[7] (engineering standards). However, the road reserve width (19m) is wider than required by the engineering standards (13.5m)

[7] Table 3.1 https://www.pncc.govt.nz/media/3131292/engineering-standards-2018-2019-final.pdf

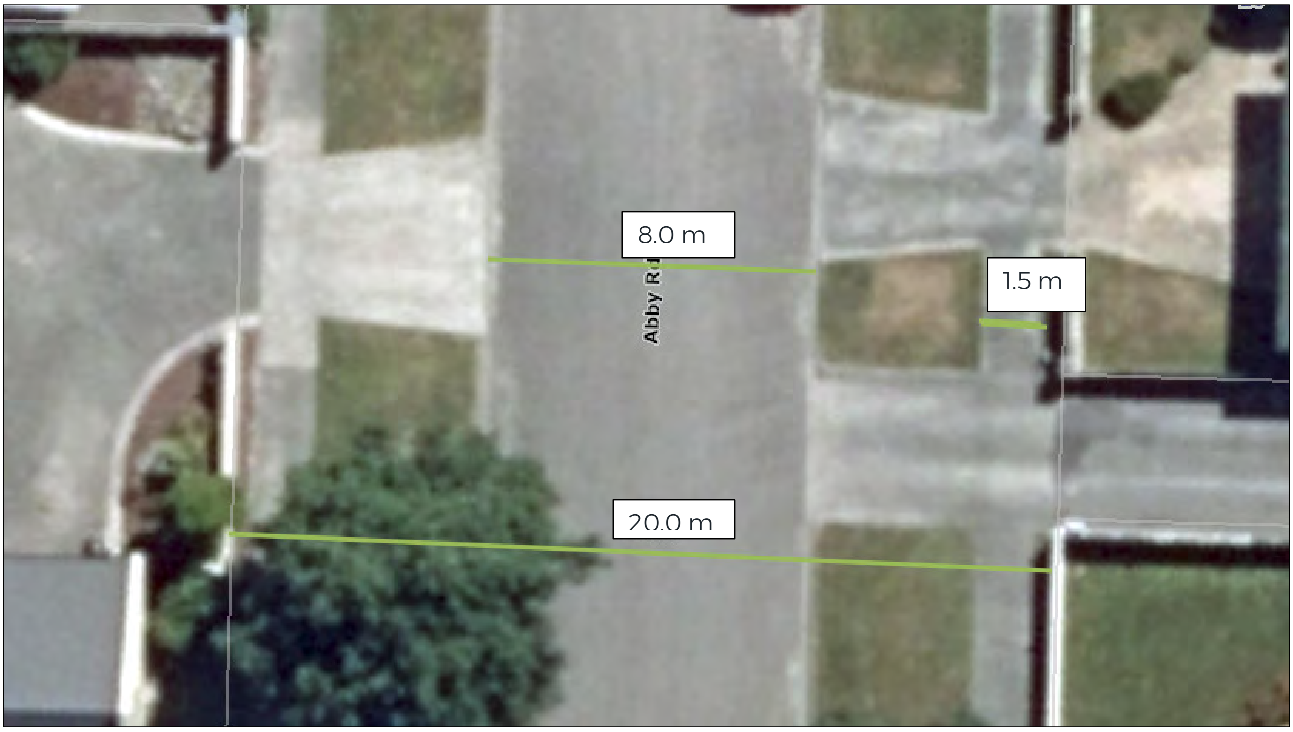
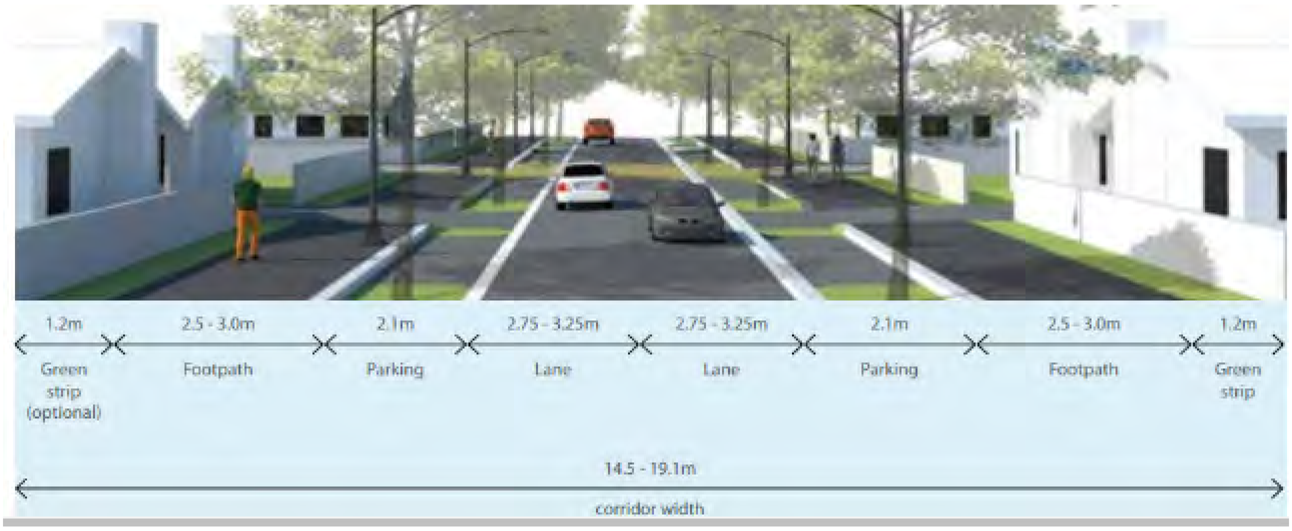


Figure 12: Current width of Abby Road (PNCC GIS)

Based on the engineering standards and the Palmerston North City Council Street Design Manual[8] (design manual) the form of the new link is proposed to be that of a Local Road. The design manual describes a Local Road as follows:

- Provide access and connectivity within local residential area.
- Significant contribution to character of residential area.
- Low vehicle speeds.
- Typical traffic flow up to 3,000vpd.
- High volumes of pedestrian movement.
- High number of vehicle access to residential properties.
- Streets function as both access / movement.
- Limited public transport route.

Figure 13 below indicates the form of the proposed link.



[8] https://www.pncc.govt.nz/media/2867364/pncc_street_design_manual_2013.pdf

Figure 13: Local Road Cross Section (PNCC design manual)

Some minor widening of the carriageway on the existing section of Abby Road may be required to provide space for on-street parking on both sides of the road (expected to be via inset parking bays fitting around the existing trees and accesses.

4.3 Link alignment

The alignment of the proposed new link is indicatively shown in Figure 14 below. The figure also shows the proposed alignment can accommodate a future connection to provide access to the north as envisaged in the proposed draft Aokautere Structure Plan. This intersection could either provide priority north-south or along the currently proposed link.

The indicative alignment has been designed to the minimum requirements for a 50km/h design speed and includes the following features:

- Maximum vertical grade of 6%;
- Minimum horizontal curve radius of 50m;
- Approximately 6m depth of fill required in the middle of the gully at the centre of the alignment;
- Cut slopes of 2 horizontal to 1 vertical and fill slopes of 3 horizontal to 1 vertical; and
- 19m width of corridor (includes carriageway, berms, footpaths).

The proposed alignment is based on a feasibility-level design and will be required to be developed in more detail and subject to relevant Council approval processes and an independent Road Safety Audit.

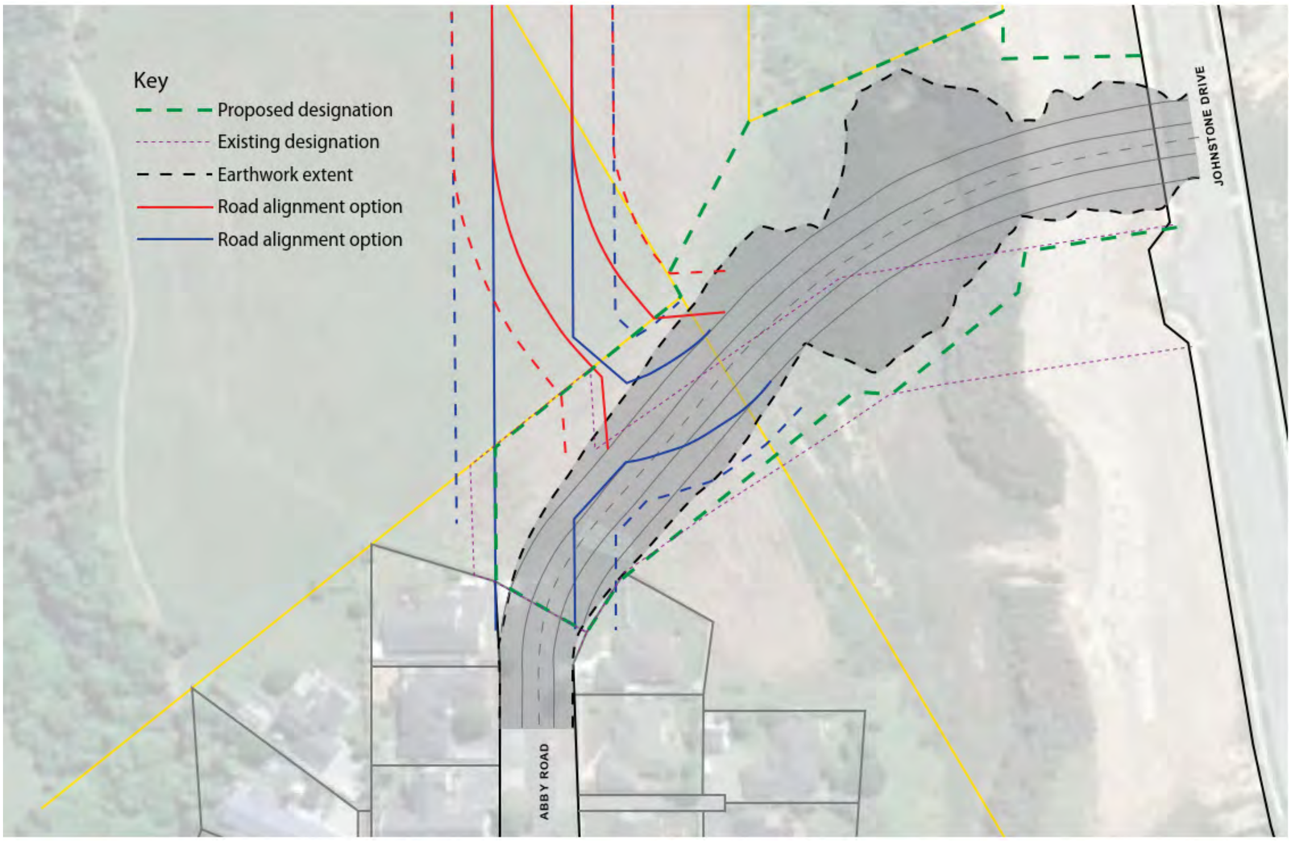


Figure 14: Proposed link alignment

4.4 Intersection form

For the purposes of assessment, the intersection of Abby Road and Johnstone Drive is expected to have the same form as the intersection of Abby Road and Pacific Drive (refer Figure 17 below), being a simple T-intersection with Abby Road priority controlled.

5 Future Transport Environment

This section seeks to outline the future transport demands on the proposed link and the adjacent network.

5.1 Future Transport Demands – Johnstone Drive not connected

Figure 15 below shows the current and future areas of expected subdivision in the area:

- The areas highlighted in orange are current and future areas of development which are not expected to use the new link.
- The green area is the current properties which access Abby Road.
- The blue areas are future areas of expected subdivision which are expected to use the new link. In the event of the link not being in place, the western blue area is expected to use Abby Road and the middle and eastern blue areas are expected to use Johnstone Drive.

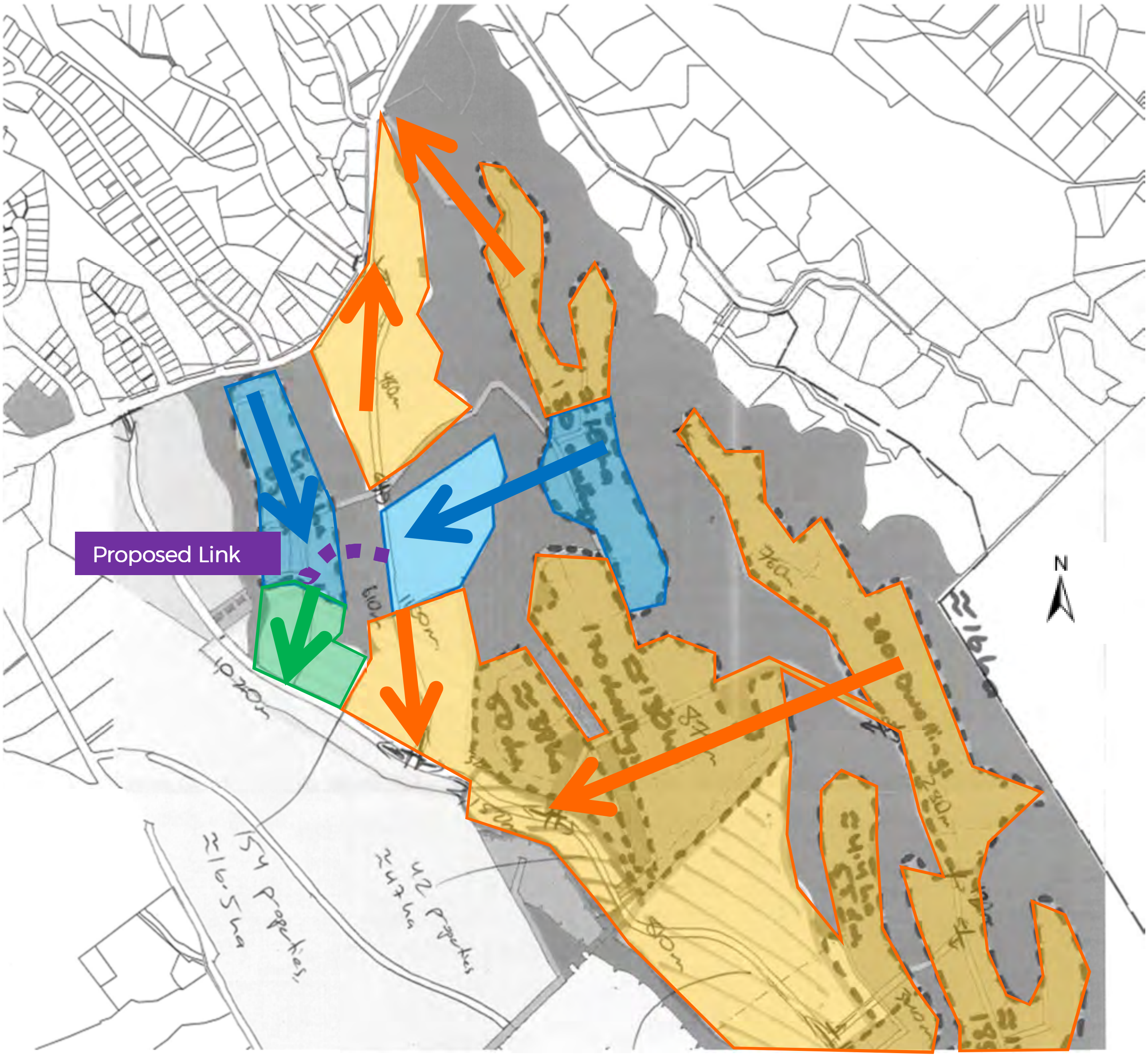


Figure 15: Potential demand area (sketch provided by PNCC)

Existing users

The existing user demands are captured in the traffic counts noted in section 3.3

Future residents

The Trips Database Bureau contains trip and parking information for various types of developments around New Zealand. The information is based on traffic surveys; trip rates for residential developments are calculated per dwelling. Pacific Drive was surveyed in 2007.

