Notice of Requirement - Extension to Abby Road between Pacific Drive and Johnstone Drive

Palmerston North City Council

18 December 2019

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Contents

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 4442

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 on land legally described as Lot 2 DP 484515 and Lot 1102 DP 519561. The road to be formed under the designation would have a length of approximately 180m and would be a two-lane road that would extend Abby Road and join with a T intersection to Johnstone Drive.

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 a cul-de-sac) and Johnstone Drive which then joins onto State Highway 57.

3. The description of the site at which the activity is to occur is:

Lot 2 DP 484515 is an irregular shaped site that has an area of 1.1063 ha. This allotment has road frontage onto Abby Road and has a generally flat topography. Lot 1102 DP 519561 is an irregular shaped parcel that has an area of 5.1792ha that has a road boundary fronting onto Johnston Drive. This allotment is bisected by a gully that runs generally north south, with the head of the gully being towards the southern end of the site.

4. The full names and addresses of the owners and occupiers of the site are:

- Lot 2 DP 484515 is held in Computer Register 686764 and is owned by Aokautere Land Holdings Limited
- Lot 1102 DP 519561 is held in Computer Register 817001 and is owned by Aokautere Land Holdings Limited

5. Additional resource consents are required in relation to the proposal:

Resource consent for the piping of a stream will be required at the time that earthworks are undertaken to form the road formed as a result of this Notice of Requirement application. The resource consent for the piping of the stream is not being applied for at this time.

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.

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Heather Shotter

Chief Executive, Palmerston North City Council

Part B: Planning Report and Assessment of Environmental Effects

1 Introduction

This Notice of Requirement (NOR) seeks to designate land that is currently zoned Residential as road. The road would extend the existing formation of Abby Road and would provide a direct link from Abby Road to Johnstone Drive, which then accesses State Highway 57. The section of State Highway 57 where Johnstone Drive joins on provides access between the urban area of Palmerston North and Aokautere.

2 Background

The area of land that is the subject of this NOR is generally bounded by State Highway 57 to the north, Johnstone Drive to the east and Pacific Drive to the west. Abby Road and Woodgate Court are 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.

Council and the landowner of the subject land have been in negotiations for six months in an attempt to reach an agreement to co-fund and deliver the connection road, but at the time of finalising this NOR the negotiations remain unresolved. While agreement has been reached on the split of costs and benefits between the Council and the land owner, agreement is yet to be reached on the mechanism for recovery of costs.

3 Problem Description

3.1 Project Objective

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

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

4 Site Description

4.1 Location

The two parcels of land that form the application are legally described as Lot 2 DP 484515 and Lot 1102 DP 519561. Lot 2 DP 484515 is an irregular shaped parcel that appears to be a balance allotment that has been generated as a result of the development which has formed the allotments that front onto Abby Road and Woodgate Court. The northern corner of the allotment is generally flat and grassed. The southern part of the allotment contains a gully with vegetated sides with the embankment at the rear of 27 and 29 Johnstone Drive being long grass. Structured

planting has been undertaken at the rear of 14, 22 and 24 Abby Road and 5 and 11 Woodgate Court.

Lot 1102 DP 519561 (also known as 33 Johnstone Drive) at its southern extent contains part of the gully that is also located on Lot 2 DP 484505 (this gully then forms the recreation reserve and associated ponds visible from SH57) and flatter grazing area (majority of the allotment). The sides of the gully are clad in a mix of long grass and scrub.

The allotments and the vegetation cover are shown in Figure 1 in Appendix A.

4.2 Environmental Setting

The area bounded by Aokautere Drive (SH 57), Pacific Drive and Johnstone Drive is a mix of residential, institutional and recreation uses. The majority of the IPU 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. On the eastern boundary of the four accommodation blocks this site 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).

4.3 Speed Environment

As described in the Traffic assessment that has been undertaken as part of this Notice of Requirement application the speed environment as follows:

- SH57/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, Woodgate Court).

At the time of writing the application the two sections of Johnstone Drive had yet to be joined.

4.4 Existing Road Characteristics

The road hierarchy of the area is such that Aokautere Drive (SH 57) is identified as a Major Arterial (National), Pacific Drive has been identified as a Minor Arterial (Primary/Secondary Collector), Johnstone Drive has been identified as a Collector (unknown) and Abby Road has been identified as a Local Road (low volume).

The standards set out in the District Plan (page 39 of Section 20 – Transportation) for these roads is as follows:

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

4.5 Land Purchase

At this point in time land purchase negotiations have commenced but have not been concluded.

5 Proposal Description

5.1 The proposed works

The works associated with the proposed Notice of Requirement will be those associated with the construction of a road, i.e. earthworks for the formation of the road, the placement of a culvert to enable the stormwater which is from the head of the gully (which is piped down the head of the gully in a 'Stormwater Main line' and then flows into a 'Stormwater Channel') 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. An assessment of the vegetation that will be required to be removed has been undertaken as part of the landscape and visual assessment that has been undertaken in association with this application.

6 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.

6.1 Introduction

In terms of providing alternative road alignments to enable increased access options for this part of Palmerston North there are three main options 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.

6.2 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.

6.3 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 also amenities in the vicinity. However, this option also increases the number of intersections on Aokautere Drive in a short distance and given the current speed environment on Aokautere Drive would require a number of other improvements to be done to the road to enable a safe intersection. This option would also result in a longer road leading to less land being available for future development in the immediate vicinity. The traffic assessment in Appendix B considers this option and comments that this proposal would result in a minor negative in terms of efficiency and safety, and a moderate positive in terms of accessibility and a minor positive in relation to resilience. The key conclusions of the traffic assessment are:

- 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 SH57Aokautere Drive are also expected to be unacceptable in future years (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.
- 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 be make crossing difficult and less safe.
- 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 proposed link 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.

6.4 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. The traffic assessment in Appendix C considers this option and comments that this proposal would result in a minor negative in terms of efficiency (neutral with intersection improvements) a minor negative in relation to safety (minor positive with intersection improvements and traffic calming), and a moderate positive in terms of accessibility and a minor positive in relation to resilience. The key conclusions of the traffic assessment are:

- The intersection of the Abby Road and Pacific Drive is expected to have unacceptable performance in future years.
- Upgrading the intersection to a roundabout will provide good performance with or without the proposed link.
- The additional traffic on the link is expected to increase crash risk.
- Traffic calming on the proposed link and Abby Road could help to reduce traffic speeds and mitigate the safety concerns.
- The link provides improved access for some areas.
- The proposed link provides limited redundancy of the road network.

The landscape and visual assessment splits this option into two options. The options are described as follows:

Option 1 (PNCC 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 more oblique angles (80˚) onto Johnstone Drive, resulting in an entrance location approximately 40m further north than Option 2.

Option 2 (Pirie Alignment) provides for a simpler geometric form, which connects at a right angle onto Johnstone Drive and is slightly shorter (220m).

The following comment is made with regard to the differing options in relation to the intersection with Johnstone Drive *"While both designation options will result in the same level of effects, Option 1 is preferable as it will reduce the area of designation required to create a 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."*

7 Designation Process

7.1 Notice of Requirement to Territorial Authority

The Notice of Requirement is being sought to designate the route while development plans are worked through for the wider area.

7.2 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, an Notice of Requirement 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 Notice of Requirement 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 Notice of Requirement are indicative plans only to assist with evaluating potential effects on the environment. Once the specific design of the road are known, and prior to construction, an Outline Plan application will be submitted in accordance with section 176A of the Resource Management Act 1991.

8 Assessment of Effects on the Environment

8.1 Traffic and Transportation

A traffic assessment has been undertaken in relation to the proposal. The assessment has taken into account the land use of the area, the existing roading hierarchy and speed environment, what impact future transport changes may have, what future demand might look like, the capacity of the future road. The report is provided in Appendix B.

The key findings of the report are that:

- The overall effect on efficiency is expected to be a minor negative as the do minimum performance of the intersection is unacceptable
- The overall effect on safety is expected to be a minor negative due to the increased traffic volumes on the link and through the intersection
- The overall effect on access is expected to be a minor positive as the link provides improved access for some areas
- The overall effect on resilience is expected to be a minor positive as the link provides a limited level of redundancy.

The traffic assessment recommends that a roundabout would reduce delays on Abby Road to an acceptable level, but it is noted that the 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 is also suggested that traffic calming measures be implemented on Abby Road and the new link to reduce traffic speeds and mitigate safety concerns.

8.2 Landscape and Visual Amenity

A landscape and visual amenity assessment has been undertaken of the proposed road. The report undertakes a landscape character effects assessment, a natural character assessment, a

visual amenity effects assessment and also considers potential mitigation measures. The key findings of the report are as follows:

- The project provides the opportunity for a development that has limited adverse effects on the existing landscape and natural character, and the visual amenity values of the surrounding gully environment.
- 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 natural character of the area.
- While both Option 1 and Option 2 will result in a similar overall level of effect, Option 1 is more sympathetic to the landform of the gully as it is longer and therefore has more length to dip own in the middle of the road, reducing the overall level of fill required and the height of the road.
- Both options provide the opportunity for the public to gain views along the gully towards Manga o Tane Reserve.
- To ensure mitigation of adverse effects it is necessary to fully revegetate the land between the northern side of the road and the southern boundary adjacent to Manga o Tane Reserve. The entire fill batter on the southern side should also be revegetated.

The overall conclusion of the report is 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 properties.*
- *Visual amenity – Moderate Low. This is due to the positive effects of revegetation of the batters that is recommended which will enhance visual amenity of the nearby residents but is offset by the negative effect of fill in the gully and the visual effect of traffic crossing the fill.*

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

8.3 Noise

Potential noise effects relate primarily to construction noise. Noise associated with the construction of the road will be temporary in nature. The total duration of the construction period will be approximately 6 months. During this period construction activity will occur from Monday to Friday and between the hours of 7am and 5pm. In limited circumstances it may also be necessary for construction work to occur on Saturday's, also between the hours of 7am and 5pm. No construction work will take place on Sundays or public holidays.

Construction activity will be undertaken in such a way that it complies with provisions of NZS6803:1999 Acoustic – Construction Noise. In this regard, the proposed designation conditions to be attached to the designation require that construction noise from the site comply with NZS6803:1999. It is therefore considered that the potential adverse noise effects of the proposal will be less than minor.

8.4 Historic Heritage

The District Plan does not show any evidence of 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. It is therefore considered that the potential adverse historic heritage effects of the proposal will be less than minor.

8.5 Earthworks

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. All of these effects are temporary in nature, and can be avoided or mitigated through routine site management measures. In particular, that 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. The extent of potential construction effects ae considered to be less than minor.

9 Statutory Assessment

9.1 Notice of Requirement

Pursuant to Section 167 of the RMA, the Palmerston North City Council has been approved as the Requiring Authority for the roading network within Palmerston North City. Section 181(1) of the RMA provides that a Requiring Authority may give notice to a territorial authority of its requirement to alter a designation or a designation requirement as follows:

> *"(1) A requiring authority that is responsible for a designation may at any time give notice to the territorial authority of its requirement to alter the designation*
>
> *(2) Subject to subsection (3), sections 168 to 179 shall, with all necessary modifications, apply to a requirement referred to in sub section (1) as if it were a requirement for a new designation."*

9.2 National Policy Statements

National Policy Statement (NPS) for Freshwater Management 2011

The National Policy Statement (NPS) for Freshwater Management 2011 came into effect on 1 July 2011. Decision-makers under the Resource Management Act (RMA) must have regard to the NPS in consenting decisions. The NPS sets in place a strengthened limits-based regime for water management.

The site contains a small, highly modified stream. The headwaters of the stream are formed by a stormwater pipe from an adjacent residential area. The formation of the proposed road will result in the installation of a culvert and the stream being piped under the road. Following the works the stream will continue to 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 that they will be able to carried out in accordance with the principles set out in the NPS Freshwater.

9.3 National Environmental Standards

National Environmental Standard for Contaminants in Soil

The National Environmental Standard seeks to protect Human Health from contaminants in soil, given the nature and scale of the works that would result from this Notice of Requirement it is considered due to the previous use of the land and that the NES would not apply in this instance as 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.

9.4 Regional Policy Statement (RPS)

The Regional Policy Statement (RPS) became operative in 2014. The RPS provides a framework for sustainably managing the region's natural and physical resources. It highlights regionally significant issues with our land, air, fresh and coastal water, infrastructure and biodiversity, including issues of significance to iwi. It sets out what needs to be achieved (objectives) and how it will be achieved (policies and methods).

The Notice of Requirement and the proposed road are considered to be consistent with the relevant objectives and policies of the RPS as 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 and the road will provide for community connections. In particular there are no objectives or policies identified which the Notice of Requirement is contrary to.

9.5 Palmerston North City Council District Plan

The relevant objectives and policies from the District Council Plan are assessed below:

9.5.1 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.**
Policy 1.4	To ensure network infrastructure and services are available to support residential development and intensification.
Policy 1.5	To ensure that residential development in the Pacific Drive Extension area does not proceed in the absence of a water supply with sufficient capacity and pressure to meet the need of all development in the Pacific Drive and Pacific Drive Extension areas.

Comment:

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 areas that are developed as residential to amenities that are located in the vicinity. The proposed road will be able to provide a conduit for services as required.

9.5.2 Section 20: Transportation Zone

Objective 1	**To maintain and enhance the safe and efficient functioning of the roading network.**
Policy 1.1	To establish and maintain a roading hierarchy.

Policy 1.3	To ensure all roads have function and design characteristics consistent with the roading hierarchy
Policy 1.4	To have regard to the particular safety needs of cyclists and pedestrians

Objective 3	**To avoid, remedy or mitigate the effects of roads and vehicles on the amenity values of the City.**
Policy 3.2	To establish and maintain a roading hierarchy.
Policy 3.3	To ensure all roads have function and design characteristics consistent with the roading hierarchy

Comment:

The proposed road will form a local road as part of the roading hierarchy that has been set out in the District Plan. The road will be designed for its intended function and will be designed to take pedestrians and cyclists into account. This will be necessary as the road will be part of the local roading network and it is anticipated that cyclists and pedestrians will be regular users of the new piece of road.

9.5.3 Section 22: Natural Hazards

Objective 1	**To recognise the existence of natural hazards.**
Policy 1.1	To identify any land subject to the effects of a natural hazard.

Objective 2	**To control the type of development on land which is or might be affected by natural hazards.**
Policy 2.1	To exclude development on hazard-prone land where the effects of the hazard cannot be effectively avoided, remedied or mitigated.
Policy 2.2	To establish appropriate controls to avoid, remedy or mitigate the effects of natural hazards.

Comment:

The site is not known to be subject to natural hazards, as the road will be constructed to go over the highly modified stream, potential flows in high rainfall events will be taken into account in terms of the culvert design and size. The road embankments will also be designed to ensure that the road is resilient in design and takes into account the potential for natural hazards.

9.6 Part 2 of the RMA

9.6.1 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
The cornerstone of Part 2 is the purpose of the RMA as set out in section 5(1), 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 overarching intention of the Notice of Requirement process is to ensure that the proposed activity is consistent with the purpose of the RMA. The promotion of sustainable management requires an overall broad judgement of whether a proposal will meet the requirements of section 5 of the RMA. The approach recognises that the RMA has a single purpose – sustainable management. Such a judgement allows for the comparison of conflicting considerations and the scale or degree of them and their relative significance or proportion in the final outcome.

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 also for their health and safety. This will enhance the community's wellbeing. As described in Section 4 of this report, adverse effects are being avoided, remedied or mitigated as 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.

The NOR and the proposed substation are considered to be consistent with the purpose of the RMA as stated in section 5 of the legislation.

9.6.2 Matters of national importance – Section 6

In considering whether a proposal will achieve the sustainable management of natural and physical resources, it is also necessary to consider section 6 of the RMA. 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 not matters of national importance that are relevant to the application.

9.6.3 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 most 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'; and g) 'any finite characteristics of natural and physical resources'.

The application is considered to be consistent with section 7 matters for the following reasons. In respect of section 7(b) and (g), the designation of the road provides for the efficient use and development of a physical resource, and the finite characteristics of the land resource. The NOR is part of a network of roads operated by Palmerston North City Council that serves communities by providing a reliable roading network to for the community. In respect of section 7 (c) and (f), the extent of adverse environmental effects have been evaluated in detail within Section 4 of this report, and are less than minor.

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

9.6.4 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. It is considered that the NOR and proposed works will be consistent with the intent of section 8 of the RMA.

9.6.5 Part 2 Summary

Ultimately, an assessment of the application under Part 2 of the RMA requires an overall consideration of all aspects of the proposal measured against the statutory purpose in section 5 of the RMA. In the writer's opinion, such an overall assessment in this case leads to a conclusion that the purpose of the RMA is better served by the NOR being confirmed subject to appropriate conditions, rather than the requirement being withdrawn or modified pursuant to section 171(2).

10 Notification

Provisions under the RMA, including section 168A (1A), allow Council to decide whether a Notice of Requirement should be notified, using sections 168A(1A), as a basis for that decision. Council has the ability to notify the Notice of Requirement on a limited basis (section 95B).

The Council must follow the steps outlined under Section 149ZCB – 149ZCE of the Resource Management Act 1991 (RMA) in order to determine whether to publicly notify an application for resource consent. In this instance the reference to the 'Minister' is the Territorial Authority (PNCC).

Section 149ZCB - Public Notification of application or notice at Minister's discretion	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—		X

	(a) a rule or national environmental standard precludes public notification of the application or notice; and (b) subsection (2)(b) does not apply.		
(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; and		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—		X

(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.		

In this instance the applicant is seeking notification of the application. It is anticipated that the application would be fully notified and served on the land owner and immediately adjoining landowners.

11 Consultation

Consultation has been an ongoing process with the land owner and is ongoing at this point in time.

No other consultation has been undertaken at this time given the very highly modified nature of the land.

