

5 August 2025

Christchurch City Council
53 Hereford Street
Christchurch 8013
PO Box 73012
Christchurch 8154

Our reference: 511270

Attention: Kirk Lightbody

Dear Sir

RFI Response – Private Plan Change 18

1. Introduction

This letter addresses the responses to the matters raised in the RFI received from Christchurch City Council on the 12th of May 2025.

The following appendices are attached to this response:

- Appendix A – NPS - HPL Assessment (The AgriBusiness Group)
- Appendix B – Ecological Assessment (Instream)
- Appendix C - Response to Transport matters (Stantec)

The RFI matters are below in *italicised font* and the responses following below this.

2. RFI matters

- 1) *The economic assessment and the s32 evaluation report of the request refers to professional advice that the land is not productive land. The documents provided to the Council do not include this professional advice or a report to justify this statement, can this be provided please. As outlined in clause 3.6(1) of the NPS HPL, Council may only allow urban rezoning of highly productive land if clauses 3.6(1)(a), (b), and (c) are satisfied. The potential effects that need to be considered relate to Clause 3.6(1)(c) which outlines that the environmental, social, cultural and economic benefits of rezoning need to "outweigh the long-term environmental, social, cultural and economic costs associated with the loss of highly productive land for land-based primary production, taking into account both tangible and intangible values". The council requests further information on any potential effects related to highly productive land that may arise from the request.*

Please refer to Appendix A for an assessment of the National Policy Statement for Highly Productive Land (NPS-HPL). This concluded that... "It is my opinion that the environmental, social, cultural and economic benefits of rezoning of the 25 ha along Cashmere and Sparks, outweigh the long-term environmental, social, cultural and economic costs associated with the loss of highly productive land for land-based primary production and meets the requirements of Clause 3.6 (1) (c) of the NPS-HPL."

It is considered that this assessment is supported by the broader assessment of the NPS-HPL included in the primary Private Plan Change request as submitted and detailed in pages 30 – 36.

- 2) *The s32 evaluation notes at 211: "an ecological assessment of the subject land and associated watercourses has not yet been undertaken but will be required at a later stage of the consent process." The Council notes that the private plan change request could be processed as a resource consent and Schedule 4 clauses 6 and 7 of the RMA would be applicable, however, for the purposes of processing a private plan change request the Council requests that all the necessary information on any potential ecological effects that may arise from the request be provided in accordance with clause 22(2) of Schedule 1.*

Please refer to Appendix B for the ecological assessment. This concludes that the proposed plan change has the potential to result in a net improvement for aquatic ecology values, through the naturalisation of Stilwell Drains west of the east branch. Recommendations have been provided to assist in detailed design and input from Council ecologists is advised.

- 3) *Council notes that Appendix F 'Urban Design Statement', dated 25 March 2025, has been prepared by a landscape architect and is relied upon in the assessment of effects at paragraph 174 of the s32 report. Paragraph 174 of the s32 report outlines "Given that the site adjoins existing residential areas which are part of the Hoon Hay suburb to the east and rural areas to the west, the boundary interfaces have been carefully considered to mitigate and minimise and adverse effects." Council cannot locate a report or a section of the 'Urban Design Statement' that considers these potential interface/landscape effects. The Council requests further information on any potential landscape effects that may arise from changing the land use of the site from rural to urban land use.*

The statement referring to interfaces being carefully considered relates to how the applicant has arrived at the Outline Development Plan (ODP). No special interface rules apply or are necessary, aside from general accordance of future development with the ODP. The ODP being the central document that will govern and reduce potential adverse effects. Effects mitigation comes from structural ODP elements including: consideration of accessway alignment, viewshafts to rural and port hills, linkages for pedestrian and cycle to surrounding urban areas, and situating roads to ensure publicly accessible environments between developable land and flood/ stormwater management areas. Given this key guiding document has been setup to incorporate these elements with appropriate mitigation in mind, no further conditions outside the proposed ODP text are considered necessary to achieve the desired outcome from a landscape and visual effects perspective.

Jade McFarlane

Urban Designer/Landscape Architect

- 4) *The Council requests further information on how the proposal would align with the operative Hendersons Outline Development Plan (East) in Appendix 8.10.18 of the Christchurch District Plan.*

The overall concept of the proposed ODP design is consistent and will be aligned further during the detailed design and consenting process. Minimal changes have been proposed and therefore the proposed amended ODP shows alignment with the operative ODP.

DEVELOPMENT FORM AND DESIGN

As outlined in paragraph 143 of the original plan change request:

the development design can be sensitive to the natural environment of the surrounding area by maintaining the sense of open space and rural outlook through the openness of the stormwater, utility and recreation areas between the residential which are shown within amended ODP. Given this, there is opportunity to integrate additional residential housing with a sensitive and cohesive design for the site.

This aligns with 8.10.8.C – Development form and design in the operative ODP as it will encourage an open and attractive interface between the edge of new residential areas and adjacent open lands and new development will take advantage of the outlook across Hendersons Basin wetlands, as well as allowing visual and physical access to the basin for the wider community, being achieved through view shafts, alignment of roads and footpaths, orientation of allotments, and convenient access points for pedestrians and cyclists.

Therefore, the proposed ODP clearly aligns with the operative development form and design.

DEVELOPMENT REQUIREMENTS

The following is considered to align with the operative ODP in terms of development requirements.

INTEGRATION

The design of the development will demonstrate good connectivity between different land ownership areas through road, open space, cycle way and pedestrian linkages. The proposed changes, albeit minimal, support integration into the existing urban framework.

OPEN SPACE, RECREATION AND COMMUNITY FACILITIES

The proposed amended ODP incorporates stormwater management areas, green corridors, and connectivity with existing infrastructure. This aligns with the development requirements in the operative ODP as land will be used for recreational/conservation use in conjunction with use for stormwater management. Open space will also be retained through the openness of the stormwater, utility and recreational areas shown within the amended ODP.

ACCESS AND TRANSPORT

The amended ODP shows integration with existing infrastructure, public spaces, and is easily accessible by various modes of transport. This aligns with the operative ODP as it shows a fully interconnected transport network, including opportunities for walking, cycling and public transport. Furthermore, the design is carefully considered to allow for pedestrian and cycle connections between residential areas and public spaces.

Secondly, the connection from Cashmere Road and the Quarryman's Trail cycleway is a positive outcome which is enabled through the amended ODP and aligns with the operative as it provides a high level of accessibility for people. The proposed new Cashmere Road intersection will also provide local access and connectivity with the new residential area.

STORMWATER

The opportunity to enhance ecological values through native planting and sustainable stormwater management aligns with the operative ODP as the operative ODP states that

existing waterway and stormwater drains are to be enhanced in conjunction with residential development.

WATER AND WASTEWATER

It has been confirmed that the site can be adequately serviced for water supply and wastewater. Therefore this aligns with the operative ODP as the new proposed new development can be serviced by the existing water supply network and may require some upgrades but will be determined at design stage.

- 5) *In preparing the request has any consultation been undertaken with the community in Hoon Hay or landowners adjoining the site?*

Initial consultation occurred when residents around the area were invited to meet with Mr Lewis. It is acknowledged that this consultation was limited but the community will have the opportunity to assess the full application and make submissions through the public notification process.

- 6) *It is noted that the primary objective/purpose of this request is to facilitate the rezoning of the site. The Council requests further information on the benefits and costs, and the efficiency and effectiveness of any other possible land use alternatives to better understand the request and complete the evaluation requirements of Section 32 of the Resource Management Act.*

The proposal acknowledges that there is a general lack of Greenfield development areas in such close proximity to the city. Therefore, rezoning the site would have benefits that outweigh the costs as outlined below.

Please note that the additional assessment (beyond what was submitted in the previous proposal) is outlined in **bold**.

The below was provided as a cost benefit analysis in the original s32 provided to Council:

Reasonably practicable options

In considering reasonably practicable options for achieving the objectives of the Plan and any relevant higher order directions, the following options have been identified. Considering the environmental, economic, social and cultural effects, the options identified were assessed in terms of their benefits, and costs. Based on that, the overall efficiency and effectiveness of the alternative options was assessed.

Option 1: Retain the current zoning

Benefits	Cost
Environmental	
• Maintains the rural character of the site. • No residential expansion of Hoon Hay.	• A missed opportunity for providing additional residential capacity in

Benefits	Cost
• No additional capacity for stormwater/wastewater required. • Retains rural productive use, though with low productivity capability for grazing. • Does not offend CRPS. • Lower pressure for urban infrastructure or land disturbance	Hoon Hay and Christchurch • Likely additional reverse sensitivity issues with the development of vacant RNN zoned land on the site given its shape in the centre of the site surrounded by rural zoning, • No buffer on existing rural/urban interface with no change or improvement to existing reverse sensitivity effects.
Economic	• No cost to the owner or Council to retain the existing zoning. • No change to National Grid considerations or use of land in corridor. • Maintains affordability of rural-based practice. • Avoids infrastructure costs • Does not contribute to housing demand/supply. • No additional development contributions or increased rateable income for Council. • Limits potential for higher-value land use.
Social	• No social benefit recognised. • Does not contribute to Christchurch housing stock or contribute to providing for projected increase in population.
Cultural	• Retains on-site effluent and stormwater discharges to ground. • Does not reduce potential effects on water quality from continued rural use of site.