Within the residential category there are two land use activities that could fit with the Aokautere Development Area; these are Dwelling (traditional detached housing) and Lifestyle Dwelling (residential in a rural area, with larger lot sizes than a normal residential suburb). Average trip generation per dwelling (for both Dwelling and Lifestyle Dwelling) are summarised on Table 2 below.

Table 2: Trip rates from the trips database bureau

Location	Date of survey	Average AM trip generation	Average PM trip generation	Average daily trip generation
Pacific Drive – 190 dwellings	October 2007	0.91	0.86	7.4
Other Palmerston North sites	Various – 1995 to 2014	0.83	1.06	9.2
NZ wide	Various – 1995 to 2015	0.89	1.05	9.9

The NZ Transport Agency Research Report 453: Trips and parking related to land use (2011) includes an estimated NZ wide trip generation rate of 10.7 trips per day or 1.3 per hour. These trip rates have been used to provide a measure of conservatism to the results.

Based on the information provided by PNCC in Figure 15 above, there are expected to be 160 total dwelling units in the three blue areas (65 in the west area, 65 in the east area (being half of the total area) and a nominal 30 in the middle area noting that a large proportion of this area is a Seventh Day Adventist school.

Table 3 below shows the range of traffic generated based on the expected number of lots.

Table 3: Trip generation estimates

Area	Number of Dwellings	Traffic generated per day	Traffic generated at peak hour
Western	65	695	85
Central	30	320	40
Eastern	65	695	85
Total	**160**	**1,710**	**210**

Summary of demands

The table below summarises the expected traffic generation on the key links assuming Johnstone Drive is not connected.

Table 4: Traffic generation estimates

Area	Existing	Future (no link)	Future (with link)
Abby Road at Pacific Drive	315 vpd 42 vph	1,010 vpd 127 vph	2,025 vpd 252 vph
Johnstone Drive at Pacific Drive	480 vpd 60 vph	1,495 vpd 185 vph	480 vpd 60 vph
Pacific Drive (excluding demands from Abby Road and Johnstone Drive)[9]	1450 vpd 160 vph	11,215 vpd 1,360 vph	

5.2 Future Transport Demands – Johnstone Drive connected

Table 5 compares the expected travel distance between the areas identified in Figure 15 and east or west on SH57. Johnstone Drive is quicker for all trips heading east on SH57. Pacific Drive is quicker for all trips heading west on SH57 except for trips from the Central and eastern blue areas. The green highlighted cells in the table indicate which route is shorter to the west and to the east.

Table 5: Travel distances via Pacific Drive and Johnstone Drive

Area	Distance (m)			
	West on SH57 via Pacific Drive	West on SH57 via Johnston Drive	East on SH57 via Pacific Drive	East on SH57 via Johnstone Drive
Existing Abby Road (green area)	830	1,590	1,470	950
Western blue area	990	1,430	1,630	790
Central and eastern blue area	1,320	1,100	1,960	460
Southern orange area	1,040	1,750	1,680	1,110

Based on the assumption used in the Aokautere Transportation Assessment that 80% of traffic from the Aokautere area is heading west on SH57 to Palmerston North, Table 6 shows the

[9] Based on the information supplied by PNCC there are approximately 975 potential new dwellings that are likely to access Pacific Drive east of Johnstone Drive (10,400 vpd, 1,270 vph).

expected changes in traffic volumes associated with the opening of Johnston Drive. This scenario compares both the Abby Road link open and Johnstone Drive is connected with only Abby Road link open (previous section).

Table 6: Change in peak hour trips

Area	Peak hour trips[10]	West on SH57		East on SH57	
		Trips	Route	Trips	Route
Existing Abby Road (green area)	42	34	No change from using Pacific Drive	8	Change from Pacific Drive to Johnstone Drive
Western blue area	85	68	No change from using Pacific Drive	17	Change from Pacific Drive to Johnstone Drive
Central and eastern blue area	125	100	Change from Pacific Drive to Johnstone Drive	25	Change from Pacific Drive to Johnstone Drive
Southern orange area	1,420	1,136	No change from using Pacific Drive	284	Change from Pacific Drive to Johnstone Drive

Table 7 shows the changes in peak hour trips on key links as a result of the changes described above.

If Johnstone Drive is not connected, then any future demand that uses an Abby Road extension will travel onto SH57 via Pacific Drive (however that would occur regardless of whether Abby Road is extended).

If Johnstone Drive is connected, then the demand on Abby Road extension will reduce as more vehicles access SH57 via Johnstone Drive.

The only change in current demand as a direct result of the Abby Road extension and connecting Johnstone Drive is likely to be those existing properties on Abby Road which have a destination on SH57 east of Johnstone Drive. The peak hour number of vehicles is estimated to be 8 (as per Table 6).

The only change in future demand as a direct result of the Abby Road extension and connecting Johnstone Drive is likely to be the properties in the western blue area (refer Figure 15) which have a

[10] From tables 3 and 4 of the Transportation Assessment

destination on SH57 east of Johnstone Drive. The peak hour number of vehicles is estimated to be 17 (as per Table 6).

The redistribution of approximately 25 vehicles from the Pacific Drive intersection with SH57 to the Johnstone Drive intersection with SH57 as a result of the Abby Road extension is not considered to be significant given the more significant changes to traffic distribution as a result of Johnstone Drive being connected.

Table 7: Change in peak hour trips on key links

Link	Segment	Abby Road link with no Johnstone Drive Link	Abby Road link with Johnstone Drive Link	Difference
Abby Road	Existing	252	102	-150
	New link	125	25	-100
Pacific Drive	North of Abby Road	1,672	1,238	-434
	Abby Road to Johnstone Drive	1,420	1,136	-284
Johnstone Drive	Pacific Drive to Abby Road	60	344	+284
	Abby Road to currently blocked section	125	484	+359

Figure 16 below summarise the above tables.

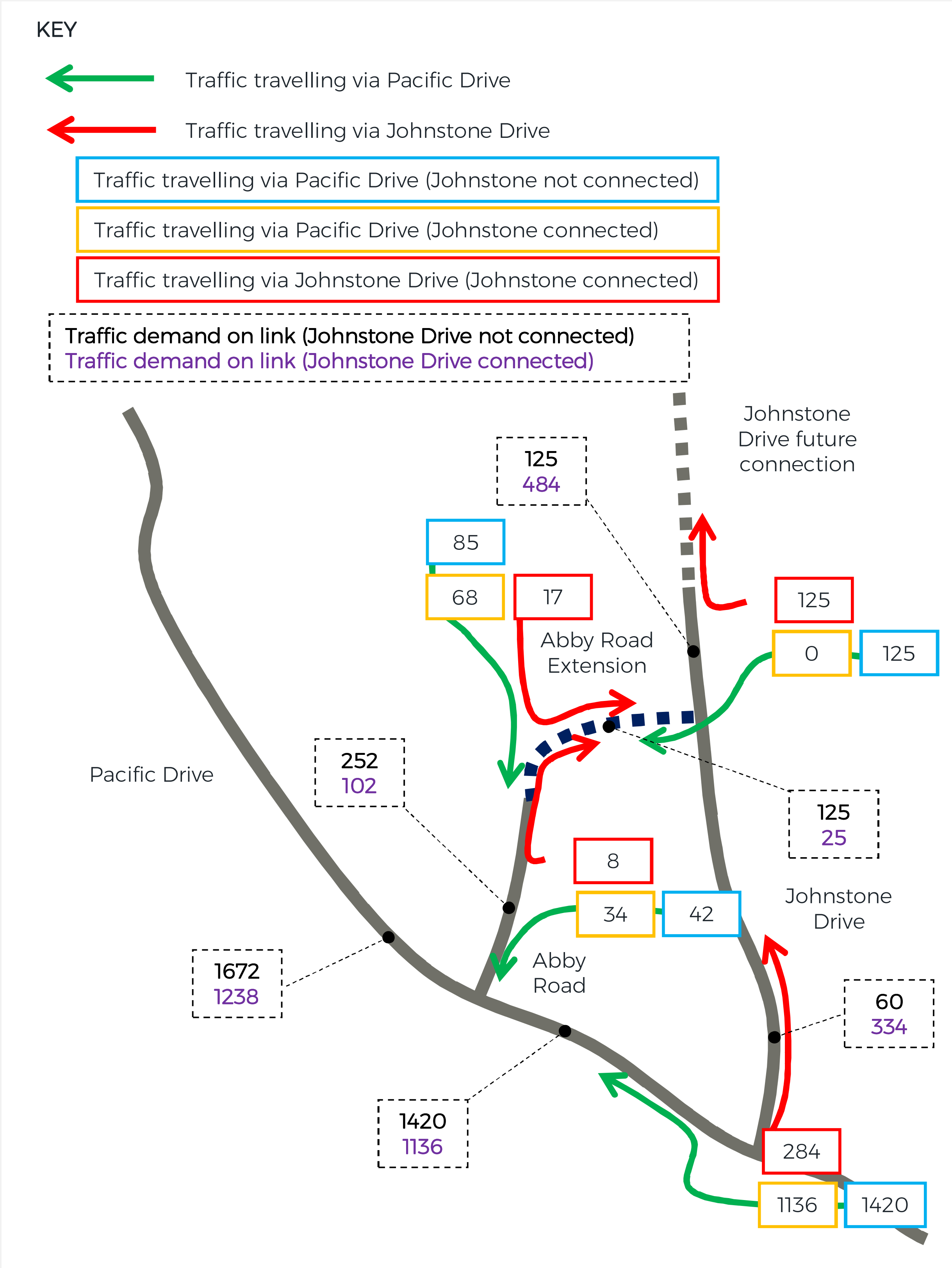


Figure 16: Summary of traffic changes with Johnstone Drive connected (peak hour trips)

5.3 Link Capacity

As noted in section 4.2 the proposed link is expected to be designed to the Local Road standard as defined in the PNCC design manual. Local Roads are expected to have typical traffic flow up to 3,000 vehicles per day.

5.4 Intersection Modelling - Abby Road / Pacific Drive

An uncalibrated SIDRA[11] intersection model has been prepared to understand the current and future intersection performance of the Abby Road / Pacific Drive intersection with and without the proposed link (and with and without Johnstone Drive connected).

Figure 17 below shows an aerial image of the Aby Road / Pacific Drive intersection.

Figure 17: Aerial image of Abby Road / Pacific Drive intersection
https://geosite.pncc.govt.nz/MapViewer/?map=cb2b06a88392471a849340b277438064

Estimated demands

The following assumptions have been used to estimate the demands at the intersection:

- 5% of vehicles are heavy commercial vehicles (HCV);
- Peak flow factor of 0.95;

[11] Intersection modelling software, SIDRA version 7

- 95% of traffic on Abby Road is traveling to/from the north.
- 70%/30% split for inbound/outbound direction flows in the peak hour where information not available.

Figure 18 - Figure 22 below show the estimated existing and forecast turning traffic volumes at the intersection of Abby Road and Pacific Drive.

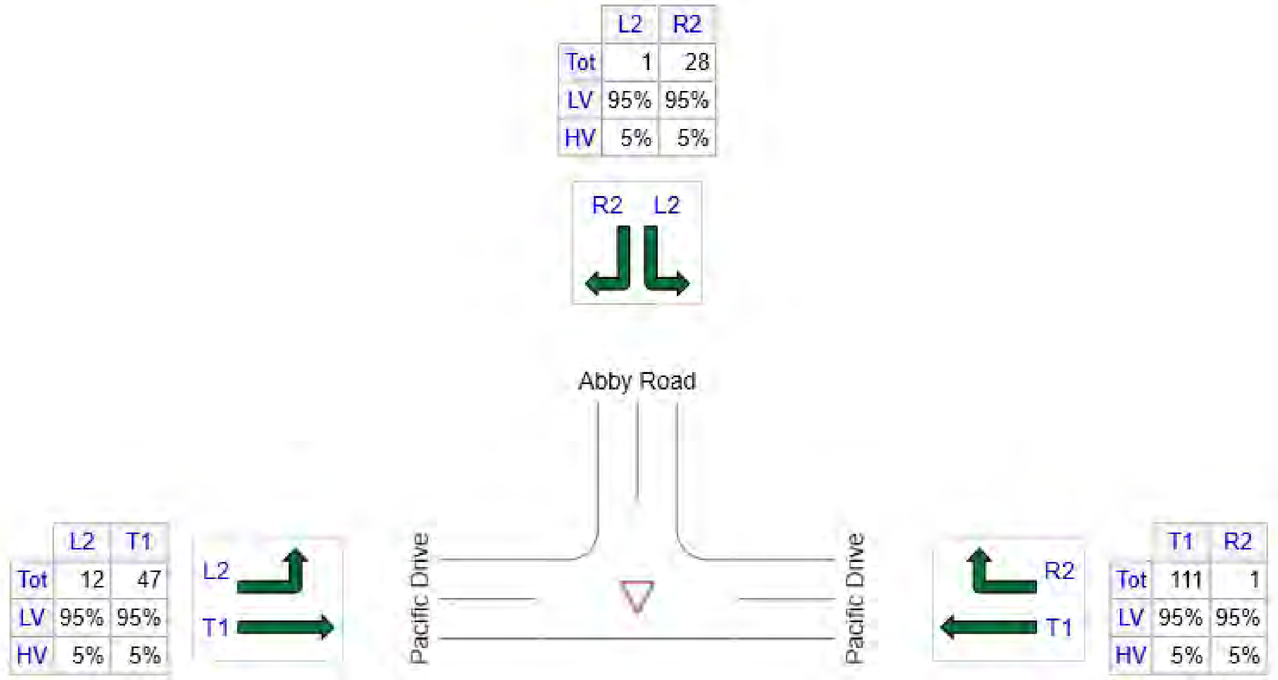


Figure 18: Existing demands

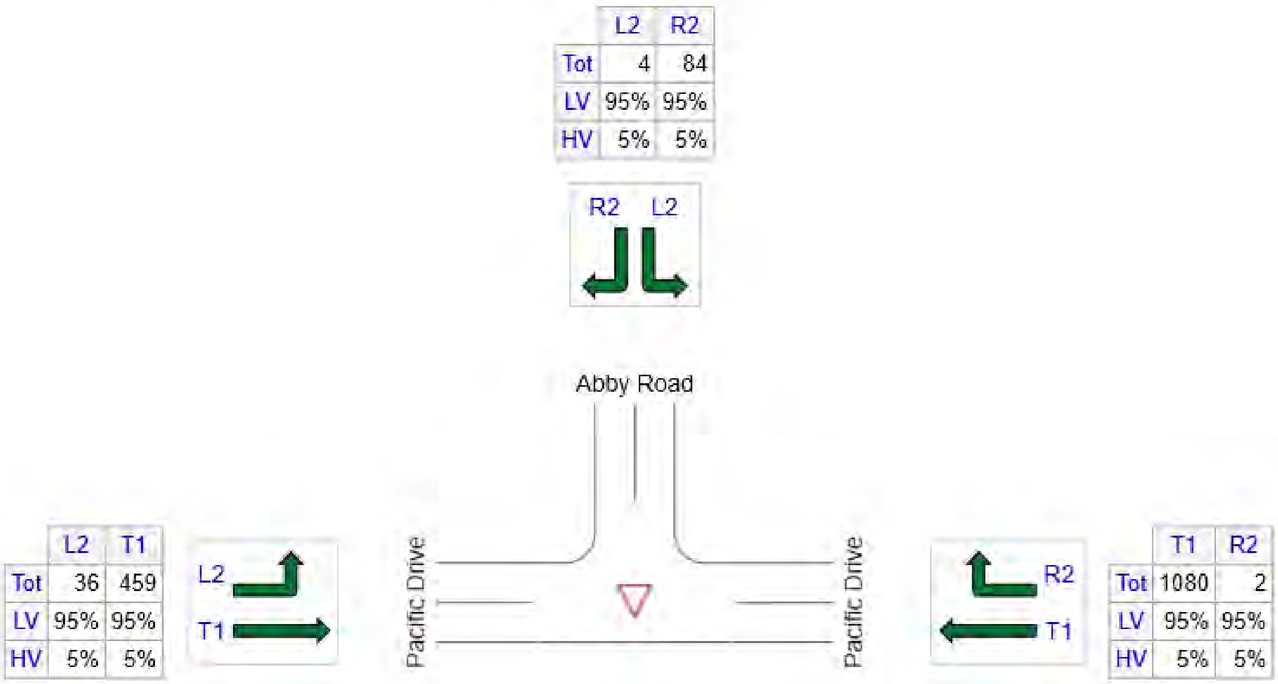


Figure 19: Forecast demands – no Abby Road extension, Johnstone Drive not connected

