

Summary of Technical Reports:

In considering and preparing Proposed PCG the Council commissioned relevant technical reports and supporting documents. These included the following:

1. Transport Report
2. Cultural Impact Assessment
3. Aokautere Ecology Report and addendums
4. Acoustic Assessment
5. Geotechnical Report and addendums
6. Landscape and Visual Assessment
7. Stormwater Management Strategy
8. Aokautere Centre & Retail Report
9. Parks and Reserves Servicing Memorandum

A Masterplan and accompanying Urban Design Planning Controls Report were also prepared by McIndoe Urban as part of the Structure Plan process. Given the explanatory role of these documents, with their role to inform the Structure Plan and provisions, they are not summarised below. These reports are at Appendix 3 and 14 to the Section 32 report.

This summary sets out the key findings and recommendations of the technical reports to assist with understanding the background technical work underpinning the section 32 Report for Proposed PCG, however, it is not intended to be a substitute for the full reports.

1. Transport Assessment:

Council commissioned a Transport Assessment for the plan change area, which was prepared by Harriet Fraser, Traffic Engineering & Transportation Planning. Ms Fraser's assessment reviews the existing local transportation characteristics, makes recommendations regarding the proposed internal road network and its connections with the existing road network, and gives a summary of the potential traffic effects associated with the development of the Aokautere area for residential purposes under the proposed zoning.

Ms Fraser's assessment finds that, based on existing travel mode share behaviours, there is the potential for Proposed PCG to result in significant additional vehicle traffic on the local road network. However, she considers that with the mitigation measures recommended, the proposed Structure Plan would allow for the plan change area to be developed in a manner which is consistent with the District Plan traffic and transportation objectives and policies.

Recommendations:

- Improvements should be made to facilitate safe right turns from SH57 Old West Road into SH57 Aokautere Drive, which could be achieved with a wider central median and longer merge lane. Given safety on this turn is already a concern, these improvements should be completed prior to the development of the plan change area.
- The SH57 Aokautere Drive/Pacific Drive intersection should be signalised. There is already a need to provide for pedestrians and cyclists in this location and Pacific Drive will accommodate the majority of traffic associated with the further development of the Aokautere area. There is existing need for these improvements, so they should be completed prior to the development of the plan change area.
- It is recommended that Ruapehu Drive operates with left in/ left out with an opportunity for U-turns created further to the south along Summerhill Drive. A right turn out of Mountain View Road would need to continue to be accommodated. One possibility would be to introduce a roundabout at the Williams Terrace intersection with Summerhill Drive. This would also assist vehicles turning to and from Williams Terrace. There is existing need for these improvements, so they should be completed prior to the development of the plan change area.
- An option for safely accommodating cyclists travelling between the northern end of Ruapehu Drive and the City should be developed. This might include introducing a crossing facility across Summerhill Drive (signalised or an underpass) or accommodating two-way cycle flows along the eastern side of Summerhill Drive and towards the Fitzherbert Bridge. There is existing need for these improvements, so they should be completed prior to the development of the plan change area.
- Further review of the safety of the intersection to accommodate additional traffic on the Valley Views and Turitea Road approaches is recommended.
- An option for a future connection from the end of Valley Views to the wider plan change area is accommodated within the Structure Plan.
- Control of the Abby Road and Johnstone Drive Intersections with Pacific Drive, and the future intersections with the existing section of Pacific Drive, should be changed to either roundabouts or traffic signals as needed.
- The planned shared path along the southern side of SH57 Aokautere Drive is needed to connect Johnstone Drive and Pacific Drive and to provide access to the Adderstone Reserve from both directions on SH57. A pedestrian crossing facility, most likely in the form of dropped kerbs and a median island, is also needed at a point along the section of SH57 Aokautere Drive between Cashmere Drive and Johnstone Drive.
- Introduction of high frequency bus services which can be accessed from throughout the suburban part of the Proposed Plan Change area.
- Facilitation of commuter cycling between Aokautere and the City.