Option 2: Rezone the majority of the site to RNN and retain RuUF for the proposed stormwater management areas.

Benefit

Cost

Environmental	• Reticulated water and wastewater services. • Additional stormwater treatment/ reserve area provided. • SW reserve area provides a buffer between new and existing residential land and adjacent rural land uses and enables integrated stormwater management. • The SW reserve area also reduces flood risk and improves water quality.	• Loss of rural land. • Loss of rural outlook / character.
Economic	• Provides the most housing capacity and potential for variety in housing choice. • Unlocks development potential and an uplift in land value. • Supports funding for infrastructure and services through development contributions and an expanded rating base. While development contributions do not cover all costs, the efficient use of land and integration with existing infrastructure help manage financial impacts, ensuring sustainable growth and reducing pressure on council resources over time. • Potential for affordable housing, with a greater number of dwellings available to the market, the less likelihood of significant price increases in the market. • Good transport links to existing employment hubs of Christchurch City and Rolleston. • Gives effects to NPS-UD 2020 as it contributes to development capacity. • Efficiencies in infrastructure cost to develop the site for the greatest number of dwellings. • The respective estimated yields for the development are 18.9ha of the total site for residential development and zoning. At 15 dwellings per ha this would give a total of 284 dwellings. At 18 dwellings per ha this would give a total of 340 dwellings. • Short-medium term employment opportunities during construction.	• Economic cost for development of urban infrastructure (services and roading) for landowner/ future developer. • Loss of rural land. • Decrease residential intensity momentum in other areas.

Benefit	Cost
Social	• An integrated neighbourhood with connections to adjoining residential subdivisions. • Adjoining existing residential development and in close proximity to Hoon Hay Park and Kaiwara & Rydal Reserves for recreation. • Supports community building with an increase in housing supply and urban growth. • Allowing Medium Density Residential Standards (MDRS) to underly the ODP and RNN zoning provides for flexibility and diversity in relation to areas that are more appropriate for more intensive development. As stated previously the developer considers older persons housing nearer to Sparks road to be appropriate and provide diversity in housing typology.
Cultural	• Integration of services and treatment resulting in improved water quality in accordance with Mahaanui Iwi Management Plan. • Opportunity to incorporate mātauranga Māori into stormwater design.

Option 3: Utilise the land for forestry, solar energy or a wind farm/alternative rural use:

This option retains the current zoning but uses it strategically for the purpose of either forestry, solar energy, wind farming or other alternative uses. It is considered that this option would not be viable as PC14 seeks to rezone part of the PPC site to FUZ, indicating the potential for urban growth in the area. The current RNN zone is intended for housing development, community infrastructure, and urban services, not large-scale industrial or rural activities. The cost/benefit analysis is provided below:

Benefit	Cost
Environmental	• Renewable energy or forestry contribute to climate change mitigation. • Lower intensity land use compared to urbanisation. • Potential for ecological enhancement with well-managed forestry or mixed-use solar farms.
Economic	• Generates long-term economic return through energy or timber production. • Diversifies the rural economy. • Lower infrastructure demands than residential development.

Benefit

Cost

		• May not maximise the land value compared to rezoning for housing.
Social	• Maintains rural character and a sense of openness. • Minimal increase in population or traffic pressure. • Can provide opportunities for educational or community engagement (for example through tours, carbon initiatives).	• May be unpopular locally if there is a large visual or noise dominance in the landscape. • Land is effectively “locked in” to long term non-residential use.
Cultural	• Opportunities for Mana Whenua involvement in renewable energy partnerships • Alignment with Kaitiakitanga principles • Land remains largely undeveloped, preserving mauri.	• Cultural values could be impacted in larger infrastructure was dominant. • Limits traditional land use opportunities.

Option 1 – Efficiency

This option would be unable to achieve the objectives of the higher order documents. It would not achieve any positive environmental or recreational benefits. From an efficiency perspective, retaining the current zoning may appear less complex in the short term, as it avoids the administrative and consultation costs associated with the proposed plan change. However, these short-term savings are generally outweighed by the long-term inefficiencies associated with underutilised land, constrained development opportunities, and increased pressure on less suitable areas for growth. Where existing infrastructure is already in place, failing to enable more intensive or appropriate land use can result in significant opportunity costs.

Option 1 – Effectiveness

This option would not be effective in achieving any of the desired outcomes for the zone. Retaining the current zoning is generally considered to be a less effective and less efficient option in this context. In terms of effectiveness, the existing zoning is unlikely to achieve the relevant objectives of the plan if it does not align with strategic planning directions such as the National Policy Statement on Urban Development (NPS-UD), or community needs. Where there is identified demand for additional housing, business land, or more intensive use of infrastructure, maintaining the status quo may constrain development potential and undermine broader urban growth and sustainability objectives. While it may be partially effective in preserving existing character it does not provide a proactive response to changing economic, social, or demographic conditions.

Option 1 - summary

This option would be effective in achieving the objectives and policies of the higher order documents. Opportunities for mixed housing typologies and density is consistent with the

existing ODP for the wider Hendersons area. In summary, while retaining the current zoning may offer some environmental benefits such as reducing immediate development pressures, avoiding potential ecological impacts, and maintaining existing land cover, this option performs poorly in terms of both efficiency and effectiveness. It may maintain certainty and minimise short-term disruption but does not represent the most appropriate way to achieve the purpose of the Resource Management Act. Where the current zoning no longer reflects the most suitable use of land or the strategic direction of the district, retaining it risks undermining long-term planning outcomes and fails to promote the sustainable management of natural and physical resources.

Option 2 - Efficiency

This option would be highly effective in achieving the objectives and policies of the higher order documents. Opportunities for mixed housing typologies and densities is consistent with the existing ODP for the wider Hendersons area. Option 2, rezoning the entire site to RNN excluding the stormwater management areas, has been assessed as the most efficient use of the land when comparing the costs and benefits of the available options, as shown above. **It is considered the most efficient because it provides greenfield housing that benefits the wider community whilst having significantly lower costs than any other viable option as shown in the cost benefit analysis.** Efficiency considers whether the proposal achieves the desired objectives in a way that maximizes benefits while minimizing costs, resource use, and complexity. **It is considered that Option 2 would minimise cost while maximizing benefits due to the economic benefits outweighing the costs, and development potential would be unlocked.**

The proposed rezoning optimizes the use of the land by enabling medium-density residential development, which makes the best use of existing infrastructure and minimizes additional investment. By consolidating residential growth within the urban boundary, the proposal avoids further sprawl into rural areas and supports the objectives of the NPS-UD.

Key factors contributing to efficiency include:

- Infrastructure Integration: Utilizing existing water, wastewater, and stormwater networks reduces the need for extensive new infrastructure investment.
- Housing Supply: The proposed density provides a significant number of dwellings to meet current and future housing demand while ensuring affordability and diversity.
- Land Productivity: Rezoning avoids underutilization of the site, as the current RuUF zoning provides minimal economic or social benefit given the site's limited productive capacity.

By addressing these considerations, Option 2 ensures that resources are used effectively to achieve the objectives of the RMA and the NPS-UD while balancing environmental, social, and economic factors. **As outlined above, the existing infrastructure utilisation effectively reduces the need for significant new investment. By avoiding underutilization, there is an overall efficient and effective use of the land.**

The proposed rezoning is the most efficient option, as it maximizes the benefits of residential development while minimizing the costs of infrastructure expansion and land underutilization. The balance of costs and benefits clearly demonstrates that Option 2 is the most efficient use of the site.

Option 2 - Effectiveness

Option 2 has been assessed above as the most efficient option; however, it is also assessed as the most effective option in giving effect to the National Policy Statement on Urban Development and the Enabling Housing Act.

In contrast, option 1 and 3 have been assessed as not effective/efficient. The reasons for this being determined is because option 3 has a lot of costs involved (socially, economically culturally and environmentally) as detailed above. It is argued that the benefits of these would not outweigh the costs.

Option 1 has also been assessed as neither effective nor efficient. This is because large costs for the missed opportunity would occur and there would be no change which would not unlock the development potential.

The NPS-UD has objectives and policies relating to having well-functioning urban environments that are sustainable, contribute to peoples social, economic and cultural wellbeing and health and safety whilst providing sufficient development capacity in the short, medium and long term.

Option 2, rezoning entire site to RNN excluding the stormwater management areas, is the most effective at achieving the relevant objectives and policies of the NPS-UD. The proposal will provide a well-functioning urban environment that improves the supply of residential housing and housing capacity in the short, medium and long term. The proposed rezoning and amended ODP will provide consolidated residential growth and will have sufficient infrastructure servicing and accessibility.

The proposed rezoning is consistent with Objective 5.2.1 of the Canterbury Regional Policy Statement (CRPS) because it will achieve a consolidated and sustainable extension to Hoon Hay as well as Christchurch which will enable people to provide for their social, economic and cultural well-being and health and safety now and in the future.