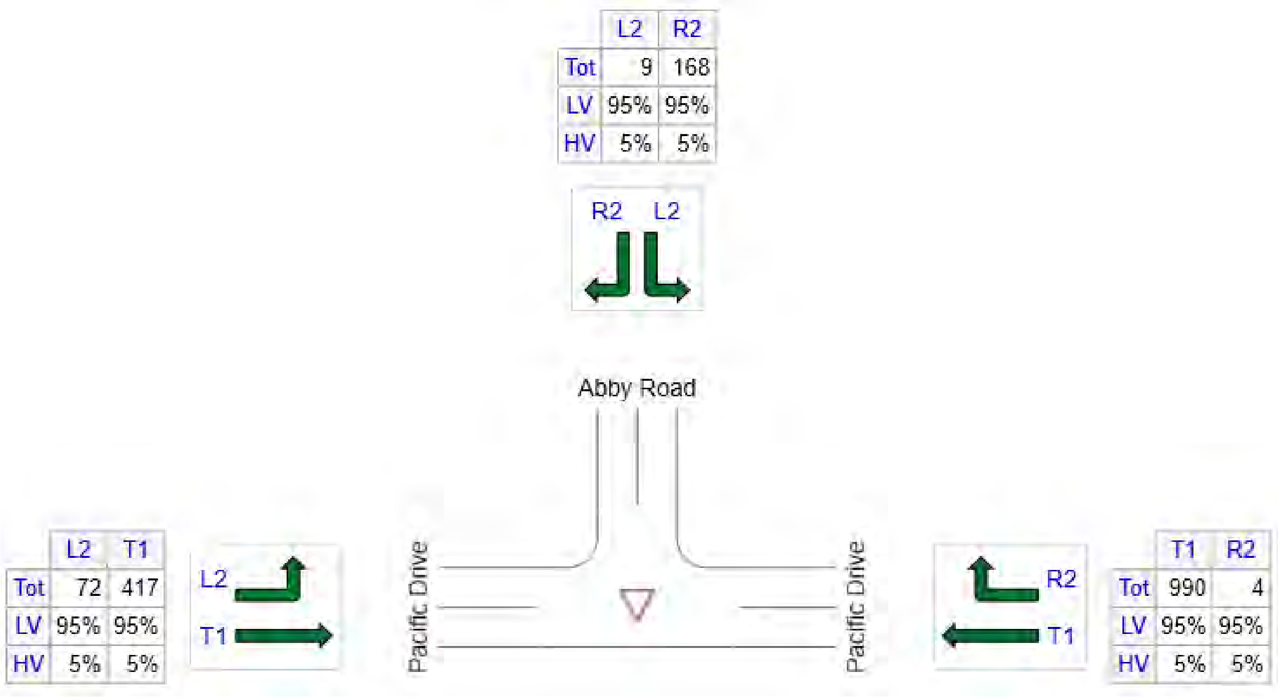


Figure 20: Forecast demands – with Abby Road extension, Johnstone Drive not connected

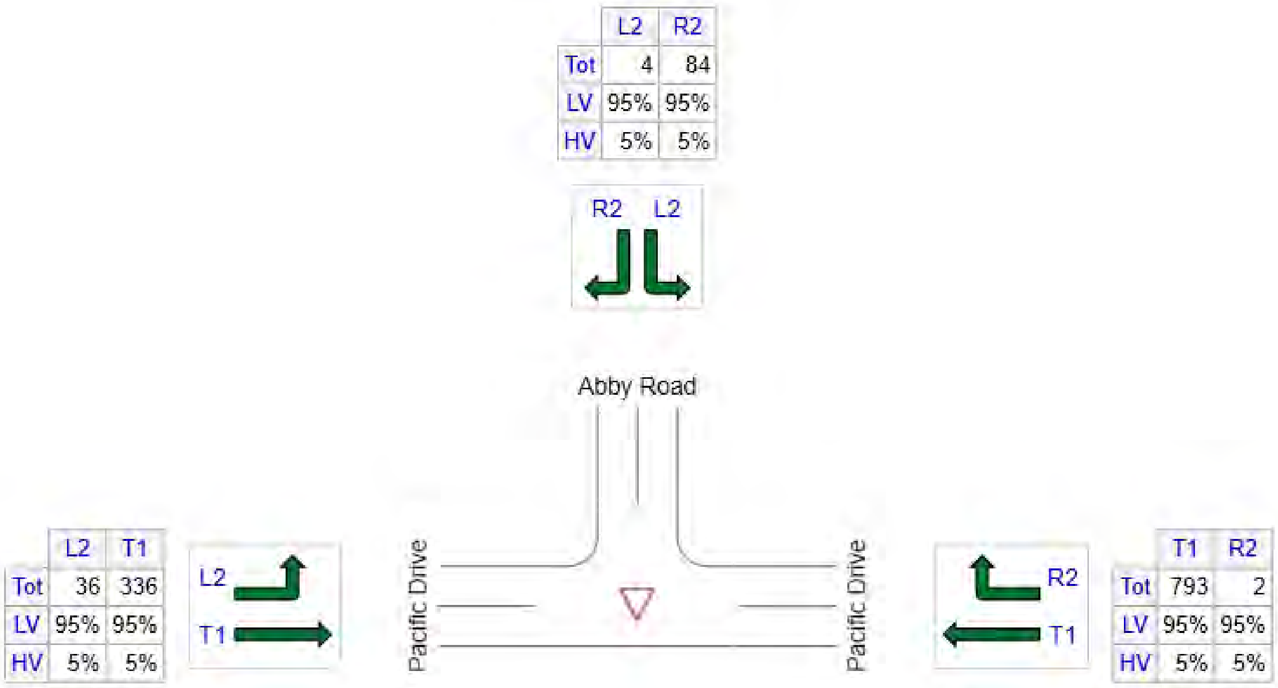


Figure 21: Forecast demands – no Abby Road extension, Johnstone Drive not connected

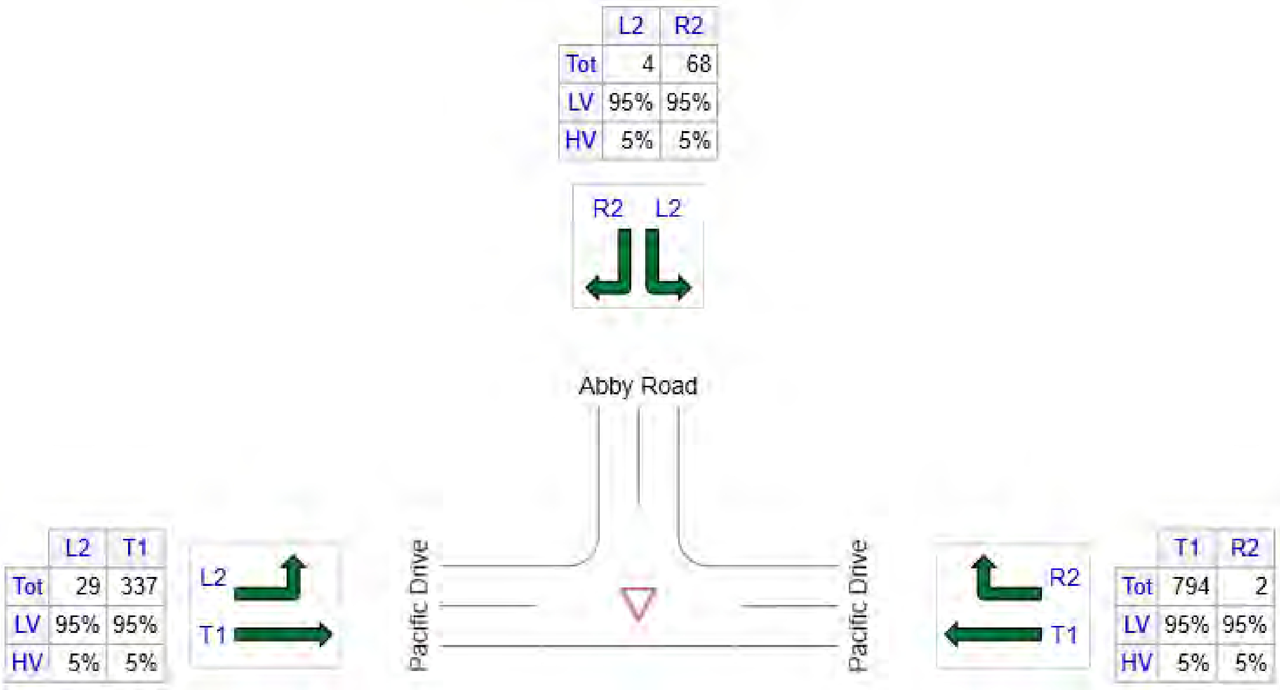


Figure 22: Forecast demands – with Abby Road extension, Johnstone Drive connected

Intersection layouts

Figure 23 below shows the intersection layout used for the modelling.

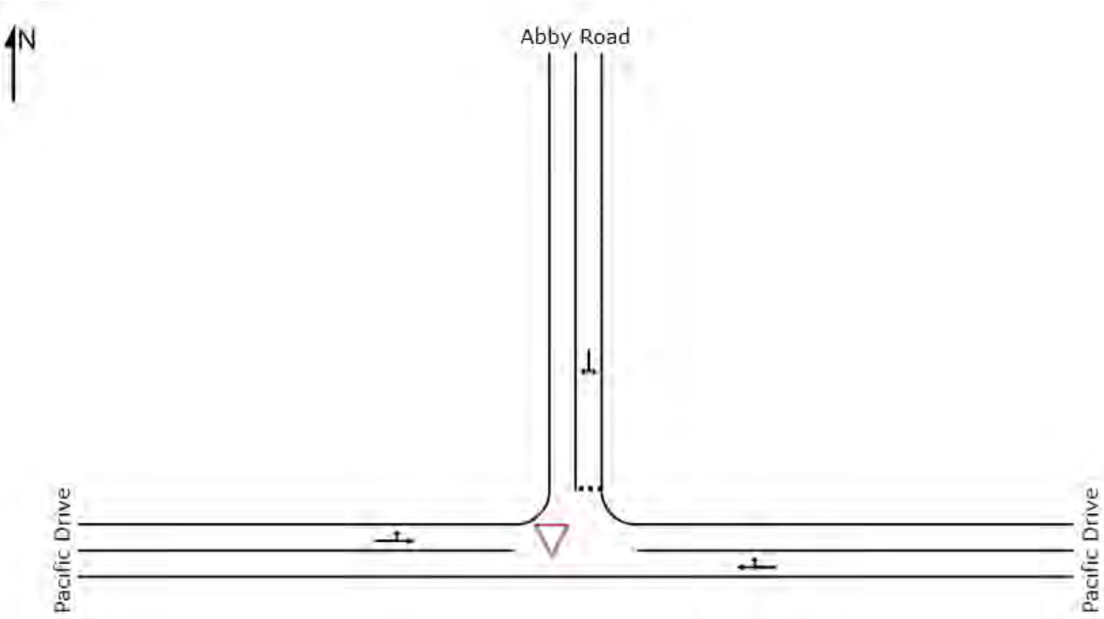


Figure 23: Intersection layout

Intersection performance

Table 8 below summarises the intersection performance for the current scenario and a number of different future connectivity scenarios.

Level of service (LOS) has been used as a performance metric. LOS is a function of intersection delay on a scale from LOS A to LOS F. Generally, LOS D or better is considered acceptable performance with LOS E and F unacceptable.

Table 8: Intersection Performance (Peak hour)

Scenario	Current	Future 1A	Future 1B	Future 1C	Future 1D
Abby Road extension	N	N	Y	N	Y
Johnstone Drive connected	N	N	N	Y	Y
Movement / approach					
Pacific Drive east / south	A	A	A	A	A
Abby Road	A	F	F	C	C
Pacific Drive west / north	A	A	A	A	A

The modelling results show that the intersection functions satisfactorily with current traffic volumes. The future models show that if Johnstone Drive is not connected the motorists exiting Abby Road experience unacceptable performance and performance worsens with the Abby Road extension being established. However, if Johnstone Drive is connected the performance is acceptable regardless of whether the Abby Road extension is established.

In summary, the Abby Road extension worsens an already unacceptable performance at the intersection if Johnstone Drive is not connected. If Johnstone Drive is connected the Abby Road extension has negligible impact on the efficiency of the intersection.

5.5 Intersection Modelling - Abby Road / Johnstone Drive

An uncalibrated SIDRA[12] intersection model has been prepared to understand the future intersection performance of the Abby Road / Johnstone Drive intersection with and without Johnstone Drive connected.

Estimated demands

The following assumptions have been used to estimate the demands at the intersection:

- 5% of vehicles are heavy commercial vehicles (HCV);
- Peak flow factor of 0.95;
- 95% of traffic on Abby Road is traveling to/from the north.
- 70%/30% split for inbound/outbound direction flows in the peak hour where information not available.

Figure 24 and Figure 25 show the demands used in the assessment.