12 Conclusion

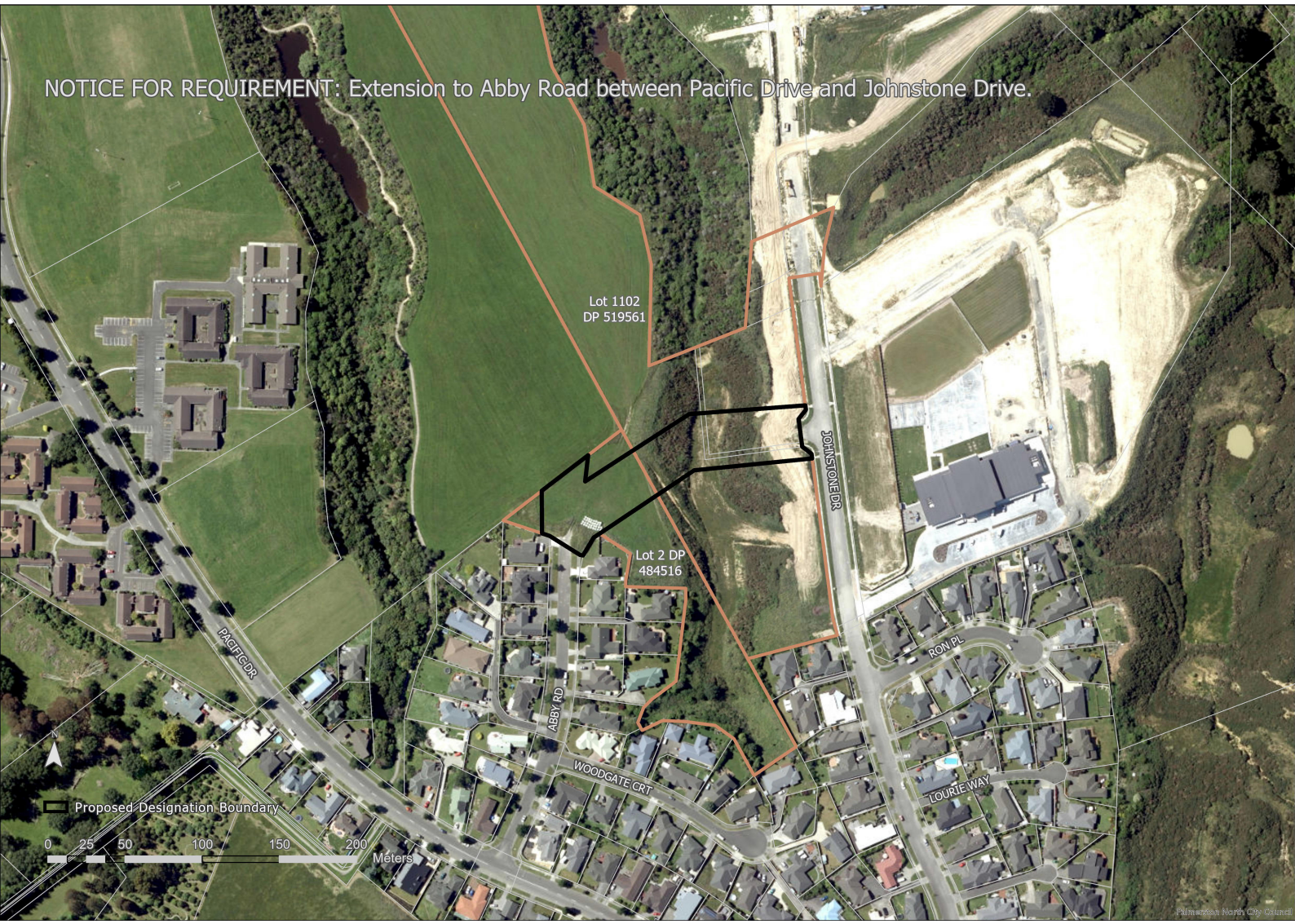
This NoR has demonstrated that the proposed road is required for greater community connection and aiding in providing a resilient roading network, the road also has the potential to provide for social and economic wellbeing.

The assessment of potential environmental effects has demonstrated that the proposed road can be established while having adverse effects that are less 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.

Appendix A

Plans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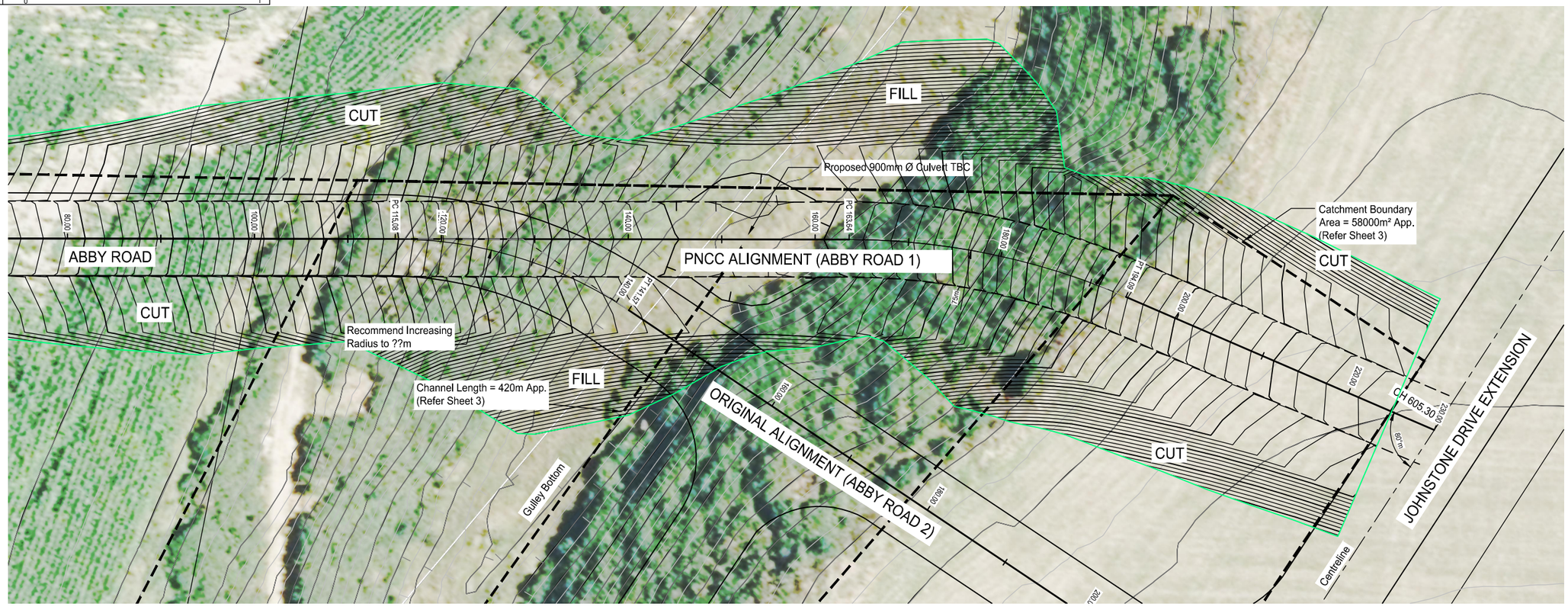
DP 519561
Lot 2 DP
484516
JOHNSTONE DR
PACIFIC DR
ABBY RD
WOODGATE CRT
RON PL
LOURIE WAY
N
Proposed Designation Boundary
0 25 50 100 150 200
Meters

Graphic Scale 1:1 0 1



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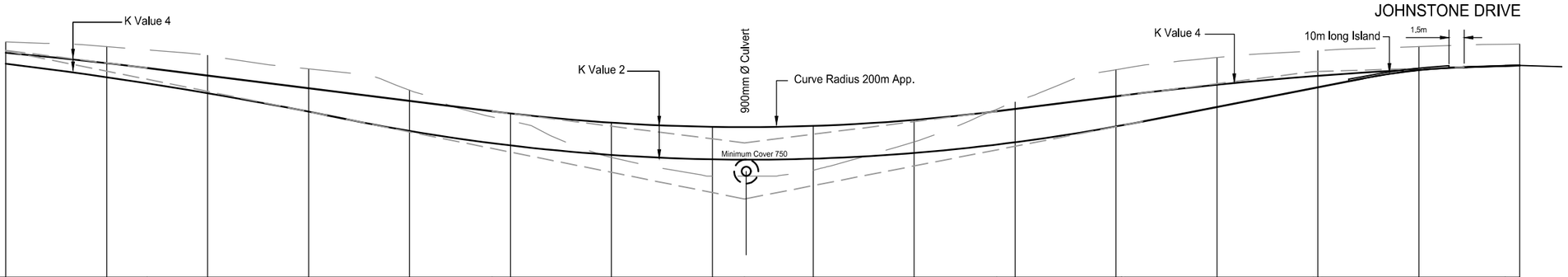
Scale 1:250 A1



ABBY ROAD 1 LONG SECTION
Vert Exaduration: 1:1
H.A.D. 70.000m

CUT TO PROP. 1 in 8 OPTION	-1.077	-1.644	-1.806	-2.013	-1.922	-1.066	0.562	0.738	3.440	4.870	4.845	4.380	2.176	-0.208	-0.693	-2.629	-2.652	-2.709	-2.495	-2.487	-2.254	-2.146	-2.121				
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GRADIENT 1 in 8 OPTION		VC 35.16		-1:8.0 (-12.50%)					VC 50.00						1:8.0 (12.50%)			VC 38.00				1:33.3 (3.00%)					
CUT TO PROP. 1 in 5 OPTION	-2.159	-3.031		-3.749	-4.238	-4.415	-4.607	-4.030	-2.422	0.254	1.655	1.821	1.138	-1.094	-3.982	-5.606	-5.549	-4.896	-3.617	-2.961	-2.366	-2.190	-2.120				
PROP. CROWN 1 in 5 OPTION	91.103	89.774		88.194	86.364	86.005	85.620	84.467	83.029	82.092	81.655	81.621	81.718	82.281	83.344	84.907	85.403	86.835	88.779	89.653	90.418	90.775	90.940				
GRADIENT 1 in 5 OPTION		VC 67.92			-1:5.0 (-20.00%)				VC 78.90									1:5.1 (19.45%)			VC 10.00		1:33.3 (3.00%)				
DISTANCE	80.00	90.00	94.01	100.00	110.00	120.00	128.19	130.00	140.00	150.00	153.19	160.00	170.00	178.19	180.00	190.00	196.55	200.00	206.55	210.00	220.00	228.55	229.99				

ABBEY ROAD 1 LONGSECTION
Scale 1:250 A1

FOR COMMENT ONLY

Notes:
1. Proposed Conturs Based on 1 in 8 Option

Rev	Amendments	Initial	Date

PALMERSTON NORTH CITY COUNCIL

Job Title
ABBY ROAD EXTENSION
GULLEY TRAVERSE

Drawing Title
PLAN AND LONGSECTION ABBEY ROAD 1 PNCC ALIGNMENT

City Networks

Ray Swadel - General Manager

City Enterprises		Checked	Date
Surveyed	*LIDAR*		*2014*
Landscaping	*N/A*		
Designed	*R.H. / G.C.*		*02/17*
Drawn	*R.H.*		*02/17*
Recommended			
Approved	RAY McINDOE - General Manager		

Scales A1 - 1:250
A3 - 1:500

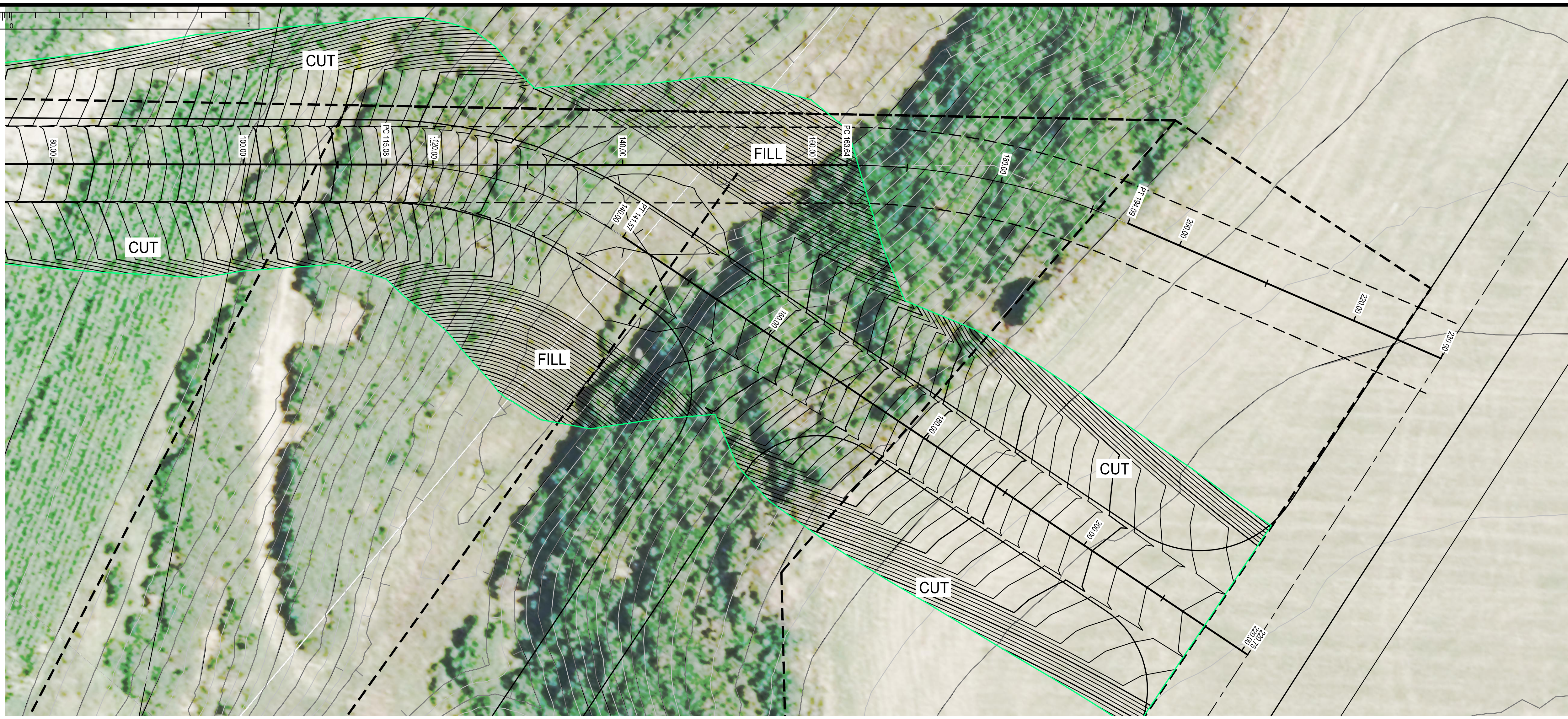
Plan no. 5570

Revision A 24/02/17

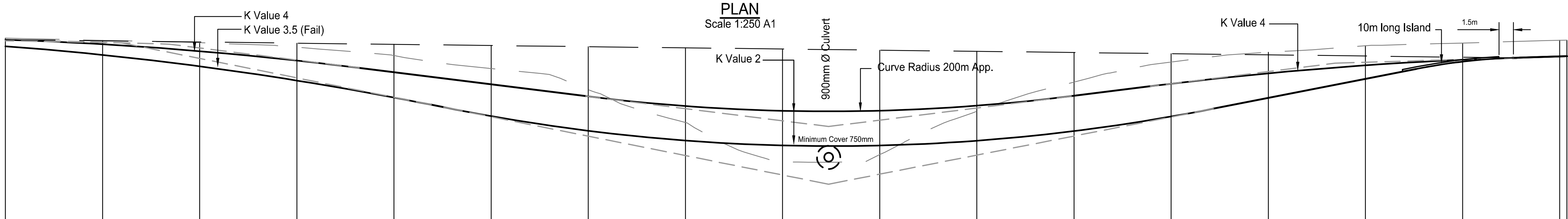
Sheet 01 of 03

C:/Civil 3D Projects/ ous/Johnstone Drive Connection Les Fugel Block/5570.dwg Plotted:24 FEB 2017

Graphic Scale 1:1 0 1



PLAN
Scale 1:250 A1



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Vert Exaduration: 1:1
H.A.D. 75.000m

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ABBEY ROAD 2 LONGSECTION
Scale 1:250 A1

C:/Civil 3D Projects/ ous/Johnstone Drive Connection Les Fugel Block/5570.dwg Plotted:24 FEB 2017

FOR COMMENT ONLY

Notes:

1. Proposed Contours Based on 1 in 8 Option

Rev	Amendments	Initial	Date

PALMERSTON NORTH CITY COUNCIL

Job Title
ABBY ROAD EXTENSION GULLEY TRAVERSE

Drawing Title
PLAN AND LONGSECTION ABBEY ROAD 2 PIRIE CONSULTANTS ALIGNMENT

City Networks

Ray Swadel - General Manager

City Enterprises		Checked	Date
Surveyed	*LIDAR*		*2014*
Landscaping	*N/A*		
Designed	*R.H. / G.C.*		*02/17*
Drawn	*R.H.*		*02/17*

Recommended

Approved

RAY McINDOE - General Manager

Scales A1 - 1:250
A3 - 1:500

Plan no. 5570

Revision A 24/02/17

Sheet 02 of 03 sheets

Graphic Scale 1:1 0 1

OVERALL PLAN
Scale 1:1000 A1

FOR COMMENT ONLY

C:/Civil 3D Projects/ ous/Johnstone Drive Connection Les Fugel Block/5570.dwg Plotted:24 FEB 2017

Notes:
1. The Contractor is to give 48 hrs notice to all service authorities & to confirm with the relevant authority the location of their service positions prior to the commencement of any excavations.
2. It is the Contractors responsibility to confirm all dimensions on site.
3. Residents to be given 48 hrs notice prior to vehicle access being restricted.
4. All existing service connections are to be reconnected to the proposed pipework. All consumers are to be notified prior to any disruption to water supplies. A minimum of 24 hrs notice is required for any shutdown longer than 1 hour.
5. All trenching work shall be carried out to the standards stated in SNZ HB 2002:2003 Code of Practice for Working in the Road.
6. All existing road markings to be reinstated within 48 hours of sealing.
7. Distances to all fixtures and laterals to be recorded by the Contactor for "As Built' information.

Rev	Amendments	Initial	Date
A	FOR APPROVAL	E.A.	08/09

PALMERSTON NORTH CITY COUNCIL

Job Title
ABBY ROAD EXTENSION GULLEY TRAVERSE

Drawing Title
OVERVIEW PLAN

City Networks

Ray Swadel - General Manager

City Enterprises		Checked	Date
Surveyed	*LIDAR*		*2014*
Landscaping	*N/A*		
Designed	*R.H. / G.C.*		*02/17*
Drawn	*R.H.*		*02/17*

Recommended

Approved

RAY McINDOE - General Manager

Scales A1 - 1:1000
A3 - 1:2000

Plan no. 5570

Revision A 24/02/17

Sheet 03 of 03 sheets

Appendix B

Traffic Report – Aokautere Drive option

Aokautere Connection - Notice of Requirement

Transport Assessment

Contact Details

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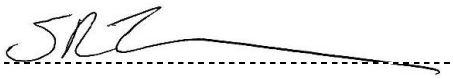
Document Details:

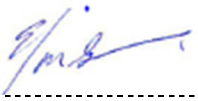
Date: February 2019
Reference: 5-C
Status: Issue 1

Prepared By



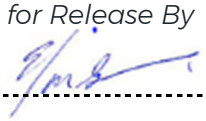
Sam Thornton & Fiona Chapman

Reviewed By



Eliza Sutton

Approved for Release By



Eliza Sutton

Contents

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.