The proposed rezoning will enable land to be bought forward for residential development in close proximity to Christchurch City to meet demand and enable the efficient use of the infrastructure network. The proposal will also encourage sustainable growth by providing a residential development to contribute to alleviating demand, but that is also consolidated and adjoining the existing residential development. The proposed rezoning, amended ODP, and any future subdivision will give effect to the principles of good urban design.

In addition, the amended ODP provides for a development that is integrated with existing infrastructure, public spaces and is easily accessible by various modes of transportation, while creating a healthy living environment that contributes to people's wellbeing and sustainability.

The proposed rezoning to RNN is the most effective option for meeting the objectives of the NPS-UD and enabling a well-functioning urban environment. It ensures that housing supply is increased in a consolidated, accessible, and sustainable manner, supporting the social, economic, and cultural wellbeing of Christchurch's growing population. The integration of the proposed development with existing infrastructure and public spaces further demonstrates its effectiveness in achieving both regional and national planning goals.

Option 2 - summary

In summary, this option is the preferred option as it would be both efficient and effective in achieving the objectives and policies of the higher order documents as well as the district plan.

Efficiency – Option 3

From an efficiency perspective, this option offers relatively low infrastructure demands and aligns well with the existing rural land use framework. Forestry or renewable energy projects can provide long-term returns with limited ongoing servicing requirements from the council, which represents an efficient use of land and public resources. Additionally, the environmental benefits generated over time, such as reduced emissions or increased carbon sinks, can outweigh the initial setup costs. However, the financial return per hectare may be lower than residential development, and the potential for local economic uplift is limited if the activities are capital-intensive and do not generate substantial employment. The need for regulatory approvals and the capital cost of infrastructure (particularly for wind and solar) can also reduce implementation efficiency. Overall, the option is efficient for delivering environmental outcomes but may not be the most efficient use of the land in terms of economic return or addressing urban growth needs.

Effectiveness – Option 3

This option, which retains the rural zoning but utilises the site for alternative productive uses such as forestry, solar energy generation, or wind farming, is effective in achieving objectives related to environmental sustainability, climate change mitigation, and the efficient use of rural land. It supports national and regional goals for renewable energy and carbon sequestration, while maintaining rural character and avoiding urban sprawl. The option also preserves open space and can allow for ecological enhancement, particularly where planting or infrastructure is integrated with biodiversity outcomes. However, it is less effective in meeting objectives related to urban growth management, housing supply, and the provision of residential land close to existing towns. In a peri-urban context with increasing demand for housing, the option may not adequately respond to urban development pressures.

Summary – Option 3

In summary, this option would achieve some objectives and policies of higher order documents, however not to the same extent as the preferred option which is Option 2.

Transport

- 7) *Please provide additional SIDRA modelling outputs at two arterial intersections: Hoon Hay Road / Cashmere Road and Sparks Road / Hoon Hay Road (Existing and Proposed).*

Please refer to Appendix C for this response in detail. In summary two signalised intersections have been modelled and the summary tables can be found in Appendix C.

- 8) *Please provide additional CAST model outputs of volume and delay difference plots between the existing and rezoning scenarios.*

These have been provided in Attachment 2 of Appendix C.

- 9) *Please provide additional modelling scenario in CAST for the vehicle access onto Cashmere Road to be connected at Penruddock Rise intersection through the proposed roundabout, as*

this may highlight further adverse increases in vehicle movements on existing and proposed residential roads.

Please refer to Appendix C for the detailed response to this request. In summary, regardless of the position of the intersection, development of the site is determined to only contribute low traffic volumes to this new local road. The CAST outputs suggest the additional development could contribute approximately 20 – 30 vehicle movements per hour to the new road. The forecast increased use of Cashmere Road as a result of additional development enabled by the proposed plan change is modest and would not impact the arterial road network. Overall, it has been determined that further CAST modelling with respect to this intersection location is not required and will not be of benefit.

- 10) *The Operative Hendersons Outline Development Plan (East) in Appendix 8.10.18 shows two access points onto Cashmere Road. Considering the construction of a roundabout at the intersection of Penruddock Rise/Cashmere Road along with the existing access from Leistrella Road, Council requests further information on any potential effects that may arise from the construction of an additional access onto Cashmere Road.*

Please refer to Appendix C for the response to this request. In summary, it has been assessed that the intersection is proposed approximately 150m west of Leistrella Road and that the separation will be adequate to ensure vehicle movements at the intersections and conflict points are suitably separated. It has also been noted that the proposed intersection location is approximately 190m from the western Cashmere Road intersection location shown on the proposed ODP. If the western Cashmere Road connection shifts to opposite Penruddock Rise, the separation will increase to approximately 290m. It has been determined that this is more than adequate in the urban speed environment.

- 11) *Please clarify when interventions will be needed at Cashmere Road/Hoon Hay Road intersection and Sparks Road/Hoon Hay Road intersection, as development progresses northward from Cashmere Road toward Hoon Hay and Sparks Roads.*

Please see Appendix C in regard to the response to this matter. To summarise, the traffic assessment presented in the ITA and the further information provided (in Appendix C) confirm that the additional development enabled through the plan change will not have a noticeable effect on the performance of these two intersections. It is determined that no interventions to accommodate additional traffic volumes needs to be contemplated.

- 12) *The Integrated Transport Assessment notes that the nearest public transport bus route/stop is between 600m-800m from the central and northern blocks of the site and thus the site would be 'relatively well served by public transport'. It is outlined in Council's Infrastructure Design Standards at Figure 4 that 90% of all residential development shall be located within 500m of a bus route. The Council requests further information on the potential effects of the greater distances to public transport proposed by the request.*

Please refer to Appendix C for this response. In summary, the southern portion of additional residential land is very well located for public transport uptake, it has been determined. This is within a short distance of Cashmere Road where there is the existing Westmoreland/Shirley bus service.

The central block is similar to the surrounding zoned residential land in terms of accessibility for public transport and is approximately 400m from Cashmere Road and 600m from Hoon Hay Road via the Kaiwara Street reserve and Blakiston Street. The Orbiter service as well as the Westmorland/Shirley service run along this part of Hoon Hay Road.

The northern block is similar to the existing Leistrella Road/Rydal Street residential catchment in terms of accessibility for public transport. The northern part of the block will be approximately 600m from the Hoon Hay Road/ Sparks Road intersection, through which the Hillmorton/Southshore service runs. The southern part of the block will be approximately 600m from Rose Street, which both the Orbiter and Westmorland/Shirley services run along.

Water Supply

- 13) *The recommendations in Appendix M of the request, i.e. 'Eliot Sinclair - Cashmere/Hendersons Plan Change Water Supply Design Report' dated 28 April 2023, do not align with the recommendations of the WSP 'Cashmere Park Residential Development Water Supply Assessment', dated 11 November 2023, that was commissioned by CCC for this development. Can you please confirm the water supply arrangements for the proposed development? The Council requests further information on any potential effects that may arise from the clarified arrangements on the existing Council networks.*

We confirm that the proposed development adopts the recommendations outlined in the WSP report titled "Cashmere Park Residential Development Water Supply Assessment", dated 11 November 2023, commissioned by Christchurch City Council.

The earlier report by Eliot Sinclair, "Cashmere/Hendersons Plan Change Water Supply Design Report", dated 28 April 2023, was included in the original submission as the WSP report was not yet available at that time. The WSP report arrived after both the original submission and appearance at the IHP hearing on 14 November 2023.

The WSP report supersedes the Eliot Sinclair report and reflects the current, agreed-upon water supply arrangements for the development. This ensures alignment with Council's expectations and network capacity assessments. No additional effects are anticipated on the existing Council water supply network beyond those already assessed in the WSP report.

Yours sincerely



Isabelle Harding

Resource Management Planner

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Appendix A. NPS-HPL Assessment (The AgriBusiness Group)

Assessment of land owned by Cashmere Fields located adjacent to Cashmere and Sparks Road, for its potential to be rezoned under Clause 3.6 of the NPS-HPL

1 Background

Bryan McGillan has requested The AgriBusiness Group to prepare an assessment of whether the rezoning of land adjacent to Cashmere and Sparks Road, Christchurch meets the requirements of section 3.6 (1) (c) of the National Policy Statement on Highly Productive Land (NPS-HPL). Note that 3.6 (1) a & b is addressed in the S32 analysis.

This proposed rezoning includes the following properties, making up the site (as described within this assessment).

- 126 Sparks Road (Lot 1 DP 412488)
- 17 Northaw Street (Lot 2 DP 412488)
- 36 Leistrella Road (Lot 3 DP 412488)
- 240 Cashmere Road (Lot 23 DP 3217)
- 236 Cashmere Road (RS 41613)
- 200 Cashmere Road (Lot 1 DP 547021)

This assessment has looked into the capability of the site as a whole as well as the individual lots.

This assessment is under the NPS-HPL Clause 3.6 Restricting urban rezoning of highly productive land.