[12] Intersection modelling software, SIDRA version 7

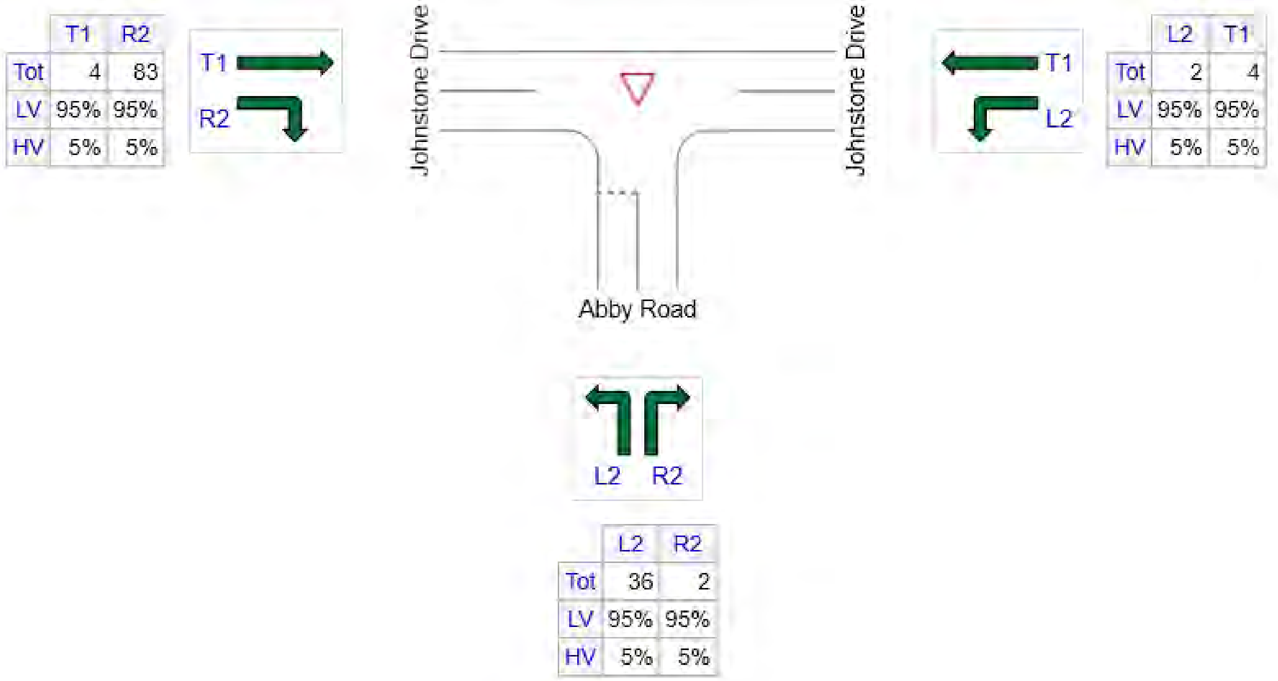


Figure 24: Forecast demands – Johnstone Drive not connected

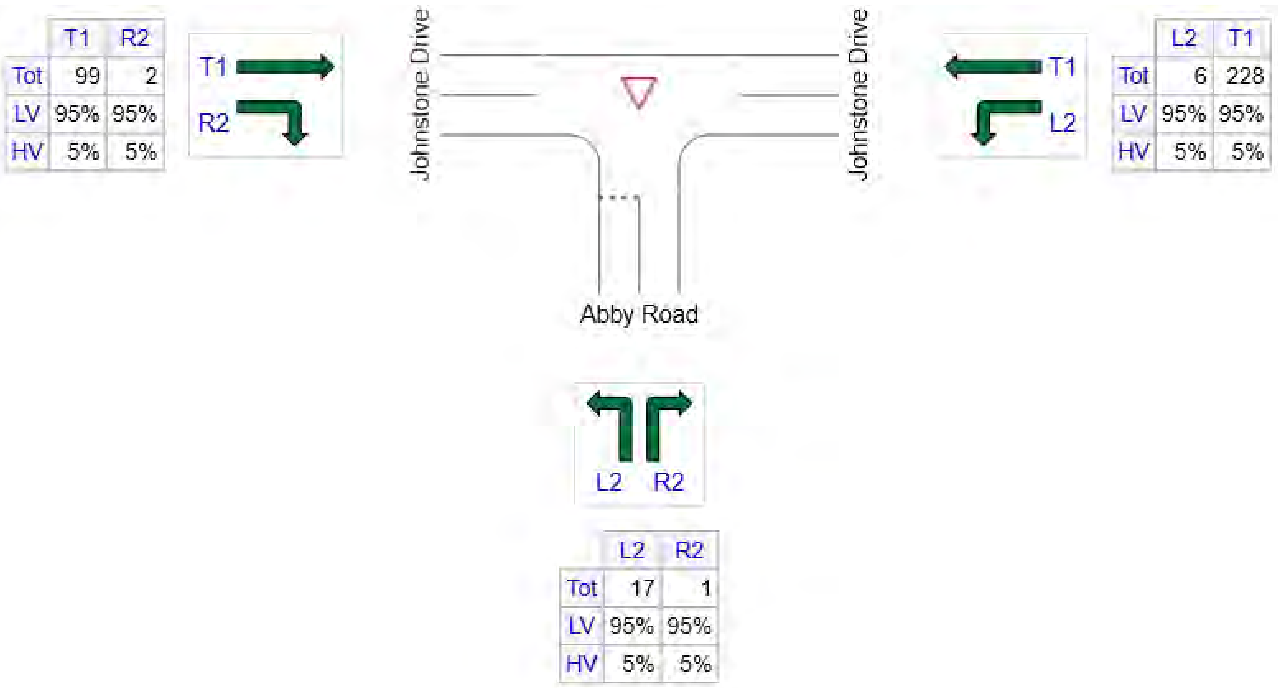


Figure 25: Forecast demands - Johnstone Drive connected

Intersection layouts

Figure 23 below shows the intersection layout used for the modelling.

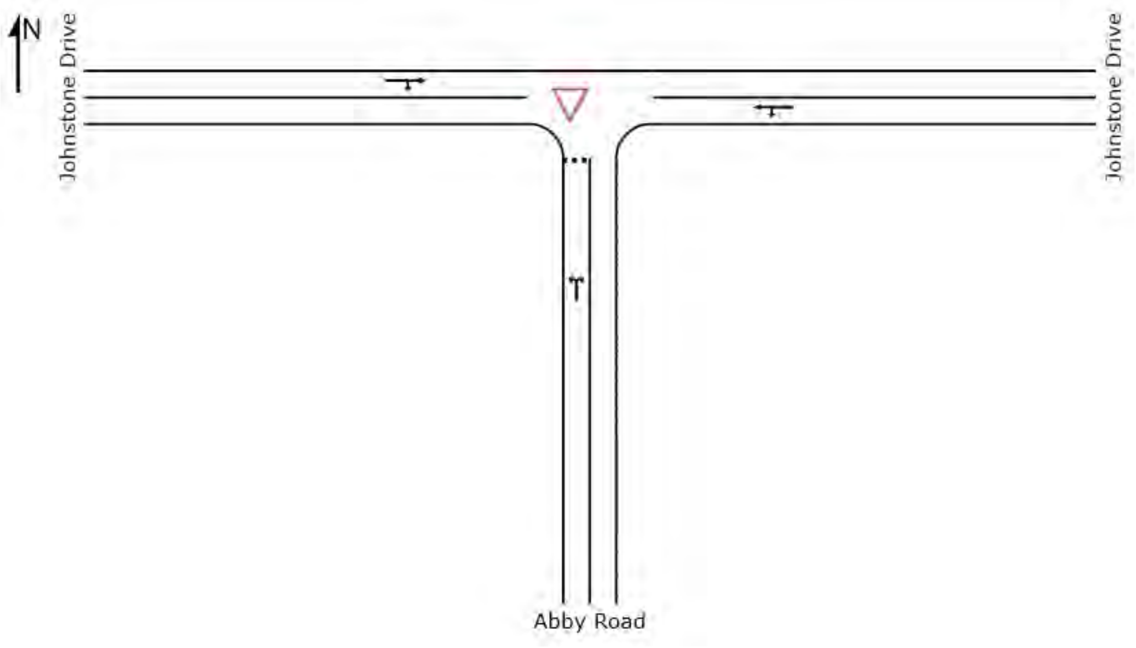


Figure 26: Intersection layout

Intersection performance

Table 9 shows the change in performance at the intersection of Abby Road and Johnstone Drive with Johnstone Drive open. The results show that the performance of the intersection of Abby Road and Johnstone Drive is very good whether or not Johnstone Drive is connected.

Level of service (LOS) has been used as a performance metric. LOS is a function of intersection delay on a scale from LOS A to LOS F. Generally, LOS D or better is considered acceptable performance with LOS E and F unacceptable.

Table 9: Performance at intersection of Abby Road / Johnstone Drive

Segment	Abby Road link with no Johnstone Drive Link	Abby Road link with Johnstone Drive Link
Johnstone Drive east / south	A	A
Abby Road	A	A
Johnstone Drive west / north	A	A

6 Assessment of Effects

This assessment of effects has considered the following impacts which are assessed in the subsequent sub-sections:

- Efficiency
- Safety
- Accessibility
- Resilience

The scale of effects used is as follows[13]:

- Negligible effect (no effect)
- Minor effect
- Moderate effect
- Significant effect

The assessment of the effect has been based on engineering judgement.

The below assessments are based on the premise that Johnstone Drive is connected.

6.1 Efficiency

The overall effect on efficiency is expected to be **negligible.**

As noted in the prior section:

- The Abby Road extension has negligible impact on the efficiency of the intersection of Abby Road and Pacific Drive.
- The performance of the intersection of Abby Road and Johnstone Drive is very good.

If for some reason Johnstone Drive was not connected then Abby Road extension worsens an already unacceptable performance at the intersection of Abby Road and Pacific Drive it is assumed that in this scenario Council would undertake improvements at the intersection of Abby Road and Pacific Drive to address any efficiency or safety problems regardless of whether Abby Road extension is constructed.

6.2 Safety

The overall effect on safety is expected to be **negligible.**

The extension of Abby Road and the intersection with Johnstone Drive will be designed and constructed to an appropriate standard for the environment. The change in performance at the intersection of Abby Road and Pacific Drive with the extension of Abby Road is negligible so there is no reduction in safety expected.

As noted above, if for some reason Johnstone Drive was not connected and performance at the intersection of Abby Road and Pacific Drive deteriorates to a point where safety issues result, it is assumed that Council would undertake improvements at the intersection of Abby Road and Pacific Drive to address any efficiency or safety problems regardless of whether Abby Road extension is constructed.

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[13] Consistent with guidance from the Ministry for the Environment
https://www.mfe.govt.nz/sites/default/files/media/RMA/aee-guide-aug06.pdf

6.3 Accessibility

The overall effect on access is expected to be **minor positive** as the link provides improved access and route choice for some areas.

6.4 Resilience

The overall effect on resilience is expected to be **minor positive** as the link provides some route redundancy.

7 Compliance with statutory documents

7.1 Palmerston North City Council District Plan

Section 20.3 of the Transportation portion of the District Plan has the following objectives:

- Objective 1. To maintain and enhance the safe and efficient functioning of the roading network. This objective includes the following policies:
    - To ensure all roads have function and design characteristics consistent with the roading hierarchy.
    - To have regard to the particular safety needs of cyclists and pedestrians.
- Objective 2. To protect the roading network, as identified in the roading hierarchy, from the potential adverse effects of all land use activities. This objective has the following policies:
    - To ensure safe and efficient vehicle access is provided to and from activities.
    - To manage and control vehicle access crossing points onto Major and Minor Arterial roads.

The proposed link is partially consistent with objective 1. The proposed link is expected to be a Local Road and meet the Council's minimum standards which includes appropriate provision for pedestrians and cyclists. However, the link removes traffic from a collector road (Johnstone Drive) and puts it onto a local road (Abby Road) which is not consistent with the roading hierarchy.

Objective 2 is not directly relevant to the proposed NOR.

7.2 Government Policy Statement

The following extracts summarises the role of the Government Policy Statement (GPS)[14].

"The GPS outlines the Government's strategy to guide land transport investment over the next 10 years. It also provides guidance to decision-makers about where the Government will focus resources. The GPS operates under the Land Transport Management Act 2003, which sets out the scope and requirements for the GPS."

Figure 27 below summarises the objectives of the GPS.

The NoR has limited alignment to the core objectives of the GPS. The NoR is aligned with the concept of access and will provide operational resilience to the local road network and improve access to recreation.

[14] https://www.transport.govt.nz/assets/Uploads/Our-Work/Documents/c6b0fea45a/Government-Policy-Statement-on-land-transport-2018.pdf

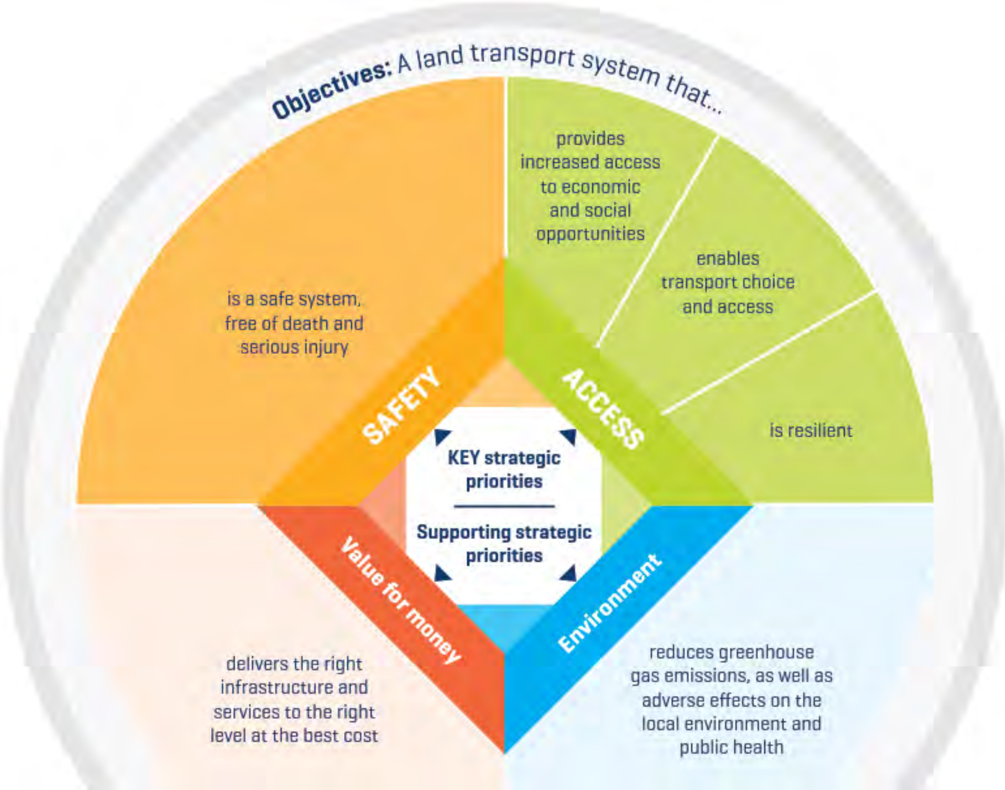

Figure 27: Objectives of the GPS 2018

7.3 Road to Zero Strategy

Road to Zero[15] is the proposed 2020-2030 New Zealand road safety strategy.

The seven guiding principles for the proposed road safety strategy are:

- We promote good choices but plan for mistakes
- We design for human vulnerability
- We strengthen all parts of the road transport system
- We have a shared responsibility for improving road safety
- Our actions are grounded in evidence and evaluated
- Our road safety actions support health, wellbeing and liveable places
- We make safety a critical decision-making priority.

The NoR has limited alignment to the principles of the Road to Zero Strategy.

7.4 Regional Land Transport Plan

The "Regional Land Transport Plan (RLTP) is a statutory document that must be prepared every six years as required by the Land Transport Management Act (LTMA) 2003 (as amended in 2013)"[16]. The current RLTP was prepared in 2015 (and reviewed in 2018) and will be updated in 2021.

The RLTP has the following objectives:

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[15] https://www.transport.govt.nz/assets/Import/Uploads/Our-Work/Documents/Road-to-Zero-strategy_final.pdf

[16] https://www.horizons.govt.nz/HRC/media/Media/Publication/Regional-Land-Transport-Plan-(2015-2025)-2018-Review.pdf?ext=.pdf

- An optimised road, rail and public transport network that provides efficient, reliable access and movement for people and freight to and from key destinations, within and outside the region.
- Maximise the strategic advantage of central New Zealand through efficient and well-serviced hub and freight distribution activities, including better utilisation of rail corridors.
- A safe land transport system increasingly free of death and serious injury.
- A reliable multi-modal transport system with less modal conflict, including walking and cycling, that mitigates potential environmental effects and improves environmental outcomes.
- A resilient transport network with secure inter- and intra-regional routes that can perform following an unplanned event.
- A transport system that provides for the increase in low carbon emission vehicles and other practices to reduce carbon emissions and environmental effects associated with transport.

The NoR has limited alignment to the objectives of the RLTP.

8 Potential Mitigation

No mitigation is required based on the premise that Johnstone Drive is connected.

As noted above, if for some reason Johnstone Drive was not connected and performance /safety at the intersection of Abby Road and Pacific Drive deteriorates and there are safety concerns with the amount of through traffic on Abby Road then the following improvements indicate what Council could do to address the issues associated with increased traffic through these locations.

8.1 Intersection

The SIDRA modelling indicates if for some reason Johnstone Drive was not connected that the intersection of Abby Road and Pacific Drive will have an unacceptable level of service for the Abby Road approach in in the future.

Other intersection forms have been investigated to determine whether an alternative layout will provide an intersection with an appropriate level of service with or without the proposed link. A roundabout has been considered as it generally provides the safest outcome for most transport users.