2. Cultural Impact Assessment:

Council commissioned a Cultural Impact Assessment (CIA) in respect of the proposed plan change from Rangitāne o Manawatu. The CIA confirms the history of the area to Rangitāne o Manawatu, and its significance to them.

The CIA includes several recommendations, which predominately relate to development protocols. Some CIA recommendations are outside the scope of the District Plan, Schedule 1 process, and will be the subject of further follow up.

Recommendations:

- Rangitāne o Manawatū see it as important to have mana whenua representation on the Green Corridors committee to ensure that restoration is being undertaken in a culturally appropriate manner. Rangitāne o Manawatu must also be offered their own opportunities to undertake restoration in this area as a priority as well.
- Rangitāne o Manawatū as mana whenua require the opportunity to be involved in planting, pest control and other associated environmental management activities within Aokautere.
- Rangitāne o Manawatū request PNCC demonstrate how the proposed structure plan will support affordable housing in Palmerston North.
- Rangitāne o Manawatū would like the opportunity to perform karakia/on site blessings for new stages of the housing development.
- Provision of cultural monitors on site during initial earthworks.
- Rangitāne o Manawatū would like to see an integrated pest control strategy for Aokautere gully systems developed in consultation with Te Ao Turoa.
- Rangitāne o Manawatū require seed used in restoration to be eco-sourced from the Tararua Ranges or closest appropriate population if species have become locally extinct. Pioneer planting for Beech Forest succession should be required in Aokautere.
- Rangitāne o Manawatū would like the opportunity to share the cultural narrative of settlement and historic ecology in the area through integration into reserve management.
- Rangitāne o Manawatū would like the ability to put a tapu on an area of reserve or waterway if an accident or unwanted event occurs.

3. Aokautere Ecology Report and addendums:

Council commissioned Forbes Ecology Ltd to undertake an ecological assessment for the proposed plan change. Mr Forbes' report identifies ecological constraints, by mapping the nature of ecological features in the plan change area and provides recommendations for ecological preservation and restoration in the plan change area.

Indigenous vegetation in the landscape surrounding the structure plan area is typically configured as small and isolated forest sites in gullies and on terrace risers. The gully systems in the Aokautere Structure Plan area contain levels of ecological constraint ranging from low to very high:

- Gully 4 contains mature kānuka forest which is a Threatened Ecosystem type in the One Plan and has the national threat ranking of Threatened-Nationally Vulnerable, thus triggering the rarity criterion of One Plan Policy 13-5.
- Lower areas of the main Gullies 1 and 3, and areas of the smaller Gullies 2, 7, 8, and 9 feature vegetation and habitats of moderate to high constraint.

A further assessment of the Waters Block was also undertaken, where the composition and structure of the existing vegetation was assessed against One Plan Schedule F requirements.

Recommendations:

- Indigenous vegetation cover in the plan change area should be increased from approximately 6.3% to >10% by actively transitioning existing gorse to indigenous forest cover.
- Protecting existing ecological features should be the first priority of the Council in Proposed PCG, with enhancement being a secondary (but important) goal.
- Restoration treatments and planting should be undertaken. A restoration implementation plan should be developed to further plan and guide the implementation of restoration treatments.
- Quantitative surveys of freshwater Biota should be undertaken.
- Net loss of stream area and ecosystem health should be avoided.
- Existing and proposed instream structures should provide for fish passage.
- Urban development should be designed and implemented so that the effects on stormwater quality and quantity are appropriately managed.
- That Areas A, B, C, D and E on Figure 1 in the Waters Block assessment are incorporated into the Structure Plans and retired, protected and restored.
- That areas shown in blue on Figure 1 in the Waters Block assessment are incorporated into the Structure Plans and retired, protected and restored.

4. Acoustic Assessment:

Council commissioned Acousafe Consulting and Engineering Ltd to undertake a Reverse Sensitivity Assessment in relation to the Rifle Rod and Gun Club (RRGC), that borders the area subject to the proposed plan change. The report undertakes an acoustic assessment to identify any reverse sensitivity effects on the rifle range from the proposed development of the Waters Block.