Under sub clause (1)(c) this requires that *“the environmental, social, cultural and economic benefits of rezoning outweigh the long-term environmental, social, cultural and economic costs associated with the loss of highly productive land for land-based primary production, taking into account both tangible and intangible values.”*

In the guide to implementation¹ it states that *“Clause 3.6(1)(c) requires an assessment of the benefits and costs of rezoning. It is intended to ensure a more robust assessment of benefits and costs across the four wellbeing’s (environment, economic, social, cultural) is undertaken for all urban rezoning proposals on HPL and that this specifically considers long-term benefits and costs and tangible and intangible values.”* And that *“Intangible values of HPL should be considered as part of this assessment include:*

- *its value to future generations*
- *its finite characteristics and limited supply*
- *its ability to support community resilience*

¹ MFE (2023): National Policy Statement for Highly Productive Land: Guide to implementation.

➤ *the limited ability of other land to produce certain products.”*

This requires that the site should be evaluated to provide the full range of benefits of the proposed subdivision of land that can be weighed up against the full range of costs of the loss of HPL.

The range of both tangible and non-tangible costs and benefits that have been used in this assessment have been taken from the Cost Benefit Analysis² carried out on the NPS-HPL. They are listed in Table 1.

I am of the opinion that I have the expertise to carry out a qualitative assessment of the benefits of the proposed development as well as the costs of the loss of HPL land. In doing so, I have drawn on my professional experience, and that of my colleagues who are environmental consultants.

Table 1: Costs and Benefits both tangible and non-tangible assessed in this exercise.

Category
Environmental
Carbon sequestration
Support habitat
Water filtration
Flood mitigation
Nutrient
Climate regulation
Air and water quality
Biodiversity conservation
Social / Cultural
Sense of belonging and place
Social fabric
Food security
Spiritual value
Economic
Income
Employment
Flow on impacts to the wider community

² Market Economics (2020): National Policy Statement – Highly Productive Land. Cost-Benefit Analysis

1.1 Description of the Site

Figure 1 shows that the site predominantly surrounded by residential housing and small scale lifestyle blocks. The site is made up of 7 different titles that account for 25.1 ha. Existing residential dwellings are located on Lot 23 DP 3217 and Lot RS 41613. Residential housing borders the site to the North and East. Established rural land is located to the West of the site, which runs out towards the South of the existing Halswell suburb. South of the site are a few lifestyle blocks followed by more residential housing.

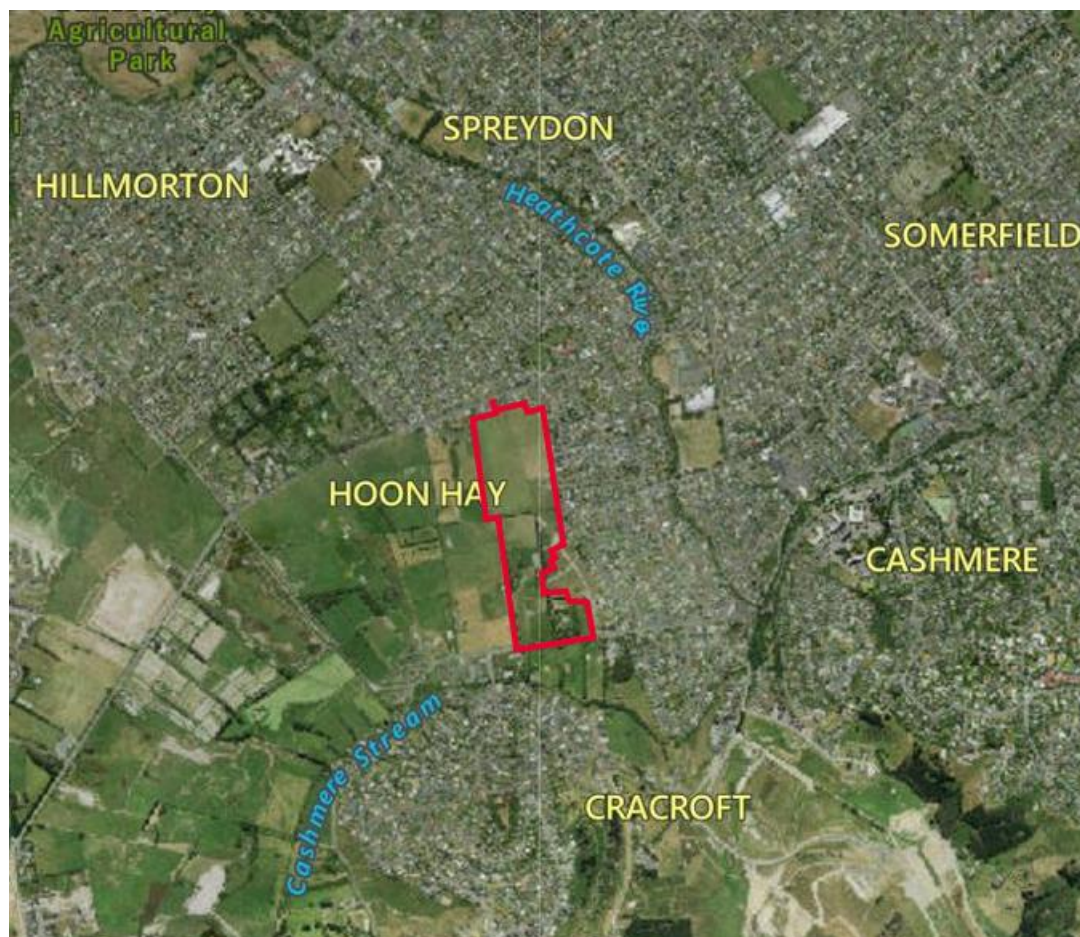


Figure 1: The Site and Its Surrounding Land Uses

1.2 Land Use Capability

Figure 2 is a screenshot from the New Zealand Land Resources Inventory Series (LRIS) Land Use Capability Portal³. The site consists of 16 ha of LUC 2, 6 ha of LUC 3, and 3 ha of unclassified land.

³ https://ourenvironment.scinfo.org.nz/maps-and-tools/app/Land%20Capability/lri_luc_hpl



Figure 2: LUC Class of the Site (Dark Green is LUC 2, Light Green is LUC 3 and white is unclassified)

In the NPS-HPL all land designated as LUC1, 2, and 3 in the LRIS mapping is deemed to be highly productive land until it is remapped at a finer scale by the Regional Council and the maps included in the Regional Policy Statement.

However, a portion of the site outlined above is not classified as HPL due to its current residential zoning. This area is represented as the yellow RNN zone within the red-bordered section shown in Figure 3

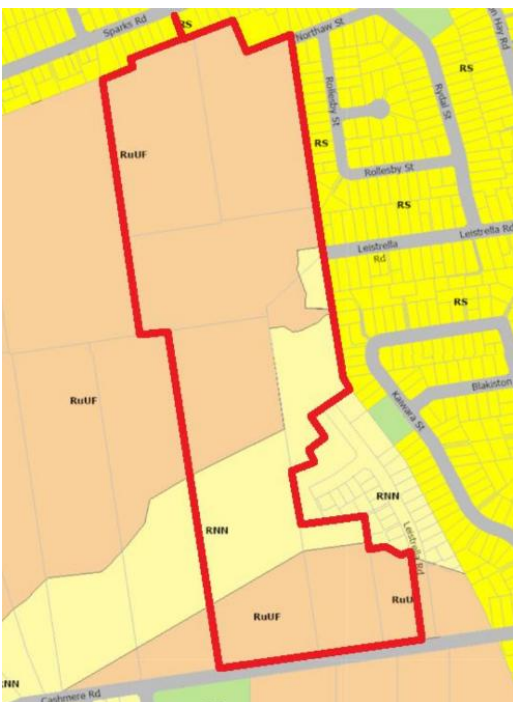


Figure 3: The sites existing zoning

1.3 Productive Capacity as HPL

The productivity of the site is determined by a number of factors including the nature of the soils, climate and scale of the operation.

1.3.1 Soils

In Figure 3 I have included a screenshot of the data held in Manaaki Whenua Landcare Research's SMap online portal of the soils of New Zealand⁴ of the site.