Austroads' *Guide to Road Design Part 4B: Roundabouts* provides guidance on the geometric design of a roundabout. Due to the constraints of the area (property and topography), the smallest appropriate roundabout was modelled. The single lane roundabout has a central island radius of 10 m (suitable for a design speed of 40 km/h, Table 4.1) and lane widths of 6 m (suitable for a 12.5 m rigid truck Table 4.3), with an overall roundabout diameter of 22 m (excluding shoulders). The modelled intersection is shown below on Figure 28.

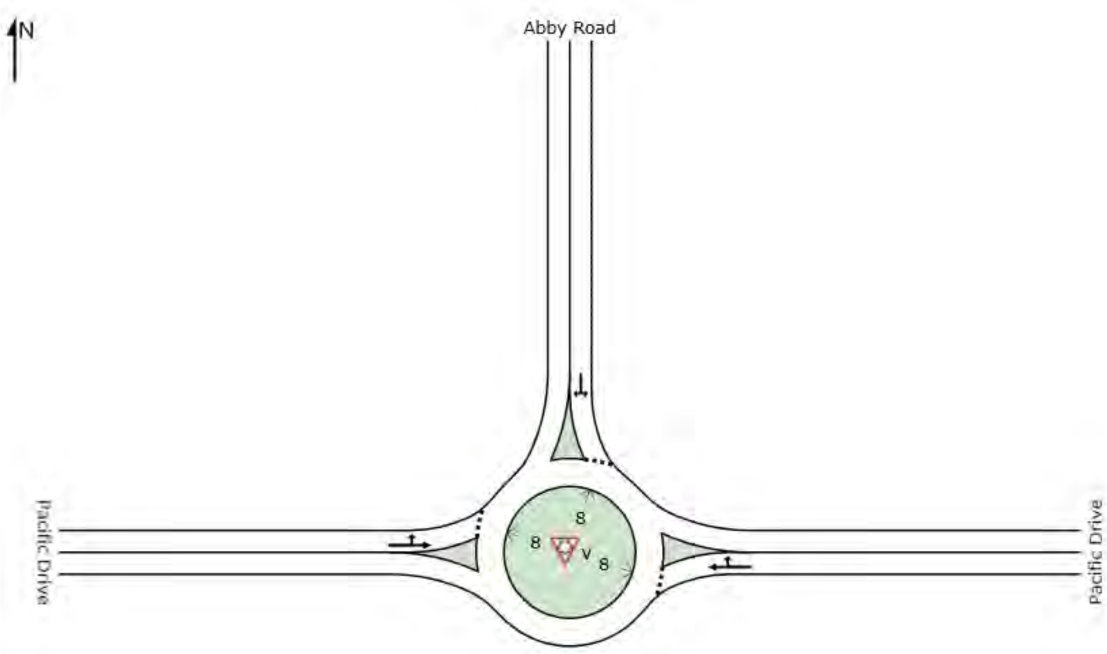

Figure 28: Roundabout layout

Table 10: Roundabout Performance (Peak hour) below shows the SIDRA model outputs for a roundabout.

Table 10: Roundabout Performance (Peak hour)

Movement / approach	Future (no Abby Road extension)	Future (with Abby Road extension)
Pacific Drive east / south	A	B
Abby Road	A	B
Pacific Drive west / north	A	A
Overall	A	B

The model results show that the roundabout has good performance with or without the link.

The intersection modelling shows that it is possible to reduce delays on Abby Road to acceptable levels by upgrading the intersection to a roundabout.

It should also be noted that other intersections in the area are also likely to have unacceptable performance in the future due to the predicted development (and associated traffic) in the area.

8.2 Link

If for some reason Johnstone Drive was not connected but Abby Road was extended, there is the potential for increased through traffic using Abby Road from the southern half of Johnstone Drive. If the through traffic introduced safety concerns traffic calming measures could be implemented on Abby Road and the new link to reduce traffic speeds and mitigate the safety concerns.

9 Conclusions

The assessment of the proposed link has identified the following.

The below assessments are based on the premise that Johnstone Drive is connected.

9.1 Efficiency

- The Abby Road extension has negligible impact on the efficiency of the intersection of Abby Road and Pacific Drive.
- The performance of the intersection of Abby Road and Johnstone Drive is very good.

The overall efficiency assessment is **negligible**.

9.2 Safety

- The extension of Abby Road and the intersection with Johnstone Drive will be designed and constructed to an appropriate standard for the environment.
- The change in performance at the intersection of Abby Road and Pacific Drive with the extension of Abby Road is negligible so there is no reduction in safety expected.

The overall safety assessment is **negligible**.

9.3 Accessibility

- The link provides improved access and route choice for some areas.

The overall effect on access is expected to be **moderate positive**.

9.4 Resilience

- The proposed link provides route redundancy in the local road network.

The overall effect on resilience is expected to be **minor positive**.

APPENDIX D

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HUDSON ASSOCIATES
LANDSCAPE ARCHITECTS

A division of Hudson Group Ltd

PROPOSED ROAD EXTENSION - NOR

52 JOHNSTONE DRIVE

AOKAUTERE, PALMERSTON NORTH

PALMERSTON NORTH CITY COUNCIL

4 September 2020

Prepared by

Hudson Associates

Landscape Architects

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INTRODUCTION

1. The following assessment of landscape and natural character, and visual amenity effects has been prepared as one of the specialist reports to support an Assessment of Environmental Effects ("**AEE**") for the road designation application by Palmerston North City Council ("**PNCC**" or "**the Client**").

THE PROPOSAL

2. The Client is applying for a notice of requirement ("**NoR**") for a road designation ("**the Project**") in order to extend Abby Road and provide a connection with recently constructed Johnstone Drive, within the Aokautere Development Area. The land to be developed is a portion of 52 Johnstone Drive ("**the site**"),. The land at 52 Johnstone Drive is 53.0378 (ha) in total but the area affected by the NoR is only 0.97ha. The site is zoned Residential under the PNCC (in the Rural Residential Area) and consists of both developable and undevelopable land (*Figure 1*).

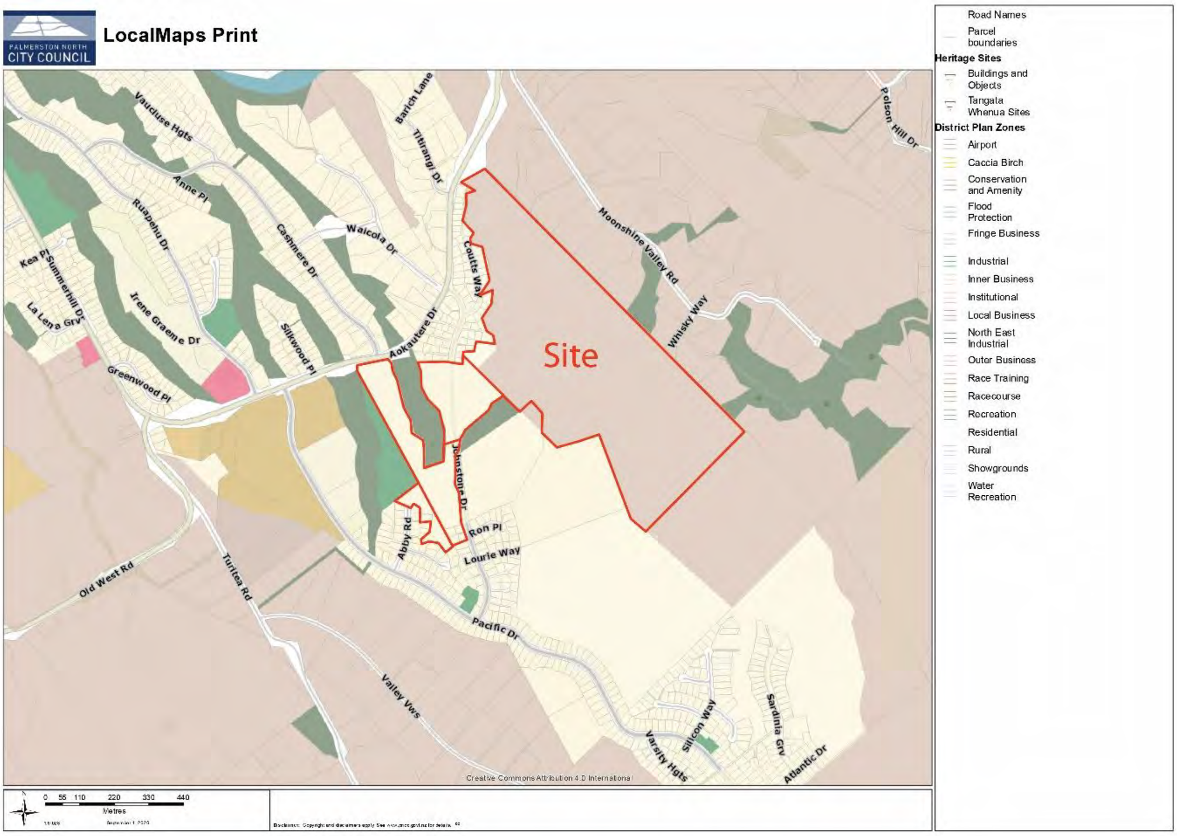

Figure 1: The site within the Aokautere Development Area and Residential Zone

3. The Project will cross the upper section of Abby Road Gully, with two alignment options proposed (*Figure 2 and 3*). The main differences between the two alignment options are the angles of the road and resulting entrance positions, as well as the length of road.

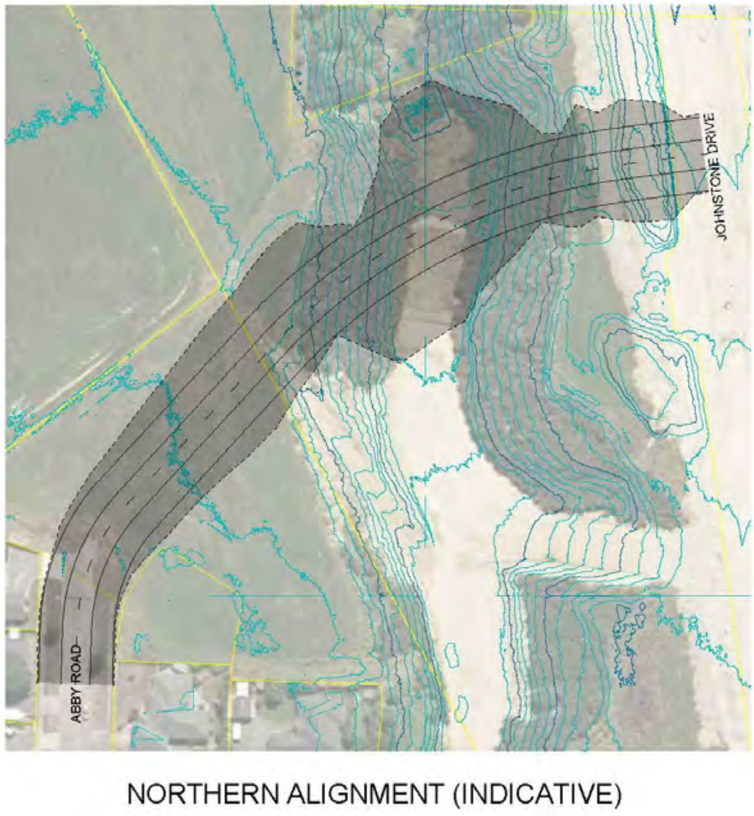

Figure 2a: Northern alignment option

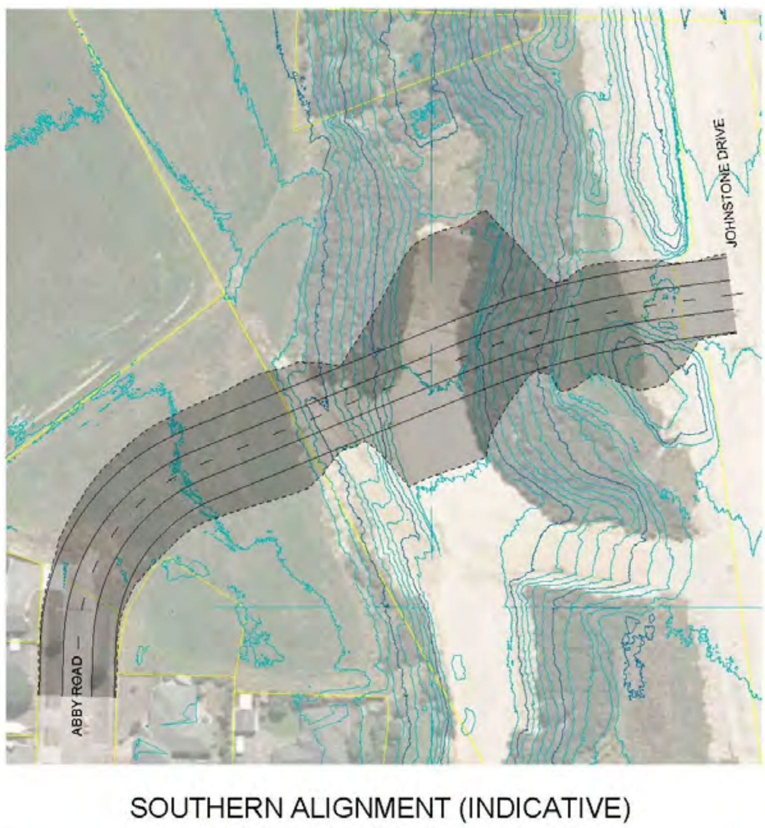

Figure 2b: Southern alignment option

Figure 3: Birdseye view of the proposed intersection

a. **Option 1 (PNCC and Northern Alignment)** is 230m, making it slightly longer than the second option, and has a lower dip in the middle of the road. A slightly deeper cut is needed to achieve this outcome but less fill. Option 1 also provides for a more acute angle onto Johnstone Drive, resulting in an entrance location approximately 40m further north than Option 2.
b. **Option 2 (Pirie and Southern Alignment)** provides for a simpler geometric form, which connects at a slightly less acute angle onto Johnstone Drive and is slightly shorter (220m).

4. The assessment focuses on the potential effects of the Project on existing landscape and natural character, and amenity values within the immediate and surrounding area. The assessment includes a review of statutory requirements in relation to landscape, natural, and visual matters. Photographs and maps that support the description of the site, the Project, and this assessment, are referred to throughout the report.

EXECUTIVE SUMMARY

5. The Project delivers a road that has minor adverse effects on the existing landscape and natural character, and the visual amenity values of the surrounding gully area. Potential adverse effects can be effectively mitigated. Additionally, proposed mitigation measures will reduce the risk of cumulative effects on the wider catchment area.

6. Restoration and revegetation of Abby Road Gully within the designation will help maintain the sense of naturalness and amenity, which are contributing elements to the character of the area. The road will provide increased connectivity between the existing residential area and future residential area located west of Johnstone Drive. It will also allow for further extension of residential development onto the Abby Road terrace.

7. While both Option 1 and Option 2 have effects of a similar character, Option 1 is more sympathetic to the landform of the gully as it is longer and therefore has more length to dip down in the middle of the road, reducing the amount of fill required and the height of the road. As such, Option 1 will more closely resemble the natural contours of the gully and will result in reduced interruption of the gully's landscape character. Option 1 will also provide better use of the land by connecting with the adjacent Manga o Tane Reserve. Unlike Option 2 which will result in a small section of land between the designation and the gully reserve, with this land having limited versatility.

8. Both options provide the opportunity for the public to gain views along the gully towards Manga o Tane Reserve. Currently this view can be obtained from SH57 looking south, but public views from the north are less easily achieved due to houses and private land enclosing the gully. The new road will allow views to be obtained looking along the gully as it crosses it.