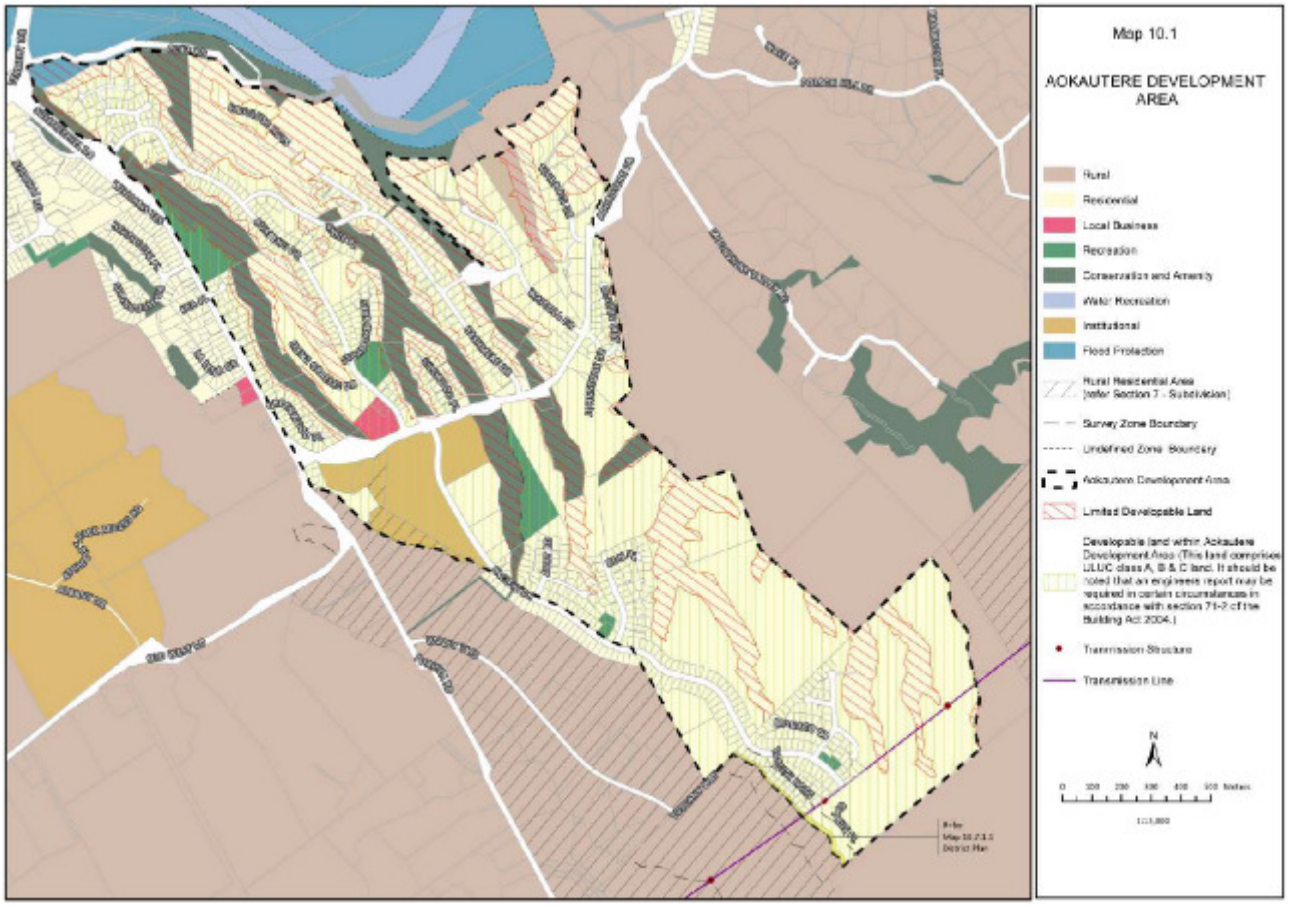


Figure 4: Aokautere Development Area zoning (Planning Map 10.1 from the PNCC District Plan)

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.

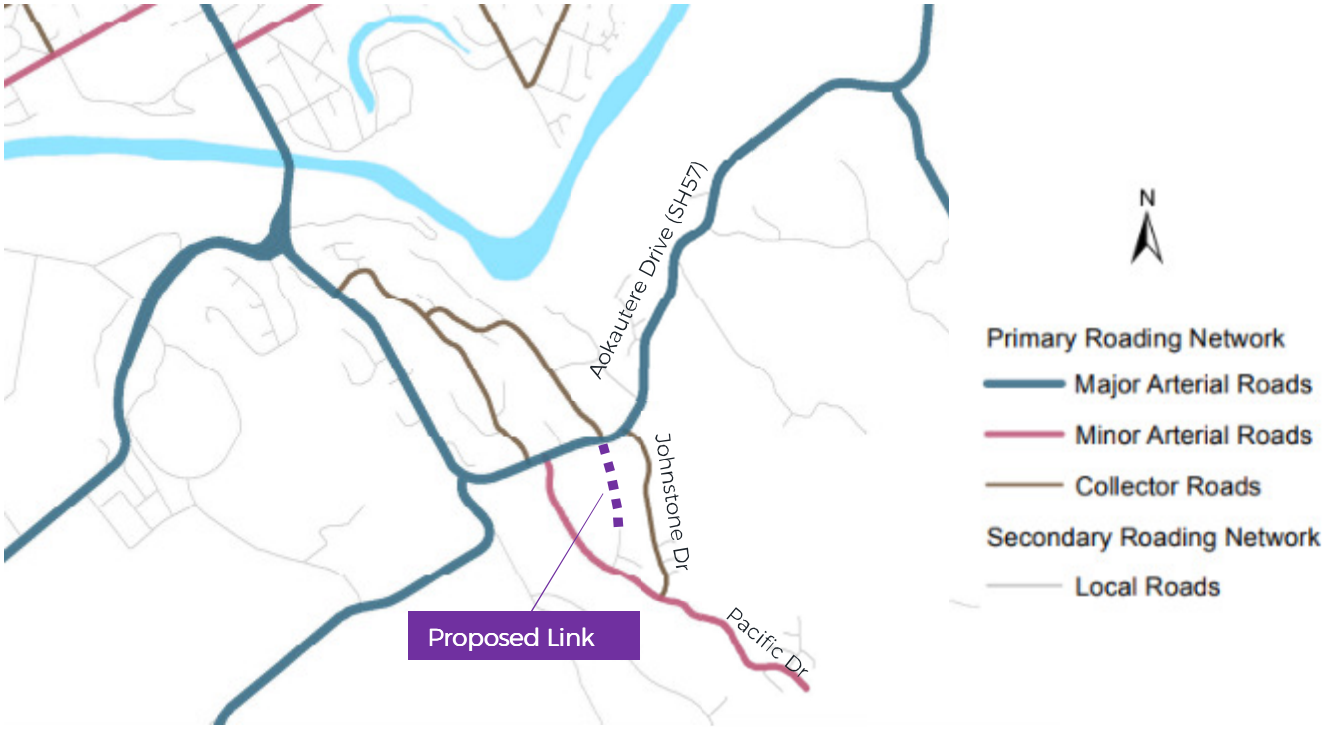


Figure 5: PNCC Road Hierarchy

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.

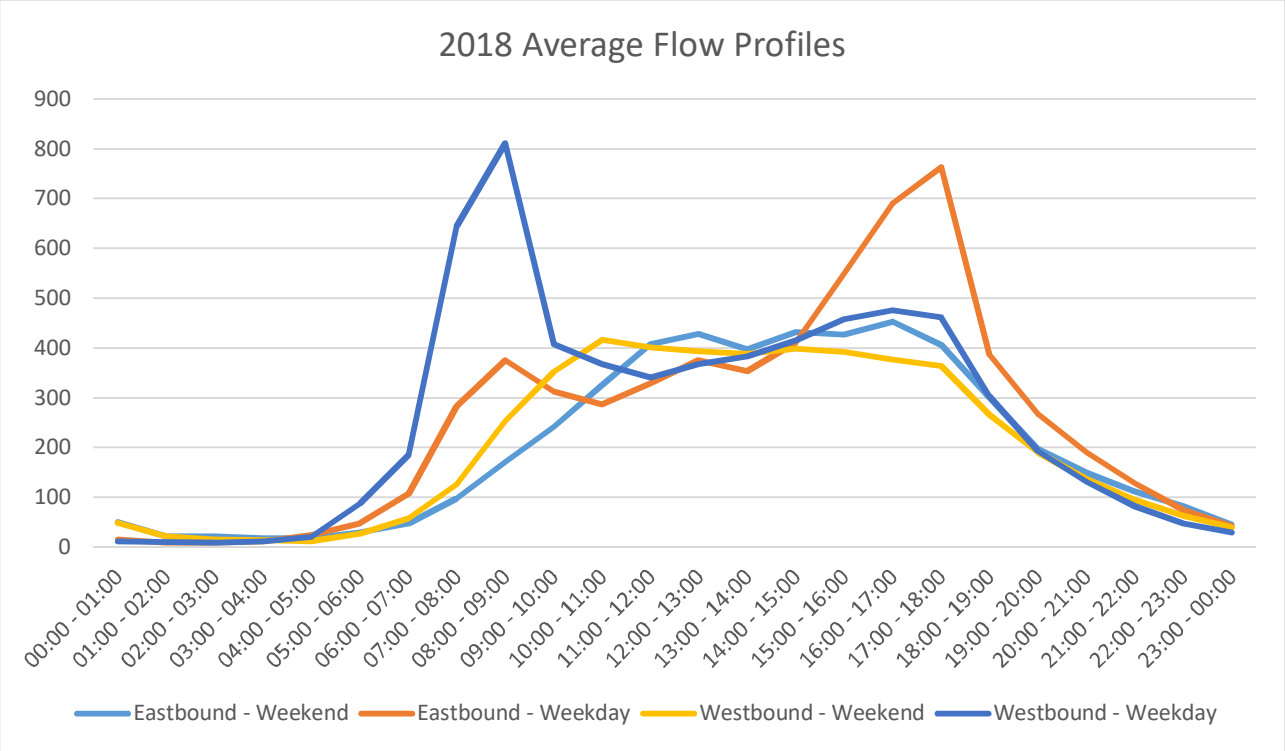


Figure 6: Flow profile on SH57 (average for 2018)

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).

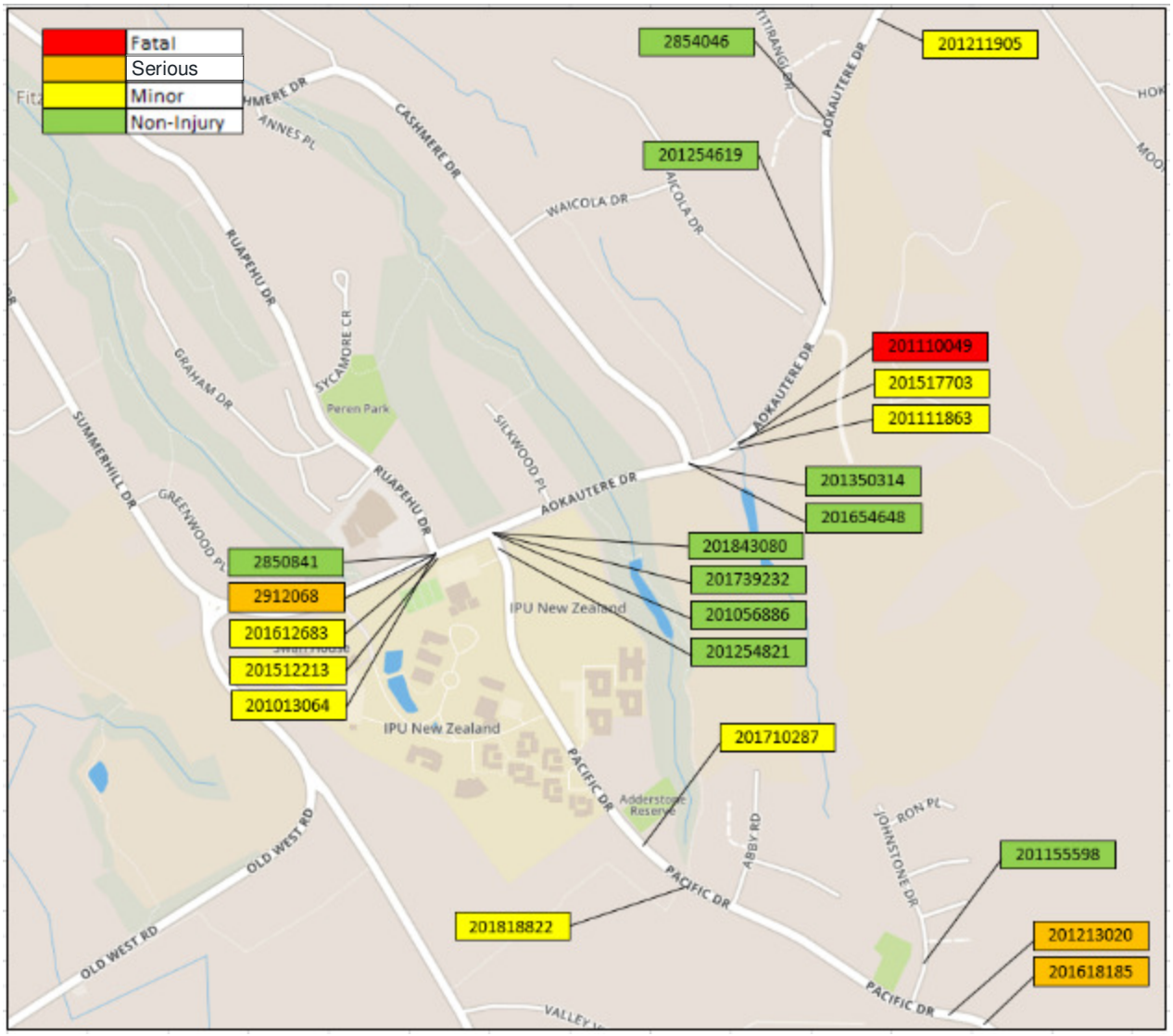


Figure 7: Crash locations (CAS)

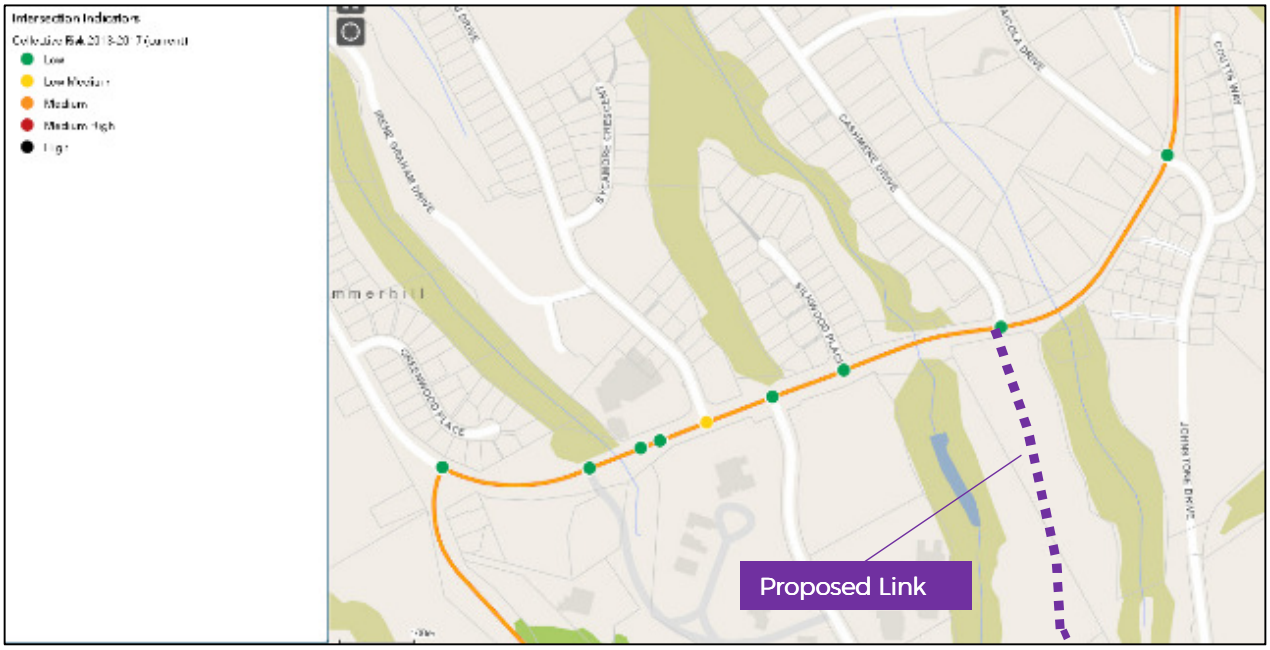


Figure 8: Intersection Collective Risk 2013-2017 (SafetyNET)

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.

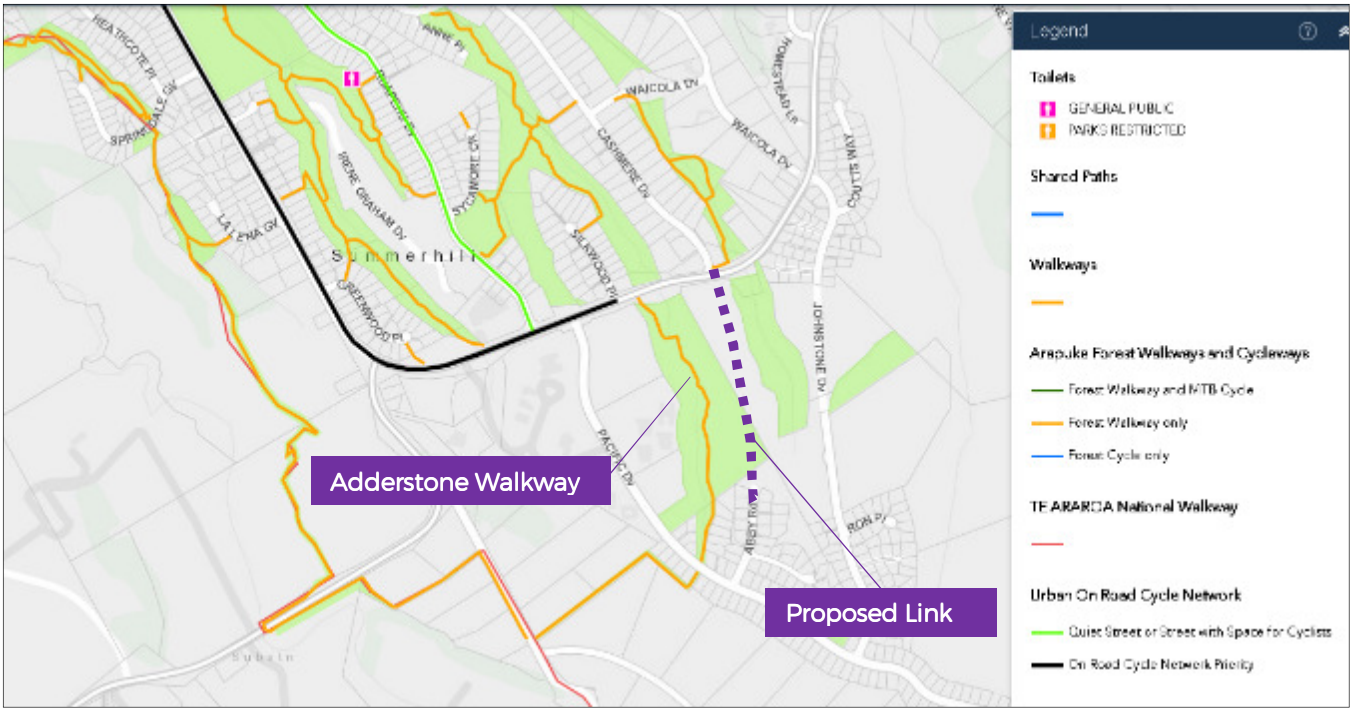


Figure 9: Walking and cycling map (PNCC GIS)

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.