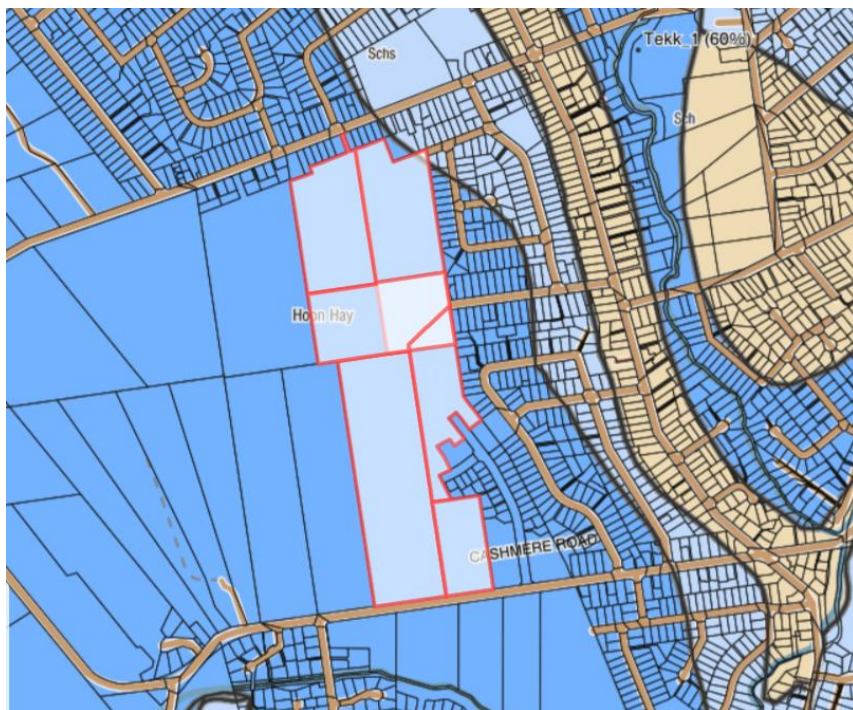


Figure 4: SMap record of soils on site

Table 2 lists the soils on the site by sibling description, area and proportion

Table 2: Soils on site by sibling description, area and proportion

Sibling	Area (ha)	Proportion (%)
Tait_21a.1	25	99.9
Kaia_1a.1	<1	0.1

Definitions of the key soils physical properties that are listed in the SMap fact sheets⁵ for the soils that are present on the site are shown in Table 3.

Table 3: Description of soils on site

Soil Name	Taitapu	Kaiapoi
SMap Name	Tait_21a.1	Kaia_1a.1
Depth Class	Deep (>1m)	Deep (>1m)

⁴ <https://smap.landcareresearch.co.nz/maps-and-tools/app/St>

⁵ <https://smap.landcareresearch.co.nz/maps-and-tools/factsheets>

Rooting Depth	Unlimited	Unlimited
Depth to stony layer	No significant stony layer within	No significant layer within
Texture Profile	Silt	Silt
Topsoil Stoniness	Stoneless	Stoneless
Drainage Class	Poorly drained	Imperfectly drained
Profile Available Water (0 to 100cm)	Very High (277mm)	High (227mm)

Taitapu soil makes up 99.9% of the site. These are deep silt soils that are stoneless, poorly drained and have a very high profile available water (PAW). Kaiapoi soil makes up just 0.01% of the site. These are deep silt soils that are stoneless, imperfectly drained and have a high PAW.

These soils are theoretically suitable for vegetable, arable and a wide range of pastoral land uses. The only constraints that these soils face are poor drainage.

2 Land Use Constraints

There are a number of significant constraints which have a bearing on the highest and best land use possible on the site.

2.1 Lack of Irrigation Capability

The site does not have an existing well or the consents required for irrigation capability. It is situated within the Christchurch West-Melton Groundwater Allocation Zone, which is currently overallocated. Consequently, obtaining irrigation water for this site is not feasible.

According to Rule 9.6.2 of the Canterbury Land and Water Regional Plan (CLWRP), *"In general, no additional water is to be allocated from the Christchurch West-Melton Groundwater Allocation Zone shown on the Planning Maps except for group or community water supply as set out in Rule 5.115 or for non-consumptive taking and use as set out in Rules 5.131 and 5.132."* This exhibits how, within this district, it is not possible to gain a new consent for irrigation purposes.

The only reference within the CLWRP to transfers of water permits within the Christchurch West-Melton Groundwater Allocation Zone pertains to gravel extraction and associated purposes. Section 9.5.6 states, *"The temporary or permanent site-to-site transfer, in whole or in part, of a water permit to take or use water for gravel extraction (and associated purposes) is a discretionary activity provided the water will be used for the same purpose."*

Consequently, under the current provisions of the Canterbury Land and Water Regional Plan (CLWRP), this site cannot obtain a water permit for irrigation purposes, as it does not meet the specified criteria for new consents or transfers.

2.2 Reverse Sensitivity

Due to the site being surrounded by residential properties, intensive farming could lead to reverse sensitivity issues. This occurs when nearby residents raise concerns or complaints about typical farming activities such as noise, odour, or dust.

- Farming activities can generate significant noise, which can be disruptive to residents especially during early morning or late evening hours. Activities such as loading or unloading stock trucks or harvesting crops cause significant disruption to the nearby properties.
- Intensive farming practices can produce strong odours from animal waste. Residents in nearby areas can find these smells offensive, leading to complaints.
- Activities like ploughing, harvesting, and the movement of machinery can generate dust. This can temporarily affect air quality and be a nuisance to residents.

Such considerations and constraints may make the site unappealing for many potential farmers.

2.3 Exclusion of Horticulture

The potential for intensive horticultural land use has been considered and it has been rejected for several important reasons including:

- The very high cost of establishing an intensive horticultural operation on a relatively small site.
- The lack of irrigation capability, which is essential for horticultural crops.
- The cold winters limit the potential range of horticultural crops.

2.4 Limitations of Arable

The ability to maximize the productivity of any of the potential arable land uses would require that the land was farmed as part of a larger farming entity and that irrigation capability was available.

The block of land would have to be incorporated into a bigger growing operation in order to achieve sufficient scale to enable the landowner to maximise productivity. Additionally, there are no large-scale arable operations in direct proximity, meaning that machinery and equipment would need to be transported along busy Christchurch roads.

The potential reverse sensitivity concerns around the use of machinery on the site, the lack of irrigation and the transportation of machinery required makes the site unappealing to existing arable operators.

2.5 Pastoral Land Use

It would be theoretically possible for the land to be used for pastoral grazing (sheep and beef and dairy support) however there are several significant constraints on that land use being achieved.

The constraints include:

- The costs associated with intensifying the productivity of the site e.g. providing for winter crops, and providing additional supplementary feed from off site, are all too expensive to be justified on such a small scale.
- The fact that the site is unable to be irrigated means that in most years, it would lack sufficient moisture over the summer months to maintain the stocking rate, so there would need to be less livestock during that period.
- The poorly drained soils make it unsuitable for large stock over winter periods.
- The potential reverse sensitivity considerations around having stock on the property, with noise of shifting stock, working with stock and transporting stock need to be considered.

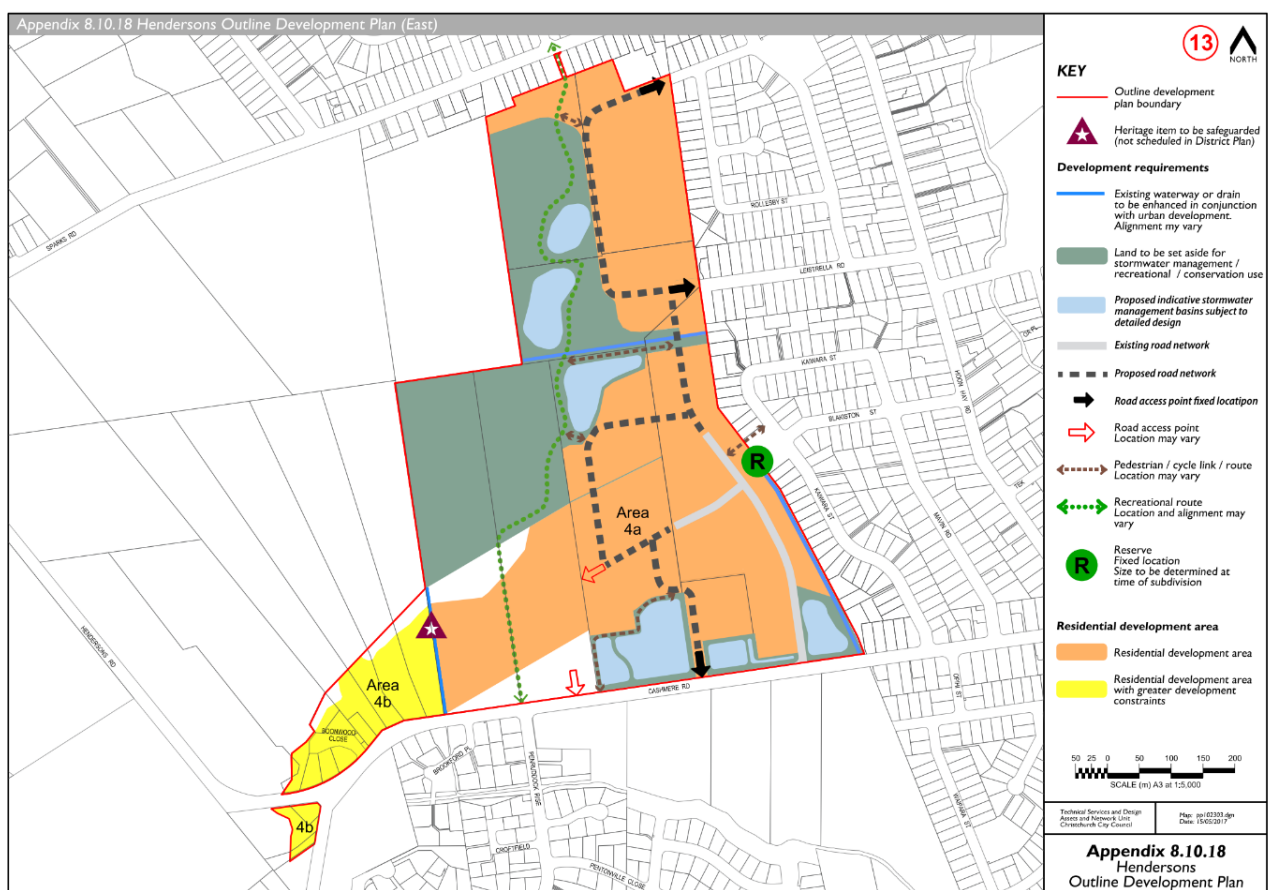
In my opinion, the site would not be an appealing option for a farmer looking to expand their pastoral productive land due to the reverse sensitivity effects to consider, the poorly drained soils and the absence of irrigation.