9. To ensure mitigation of adverse effects it is necessary to fully revegetate the fill batters on both sides of the road, and any additional space between the northern side of the road and the southern boundary of adjacent Manga o Tane Reserve. Option 1 provides a more feasible and effective choice to achieve this necessary mitigation measure as it is aligned closer to the Reserve than Option 2.

ASSESSMENT APPROACH AND METHODOLOGY

10. The methodology used for this assessment is based on the NZILA Best Practice Note: Landscape Assessment and Sustainable Management 10.1,[1] in conjunction with guidance on Landscape Assessment from the Quality Planning website.[2]

11. It is current best practice to undertake evaluation using biophysical/natural science attributes, perceptual/sensory attributes, and associative attributes. The existing environment (site and its wider context) is described and characterised in this assessment according to these attributes or values.

12. The assessment of effects is based on expert judgement and considers physical modifications and subsequent effects on the biophysical environment (effects on natural science values), as well as

[1] https://nzila.co.nz/media/uploads/2017_01/nzila_ldas_v3.pdf
[2] http://www.qualityplanning.org.nz/index.php/planning-process-plan-topics-land-landscape/landscape-1

effects on the existing character of the site and its locality, the site's resilience and capacity, and its sensitivity and vulnerability to the proposed change. Effects may arise from changes such as a new use (new or different activities), and/or changes to the existing patterns and elements in the landscape. Such changes can affect existing character and alter overall amenity and/or people's appreciation of an area. Visual changes are also considered from identified viewpoints to determine effects on visual amenity.

13. The nature and scale of the proposed changes (often referred to as the magnitude of change) are assessed against the characteristics and values identified in the existing environment to determine if the proposed changes will have adverse effects on the existing qualities of the landscape. It should be noted that that a large magnitude of change does not necessarily constitute a high level of adverse effects, depending on the qualities and character of the existing environment.

14. An assessment of cumulative effects was also undertaken for landscape and natural character, and visual amenity effects.

15. The assessment uses a seven-point scale (as follows) to rate effects:
Very Low, Low, Moderate Low, Moderate, Moderate High, High, and Very High.

LANDSCAPE CHARACTER EFFECTS ASSESSMENT

16. Landscape is defined in the NZILA Best Practice Note[3] as "the cumulative expression of natural and cultural features, patterns and processes in a geographical area, including human perceptions and associations."

17. For the assessment of landscape effects consideration is given to effects on all attributes (biophysical, perceptual, and associative) in coming to an overall conclusion. Weighting between these three will not necessarily be equal as one factor may be of particular importance and weigh more strongly than one or two of the other attributes. To assess landscape effects the existing landscape character (Table 1.0) then the magnitude of the change and the sensitivity of the landscape to change are considered (Table 1.1).

18. Table 3.0 Existing landscape character

SCALE	DESCRIPTION
Very High	Very high levels of landscape character due to no or indiscernible levels of modification
High	High levels of landscape character due to only slight levels of modification
Moderate High	Moderate high levels of landscape character due to minor modification
Moderate	Moderate levels of landscape character due to modification of one key attribute
Moderate Low	Moderate low levels of landscape character due to modification of several key attributes
Low	Low levels of landscape character due to fundamental levels of modification to key attributes
Very Low	Very low levels of landscape character due to modifications causing a complete change to the natural character

[3] https://nzila.co.nz/media/uploads/2017_01/nzila_ldas_v3.pdf

Table 1.1 Landscape character effects

SCALE	DESCRIPTION
Very High	Complete change of landscape character
High	Fundamental alteration to key features/attributes – composition largely changed
Moderate High	Alteration to several key elements or features/attributes/patterns – major change to composition
Moderate	Alteration to one key element or feature/attribute – composition/pattern partially changed
Moderate Low	Minor change to underlying composition/pattern – similar to before
Low	Very slight change to landscape character – change barely distinguishable
Very Low	No discernible change

19. Landscape character is a result of a combination of elements, including landform, land cover and land use, which make one area different from another. Land use change can potentially affect existing landscape patterns and processes, for instance landform, waterbodies, vegetation, and settlement patterns. The introduction of earthworks, structures and traffic from the Project into Abby Road Gully combine to modify the existing landscape character.

NATURAL CHARACTER EFFECTS ASSESSMENT

20. For the assessment of natural character, both physical modifications and the perceptual component of naturalness are considered. Associative attributes (which comprise matters such as cultural, historical and recreation values) are not taken into consideration as these do not determine levels of natural character.

21. Biophysical effects consider the extent and significance of modifications to vegetation, habitat, waterways, and landform (Table 2.0).

Table 2.0 Biophysical effects

SCALE	DESCRIPTION
Very High	Total loss of key feature/attribute
High	Fundamental alteration to most key features/attributes
Moderate High	Alteration to several key features/attributes – considerably changed
Moderate	Alteration to one key feature/attribute – partially changed
Moderate Low	Minor change to a key feature/attribute – similar to before
Low	Very slight change – change barely distinguishable
Very Low	No discernible change

22. Natural character, as referred to in the Resource Management Act 1991 ("**RMA**") (section 6(a)) relates only to the coastal environment and to waterbodies and their margins, rather than the landscape as a whole. The main section of the Abby Road Gully contains an ephemeral stream. Whether or not the location of the proposed road at the head of the Abby road gully is regarded as a waterbody is uncertain, however in the absence of detailed assessment I have assumed a stream with the gully margins as part of the natural character assessment in this report.

23. An assessment of the natural character of Abby Road Gully was undertaken at two scales: a brief assessment of the broader catchment area, and a more detailed analysis of the gully (which the proposed road extension will cross). The broad-scale assessment is intended to provide a contextual baseline of the existing level of natural character. The level of natural character has been assessed against a seven point scale (Table 3.0).

Table 3.0 Existing natural character

SCALE	DESCRIPTION
Very High	Very high levels of natural character due to no or indiscernible levels of modification
High	High levels of natural character due to only slight levels of modification
Moderate High	Moderate high levels of natural character due to minor modification
Moderate	Moderate levels of natural character due to modification of one key attribute
Moderate Low	Moderate low levels of natural character due to modification of several key attributes
Low	Low levels of natural character due to fundamental levels of modification to key attributes
Very Low	Very low levels of natural character due to modifications causing a complete change to the natural character

24. Natural character is a term to describe the naturalness (lack of modification) of environments. The level of natural character within an environment depends on a range of elements, including the extent to which natural elements, patterns and processes occur, and the degree of modification of an ecosystem or landscape.

25. The assessment of effects on natural character in relation to an activity involves consideration of the proposed changes to the current condition compared to the existing environment (Table 4.0). It is assumed that best practise stormwater management and erosion and sediment control measures will be implemented during construction to avoid or minimise short term adverse effects.

Table 4.0 Natural character effects

SCALE	DESCRIPTION
Very High	Complete change of natural character
High	Fundamental alteration to key features/attributes – composition largely changed
Moderate High	Alteration to several key elements or features/attributes/patterns – major change to composition
Moderate	Alteration to one key element or feature/attribute – composition/pattern partially changed
Moderate Low	Minor change to underlying composition/pattern – similar to before
Low	Very slight change to natural character – change barely distinguishable
Very Low	No discernible change

VISUAL AMENITY EFFECTS ASSESSMENT

26. Under the RMA 'amenity values' is defined as "*those natural or physical qualities and characteristics of an area that contribute to people's appreciation of pleasantness, aesthetic coherence, and cultural and recreational attributes*." This assessment considers the visual change that the Project would bring to the outlook and views of the viewing audience.

27. The method used to assess visual effects involves looking at the physical arrangement of the proposal within the existing environment and how a change in this composition is perceived, the scale, type and intensity of change, and the nature of the audience who would experience the change (Table 5.0).

Table 5.0 Visual amenity effects

SCALE	DESCRIPTION
Very High	Total loss of key attributes – complete change of character
High	Major modification or loss of key attributes – composition largely changed
Moderate High	Modification to several key attributes – major change to composition
Moderate	Partial modification or loss to key attributes – composition partially changed
Moderate Low	Minor loss or modification to one or more key attributes – similar to before
Low	No material loss of or modification to key attributes – change barely distinguishable
Very Low	No discernible change

28. Different viewing audiences tend to have differing levels of sensitivity to visual change, with resident populations generally tending to be more sensitive to change than visitors to an area, for whom views are transient. The biases of individual viewers towards the proposed activity can also be influential on viewer sensitivity.

29. Furthermore, some views may be considered more "important" than others. For example, where there are prominent lookouts or tourist spots which are frequented by many people and considered as a particularly stunning, unique or rare view. Such views would typically be considered to have a higher level of sensitivity to change than views which are generally not experienced by many people and/or are not considered to exhibit stunning, rare or unique qualities.

30. Visual effects and effects on amenity will also occur on a continuum depending on factors such as distance, elevation, angle of view, context, resilience and capacity of the environment to absorb change, the site's sensitivity and vulnerability to the proposed change, and intervening screening from structures, landform or vegetation.

31. The visual appraisal in this report includes identification of the visual catchment and potential viewing audience. Representative viewpoints were selected to aid understanding of the potential effects on visual amenity.

EXISTING ENVIRONMENT: DESCRIPTION AND CHARACTERISATION

The site is located within the suburb of Aokautere, within the Manawatū-Wanganui region. For the purposes of this assessment the context has been characterised at its wider environment, as well as at the site and localised vicinity.

WIDER ENVIRONMENT

32. The proposed Abby Road extension is located on the southern banks of the Manawatū River, in the suburb of Aokautere. The Project crosses Abby Road Gully, within the Manawatū River catchment area, which covers a total area of 5,898km^2. At a broad scale the major land use in the Manawatū catchment is agricultural (70 precent), while native bush accounts for approximately 17 percent of the area. Palmerston North City is the main urban centre.

33. The catchment area has a number of large tributaries including the Oroua, Mangatainoka, Mangahao, Pohangina and Tiramea Rivers. The Ruahine Ranges are located approximately 20km north-east of site, and the Tararua Ranges are approximately 10km south-west of the site (Figure 4). Together these ranges provide a contiguous backdrop of rolling pastural land and dense vegetation. The landscape is characteristic of a valley system stemming from the foothills and becoming deeper and increasingly more vegetated towards the Manawatū River. A continuum of pastural land runs up the lower slopes where the incisions are less prominent. These features contribute to the perceived natural and rural characteristics of the Aokautere area (Figure 5-6).

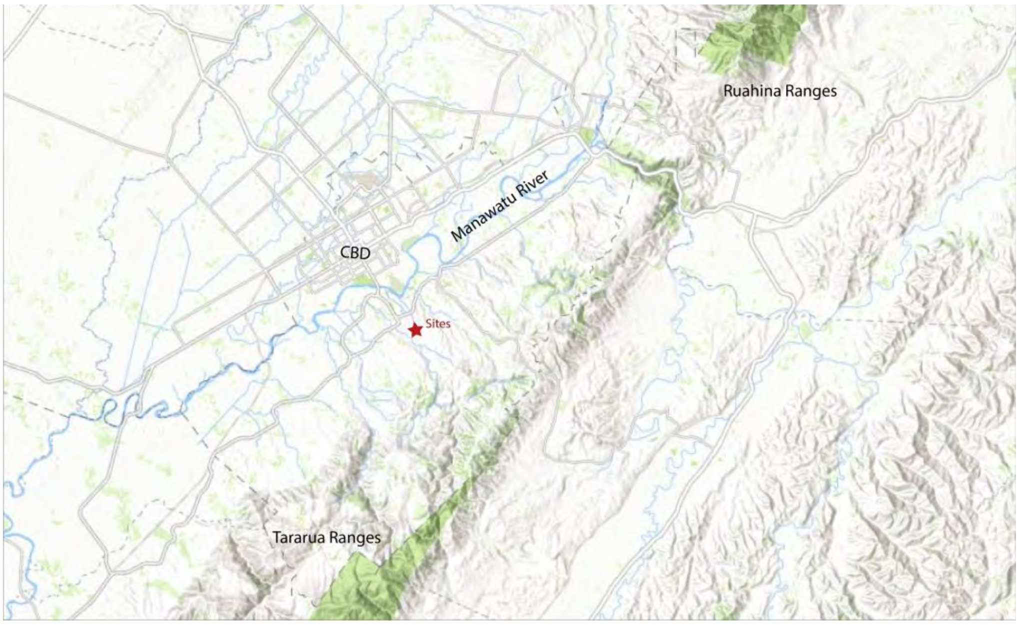

Figure 4: The site and surrounding topography, forming a natural backdrop to the south-east

Figure 5: View south - A rural backdrop consisting rolling pastural land and vegetation patches. Residential foreground

Figure 6: View east - Undulating pastural land, intermittent corridors and large patches of vegetation afford a rural vista

34. Aokautere is composed of a series of flat terraces, incised by a network of ephermeral gully and stream systems that feed into the Manawatū River, one of which is Abby Road Gully. The health and vitality of the surrounding gully systems contributes in a small way to the life-supporting capacity of the Manawatū River. These gullies are an essential element of the area's character and a defining feature of the Aokautere plateau, distinguishing it from other areas of Palmerston North which are also flat but lack the dissections of the gullies characteristic of this area.

35. Aokautere is also noted for its expansive rural vistas, however the rural-residential suburb is rapidly expanding. Aokautere Drive is the main arterial route into the Aokautere Development Area. The northern side of the road has been completely developed, while the southern side continues to expand with many recent and emergent developments in the area.

36. Currently there is a clear demarcation between residential and rural properties to the south of Aokautere. The southern area contains several recently established and emergent residential developments. At this stage the rural-residential area has not yet been subdivided so the allotments drastically increase in size from 500m² to 100ha+, resulting in a distinct line of development in the foreground of the ranges (Figure 5). The distinction between rural and residential is less obvious when looking east or west from within Aokautere. This is consistent with the graduation of allotment sizes which increase more progressively from smaller 1ha lifestyle blocks, to medium scale 5-10ha and large 20ha+ rural blocks.

37. The topography to the north-west is comparatively flat and the horizon line exhibits the highly modified, high density urban environment of Palmerston North City. The Manawatū River divides this high-density urban area from the residential suburbs of Aokautere and Fitzherbert (Figure 7). Fingers of medium density housing protrude south. The pattern of development is determined by the location of developable land available on the flat terraces situated between the gullies on the southern banks of the river (Figure 7 and 8). There is an absence of development across most gullies within the area, with many of the gullies and surrounding vegetation areas incorporated into the city reserves and open space network. The council managed reserves have been planted in native vegetation and left to regenerate. This landscape pattern contributes to a sense of openness, landscape, visual and amenity values, and the perceived natural character of the surrounding area.

Figure 7: View north is comparatively flat with the high-density CBD beyond the Manawatū River

Figure 8: Developable land within Aokautere

38. The roading pattern is also determined by the location and shape of the terraces. The main arterial route follows the Manawatū River, while a network of collector and local roads feed traffic onto the flat terraces. The terraces are generally only wide enough for a single row of houses on each side of the road. When considering surrounding road alignments, there is a preference for right angles on the flat terraces within the residential clusters, however other connecting roads are designed to work with the topography of the surrounding gullies and contain more oblique angles (Figure 9 and 10). There are approximately seven points on the roading network where crossing of the gullies has been necessary to provide increased connectivity between neighbourhoods and neighbouring developable land (Figure 11).