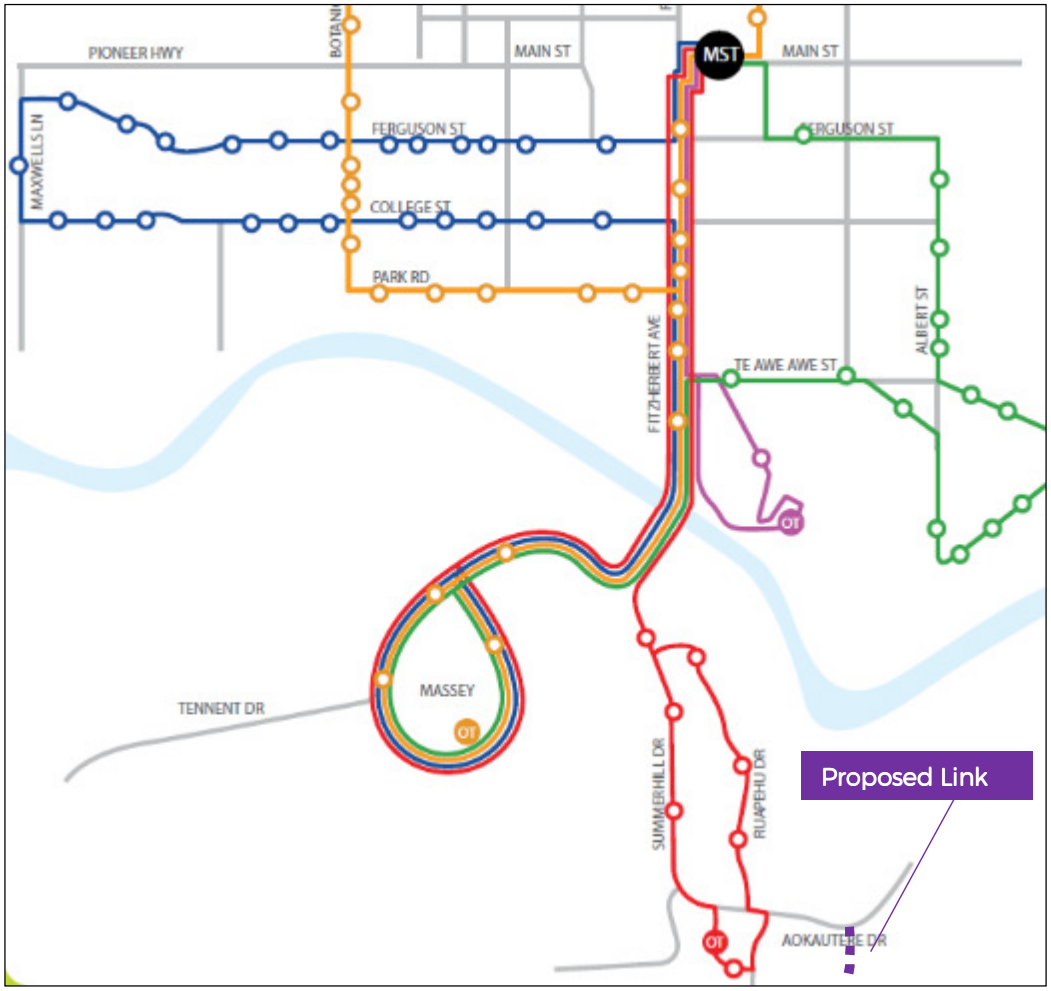


Figure 10: Bus route map (Horizons Regional Council website)

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.

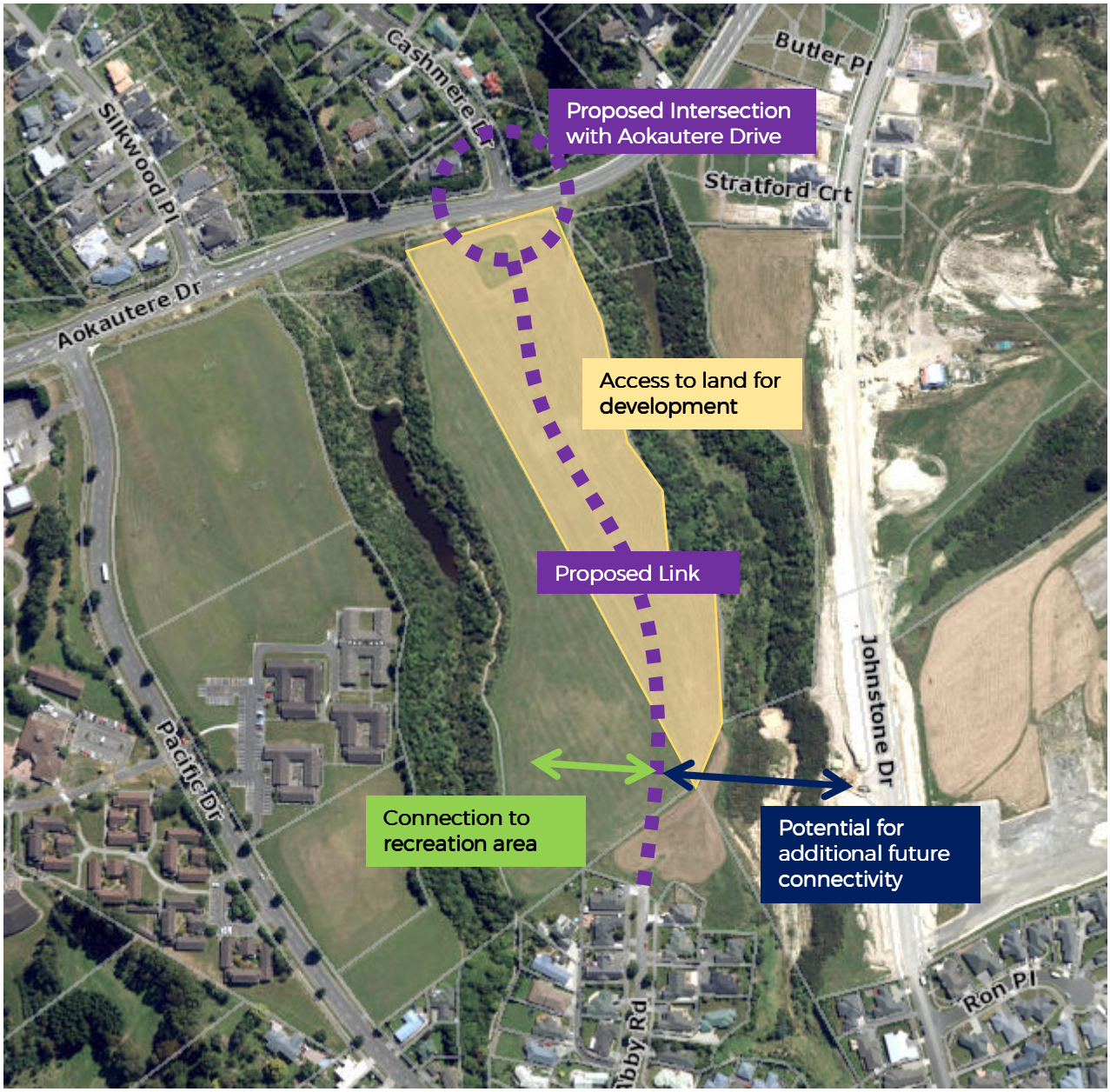


Figure 12: Function of proposed link (PNCC GIS)

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)

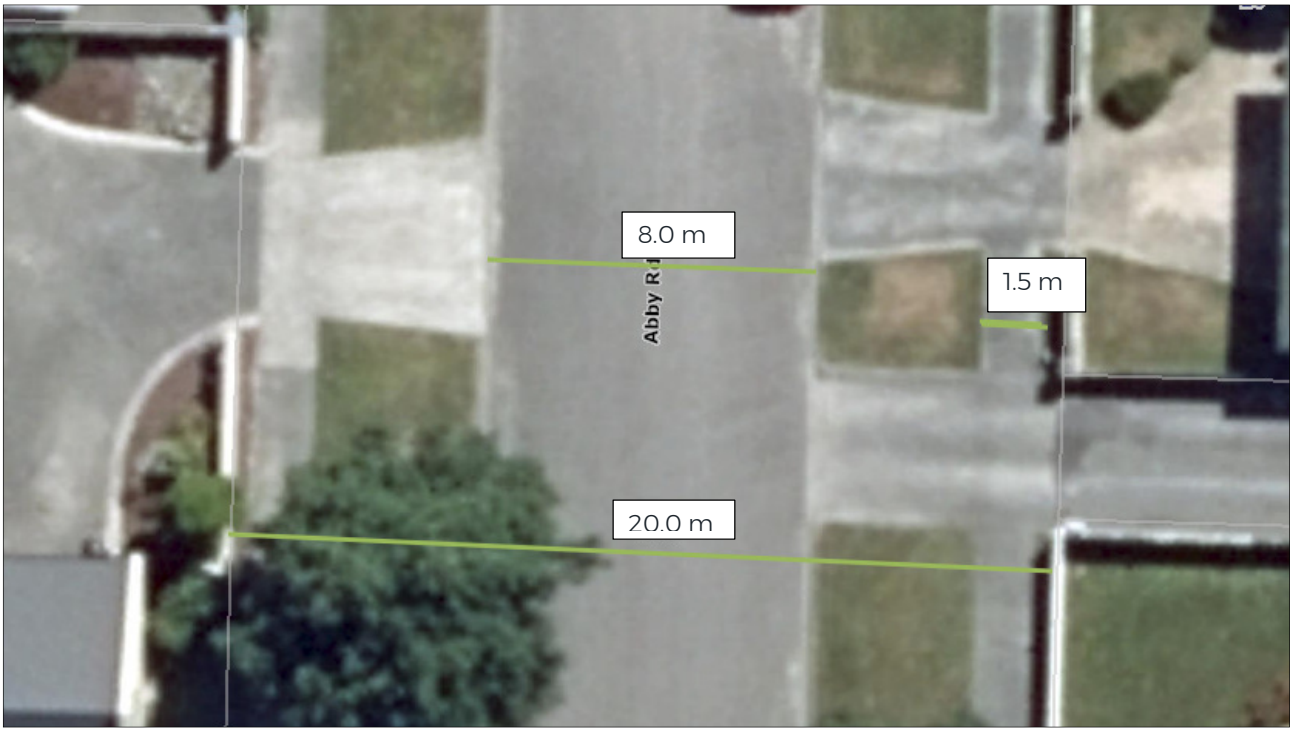


Figure 13: Current width of Abby Road (PNCC GIS)

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

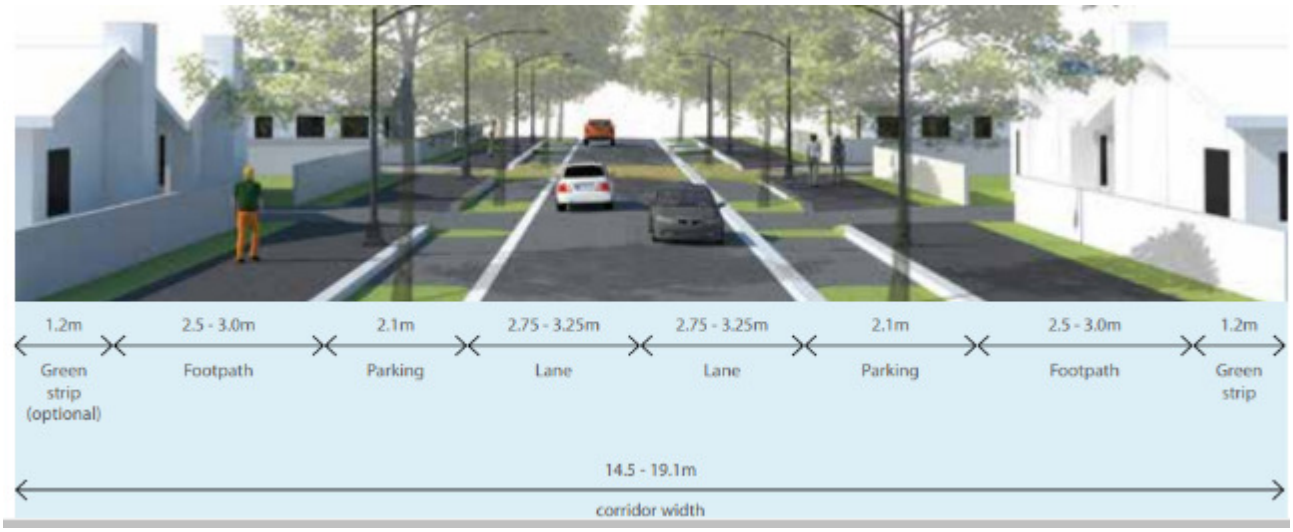


Figure 14: Local Road Cross Section (PNCC design manual)

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.

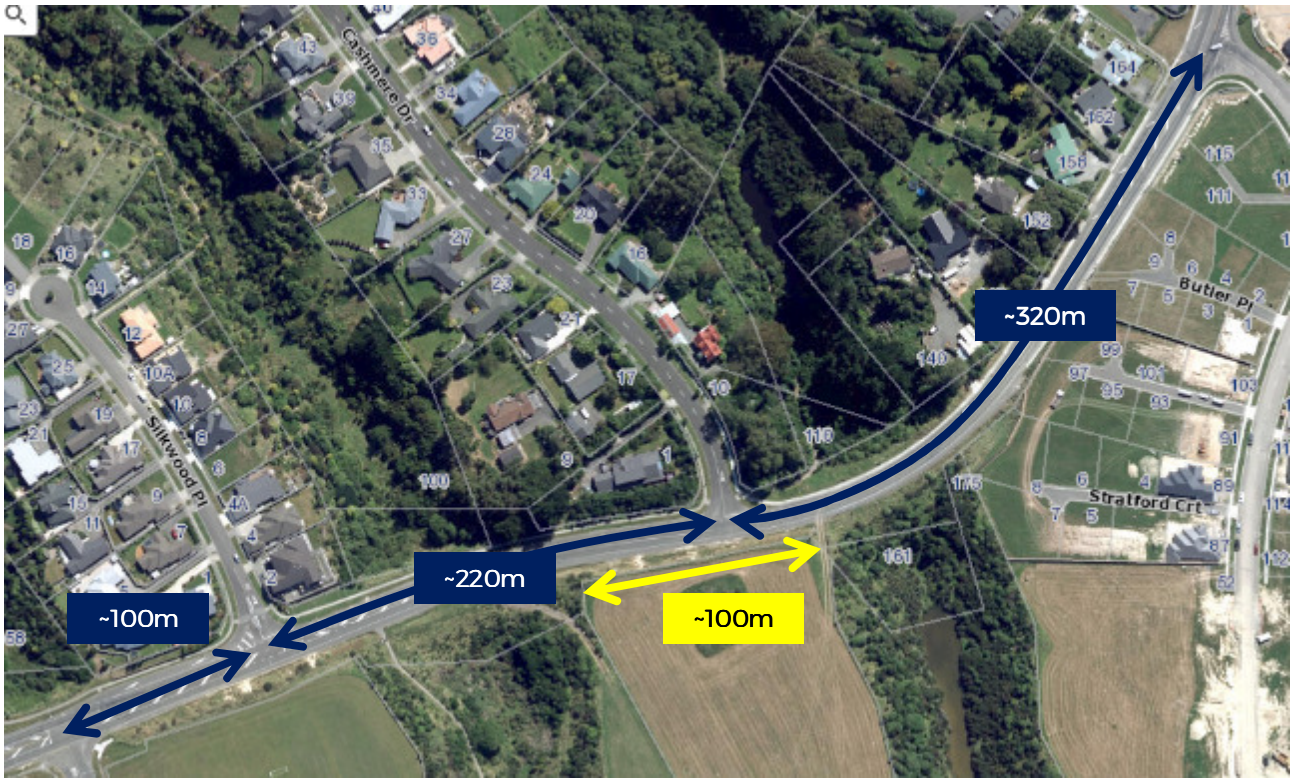


Figure 15: Intersection Spacing on SH57 / Aokautere Drive (PNCC GIS)

[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.

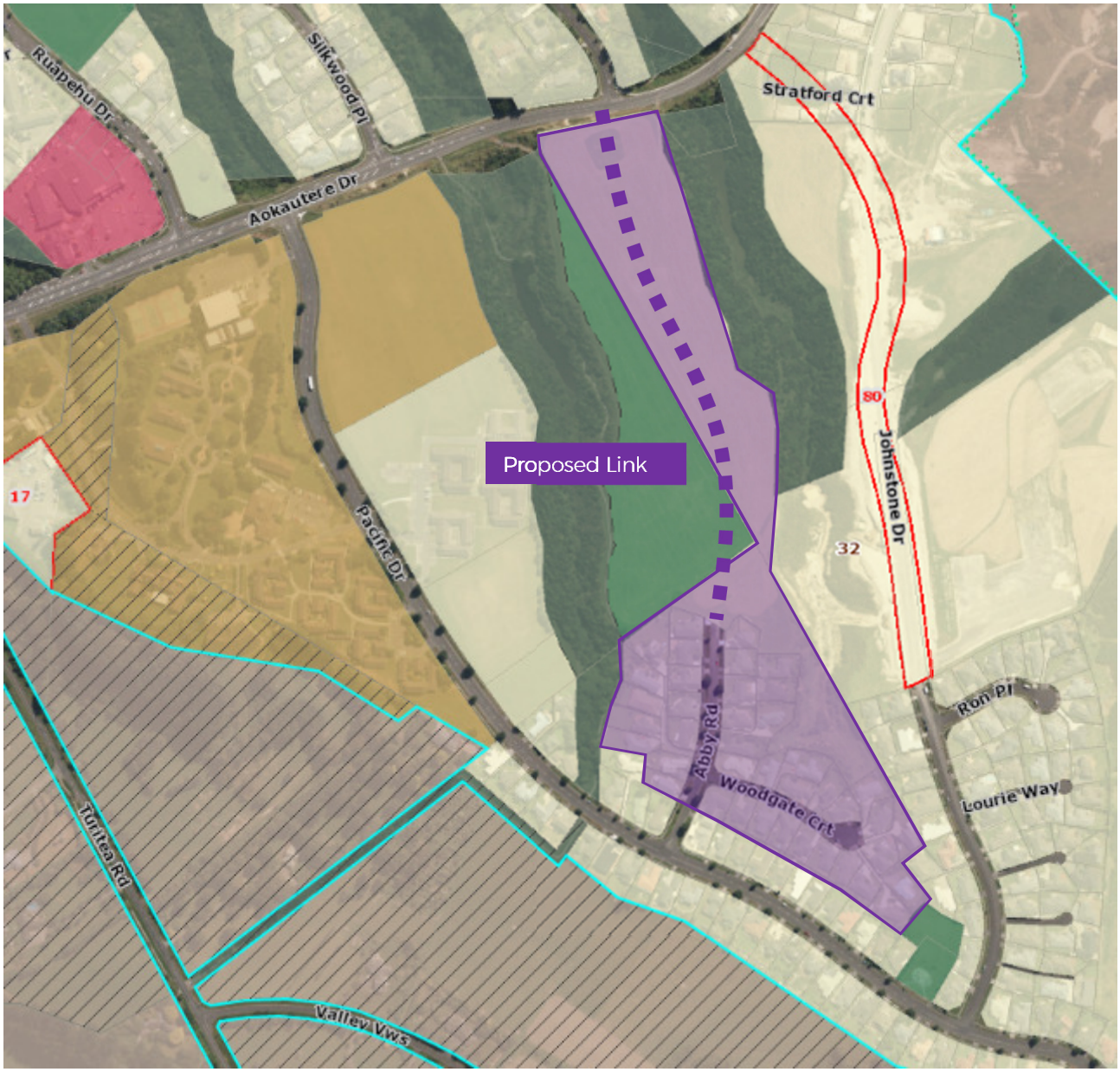


Figure 16: Typical demand area (PNCC District Plan GIS)

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.