2.6 Conclusion

Assuming the titles of the six individual lots could be operated in conjunction, the highest and best use of the land would be for dryland dairy support. However, this would require agreement from all landowners. Without such consensus, the highest and best use of the individual lots would be small-scale lifestyle grazing

Proposed Land Use

The proposal aims to rezone the site to a Residential New Neighbourhood zone, as illustrated in the site plan in Figure 4. This plan outlines the intended development, which is anticipated to allow for the creation of 284-320 dwellings. Other key components of the proposed development include stormwater management infrastructure such as stormwater basins, recreational spaces, and transportation networks.



3 Assessment of the benefits of the Proposed Rezoning Land and the Cost of the loss of HPL.

3.1 Environmental

My assessment of the benefits of the rezoning and the costs of the loss of HPL from an environmental perspective is shown in Table 4.

Table 4: Assessment of the benefits of rezoning and the costs of the loss of HPL from an environmental perspective.

Assessment Category	Benefits of rezoning	Costs of the loss of HPL
Carbon Sequestration	The proposal includes areas outlined for conservation use and curtilage vegetation which should add to the site potential to contribute to carbon sequestration	The potential removal of shelter belts that exist on the site currently would act as a small loss to carbon sequestration. These are however primarily fully grown trees which sequester carbon at a lower rate than younger growing trees.
Support habitat	The individual curtilages of the urban sections will all have a degree of permanent habitat development. There is also a significant amount of area outlined for conservation use and stormwater basins, which creates open space that will allow for habitat development	The potential removal of the existing shelter belt could result in a loss to habitat support.
Water filtration	Water filtration will be enhanced by the development, through the creation of sediment traps within drainage systems. This will benefit the environment by filtering sediment and nutrients before they enter waterways.	
Flood mitigation	The diversion of runoff water from the sections into appropriately sized water stormwater basins will act as a flood mitigation method.	
Nutrient	The change from rural to urban will have the benefit of a reduction in N loss. This comes from the removal of livestock and fertiliser use.	
Climate regulation	The removal of livestock and fertiliser use on the site will reduce agricultural greenhouse gas emissions. The conservation space within the development will enhance the site's ability to assist in climate regulation by sequestering carbon and offering some protection against severe flooding and wind impacts.	
Air and water quality	Water quality will benefit from the proposed urban development by the diversion of runoff of water from the sections into stormwater basins.	Air quality will be slightly diminished by the conversion from rural land uses to urban development because there will be more urban activity which has the

potential to negatively impact on air quality.

Biodiversity conservation	Biodiversity and conservation will benefit from the plantings that will occur in the curtilages of the sections and within conservation space.
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3.2 Social / Cultural

My assessment of the benefits of the rezoning and the costs of the loss of HPL from a social and cultural perspective is shown in Table 5.

Table 5: Assessment of the benefits of rezoning and the costs of the loss of HPL from a social and cultural perspective.

Assessment Category	Benefits of Rezoning	Costs of the loss of HPL
Sense of belonging and place	There will be an increase in the sense of belonging and place on the site with the conversion from rural use to residential. This will house multiple people per household, therefore having a positive influence on the sense of belonging and place. Walk/cycle routes within the development will also create a pathway for the community to get together and interact.	
Social fabric	The social fabric of the urban development will be enhanced on the site and within the wider Christchurch District by the additional population that this site will provide housing for.	
Food security		There will be a slight reduction in food production caused by the 25 ha being developed from rural to urban. This will be insignificant given the scale and constraints the site is faced by.
Spiritual value	As far as we are aware there are no cultural heritage sites on or near the site therefore this category is judged as having no impact on either of the considerations.	

3.3 Economic

Our assessment of the benefits of the proposed rezoning development enabled by rezoning and the costs of the loss of HPL from an economic perspective are shown in Table 6.

Table 6: Assessment of the benefits of rezoning and the costs of the loss of HPL from an economic perspective

Assessment Category	Benefits of Rezoning	Costs of the loss of HPL
Income	There will be increased income from multiple sources, including sales, construction, roading and ongoing maintenance.	The loss of income over a 30 year period would equate to \$393,674 on the basis of consensus between landholders and the site being operated as one or \$160,819 if

		operated individually (workings in appendix A)
Employment (FTE)	There will be increased employment both from the construction and ongoing maintenance, which will be required on the site. Eliot Sinclair's original plan change request refers to this development supporting around 1,000 full-time equivalent (FTE) years of employment.	The loss of employment from this area of land, based on the B+LNZ representative farm model, equates to 0.2 employees
Flow on impacts to the wider community	There will be considerable flow on impacts to the wider community because the proposed development will result in increased expenditure within the local economy.	While the decrease in inputs sent to processors could potentially impact the district, the volume is so small that any effect on processing companies or their employees is likely to be less than minor.

4 Summary

It is my opinion that the environmental, social, cultural and economic benefits of rezoning of the 25 ha along Cashmere and Sparks, outweigh the long-term environmental, social, cultural and economic costs associated with the loss of highly productive land for land-based primary production and meets the requirements of Clause 3.6 (1) (c) of the NPS-HPL.

5 Appendix A

5.1 Economic

I have evaluated the economic cost of losing 25 hectares of the site by calculating the discounted cash flow of the Earnings Before Interest and Tax (EBIT) generated from the site over a 30-year period, with a 6% discount rate applied.

If the site was able to be run as a collective the highest and best land use would be for dryland dairy support. The financial parameters are from The AgriBusiness Groups Dryland Dairy Support Model. The per ha figures and the total are shown in Table 7.

Table 7: TAG Dryland Dairy Support Economic return

	\$/ha	Total from 25 ha
Gross Revenue	2,637	65,925
Operating Expenses	1,493	37,325
Earnings Before Interest and Tax	1,144	28,600

The opportunity cost of the loss of income from the site over a 30 year period is \$393,674.

In the case that the titles were run individually the highest and best land use would be small scale lifestyle grazing. The financial parameters are from The AgriBusiness Groups small scale lifestyle model. The per ha figures and the total are shown in Table 8.

Table 8: TAG Small Scale Lifestyle Grazing Economic Return

	\$/ha	Total from 25 ha
Gross Revenue	1,184	29,589
Operating Expenses	716	17,907
Earnings Before Interest and Tax	467	11,683

The opportunity cost of the loss of income from the site over a 30 year period is \$160,819

Appendix B. Ecological Assessment (Instream)

31 July 2025

Warren Lewis
P.O. Box 13-282, City East
CHRISTCHURCH, 8141

CASHMERE FIELDS DEVELOPMENT – POTENTIAL ECOLOGICAL EFFECTS OF THE PROPOSED PLAN CHANGE

Dear Warren,

1. INTRODUCTION

Eliot Sinclair has submitted a Private Plan Change (PPC) request to Christchurch City Council (the Council), which proposes to rezone the application site from a mix of Rural Urban Fringe (RuUF) and Residential New Neighbourhood (RNN), to RNN across the entire site, while keeping stormwater management areas as RuUF. The Council have requested additional information on the potential ecological effects of the proposed land-use change. As per Clause 22(2) of Schedule 1 of the Resource Management Act (RMA), any anticipated environmental effects must be described in a level of detail that's proportionate to their scale and significance.

Instream Consulting Ltd. (Instream) were engaged to undertake an assessment of potential aquatic ecology effects associated with the Site's change of land use, the boundaries of which are shown in Figure 1 (the Site). This letter summarises the existing environment, based on the findings of recent Council waterway and wetland surveys, and observations from a site visit. It also identifies potential environmental effects of the proposed land use change and highlights areas that will require further assessment once the development reaches the detailed design/subdivision consent stage.

2. EXISTING ENVIRONMENT

The Cashmere Fields development is located between Sparks Road and Cashmere Road in Hoon Hay (the Site), at the western edge of the undeveloped Hendersons Basin. The Site's current land use encompasses approximately 20 ha of Rural Urban Fringe and an additional 5 ha of Residential New Neighbourhood. It is understood that some of this area may be retained as Rural Urban Fringe for stormwater management areas. The Site is bordered by residential areas to the north and east, multipurpose rural land use to the west, and a mixture of residential and lifestyle dwellings to the south. Current land use within the Site appears to be a mixture of lifestyle blocks, grazing, and silage production. The Site footprint contains or is directly adjacent to three network waterways (Stilwells Drain, Stilwells Drain Branch and Rollesby Street Drain), which are tributaries of the Ōpāwaho / Heathcote River. There are no known wetlands or sites of ecological significance within the Site footprint. Three additional watercourses are located outside the Site, but within the wider Hendersons Basin area. Two (Ballintines Drain and Sherrings Drain) are hydrologically connected to Stilwells Drain and the

third, Luneys Drain Branch, drains the southern extent of the Site and is separated by Cashmere Road.