Figure 9: Residential road pattern

Figure 10: Gully crossing to neighbouring terrace

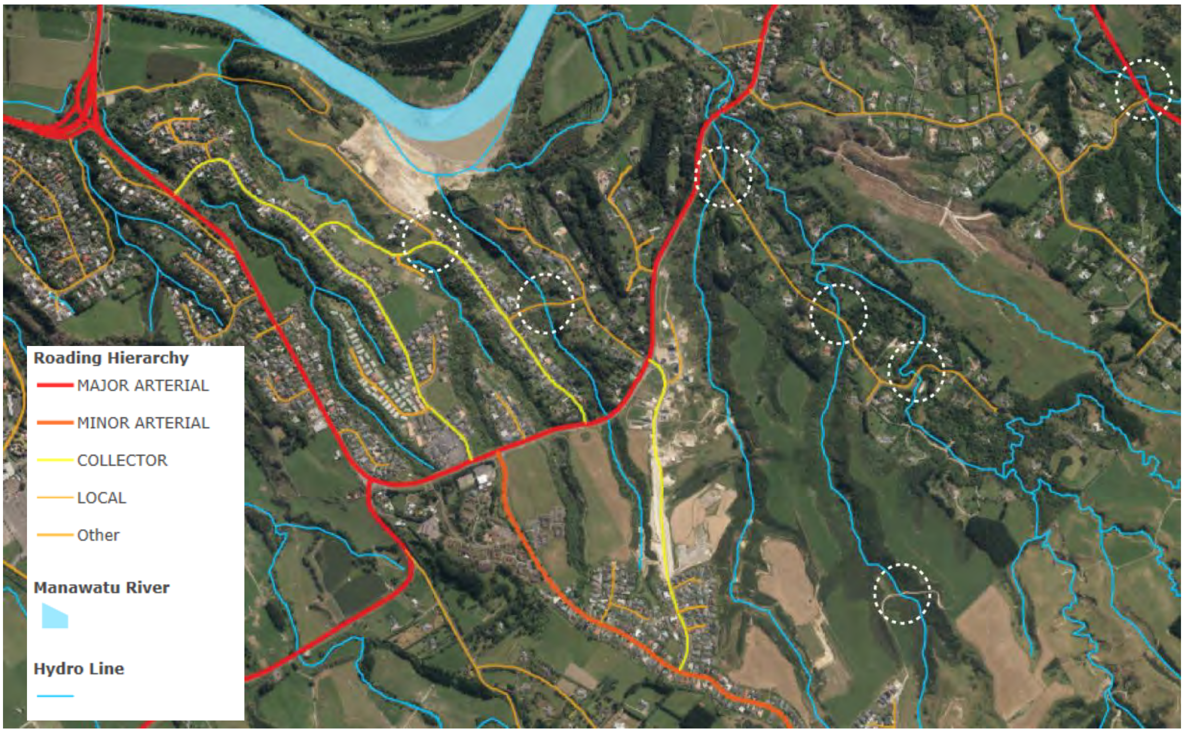

Figure 11: Existing road and gully Intersections

39. Manga o Tane Reserve, Adderstone Reserve, Titoki Reserve, and Poutoa Reserve are all within a 1km radius of the application site. A network of public walkways meander alongside the vegetated gullies, following the natural topography of the valley where possible, or a pedestrian bridge where necessary to cross the gully. These walkways provide a secondary access for pedestrians through to neighbouring parks and other development clusters (Figure 12-13).

Figure 12: Existing and proposed walkways within the Aokautere area, refer Figure 12 for inset

Figure 13: Inset of walkway following topography and pedestrian bridge

40. Considerable earthworks have reshaped the gullies for residential development. Some areas of gully within the Aokautere Development Area have been significantly modified, with the tops of some filled or partially filled. Nearby Johnstone Gully and Eastern Gully are two such examples. Some areas have been entirely cleared of vegetation for development or farming purposes. Within the Aokautere Development Area the dominant land use is now residential.

PROJECT SITE AND LOCALISED VICINITY

41. The application site is two abutting sections zoned Residential and located with the Aokautere Development Area under the Palmerston North District Plan.

42. Most of the northern boundary borders the council managed Manga o Tane Reserve which encompasses the lower, northern section of the Abby Road Gully. The gully itself is on the southern bank of the Manawatū River and may contain a small ephemeral stream. The head of the gully and adjacent terraced land is privately owned. There is a distinct contrast in the level of natural character between the seperately managed allotments (Figure 14).

Figure 14: The gully is managed separately and there is a clear contrast in natural qualities

43. To the west is Adderstone Reserve Gully, which is comprised of both a flat grassed terrace and the densely planted gully. Adderstone Reserve Gully has a public walkway and pedestrian bridge which provides access across and along the gully.

44. The natural landform of the pre-existing natural gully has been changed. However, Manga o Tane Reserve has now been replanted with locally sourced native vegetation, and left to regenerate. Over time this will restore structural complexity to the ecosystem.

45. There are no sites of cultural significance within the area, however Rangitāne have expressed interest in the biodiversity and stormwater of the gully systems.

46. The property also has access to Abby Road and is bordered to the south by existing houses along Woodgate Court. There is an existing stormwater outlet at the head of the gully which provides drainage to the rear sections of Johnstone Drive and Woodgate Court. The northern corner of the allotment adjoins the grassed terrace area of the neighbouring Adderstone Reserve.

47. Abby Road Gully has undergone change from its natural form. It was initially filled for the re-alignment of Aokautere Drive in the 1980’s with substantial stormwater management installed. Following this Abby Road and then Woodgate Estate were privately developed. This resulted in filling of the head of the Abby Road Gully.

48. The top section of Abby Road Gully has been significantly modified due to earthworks related to the formation of nearby Woodgate Estate and the extension of Johnstone Drive. As a result, the top section of the gully has been partially filled. Works completed in 2007/2008 included removal of vegetation, excavation of unsuitable material from the gully floor, subsoil drainage installed, and filling of the gully floor with fill. For unknown reasons work on the gully was not completed in accordance with any resource consent, and it was left in a state where it has subsequently become overgrown with grass, gorse and other weeds. The natural qualities of the head of the gully have been highly degraded as a direct result of this and nearby development. Visually, there is a distinct contrast in vegetation quality between the lower gully and the significantly modified upper head of the gully (Figure 15).


Figure 15: Aerial view of Abby Road Gully and the two contrasting areas of vegetation

49. From a previous resource consent application for the top of Abby Road Gully[4] it is possible to understand some of the associative values held by the local community for the area. Submitters for the aforementioned application inferred that they valued the views of the gullies, the vegetation within these gullies, farmland and distant hills, as well as Aokautere's uniqueness and beauty, which all contribute to the amenity and aesthetic values of the area. Residents also enjoy the open space, spaciousness, natural landscape and landform (including interest created by the land contours), wildlife, privacy, quietness, peacefulness, pleasantness and restfulness of the area, and use it as a place for recreation.

SUMMARY OF CHARACTERISTICS AND VALUES

Biophysical Attributes

- Flat terraces and ephemeral gullies are characteristic of the development south of Aokautere.
- North-west of Aokautere the topography is comparatively flat.
- Pasture is dominant on the lower slopes of the surrounding ranges due to the reduced presence of gullies in this vicinity.
- Most gullies within the wider environment are undeveloped.
- Sections of the site are comprised of a grass terrace and gully with vegetation.
- The main section of the Abby Road Gully contains an ephemeral watercourse.
- The top section of Abby Road Gully has been significantly modified through earthworks and is overgrown with weeds.
- The natural qualities at the head of the gully have been highly degraded.
- Restoration planting of adjacent Manga o Tane Reserve has increased its ecological value.

[4] Resource Consent Application LU 4085, Abby Road and Johnstone Drive, Palmerston North (applicant Aokautere Land Holdings Limited).

Perceptual Attributes

- Expansive rural vistas in Aokautere.
- The surrounding ranges create an uninterrupted backdrop of pasture and vegetation.
- The surrounding ranges, valley system, and pasture all contribute to the perceived natural and rural characteristics of Aokautere.
- The mainly undeveloped gullies of the wider environment create a sense of openness and perceived natural character.
- Looking from within Aokautere there is a distinct line of development in the foreground of the ranges (north and south) but the distinction between rural and residential is less obvious looking east or west.
- The Manawatū River creates a physical and visual division between the high-density urban area of Palmerston North City and the suburbs of Aokautere and Fitzherbert.

Associative Attributes

- Many of the gullies within the Aokautere Development Area have been included in the Conservation and Amenity Zone of the Palmerston North District Plan.
- Shared and recognised values of the area's public reserves and walkways.
- There are no sites of cultural significance within the area, however Rangitāne o Manawatū have expressed an interest in the biodiversity and stormwater of the gully systems.
- Natural landforms contribute to the landscape character and visual amenity values associated with the area and are enjoyed by residents.
- The area is known to be appreciated for its amenity and aesthetic values, including its vegetation, open space and natural landscape.
- Privacy and restfulness are other shared and recognised values of the community that are associated with the area.

STATUTORY CONSIDERATIONS

50. There are a number of statutory considerations relevant to landscape and natural character, and visual effects. These have been considered in undertaking this assessment. They include matters in Part 2 of the RMA, including section 6(a) and section 7(c), and associated objectives and policies in the Palmerston North District Plan. Some key provisions from this plan are described below.

PALMERSTON NORTH DISTRICT PLAN

51. Under **Section 6: General Rules**, **6.3.3: Earthworks Objective 1** provides as follows:
"*To provide for earthworks activities where the associated adverse effects are able to be avoided, remedied, or mitigated.*"

52. Relevant policies under Objective 1 are **Policy 1.1** and **1.2**:
P1.1 "*To limit the location and scale of the earthworks where adverse effects may result.*"
P1.1 "*To avoid, remedy, or mitigate any adverse effects on the environment from earthworks on:*
    - *Natural Land Form;*
    - *Landscape Values;*
    - *Visual Amenity Values;*
    - *Adjoining Properties;*
    - *Natural Hazards and Process;*"

53. Under **Section 7: Subdivision**, **Objective 1** provides as follows:
"*To ensure that subdivision of land and buildings in urban areas is consistent with integrated management of the use, development and protection of land and other natural and physical resources.*"

54. Relevant policies under Objective 1 are **Policy 1.1**, **1.3** and **1.9**:
P1.1 "*To enable the subdivision of land and buildings for residential, commercial, industrial and other purposes generally in accordance with existing land use patterns, and to promote sustainable management of the City's resources by ensuring that the land within the urban area is fully utilised consistent with maintaining amenity values.*"

P1.3 "*To ensure that all proposed new lots have been designed to allow development and use without any adverse effects on the environment which cannot be adequately avoided, remedied or mitigated.*"

P1.9 "*To ensure that subdivision contributes to established residential character, high-quality co-ordinated streetscapes and public open space.*"

55. Under **Section 7: Subdivision**, **Objective 2** provides as follows:
"*To ensure that subdivision is carried out in a manner which recognises and gives due regard to the natural and physical characteristics of the land and its future use and development, and avoids, remedies or mitigates any adverse effects on the environment.*"

56. Relevant policies under Objective 2 are **Policy 2.3**, **2.4**, **2.5** and **2.6**:
P2.3 "*To ensure safe, convenient and efficient movement of people, vehicles and goods in a high quality environment with minimum adverse effects by providing that:*
1. *The layout of the transport network shall, as appropriate for their position in the roading hierarchy, ensure people, vehicles and goods can move safely, efficiently and effectively, minimise any adverse effect on the environment, make provision for network utility systems and make provision for amenity values. The layout of the transport network shall:*
    - *link to and provide for, and be compatible with the existing and future transport networks, taking into account orderly and integrated patterns of development and adjoining developments;*
2. *The development provides for a high quality public realm considering:*
    - *the outlook from dwellings as well as functional place for movement;*"

P2.4 "*To improve land utilisation, to safeguard people, property and the environment from the adverse effects of unstable land by ensuring that:*
1. *Disturbance to the natural land form, existing vegetation (e.g. trees, groups of trees, notable and protected trees, vegetation or habitats), natural drainage and significant natural features is minimised and historic and cultural features are protected to commensurate with achieving an aesthetically pleasing subdivision design and site layout.*
6. *In Aokautere, earthworks, and in particular the restructuring of land, are to be the subject of specific design by a registered engineer experienced in soil mechanics or geotechnical matters and shall take into account the predicted improvements to soil slope and stability which will be achieved and the impact on existing vegetation and landscape values."*

P2.5 "*To avoid, remedy or mitigate the adverse effects of land development by ensuring as far as possible that the carrying out of land clearance, earthworks and other construction activity does not result in:*

- *the migration of silt, soil and roading material to waterways or adjoining properties*"

P2.6 "*To avoid, remedy and/or mitigate the adverse effects caused by alterations to the natural land form and removal of vegetation (e.g. trees, groups of trees, notable and protected trees, vegetation or habitats) and to enhance the amenities of the natural and built environment by requiring that:*

2. *Public open space is formed, topsoiled, landscaped and planted to a level commensurate with its purpose and ease of maintenance.*
3. *Earthworks are designed, built, and landscaped to avoid and/or mitigate adverse effects on the amenities of adjoining existing or potential residentially zoned areas.*"

57. Under **Section 10: Residential Zone**, **Objective 4** provides as follows:
"*The predominant character of the Residential Zone is not compromised by incompatible land use and development*."

58. Relevant policy under Objective 4 is **Policy 4.4**:
P4.4 "*To avoid the establishment of activities which create adverse effects on, the overall amenity and ambience of the residential environment.*"

59. Under **Section 24: Designations**, there are no objective or policies related to landscape and natural character, and visual amenity effects.

ASSESSMENT OF LANDSCAPE AND NATURAL CHARACTER, AND VISUAL AMENITY EFFECTS

60. The assessment below explains the potential changes that will result from the project in terms of effects on biophysical aspects, landscape character, natural character, and visual amenity, as well as cumulative effects.

BIOPHYSICAL EFFECTS

61. Both roading alignment options will result in changes to the landform of Abby Road Gully as a result of necessary cut and fill (Figure 16-17). Option 1 will result in a slightly deeper cut, however the longer length of Option 1 will also reduce the height in the middle section of the road, enabling it to dip lower than Option 2. This will allow the road in Option 1 to more closely follow the contours of the gully, as well as create less need for fill. The designation intersects the area of the gully which has already undergone previous earthworks and has reduced natural values. Both Option 1 and 2 will have Moderate effects.