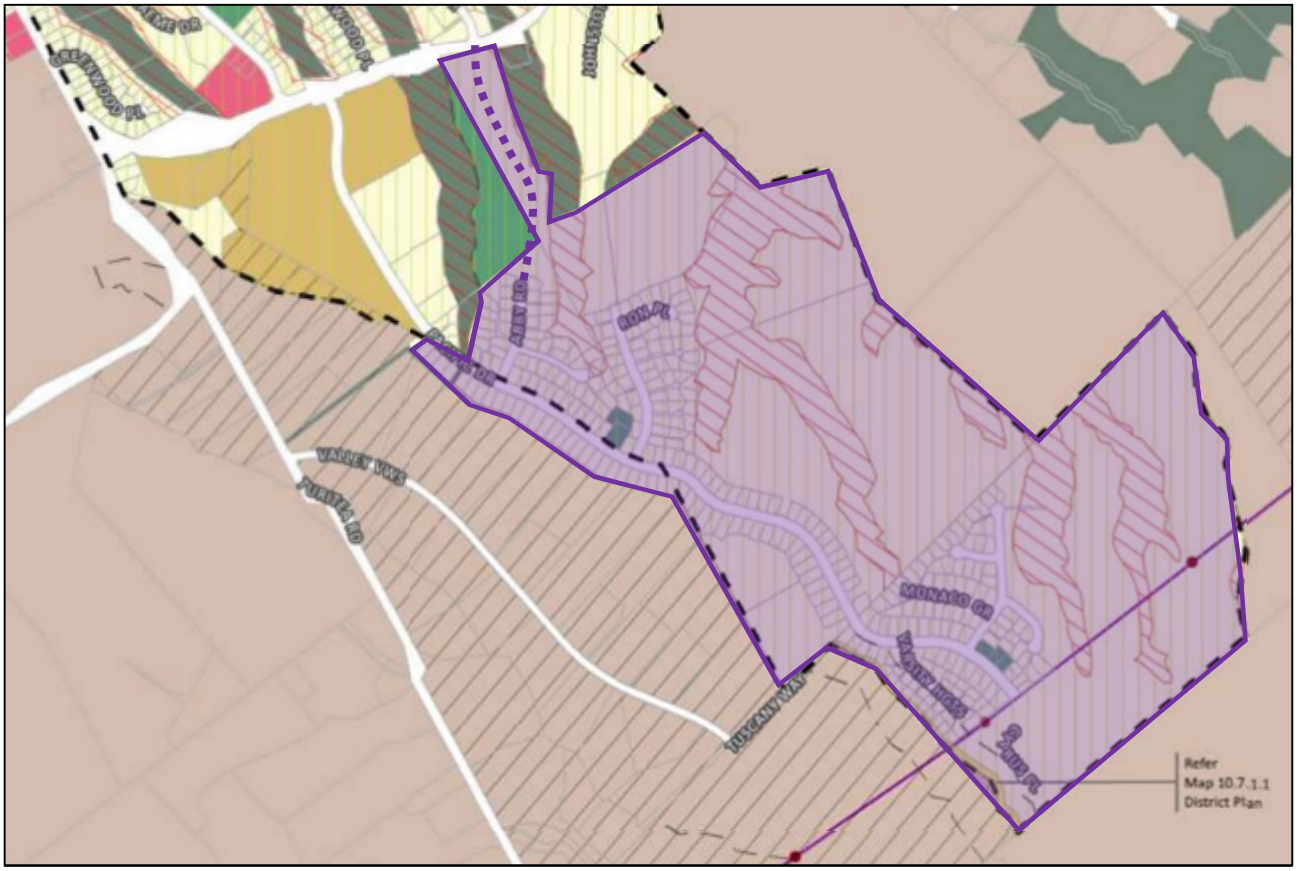


Figure 17: Potential event demand catchment (extract from Aokautere Development Area zoning (Planning Map 10.1 from the PNCC District Plan))

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.

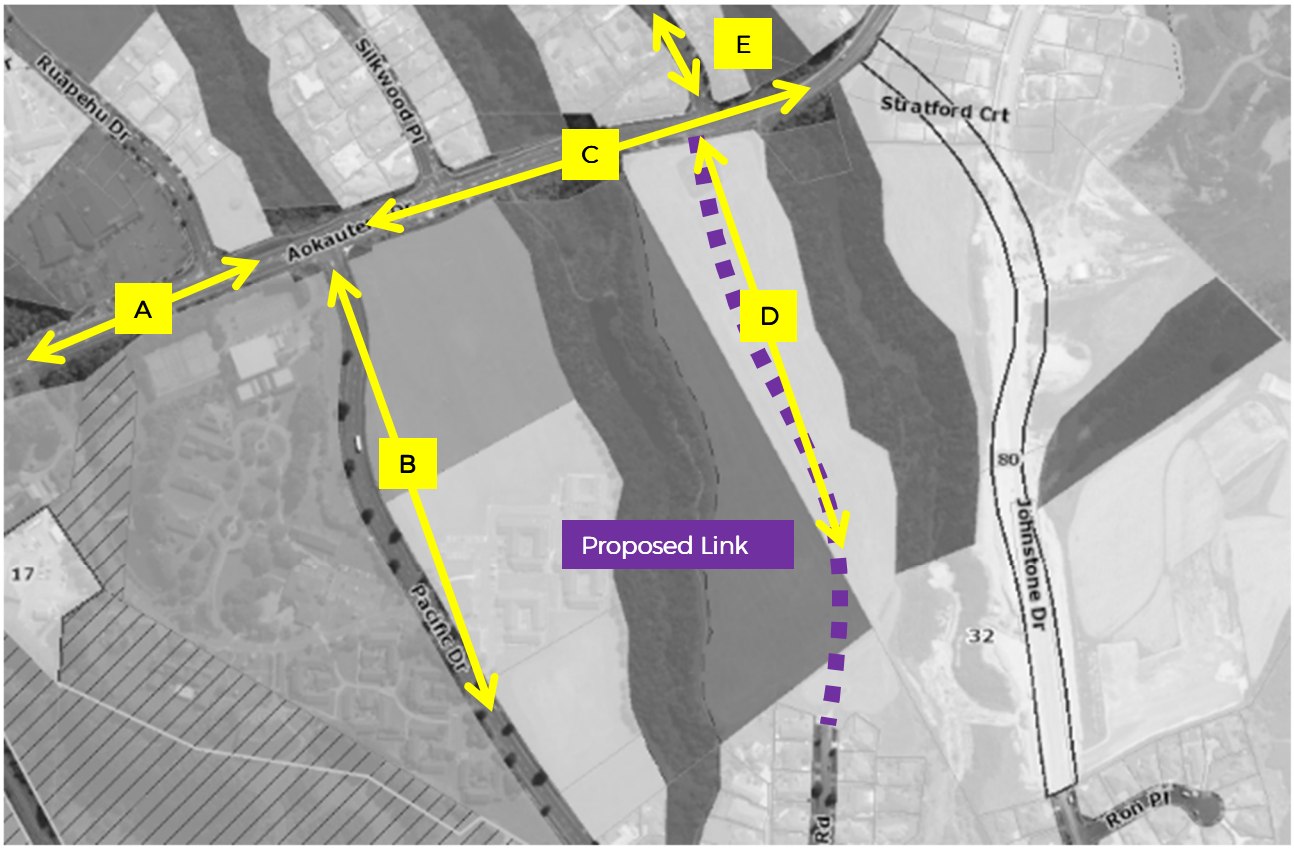


Figure 18: Summary of traffic flows (PNCC District Plan GIS)

[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

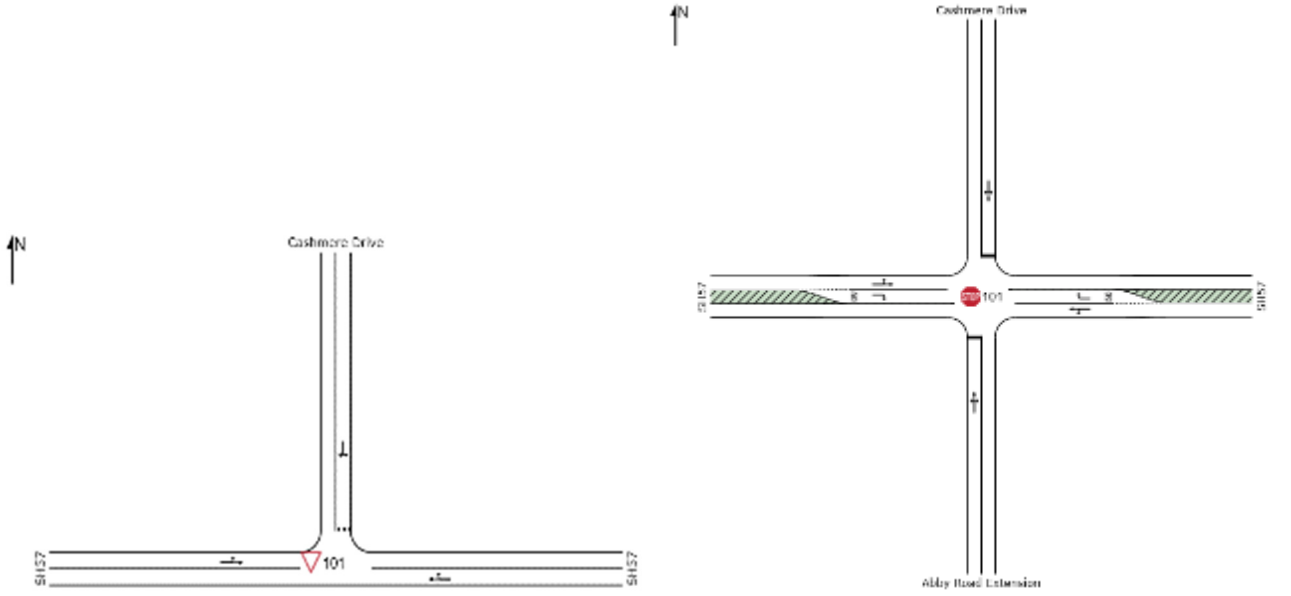
The following assumptions have been used to estimate the demands at the intersection:

- 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.

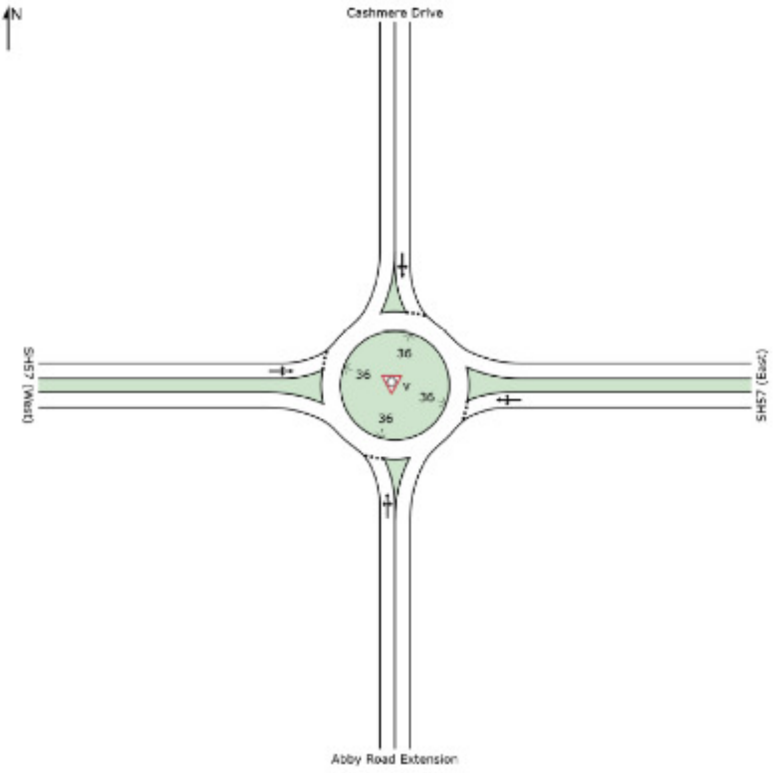


Figure 20: Intersection layout

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.

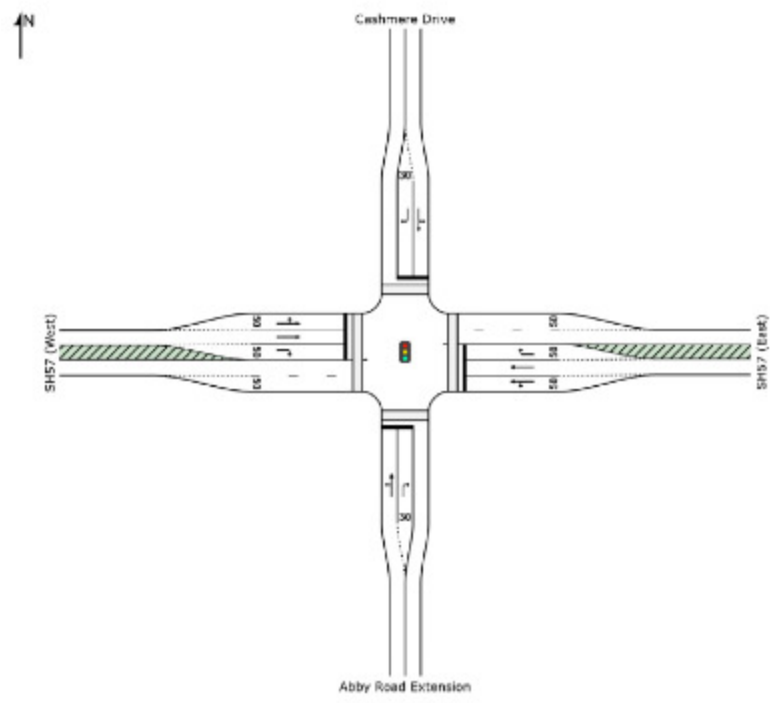


Figure 21: Intersection layout

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**.

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Appendix C

Traffic Report – Johnstone Road option

Abby Road Connection - Notice of Requirement

Transport Assessment

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Contents

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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 Johnstone Drive in Aokautere. This Transportation Assessment has been prepared to support the NOR application.

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.

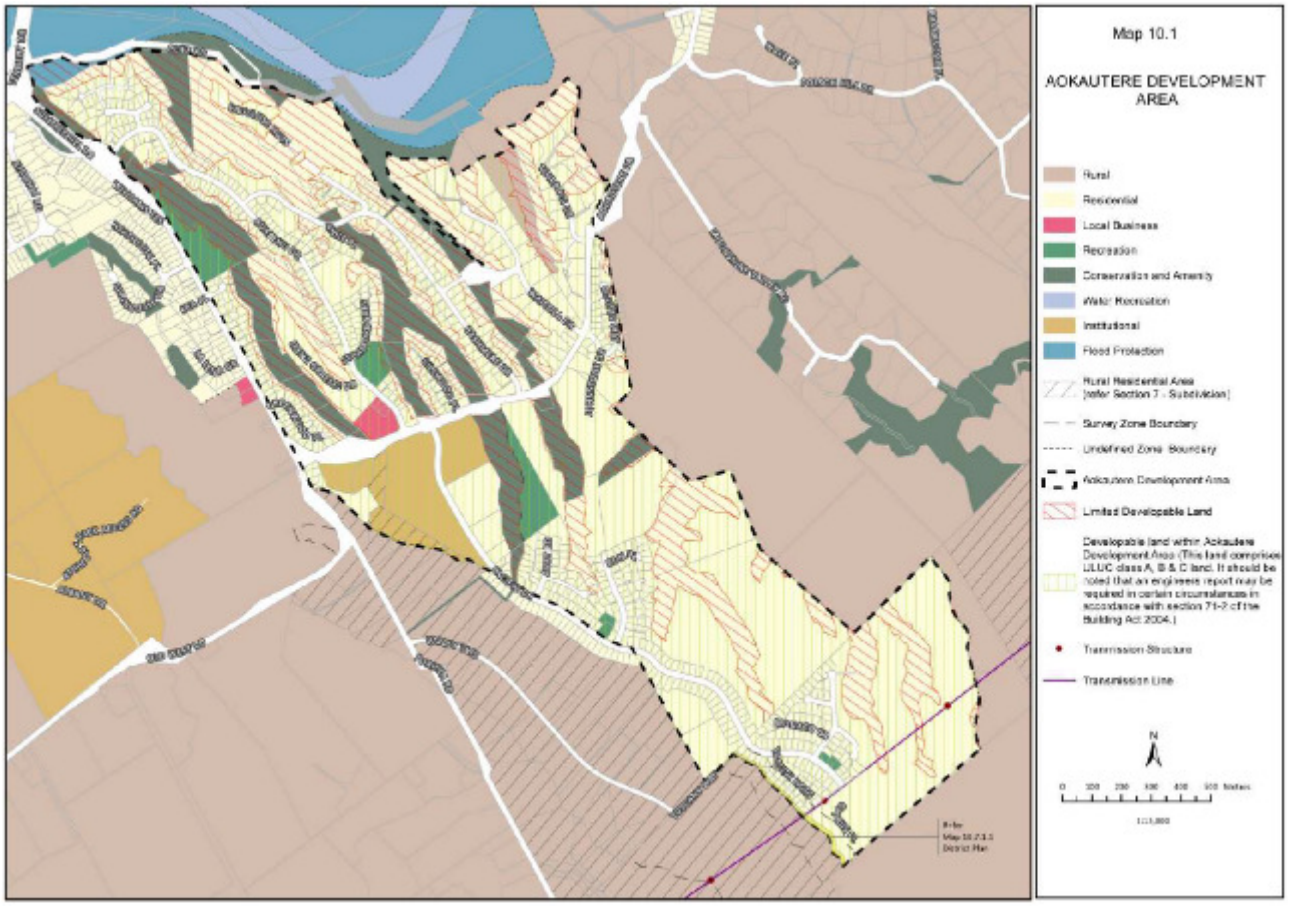

Figure 4: Aokautere Development Area zoning (Planning Map 10.1 from the PNCC District Plan)

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.