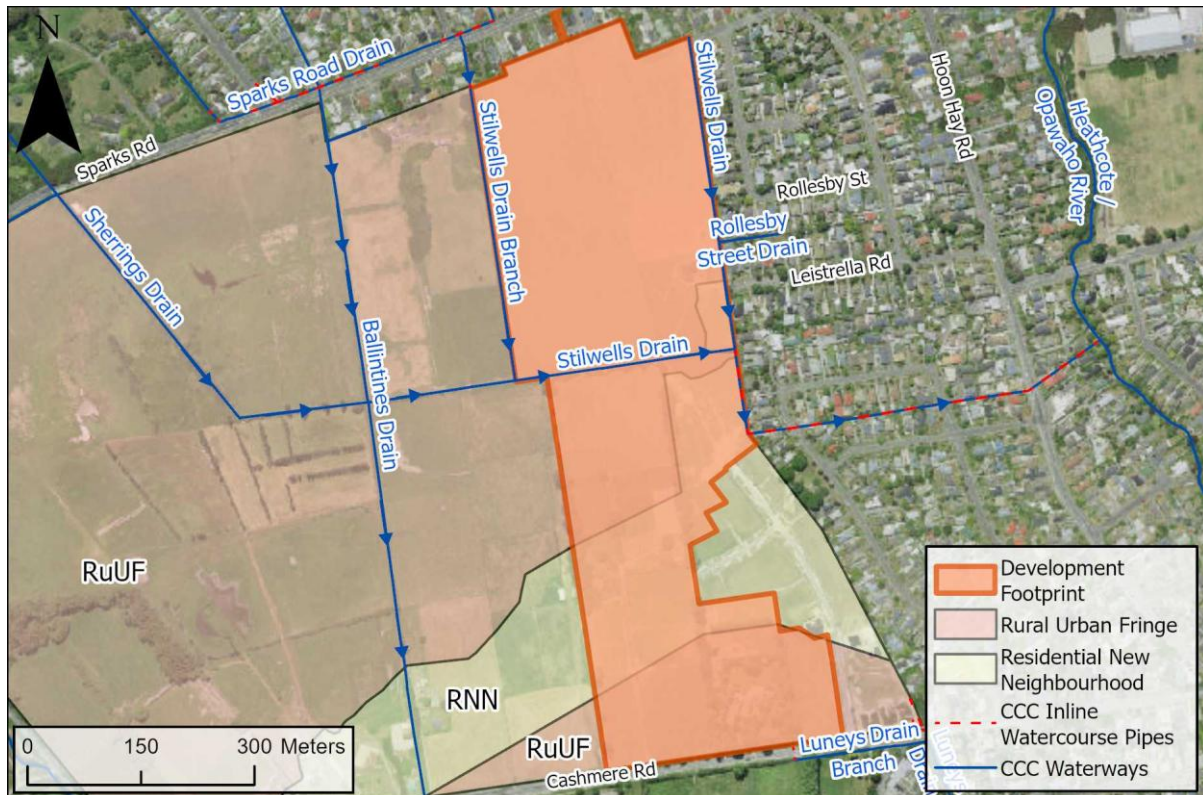


Figure 1: Site overview showing the Cashmere Fields Development Footprint (the Site) and the land within the Site currently zoned Rural Urban Fringe and Residential Urban Footprint.

The Council has recently undertaken ecological surveys of the wider Hendersons Basin area, in preparation for future development. A wetland report (Head 2025) and a watercourse report (Hornblow 2025) have been completed. These provide an overview of the ecological values present, and recommendations for waterway naturalisation and enhancement and best practice recommendations for works in and adjacent to waterways. The main findings are summarised below.

Stilwells Drain is the main watercourse associated with the Site and is comprised of north–south branch tributaries along the Site’s western and eastern boundaries. The west–east channel begins at the confluence of Ballintines and Sherrings Drains and carries the most flow. During recent surveys, Stilwells Drain Branch and Rollesby Street Drain tributaries characterised as open grass channels that were either intermittent or dry, suggesting they mainly carry excess flow during rainfall (Hornblow 2025). In comparison, Stilwells Drain (west–east) was comprised of either concrete or timber lined sections with stable, spring-fed, homogenous flow. It also had minimal native riparian vegetation present to shade or buffer the channel, poor instream habitat (i.e., absence of riffle and pools), and high sediment cover of the stream bed (Hornblow 2025). Combined with lined banks, these conditions provide poor habitat for both fish and macroinvertebrates. Recent surveys confirmed the macroinvertebrate communities within Stilwells Drain and adjacent waterways are comprised of pollution-tolerant taxa, and the fish community is typical of urban Christchurch waterways. Six fish species were recorded: īnanga, common bully, upland bully, giant bully, shortfin eel and longfin eel, of which īnanga and longfin eel are both listed as “At Risk - Declining” (Dunn *et al.* 2018). A single banded kōkopu in upper Sherrings Waterway was recorded, which is noteworthy. While this species is Not Threatened on a national level, it is locally rare; and as per the waterways report

(Hornblow 2025) this is the first known banded kōkopu recorded in the upper Ōpāwaho/Heathcote catchment. As a result of this finding, waterway enhancement within the broader Cashmere Fields development should include suitable banded kokopu habitat, to encourage the local distribution of this species. Many of the fish species recorded are migratory and require access to the sea to complete their lifecycles. While there are no instream barriers within the development footprint, Stilwells Drain is piped approximately 80 m downstream of Leistrella Road. It continues as Blakiston Drain for approximately 600 m before discharging into the Ōpāwaho / Heathcote River. This piped section may be a partial barrier to the upstream migration of some fish species (Hornblow 2025).

Wetland surveys have been completed within the site footprint and within the broader Henderson Basin. A wetland complex that supports rare plant species, provides habitat for native waterfowl, and contains potential lizard habitat, lies west of the Site (Head 2025). This wetland complex has been mapped in part by Council and meets the Resource Management Act (RMA) definition of an ecologically significant wetland. There are further areas within the wider Hendersons Basin that have not been ground truthed or mapped, therefore site-specific wetland delineations will be required at subdivision stage. Identification of wetlands within 10 m of any earthworks and within 100 m of the Site's development will be required to in accordance with regulatory requirements of the National Policy Statement for Freshwater Management (NPS-FM, amended January 2024). It is noted that the wetland complex mapped in the Council wetland report is over 200 m from the Site and is hydraulically separated in the northern half of the Site by watercourses (Ballantine's, Sherrings and Stilwells Drains). Within the site footprint, a wetland delineation at a proposed stormwater management area found no natural wetlands within the assessed area or within 100 m (Instream Consulting 2025). We note that the surveyed area was smaller than the Site shown in Figure 1; however, Instream (2025) concluded that the proposed stormwater management area location posed low risk to the hydrology of the wetland complex because of the hydraulic separations present.

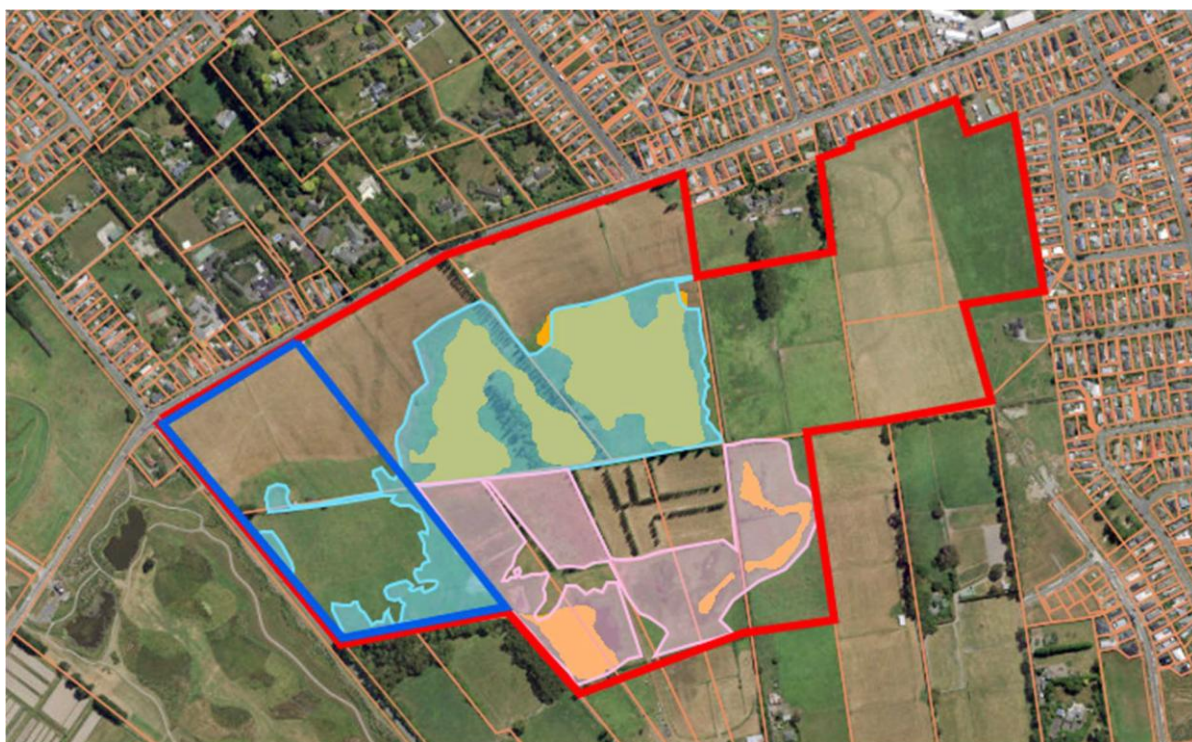


Figure 2. Sourced from the recent Council report by Head (2025) showing the extent of identified wetlands. Light blue shading shows wetlands determined by field survey; pink shows likely wetlands that are yet to be surveyed. The underlying orange is Environment Canterbury's indicative wetland layer.