Conservative modelling indicates that noise generated at the RRGC will be significantly audible to dwellings constructed on the ridgeline and southern hillside of the Waters Block to the east of the access road. However, the ridgeline forms a significant barrier to noise propagating in a northerly direction.

Recommendations:

- Recommended setback from the Gun Club of 400m unless the ridgeline intersects.
- No dwellings to be built south of the ridgeline.

5. Geotechnical Report and addendums

Council commissioned Tonkin & Taylor to prepare a Geotechnical Assessment. A report in 2020 sets out preliminary site observations for the plan change area including conclusions from a site walkover as to potential areas of geotechnical risk and related geo-hazard assessment to inform the Structure Plan planning process.

A further report, dated May 2022 provides an overview of the slope stability analysis for instability, makes recommendations on managing slope stability hazards, assesses areas of potential uncontrolled fill and includes recommended considerations for future development. The report outlines the assessment of geohazards for the proposed Structure Plan, in order to inform requirements for future subdivision, including further site specific investigation and assessment that may be required for development.

Having completed slope angle analysis, Tonkin and Taylor make recommendations for the management of the different classes of land (A, B, C, D and E) within the plan change area. The recommendations build on land class categorisation already utilised in the District Plan. The report considers the level of analysis required with regard to the classes of land at the type of subdivision and land use, with specific recommendations around the scope of geotechnical assessments to inform consent applications.

The report identifies areas of potential uncontrolled fill and includes recommendations for the scope and nature of further geotechnical assessment on land with uncontrolled fill, with a view to informing options available for developing filled land (such as preloading, ground improvement, or piling) and any consent application for development and use of the land.

The report confirms that the land has a classification of Liquefaction Category is Undetermined in the Turitea Stream valley bordering the northeast side of Turitea Road. It confirms that any development in the area should assess the potential for liquefaction in these areas.

6. Landscape and Visual Assessment

Council commissioned a landscape and visual assessment for the plan change area from Hudson Landscape Architects. Mr Hudson's assessment reviews the existing character of the plan change area and its locality, identifies and evaluates existing

landscape attributes, and considers what effects the development of the plan change area could have on landscape character and visual amenity.

Mr Hudson recommends landscape areas and features to be protected, identifies opportunities to enhance appreciation of landscape character and visual amenity (including an assessment of visual effects of the proposed plan change), and provides input into how new landscape interventions can help shape a quality urban environment.

Mr Hudson considers the landscape of the plan change area to be “one of interfaces”, including the interface between the foothills of the Tararua Ranges and the plains, and the interface between the extensive flat pastoral terraces and the eroded gullies that dissect them. The main finding of the report is that the flat terraces and contrasting gullies are the defining landscape characteristic of the majority of the plan change area. The eastern part of the area (the Waters Block) is dominated by more hilly landforms.

Recommendations:

- Retaining and enhancing the natural gully network should be an integral part of the design, so the urban areas within the plan change area should be complementary to existing landscape qualities, while managing the potential for effects from residential development.
- To do so will require the Council to retain public views and access to the gullies through roading design and lot layout design, create pedestrian and cycling opportunities through roading design, and provide pedestrian linkages through the gullies for access and recreational benefit.
- Stormwater management should incorporate primary filtering through detention ponds, and raingardens, which can serve a dual purpose of mitigating stormwater effects on the gully network and enhancing open spaces.

7. Stormwater Management Strategy

Council commissioned GHD Ltd to undertake a Stormwater Assessment for Proposed PCG. The report focuses on assessment of flood risk, erosion risk, and water quality requirements for the proposed development. The report undertakes hydrologic and hydraulic modelling to characterise stormwater runoffs to inform flood and erosion impacts,

It finds that uncontrolled overland stormwater flows have the potential to cause slope stability and erosion risks and quantifies both the increased flood risk caused by higher peak flows and the effects on water quality from development of the plan change area.

Based on the analysis, a recommended stormwater management strategy was developed including a design for stormwater detention and water quality treatment facilities.