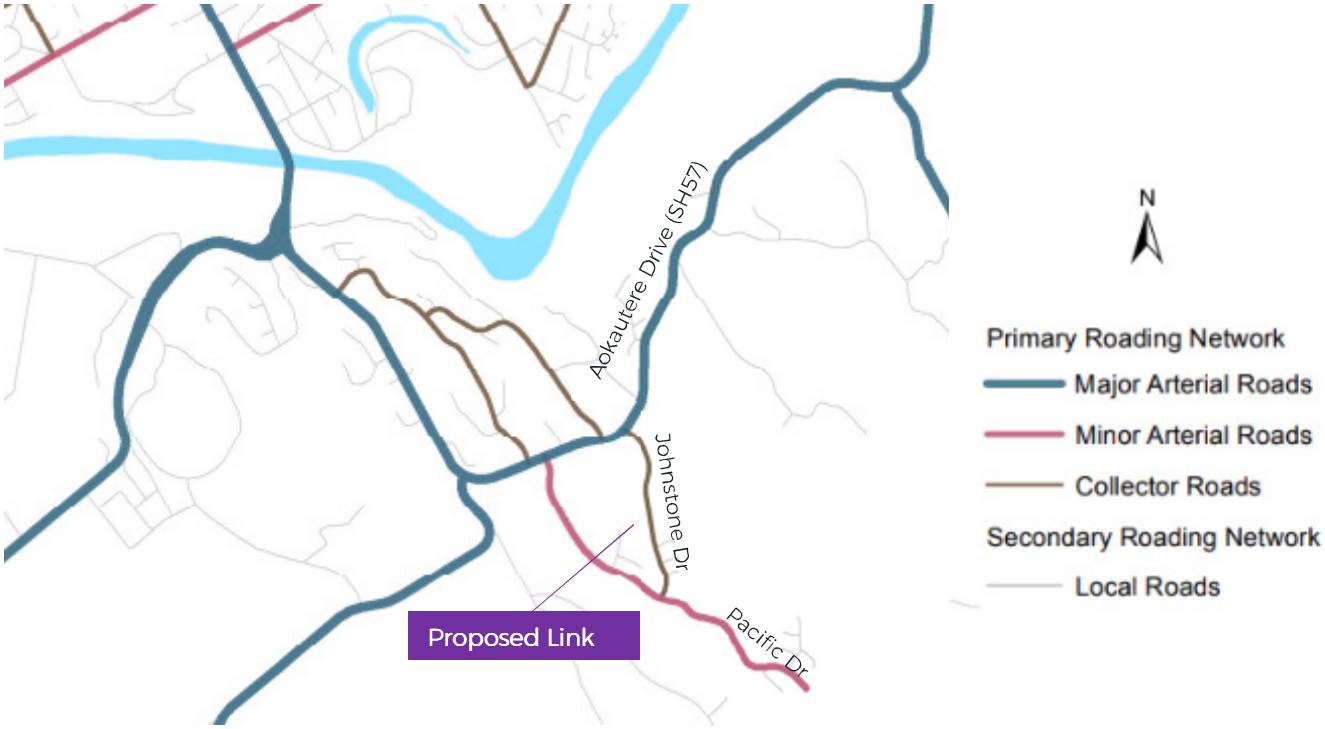

Figure 5: PNCC Road Hierarchy

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.

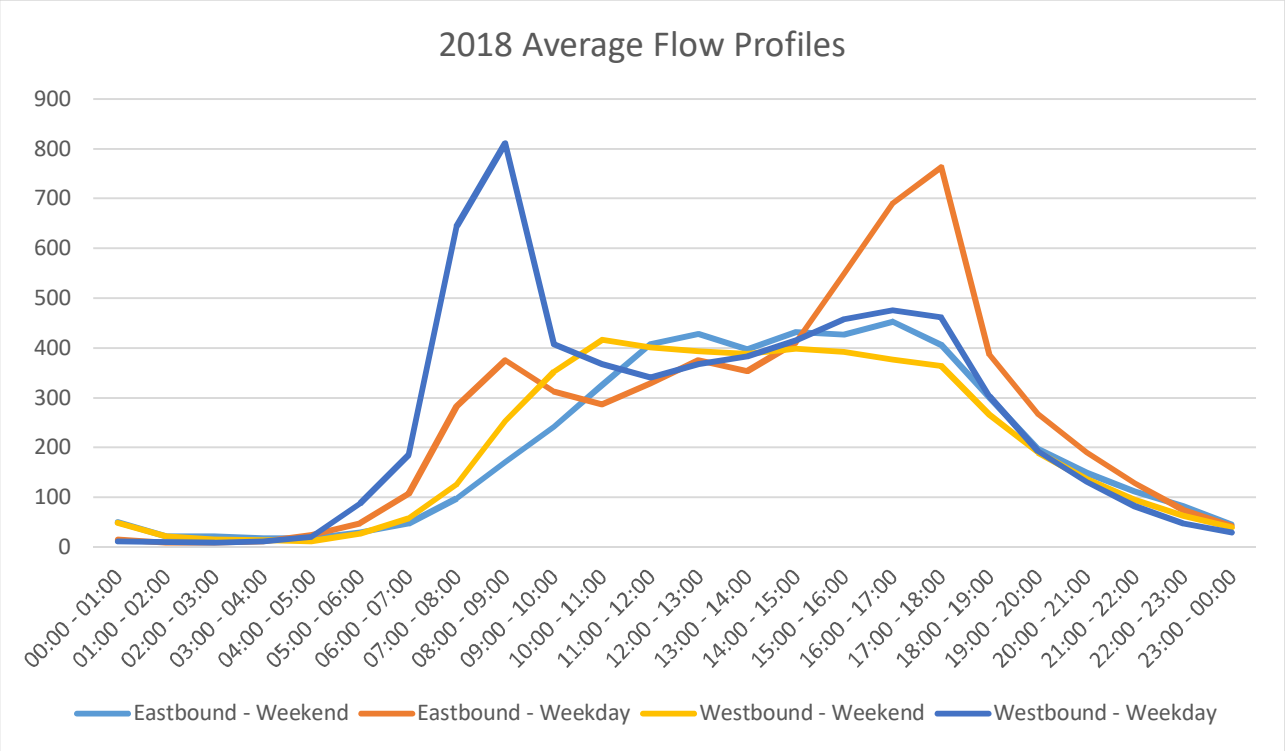

Figure 6: Flow profile on SH57 (average for 2018)

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 (2009-2018) there have been the following reported crashes:

- Four 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 three crashes on Pacific Drive, one 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 serious injury crash occurred south of the intersection with Johnstone Drive and was a loss of control type crashes that occurred heading north on Pacific Drive.
- A number of crashes have occurred at the intersection of Ruapehu Drive and SH57, including one serious, three minor. 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 are low risk (with the exception of the Ruapehu Drive intersection which reflects the crash history at this location identified above).

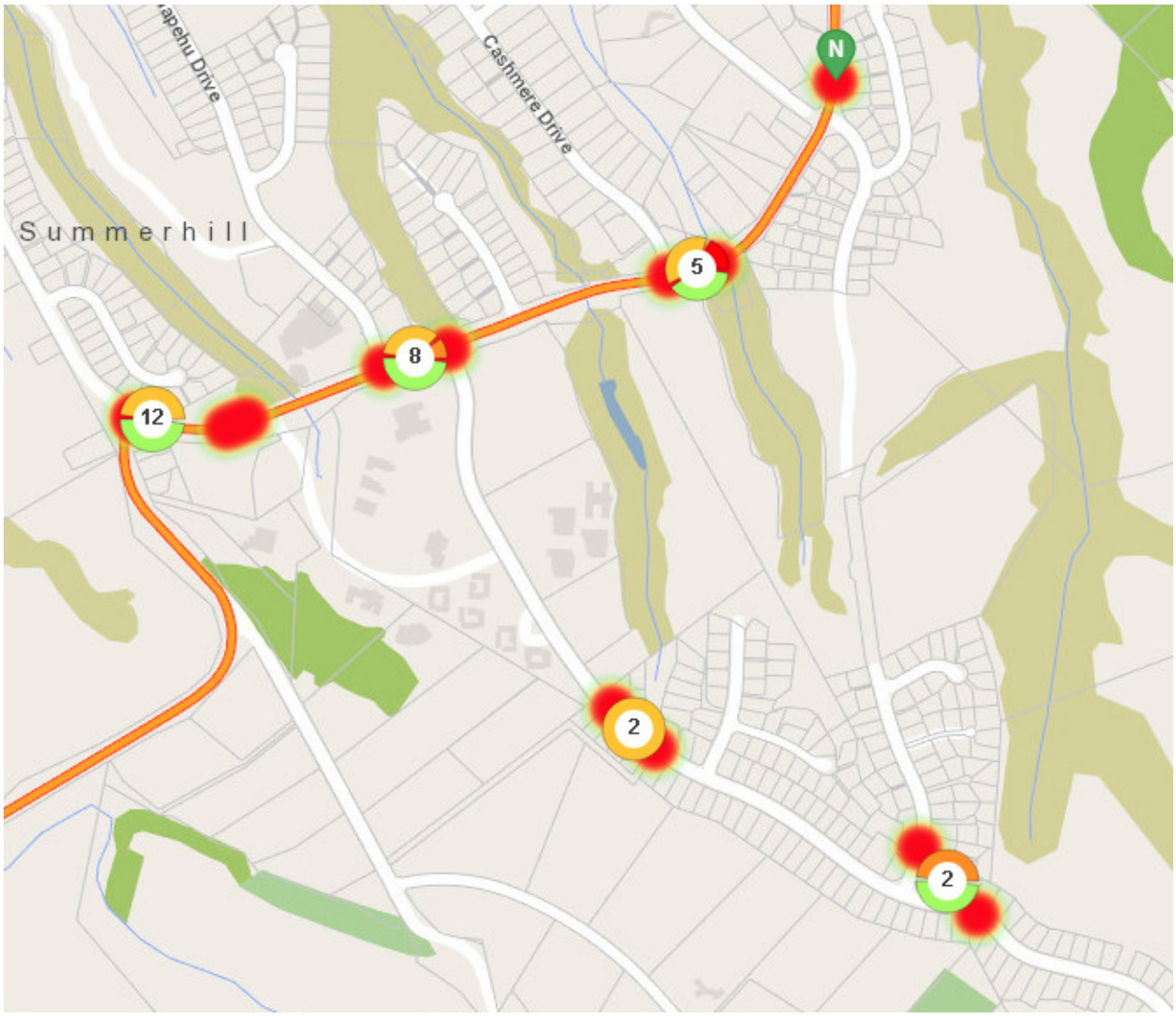

Figure 7: Crash locations (CAS)

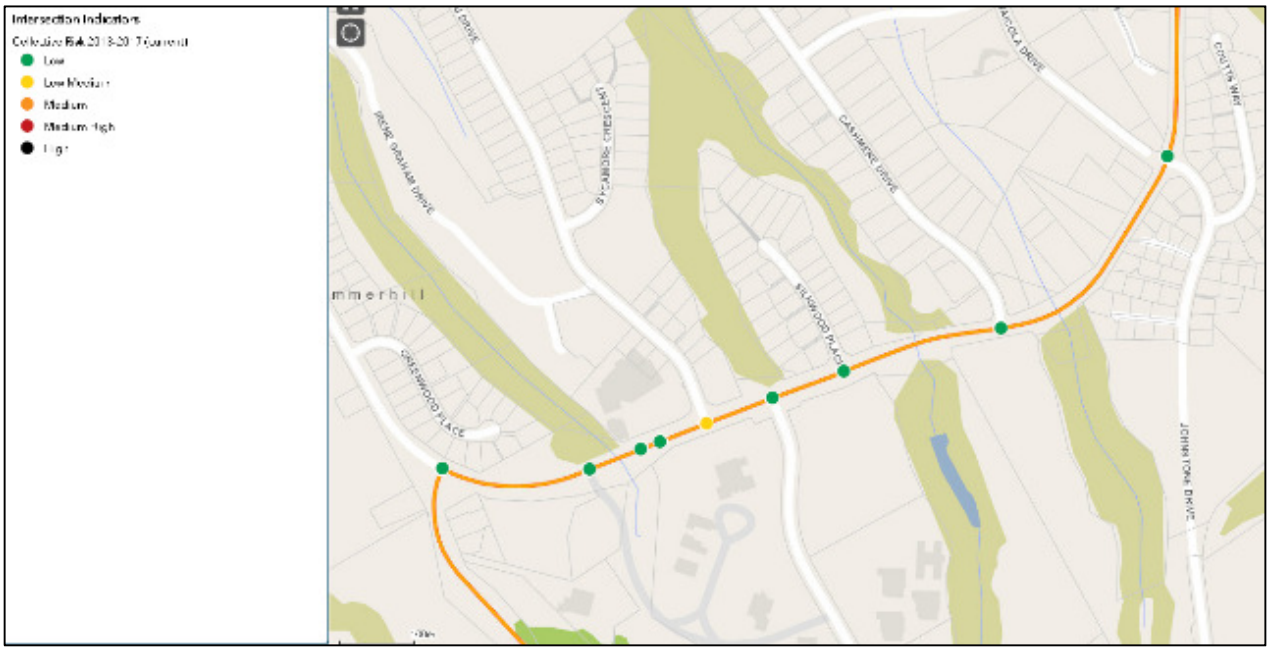

Figure 8: Intersection Collective Risk 2013-2017 (SafetyNET)

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.

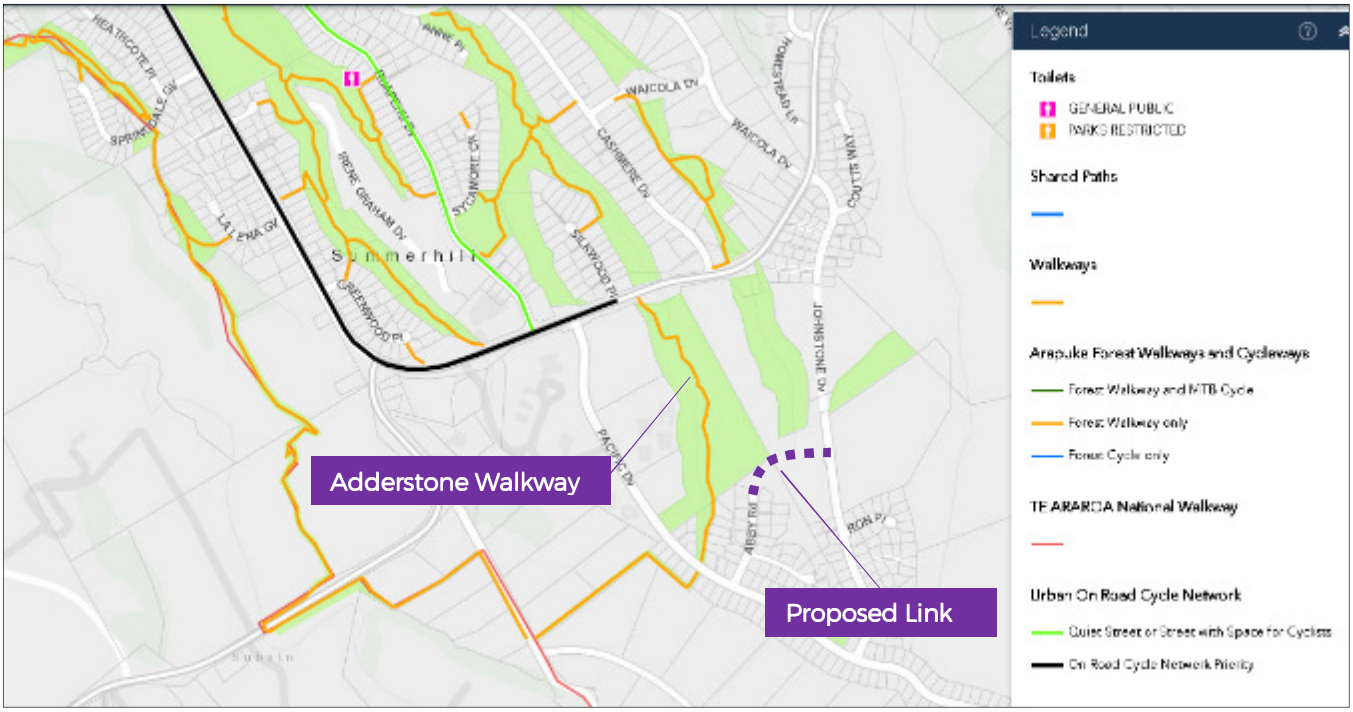

Figure 9: Walking and cycling map (PNCC GIS)

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.

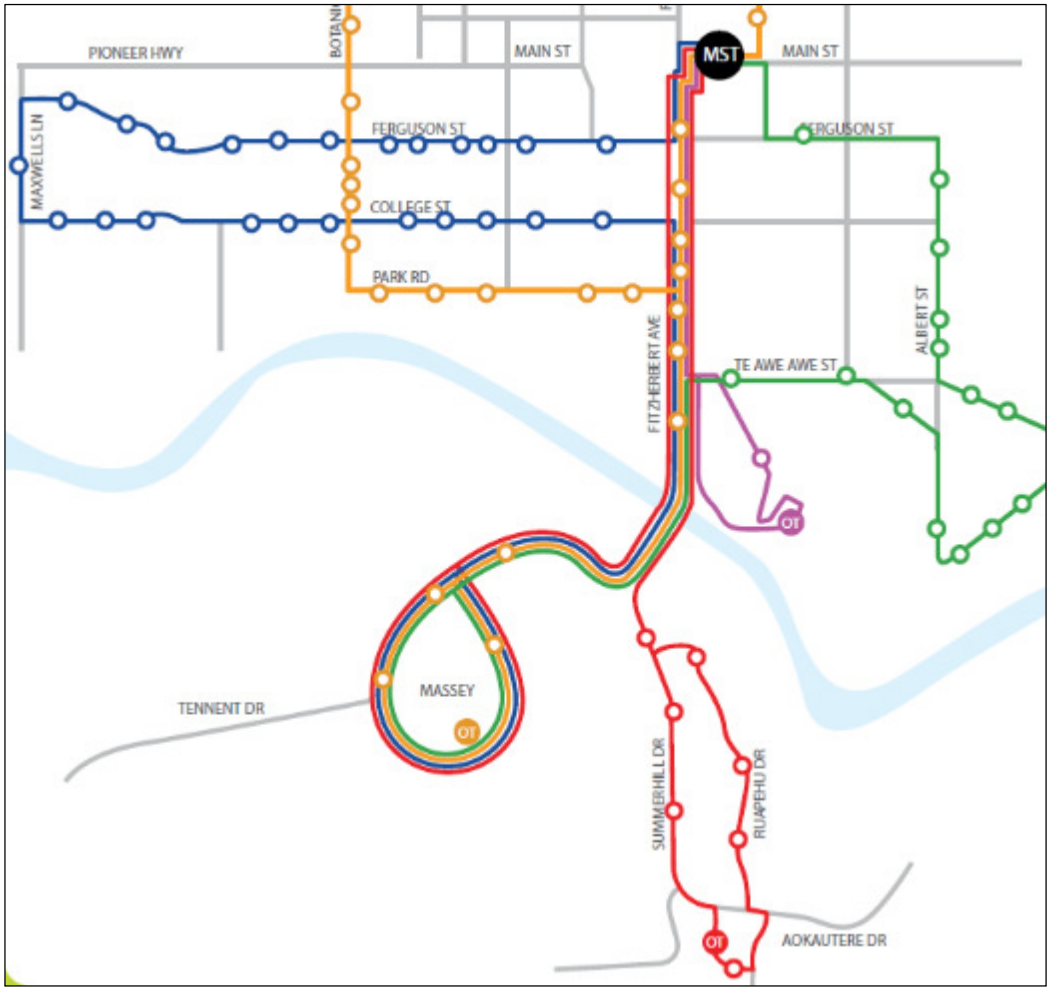

Figure 10: Bus route map (Horizons Regional Council website)

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 Johnstone Drive.