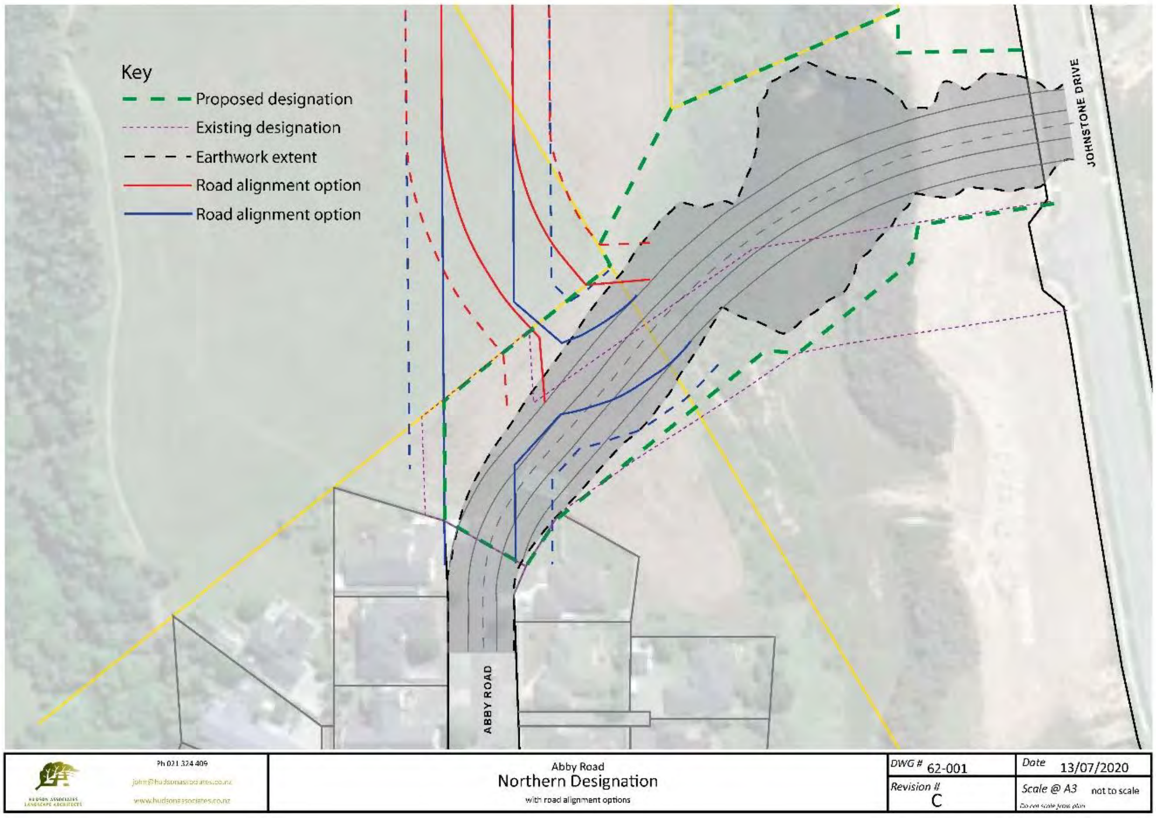

Figure 16: Option 1, Northern Alignment

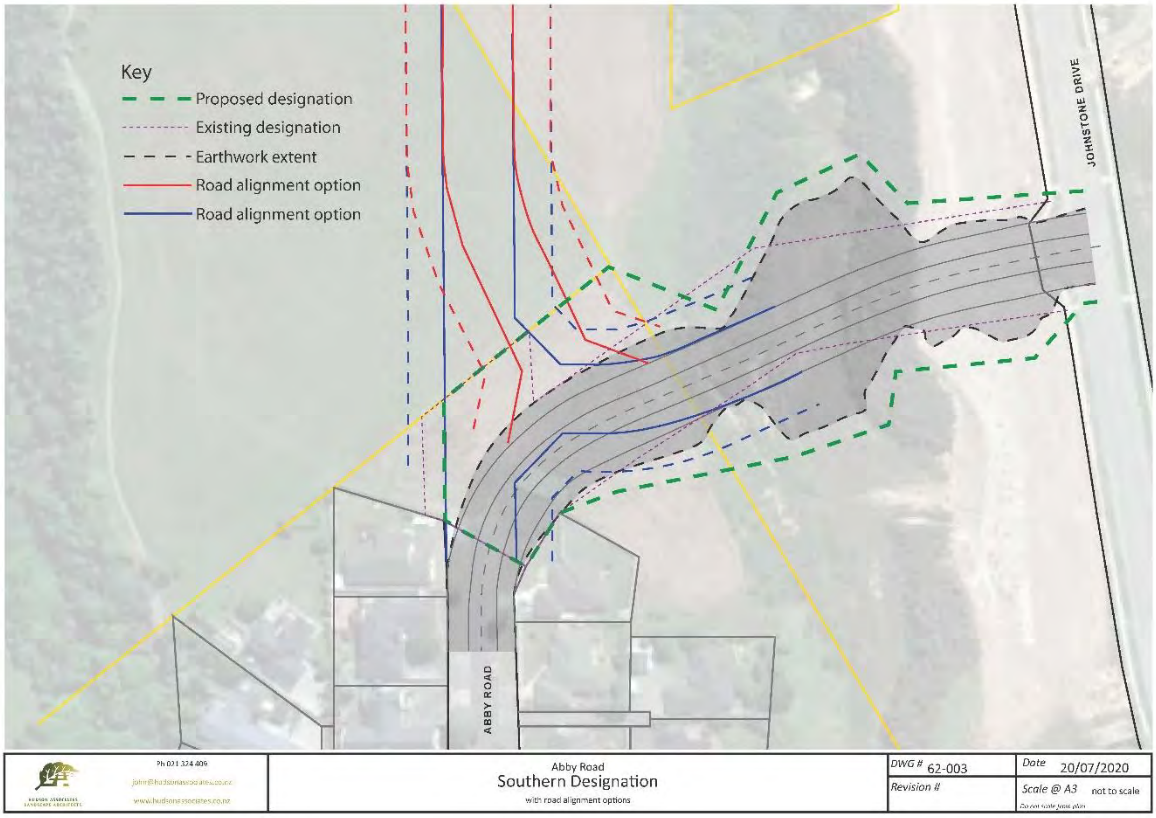

Figure 17: Option 2, Southern alignment

62. Both options require embankments, however due to previous modifications there is no existing vegetation other than weed species within the designation area and therefore neither option will result in an adverse loss of habitat. Due to these previous modifications the stream bed is also already in a modified state. A culvert will be included in both option designs to enable water movement through the embankment. The effects of either option will have a Low adverse effect on vegetation, habitat and the stream bed.

63. Option 1 will link directly with Manga o Tane Reserve, enabling mitigation planting on the northern side of the road to integrate effectively with existing vegetation in the adjacent Reserve. Option 1 will contribute to existing land use patterns and will provide better utilisation of the land than Option 2 (which will result in a small parcel of land between the Reserve and the designation, that will have limited versatility). Option 1 also allows walkway connectivity from the new road directly to Manga o Tane Reserve, thereby enhancing the recreational and pleasantness aspects of amenity values[5] as an aspect of mitigation for the new road.

LANDSCAPE CHARACTER EFFECTS

64. The gully is a natural landform and feature which contributes to the landscape values of the site and surrounding context. The introduction of a road spanning the gully and associated traffic will change the character of Abby Road Gully, as well as contribute to increased traffic volumes in Abby Road (which is currently a 'no exit' road).

65. The positioning and configuration of the road has been considered in relation to existing and possible future landscape patterns within the surrounding area. The road extension will provide increased connectivity between existing and proposed residential areas across the Abby Rd Gully.

66. The Aokautere Structure Plan (Figure 18), which was independently undertaken for the urban design of the Aokautere community, proposes a town centre south-east of the Project, as well as further residential development on the terrace to the west of Abby Road Gully. The proposed road contributes to enabling full circulation with this town centre and surrounding residences. Therefore, the connection across the gully is important for the wider community.

Figure 18: The proposed draft Aokautere Structure Plan (designation area indicated by red circle)

[5] RMA defined Amenity Values as: *those natural or physical qualities and characteristics of an area that contribute to people's appreciation of its pleasantness, aesthetic coherence, and cultural and recreational attributes*

67. Looking at the gully from the north-south axis the road will interrupt the flow of the valley's character. Of the two options, Option 1 will ensure less interruption of the valley flow due to its greater opportunity for mitigation by integration with the adjacent reserve and due to the lower height in the middle of the road. While the low elevation of both options will not impede on the expansive rural vistas characteristic of the area, either option would place fill in the currently hollow gully and create a crossing that is not reflective of natural patterns of the area.

68. Overall, it is concluded that either option will result in Moderate adverse effects on landscape character.

NATURAL CHARACTER EFFECTS

69. For the purpose of assessing the effects on natural character, the top section of Abby Road Gully has been assessed in terms of the descriptions in Table 3.0.

Table 5.0: Top Section, Abby Road Gully – existing level of natural character

Component	Attribute	Natural Character Attributes	
Active Bed	Abiotic	**Bed morphology/modification** The top section has been significantly modified. The batter has been significantly reformed and the base widened and filled. **Flow regime** The flow regime is modified due to wider modifications and fill in the active bed. A stormwater pipe under the fill area provides drainage in the ephemeral streambed for the adjacent properties. **Water Quality** Stormwater contaminants such as copper, zinc and hydrocarbons are likely due to the surrounding impervious surface areas.	Low
	Biotic	**Flora and Fauna** The lower base comprises grass, weeds and fill in its current unmanaged state. **Ecosystem Functioning** Significant modifications have reduced the functioning of the gully ecosystem over a long period of time.	Low
Margin	Abiotic	As with the active bed, the gully margins have been previously modified, vegetation cleared, and the batters reformed.	Low

	Biotic	The riparian margins have been left to become overgrown in gorse and other weed species. There are few indigenous species remaining.	Low
Context	Abiotic/Biotic	Residential development dominates the surrounding terraces which have been built around a network of vegetated gullies.	Low
All	Perceptual	The area has been left in an unruly state for some time and has lost some of its natural and ecological values as a result of the gully and surrounding development.	Low
		Overall existing level of natural character	**Low**

70. The earthworks required will result in land modification and areas of fill, as well as division of the gully. The Project crosses the upper section of Abby Road Gully, which in its current state is of Low natural character. The proposal will add additional fill and further interrupt the natural flow, patterns and processes within the gully.

71. Overall, it is concluded that either option will result in Low adverse effects on natural character.

VISUAL AMENITY EFFECTS

72. Visual coherence of the landscape is an important consideration when assessing the Project against existing development patterns. Existing patterns of development, land use, and vegetation within the landscape provide amenity. Of primary concern is the visual intrusion of the development on the amenity of the gully area for nearby residents.

73. The visual effects of any development will vary for differing viewing audiences. The main viewing audience comprises the neighbouring properties directly adjacent the site on Abby Road, Woodgate Court, and Johnstone Drive. Users of Abby Road and Johnstone Drive were also considered.

74. Properties on Abby Road, Woodgate Court and Johnstone Drive which are adjacent to Abby Road Gully have slightly elevated positions over the gully from within their backyards and from elevated living spaces. While residential sections adjoining the proposal area may have restrictions to their views due to existing fences, vegetation, and other screening, the effect on visual amenity due to the potential loss of openness/separation that could result from the Project must be considered.

75. Users of Abby Road and Johnstone Drive will receive slightly different views of the road corridor depending on the selected designation alignment.

76. Manga o Tane Reserve is a public reserve and has full public access. While access within the Reserve is permitted, there is limited accessibility with no formed tracks or clear public access point.

77. While the road will introduce new traffic movements in the area, the low profile of the road, particularly with Option 1, will ensure that rural vistas enjoyed by surrounding residents will not be interrupted. Additionally, the designation across the gully will enable public perception of Abby Road Gully and Manga o Tane Reserve, which is currently only seen from State Highway 57 or from private residences adjacent to the gully. Of the two options, Option 1 would enable road users to gain greater visual and physical connectivity to the Reserve. Other views of the gully and Reserve are screened by houses along the road edges, partially privatising these views. By having a road situated across the Abby Road Gully, road users will gain visual access to the gully, such as what has occurred north of State Highway 57 on Waicola Drive.

78. Overall, it is concluded that either option will result in Moderate adverse effects on visual amenity.

CUMULATIVE EFFECTS

79. Disturbance of natural areas resulting in altered landscape structure is a source of potential adverse cumulative effects. As the wider area is already modified through housing and roading it is not considered that the Project will result in adverse cumulative effects on the landscape character of the wider area.

80. The Project will result in an additional road in the Aokautere Development Area, however the proposal is consistent with the current scale of the surrounding Residential Zone. It is concluded that cumulative effects for both options will be Low (less than minor).

MEASURES TO MITIGATE ADVERSE EFFECTS

81. Prior to consideration of any mitigation, the proposal is considered to have moderate adverse effects on landscape character, natural character and visual amenity. The following mitigation measures are recommended measures to reduce adverse effects:

- Ensure the land area between the proposed road and the Manga o Tane Reserve is revegetated to match the native species within the Reserve (this is already illustrated for Option 1 in Figure 16).
- Plant all road embankments within the designation
- Ensure pedestrian access is provided for along the road to add further amenity value and connectivity.
- Facilitates the opportunity for a walkway connection to be created through to Manga o Tane Reserve.

EVALUATION

82. It is expected that full revegetation of earthworks, embankments and the area between the northern side of the road and Manga o Tane Reserve will significantly reduce any adverse visual amenity effects, by screening and softening the road. Revegetation of the gully between the road and the Reserve is likely to increase visual amenity. It is expected that appropriate vegetation on the northern and southern embankments will provide some screening of the road embankment when driving north and south on Johnstone Drive, as well as softening of hard surfaces. The revegetation and connection between the road and Manga o Tane Reserve is consistent with

Option 1, which is closer to the reserve and therefore more easily integrates with my proposed mitigations. Option 2, on the other hand, would result in an awkward area of land between the road and the reserve that does not integrate well.

83. Views of side roads while driving along Johnstone Drive is not uncharacteristic. If the recommended mitigation and offset measures outlined in this report are implemented, on completion of the Project, the vegetated embankments will assist integration with the surrounding gully. This will change residents' views of Abby Road Gully, which currently has a degraded natural character. Both options will have Low visual amenity effects if revegetation occurs on all cut and fill embankments and between the northern road edge and the boundary of the Reserve.

84. Native planting on the embankments adjacent the road will assist in treatment of stormwater runoff from the road, reducing the risk of cumulative effects. Planting between the northern road edge and Manga o Tane Reserve will also assist to mitigate adverse cumulative effects of increased impervious surfaces and treatment of stormwater. It is considered that if the recommended mitigation and offset measures outlined in this report are followed, then the Project will enhance ecological values for the top section of Abby Road Gully.

85. Further residential development of the area is anticipated, and the designation of a road is necessary to provide further connectivity between these development sites on either side of Abby Road Gully. Characteristics of the Residential Zone include roads, foot paths, and clusters of medium density development. Pockets of vegetation and open space provide amenity value and a sense of increased natural character. The proposal will adversely effect the gully form but enhance the natural values of the area where vegetation in the gully does not currently exist.

86. With the recommended mitigation and offset measures, the proposed development is considered to be appropriate in both scale and form, and in character with the area (Table 6.0).

Table 6.0 Effects summary with recommended mitigation and offset measures

TYPE OF EFFECT	**LEVEL OF EFFECT**		
	Existing values	**Adverse effect of proposal before mitigation**	**Effect after mitigation**
Natural character	Low	Low	Very Low
Landscape character	Low	Moderate	Moderate
Visual amenity	Low	Moderate	Moderate Low
Cumulative		Low	Very Low

ASSESSMENT OF EFFECTS AGAINST THE STATUTORY CONSIDERATIONS

87. The proposal is for a road designation, as such Section 24: Designations applies, of which no objectives or policies are relevant to landscape and natural character, and visual amenity effects.

88. The provisional seek and rely on mitigation to address as much as possible the many issues they identify. The proposed road will alter the landscape character and to a lesser extent the natural

character and visual amenity. This helps address the overall intent of the provisions, but some moderate adverse effects still remain.

CONCLUSION

89. The road extension will introduce a new element into Abby Road Gully, including the addition of impervious surfaces, earthworks, additional vehicle movements and fill. These will have some adverse effect on the landscape and natural character, and visual amenity of the area.

90. However, recommended mitigation and offset measures for the Project will be effective, and result in some positive benefits. Aside from the location of the road and pedestrian paths, it is recommended that the designation area be fully revegetated, enhancing the gully habitat and visual amenity. Pedestrian access will also enable people to actively appreciate the natural values of Abby Road Gully and Manga o Tane Reserve, while the road will enable public perception of the gully and Reserve.

91. While both designation options will result in the same level of effects, Option 1 is preferable as it will enhance the ability to mitigate adverse effects of the proposed road and to create an integrated revegetated buffer between the northern road edge and Manga o Tane Reserve. Option 1 is also more sympathetic to the natural contours of Abby Road Gully and, therefore, is more in keeping with the area's landscape character.

92. With the recommended mitigation the effects are considered to be as follows:
    - Natural character - Moderate Low. This is due to the revegetation that can occur and potential for improved biophysical controls.
    - Landscape character – Moderate. This is due to the imposition of an earthworks pattern that is not consistent with the natural gully patterns of the area, particularly affecting adjacent parties.
    - Visual amenity – Moderate Low. This is due to the positive effects of revegetation of the batters that is recommended which will enhance visual amenity for the nearby residents but is offset by the negative effect of fill in the gully and the visual effect of traffic crossing this fill.

93. In my opinion, these individual effects equate to an overall effect that is minor for adjacent parties and wider public.

John Hudson

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