Recommendations:

- Control of runoff peak flows to predevelopment levels for the 2-, 5-, 10-, 20-, 50-, and 100-year ARI flows (to control flood risk).
- Further control of peak flows as needed to match post-development erosion threshold exceedance cumulative effective work index in the Aokautere Church Stream, Moonshine Valley Reserve Stream, and Tutukiwi Reserve Stream.
- Treatment of the 90th percentile rainfall volume (i.e., 15 mm) from impervious developed areas through a stormwater treatment device or multi-device system.
- Stormwater detention facilities to mitigate flood and erosion risk.
- Roadside bioretention facilities (rain gardens) to provide water quality treatment, with underdrains connecting to the stormwater reticulation.
- An indicative top-of-slope setback of 5 m from the 4:1 grade line to safely convey stormwater runoff to designated discharge points and protect gully slopes from erosion.
- Stormwater reticulation to accommodate the 10-year ARI climate change flow, with major overland flow network to accommodate the 100-year ARI climate change flow, as per PNCC ESLD.
- Discharge of stormwater runoff downstream of detention facilities into the receiving gullies through a pipe installed down the gully slopes, sized for the 100-year ARI climate change flow. No overland discharge down the gully slopes should be permitted.
- Consideration of stream stabilisation in the Aokautere Church Stream and Moonshine Valley Reserve Stream to mitigate perceived impacts from the development and enhance both aquatic habitat and community amenity.

8. Aokautere Centre & Retail Report

Council commissioned Michael Cullen of Urbacity to comment on the potential within the plan change area for a neighbourhood centre. Mr Cullen describes this as a 'village centre' – essentially, a combination of denser housing and businesses with a physical relationship with the street and people walking to and within the village. Mr Cullen considers that with the plan change area having an estimated overall dwelling yield of 1,500 households, there is enough retail purchasing power for one meaningful village centre. Mr Cullen's key recommendation is that plan change area should have a village, promoting diverse and denser housing and providing a place for locals to gather. In addition to the liveability benefits, Mr Cullen notes that not having an Aokautere Centre would at least double the trip distances for residents of the plan change area to shop. There are also related economic growth benefits.

Mr Cullen describes the key factors which apply when locating a viable 'village centre' and offers recommendations for where the centre should be located, and in what form, in the Aokautere Residential Area.

Recommendations:

- Provision for one village centre should be made within the plan change area to act as lever for a village, promoting diverse and denser housing and providing a place for locals to gather.
- Connectivity to Pacific Drive, as the primary route in and out of Aokautere, will be critical for the viability of the village centre, with any shop or shops that address Pacific Drive should be facing north, with roading configuration required to support this.

9. Parks and Reserves Servicing Memorandum

Council's Parks and Reserves team provided advice outlining the requirements and planning for recreation reserves within the plan change area. The memorandum outlines the category and purpose of each reserve type in the 2021 Parks and Reserves Asset Management Plan., before going to assess the need for each type of reserve within the plan change area.

Recommendations:

- The proposed suburb and neighbourhood reserve locations identified in the Structure Plan are suitable.
- Considering the margin of Adderstone Reserve already bounded by residential housing, the walkway connection planned, the shape of the land and allowing enough space for unforeseen small community recreation activities, a portion of that reserve could be converted to housing, with sale proceeds used to fund other reserve acquisition and development works.
- No further Special Character reserves are required, given the location of Peace Tree reserve within the plan change area.
- No new requirements for esplanade reserves adjoining rivers are triggered by Proposed PCG.
- While proposed walkways within the gullies would significantly enhance recreational opportunities in the plan change area, they should be strictly limited to sections of gullies where the construction of the walkway will have minimal impact on the existing gully form and waterways and the use of the walkway will not compromise the biodiversity aims for the area.
- No new City Reserves are planned for the city and none are required in the proposed Plan Change G area.
- There is no need for sports field provision in the plan change area.
- It is not necessary to consider the plan change area for future burial provision.