4.1 Link function

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

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[2] (engineering standards). However, the road reserve width (20m) is wider than required by the engineering standards (13.5m)

Figure 12: 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.

[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

- 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.

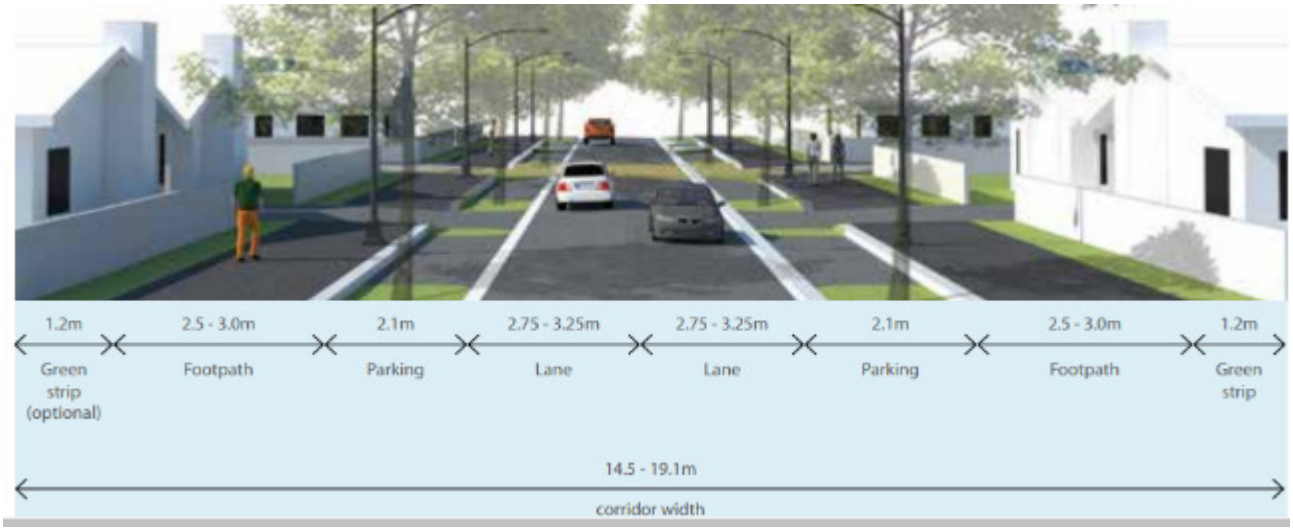

Figure 13: Local Road Cross Section (PNCC design manual)

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.

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

Figure 14 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.

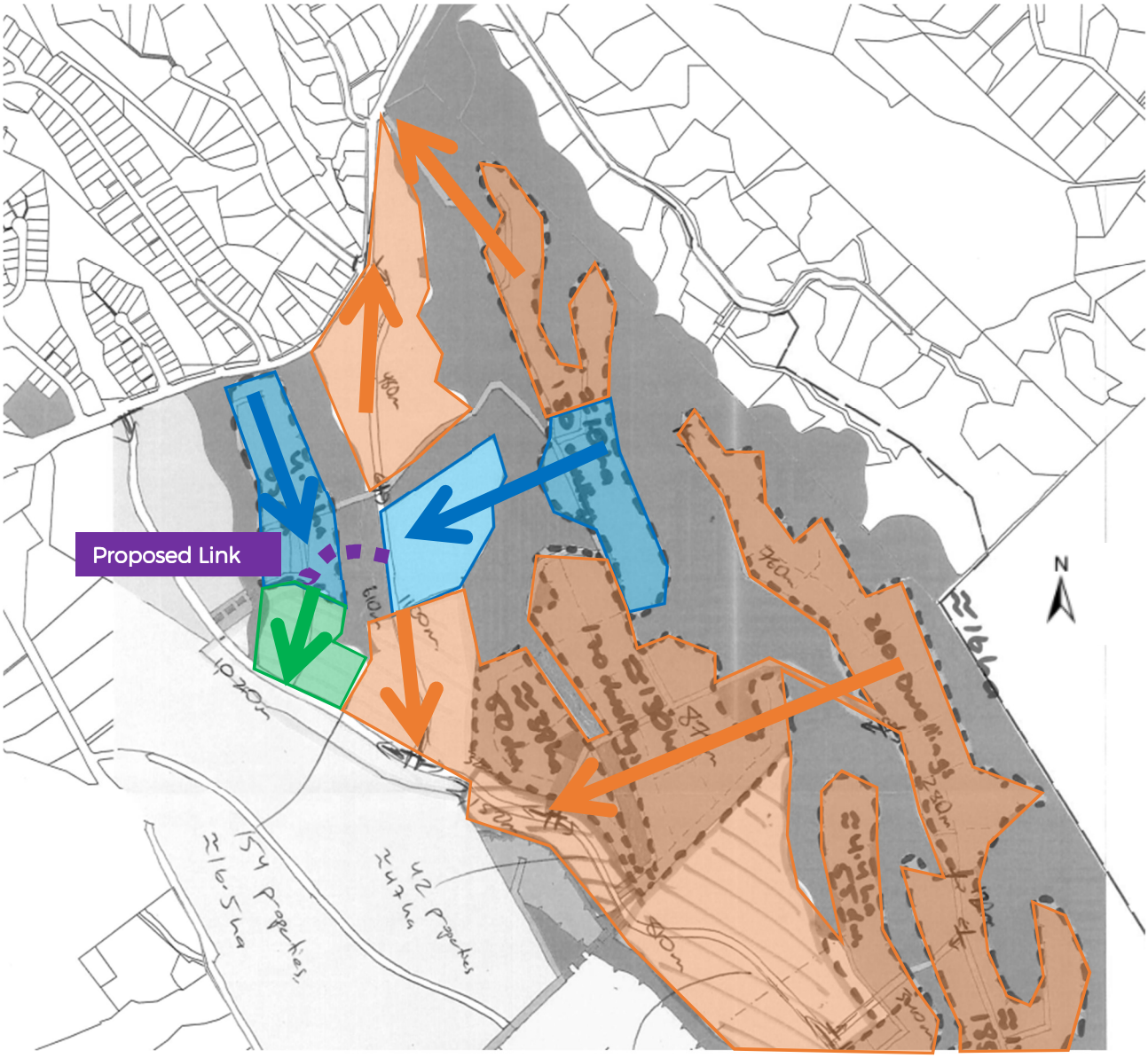

Figure 14: Potential demand area (sketch provided by PNCC)

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 14 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.

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	465 vpd 50 vph	1,480 vpd 175 vph	465 vpd 50 vph
Pacific Drive (excluding demands from Abby Road and Johnstone Drive)[4]	815 vpd 90 vph	11,215 vpd 1,360 vph	

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[5] intersection model has been prepared to understand the current and future intersection performance of Abby Road / Pacific Drive 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;
- 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.

Intersection layouts

Figure 15 below shows the intersection layout used for the modelling.

[4] 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).
[5] Intersection modelling software, SIDRA version 7

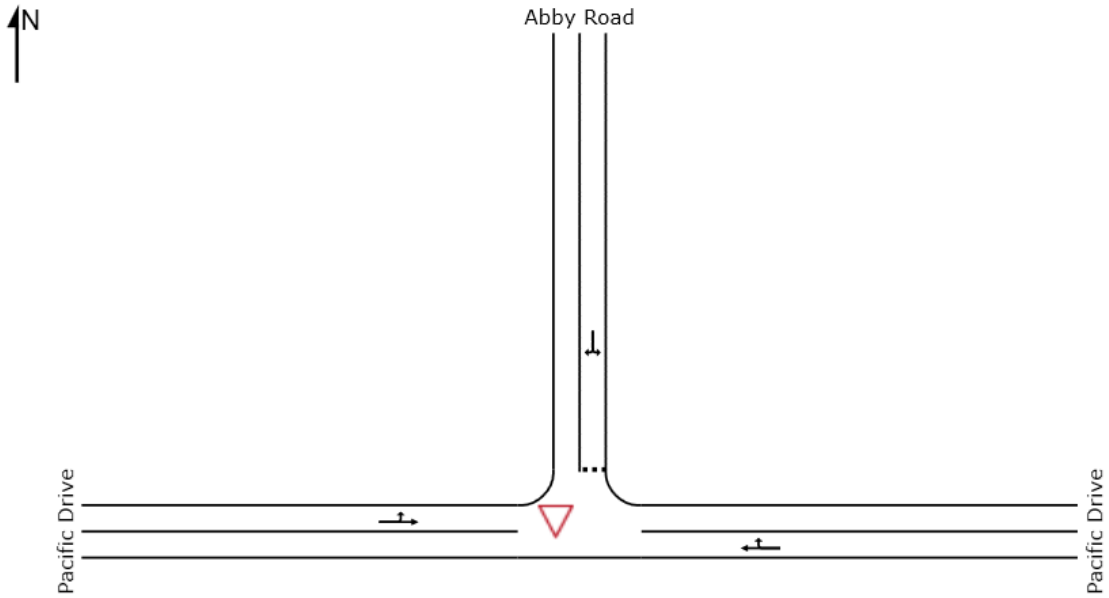

Figure 15: Intersection layout

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.

Table 5: Intersection Performance (Peak hour)

Movement / approach	Current	Future (no link)	Future (with link
Pacific Drive east / south	A	A	A
Abby Road	A	E	F
Pacific Drive west / north	A	A	A

The modelling results show that the intersection functions satisfactorily with current traffic volumes. The future models show that the motorists exiting Abby Road experience unacceptable performance and performance worsens with the proposed link being established. Provision of a short left turn lane on the Abby Road approach provides a small improvement but the impact on overall performance is negligible.

Table 6: Intersection Queue's and Delays (peak hour)

Movement / approach	Current		Future (no link)		Future (with link	
	Queue length (m)	Average Delay	Queue length (m)	Average Delay	Queue length (m)	Average Delay
Pacific Drive east / south	0.0 m	0.1 sec	0.4 m	0.0 sec	0.8 m	0.1 sec

Movement / approach	Current		Future (no link)		Future (with link	
	Queue length (m)	Average Delay	Queue length (m)	Average Delay	Queue length (m)	Average Delay
Abby Road	0.6 m	4.9 sec	15.4 m	38.3 sec	199.4 m	262.4 sec
Pacific Drive west / north	0.0 m	1.5 sec	0.0 m	0.4 sec	0.0 m	0.7 sec
Overall	**0.6 m**	**1.6 sec**	**15.4 m**	**2.4 sec**	**199.4 m**	**29.3 sec**

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

6.2 Safety

The overall effect on safety is expected to be **minor negative** due to the increased traffic volumes on the link and through the intersection.

6.3 Accessibility

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

6.4 Resilience

The overall effect on resilience is expected to be **minor positive** as the link provides a limited level of 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.

8 Potential Mitigation

8.1 Intersection Performance

The SIDRA modelling indicates that the intersection will result have an unacceptable level of service for the Abby Road approach in in the future. The addition of the proposed link is expected to reduce the performance further.

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 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 16.

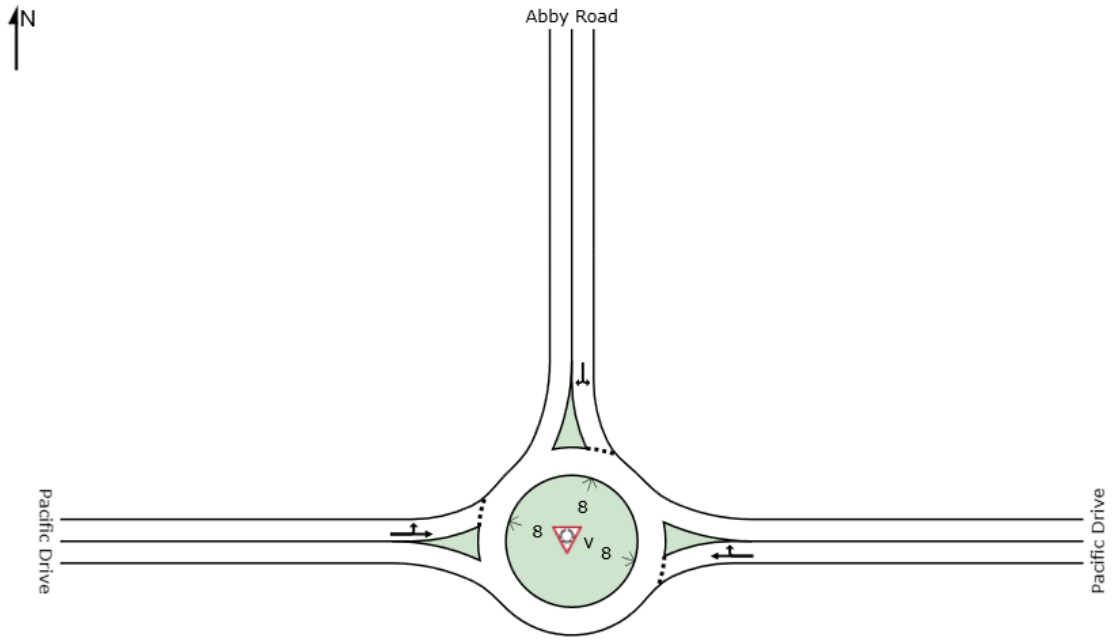

Figure 16: Roundabout layout

4

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

Table 8: Roundabout Performance (Peak hour)

Movement / approach	Future (no link)	Future (with link
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. 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 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 Safety

Traffic calming measures could be implemented on Abby Road and the new link to reduce traffic speeds and mitigate the safety concerns.

The roundabout proposed above would also provide safety benefits at the intersection.

9 Conclusions

The assessment of the proposed link has identified the following:

9.1 Efficiency

- The intersection of the Abby Road and Pacific Drive is expected to have unacceptable performance in future years.
- Upgrading the intersection to a roundabout will provide good performance with or without the proposed link.

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

9.2 Safety

- The additional traffic on the link is expected to increase crash risk.
- Traffic calming on the proposed link and Abby Road could help to reduce traffic speeds and mitigate the safety concerns.

The overall safety assessment (with no improvements) is **minor negative**. With intersection improvements and traffic calming the overall efficiency assessment is **minor positive**.

9.3 Accessibility

- The link provides improved access for some areas.

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

9.4 Resilience

- The proposed link provides limited redundancy of the road network.

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

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Appendix D

Landscape Assessment

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PROPOSED ROAD EXTENSION - NOR

30 ABBY ROAD – 33 JOHNSTONE DRIVE

AOKAUTERE, PALMERSTON NORTH

PALMERSTON NORTH CITY COUNCIL

21 December 2018

Prepared by

Hudson Associates

Landscape Architects

Contents

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 comprised of 30 Abby Road and 33 Johnstone Drive ("**the site**"), legally described as Lot 2 DP 484516 (1.11ha) and Lot 1102 DP519561 (5.18ha) respectively. Together the lots occupy a total land area of 6.29ha. The site is zoned Residential under the PNCC (in the Rural Residential Area) and consists of both developable and undevelopable land (*Attachment 1 – Figure 1*).

3. The Project will cross the upper section of Abby Road Gully, with two alignment options proposed (*Attachment 1 – 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.

    a. **Option 1 (PNCC 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 more oblique angles (80°) onto Johnstone Drive, resulting in an entrance location approximately 40m further north than Option 2.
    b. **Option 2 (Pirie Alignment)** provides for a simpler geometric form, which connects at a right 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 and are included at the end of the document under the section "Attachments".

EXECUTIVE SUMMARY

5. The Project provides the opportunity for a development that has limited adverse effects on the existing landscape and natural character, and the visual amenity values of the surrounding gully area. Potential adverse effects can be mitigated to some degree. Additionally, these 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 will result in a similar overall level of effect, 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.

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 land between the northern side of the road and the southern boundary of adjacent Manga o Tane Reserve. Option 1 provides a more feasible and efficient choice to achieve this necessary offset measure as it is aligned closer to the Reserve than Option 2, and hence less land will be required for the designation if Option 1 is selected. The entire fill batter on the southern side should also be revegetated.

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 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.

[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

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

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

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

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 potentially change 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. Abby Road Gully contains an ephemeral stream and therefore the stream and its gully margins are considered 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 application 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 Project 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 Ruahina Ranges are located approximately 20km north-east of site, and the Tararua Ranges are approximately 10km south-west of the site (Attachment 1 – 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 (Attachment 1 – Figure 5-6).

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 (Attachment 1 – 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

(Attachment 1 – 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 (Attachment 1 – 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.

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 (Attachment 1 – Figure 9 and 10). Where possible crossing of the gullies by road is avoided. However, there are approximately seven points on the roading network where crossing of the gullies has been necessary in order to provide increased connectivity between neighbourhoods and neighbouring developable land (Attachment 1 – Figure 11). 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 (Attachment 1 – Figure 12-13).

39. 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

40. The application site is two abutting sections zoned Residential and located with the Aokautere Development Area under the Palmerston North District Plan. The larger of the two undeveloped sections, 33 Johnstone Drive (Lot 1102 DP 519561), is comprised of 5.18ha of flat grassed terrace and vegetated gully. The allotment has a partial road frontage to the east onto the recently established Johnstone Drive, as well as to the north onto Aokautere Drive, which is a major alternative route.

41. 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 contains 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 (Attachment 1 – Figure 14).

42. 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 the gully.

43. Abby Road Gully has undergone significant 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.

44. The natural landform of the entire gully has been irreversibly 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. 30 Abby Road (Lot 2 DP 484516) is the southernmost section which contains the head of the Abby Road Gully and totals 1.11ha. This property 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. 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 various reasons work on the gully did not resume and it was left in a modified 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 (Attachment 1 – Figure 15).

48. 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.

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

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.
- 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.

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

49. 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

50. 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.*"

51. 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;*"

52. 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.*"

53. 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.*"

54. 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.*"

55. 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.*"

56. 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*."

57. 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.*"

58. 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

59. 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

60. Both roading alignment options will result in changes to the landform of Abby Road Gully as a result of necessary cut and fill. 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.

61. 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.

LANDSCAPE CHARACTER EFFECTS

62. 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).

63. 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.

64. The Aokautere Structure Plan, 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. A future public walkway through the gully was suggested during the Aokautere Structure Plan workshops.

65. 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 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.

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

NATURAL CHARACTER EFFECTS

67. 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**

68. The earthworks required will result in land modification and areas of fill, as well as division of the gully. There is the potential risk that the Project could result in increased stormwater runoff into the northern regenerating gully. All these effects have a negative flow on effect, potentially impacting on species diversity and overall ecosystem function.

69. 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.

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

VISUAL AMENITY EFFECTS

71. 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.

72. 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.

73. 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.

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

75. 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.

76. 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. 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.

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

CUMULATIVE EFFECTS

78. It is important to consider the impact of the ecological health of Abby Road Gully on the life supporting capacity of the Manawatū River, which the gully feeds into.

79. Drainage is a source of cumulative effects. Increased drainage into the gully can modify flow regimes and contribute to the movement of water contaminants from one location to another. Potential cumulative effects include the addition of water runoff from the road into the gully, gathering contaminants from the road. The road also introduces an impervious surface, increasing stormwater runoff through lack of percolation of water through the ground.

80. Disturbance of natural areas resulting in altered landscape structure and ecosystem functioning is another source of potential adverse cumulative effects. As the site is already highly modified through earthworks and there is an absence of vegetation, other than weed species, it is not considered that the Project will result in adverse cumulative effects on ecosystem functionality.

81. 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 Moderate Low.

MEASURES TO MITIGATE ADVERSE EFFECTS

82. 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:

- Extend designation corridor to meet Manga o Tane Reserve and revegetate to match the native species within the Reserve. Plant all road embankments
- Include pedestrian access in the designation to add further amenity value and connectivity.
- Create a walkway into and through Manga o Tane Reserve which connects SH57 with a footpath along the proposed road. This will enable people within the vicinity to gain physical access to the gully, increasing people's appreciation of the area's amenity values.
- Culvert under the road is constructed to allow for fish passage if appropriate for any indigenous species present in the ephemeral stream.

EVALUATION

83. If Option 1 is selected it would require a smaller designation area to include the area between the road and the Reserve, compared with Option 2. If Option 2 was selected, this would require a larger designation area over privately-owned land in order to revegetate the area between the road and the Reserve. Alternatively, if the designation was not extended to meet the Reserve for Option 2 it would result in a small piece of unusable, privately-owned land between the Reserve and the northern side of the road. The mitigation measure of revegetating the area between the road and Reserve, once complete, will effectively assist in integrating the planted embankment with the adjacent Reserve.

84. 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.

85. 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.

86. 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 result in enhanced ecological values for the top section of Abby Road Gully.

87. 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.

88. 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	Moderate	Moderate Low
Landscape character	Low	Moderate	Moderate
Visual amenity	Low	Moderate	Moderate Low
Cumulative		Moderate Low	Low

ASSESSMENT OF EFFECTS AGAINST THE STATUTORY CONSIDERATIONS

89. 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.

90. 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

91. 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.

92. However, recommended mitigation and offset measures for the Project will result in some positive benefits. Aside from the location of the road and pedestrian paths, the 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.

93. While both designation options will result in the same level of effects, Option 1 is preferable as it will reduce the area of designation required to create a 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.

94. 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.

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

John Hudson

FNZILA

ATTACHMENTS

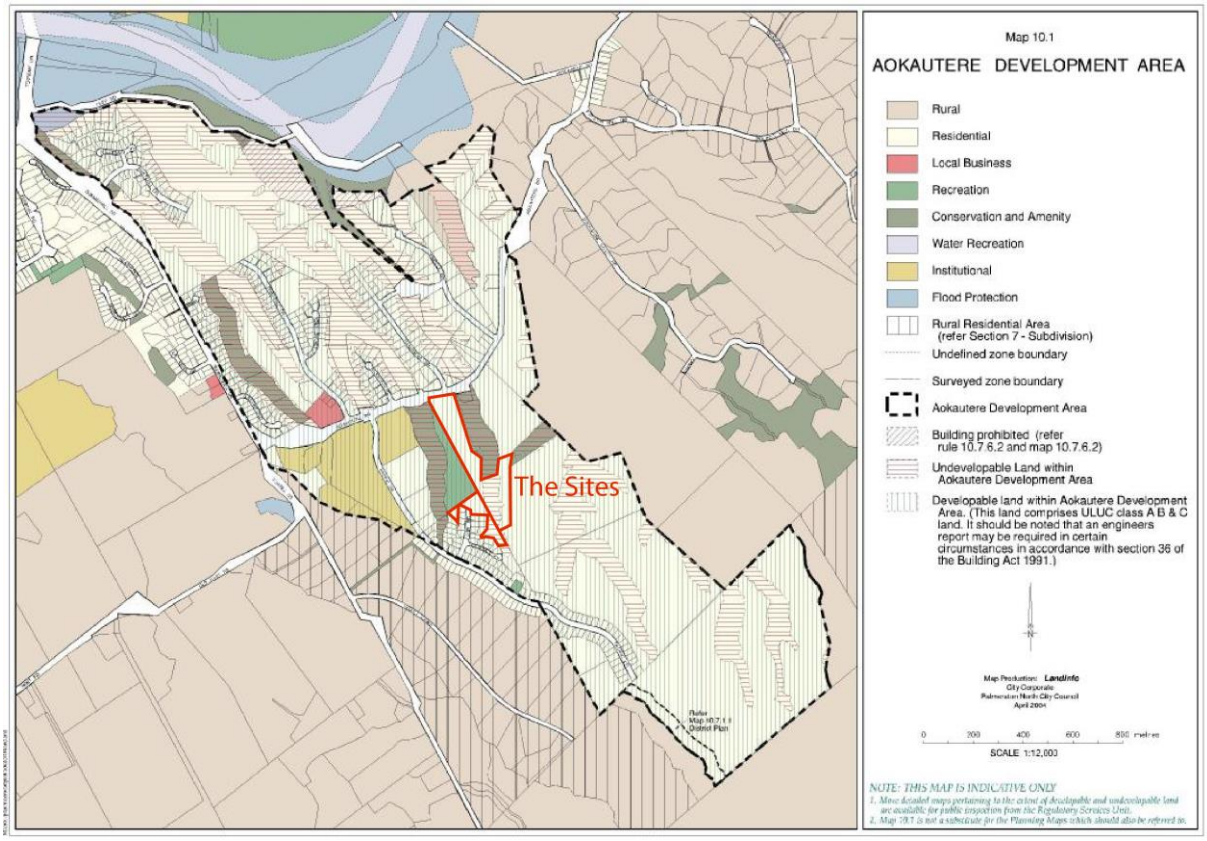

Figure 1: The site within the Aokautere Development Area and Residential Zone

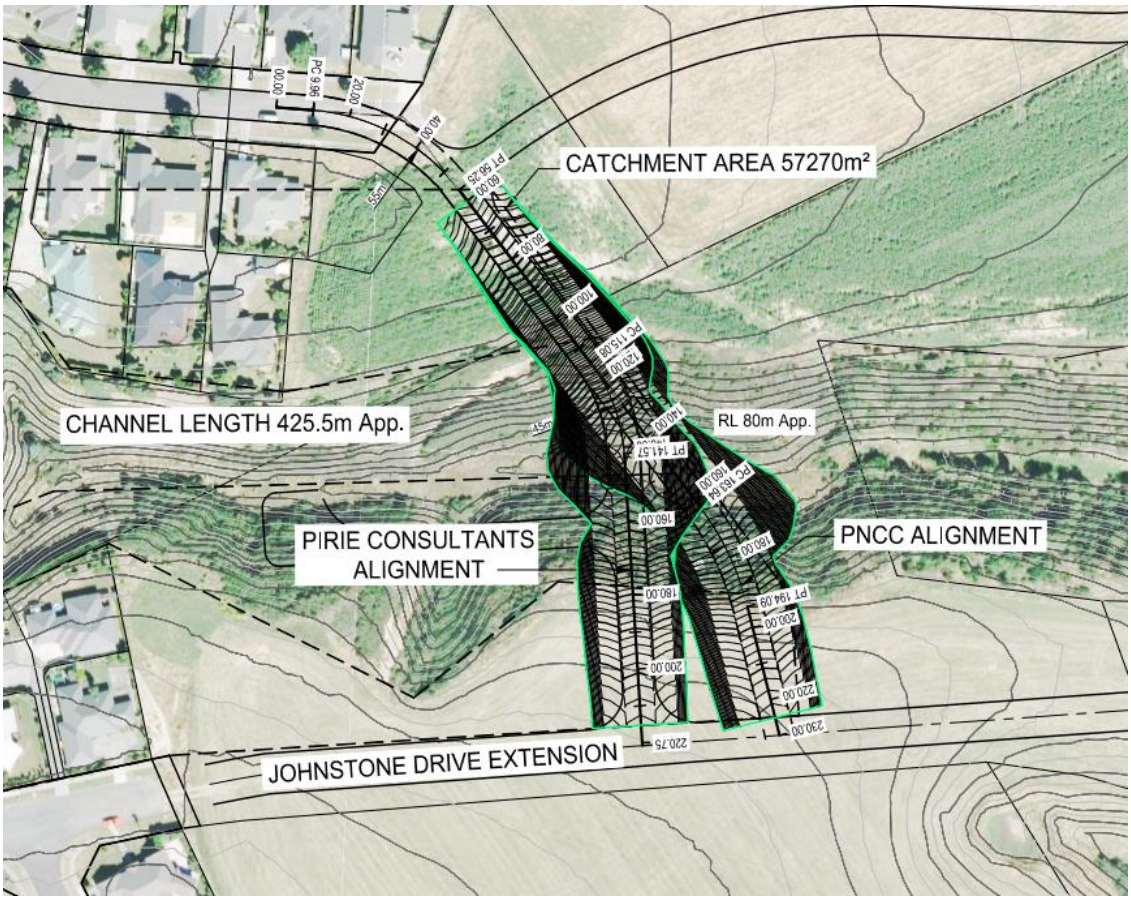

Figure 2: Both alignment options

Figure 3: Birdseye view of the proposed intersection

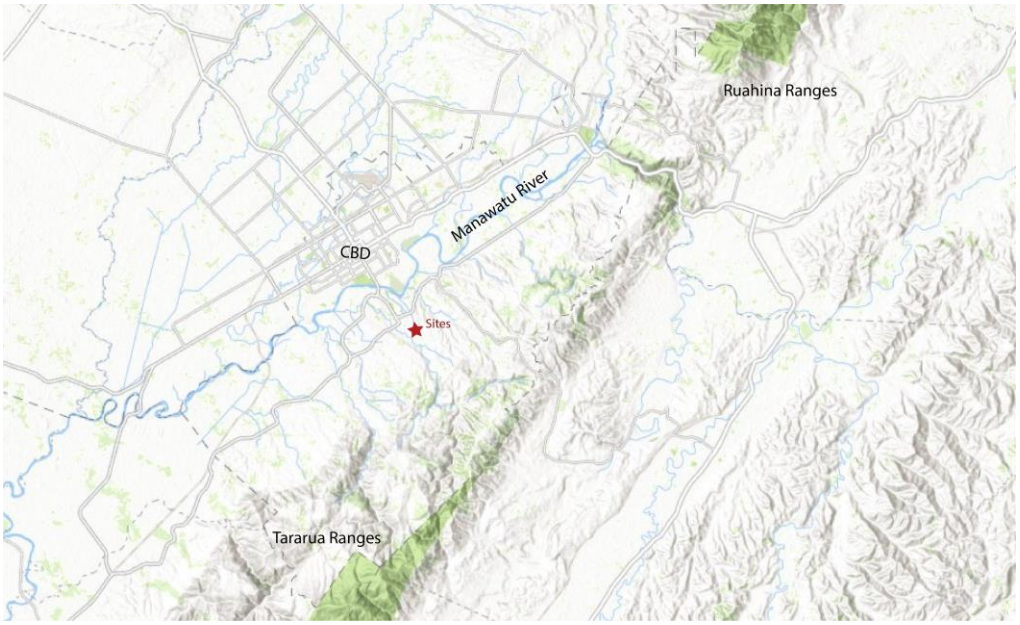

Figure 4: The site and surrounding topography, forming a natural backdrop to the south-east

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

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

Figure 8: Developable land within Aokautere

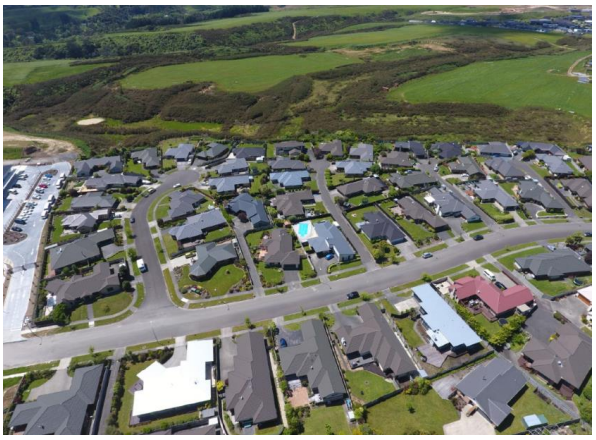

Figure 9: Residential road pattern

Figure 10: Gully crossing to neighbouring terrace

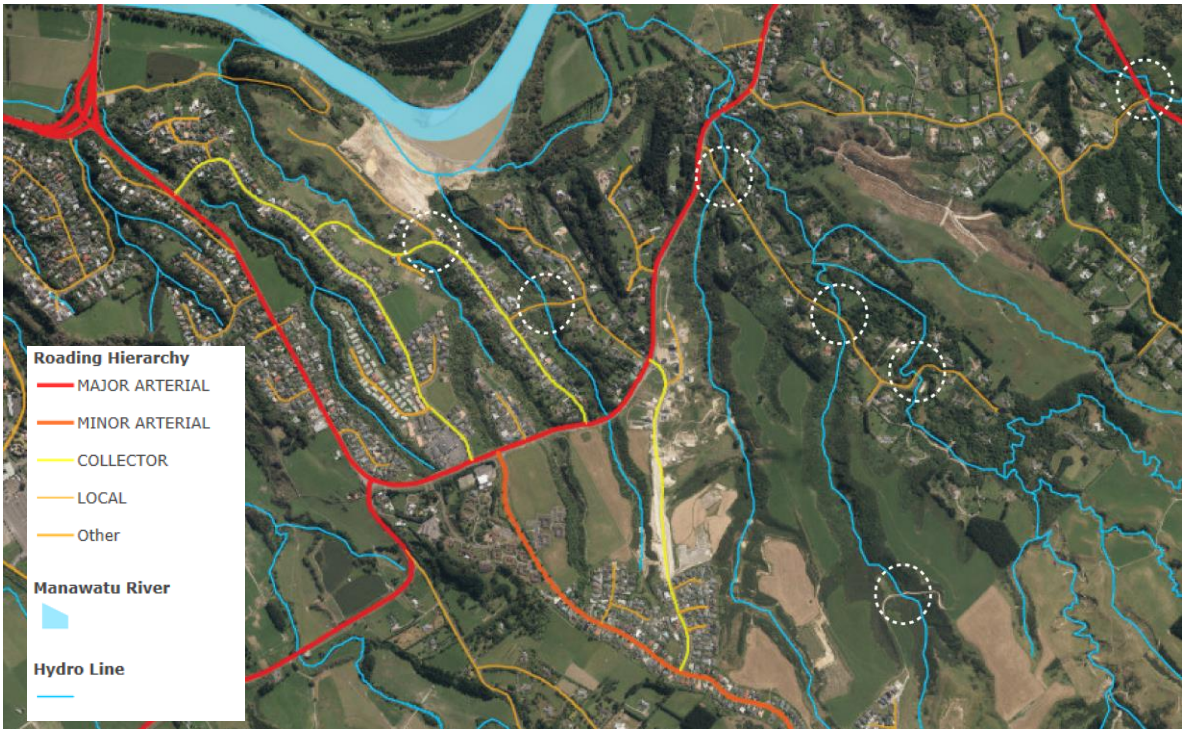

Figure 11: Existing road and gully Intersections

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

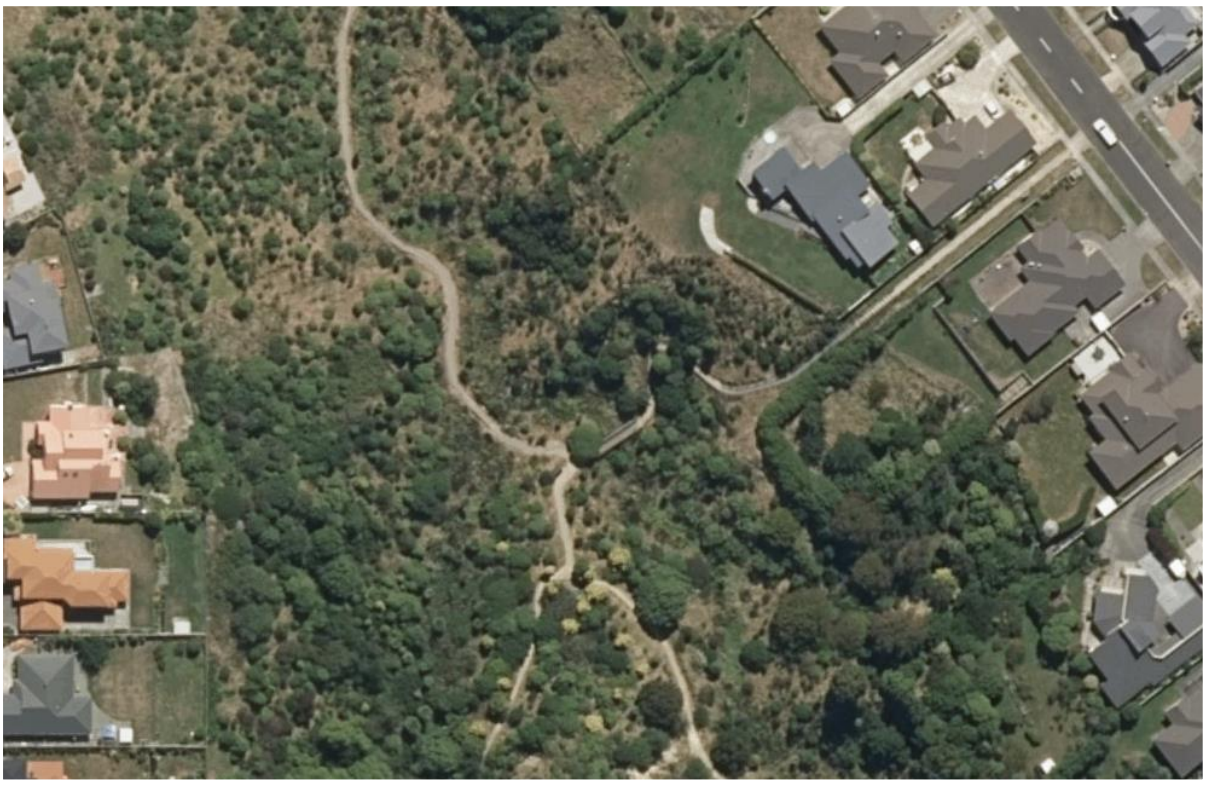

Figure 13: Inset of walkway following topography and pedestrian bridge

Figure 24: The gully is managed separately and there is a clear contrast in natural qualities

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

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