3. POTENTIAL ECOLOGICAL EFFECTS

The rezoning of land from Rural Urban Fringe to Residential New Neighbourhood has the potential to result in the following direct and indirect effects, if not mitigated for. Additional effects may also be identified at the detailed design/subdivision stage.

- Increased proportion of impervious surfaces has the potential to result in reduced recharge of nearby wetlands and watercourses if not considered and mitigated for at the design stage.

Wetlands mapped by Council are located approximately 200 m west of the proposed Site. There is also a watercourse that runs north to south (Ballintines Drain) and west to east (Stilwells Drain) which provides hydraulic separation from the northern half of the Site. The distance, as well as the watercourses separating the northern half of the Site from the wetland complex to the west, reduces the risk associated with the Site's development. However, further assessment to confirm this will be needed at the subdivision design stage, in particular for the southern half of the Site.

- Discharge of urban stormwater contaminants, including sediment, to watercourses

The change in landuse will result in an increase in urban contaminants, including sediment and heavy metals from both construction and operational phases. It is understood that stormwater within the Site is to be treated via a series of stormwater management areas. An assessment of expected discharge quality will need to be undertaken against Canterbury Land and Water Plan Schedule 5 receiving water standards at the subdivision consent stage. If stormwater is treated to a high standard, as is proposed, potential adverse effects to downgradient waterways will be avoided and/or minimised.

- Loss of watercourse and/or wetland extent

As part of the proposed land use change, there is potential for the loss of watercourse and/or wetland extent or values. It is understood that the Cashmere Fields development intends to enhance and naturalise the watercourses that flow through the Site, which if undertaken in alignment with the recommendations in section 4, will result in a net improvement to aquatic ecology values within the Site. Further assessment and detail will be provided at the subdivision consent stage, as naturalising timber lined drains requires consideration of multiple factors, including geotechnical and hydrology. We understand some piping along Stilwell Drain (north-south) and Rollesby Street Drain is to occur, with the northern portion of Stilwell Drain to be redirected west towards proposed wetlands within the Site (exact area is not yet known). It is also understood that this piping is a Council initiative and not a direct result of the proposed plan change. An assessment of this loss of watercourse extent may be required at the subdivision design stage. At this stage, it is considered the loss of watercourse extent could be effectively offset by improvements to Stilwell Drain (west-east).

No loss of wetland extent is expected, based on aerial review, and a previous wetland delineation (Instream 2025). However, an ecologically significant wetland complex is located approximately 200 m west of the Site. Further assessment to confirm the extent of this wetland complex in relation to the Site boundaries will be needed at the subdivision design stage.

- Instream works

The proposed development will require instream works for activities such as culvert installations, naturalisation and enhancement of waterways, waterway realignments, and stormwater management area connections. To avoid adverse effects to instream values, all instream works should be undertaken in an isolated works area, with associated fish salvage

by a qualified freshwater ecologist and appropriate erosion and sediment controls. All enhancement and restoration plans should be undertaken in coordination with the Council experts to incorporate the overall Hendersons Basin development objectives.

4. RECOMMENDATIONS

The proposed plan change has the potential to result in an improvement to current aquatic ecology values of the watercourses that flow through the Site, provided works are undertaken with appropriate guidance and mitigation controls. Any enhancement of waterways should be designed in accordance with the recommendations below, those provided in the Council's watercourse report (Hornblow 2025), and in coordination with Council ecologists and stormwater engineers. This will ensure consistency of the wider development objectives of the Hendersons Basin area. Development should also consider and mitigate any potential hydrological impacts to the wetland complex west of the Site.

The three waterways directly within and adjacent to the Site (Stilwells Drain, Stilwells Drain Branch and Rollesby Street Drain) are considered Network Waterways in the Christchurch District Plan. It is understood that Council plan to pipe sections of Stilwell Dain Branch and Rollesby Street Drain, located at the eastern boundary of the Site and redirect flows to wetlands planned along the western side of the Site. This piping is not considered part of the Private Plan Change works. Network Waterways require a waterway setback distance of 5 m, and Council policy is to naturalise network waterways within the Site as part of any development; this is also a requirement of the Outline Development Plan. Broadly, this could include replacing timber lining within Stilwells Drain (west-east) with battered (i.e., gentle gradient) natural banks and a meandering channel form, establishing a native riparian buffer, and providing for a variety of flow habitats (riffle-run-pool sequences) and substrate forms. In addition to habitat benefits, channel meandering will increase waterway length, helping to offset any potential piping required (i.e., of Stilwells Drain north-south branch). Any naturalisation and enhancement should be designed with the following considerations:

- Replacement of the timber lining with battered, natural banks and a meandering channel form;
- A planted riparian buffer with a minimum width of 5 m, using locally-sourced non-cultivar indigenous species. The plant selection should include plants that overhang the waterway and tall species to provide shade to the waterway;
- Incorporate a wider riparian setback where possible (> 10 m wide on either side);
- A minimum water-depth of 200 mm throughout the entire channel;
- Variation in flow habitats (i.e. inclusion of riffle, run, and pool habitats, and meanders in the channel);
- Instream habitat additions, such as logs and boulders;
- Bank and channel cross-sections and long sections;
- A variation in substrate sizes;
- Avoid rock-lining the channel, as it reduces habitat for aquatic species.

General mitigation recommendations for instream works are provided below. The construction period is the key period where adverse ecological effects on watercourses can occur. Stormwater management should be to a high standard to effectively reduce flood risk and remove contaminants from run-off. Additionally, any construction works must not negatively impact the ecologically significant wetland complex west of the development.

- The winter wet season should be avoided where possible, construction should occur over the drier summer months to avoid adverse effects.

- Construction contractors are responsible for following industry best-practice for works around waterways in the National Works in Waterways Guideline (Ministry for the Environment 2021). This includes, but is not limited to:
 - Erosion and sediment control (including implementation of an erosion and sediment control plan) for works including removal of a culvert and construction of new channels and weirs.
 - Avoiding discharge of contaminants, such as fuel, grease, and oil, through appropriate control and containment procedures.
 - Minimise loss of significant native riparian vegetation.
 - Avoiding the disturbance, injury, and mortality of terrestrial fauna, such as lizards.
 - Avoiding the mortality and stranding of freshwater fauna, such as fish.
 - Avoiding critical periods for fish migration and spawning.
 - Maintaining fish passage during and after construction.
 - Avoiding transfer of pest species to the site (e.g., through soil on dirty machinery).
- **Fish salvage prior to construction.** Fish will need to be moved out of the construction footprint prior to undertaking instream works and prevented from re-entering the site for the duration of the works. Fish salvage needs to be undertaken under the guidance of a suitably qualified and experienced freshwater ecologist, with appropriate authorisations and permits.
- **Fish screens.** When dewatering, screens with a mesh size of 3 mm should be used to prevent fish from being sucked into any pumps or re-entering any construction sites that are not already bunded off from the flowing channel. Pump screens should be set back from the pump intake, to avoid fish and debris getting impinged on the screen.
- **Maintain flow downstream to avoid fish stranding.** When flow is diverted around a worksite, there can sometimes be reduced flow downstream, due to the way the diversion and water treatment system is set up. It is essential that sufficient flow is maintained to avoid any fish stranding. The contractor should undertake checks to ensure there is adequate flow maintained and no fish stranding throughout the duration of the works. If in doubt, seek advice from a freshwater ecologist.
- **Good practice erosion and sediment control.** This is important, to minimise loss of soil into waterways and associated impacts on water quality, and deposited sediment smothering the bed. We have assumed an erosion and sediment control plan for works including removal of a culvert and construction of new channels and weirs, will be prepared by the contractor and that they will be responsible for implementing it.
- **Avoid using Bidim and other plastic geotextile liners.** Bidim is made of plastic, which should not be intentionally placed in waterways, due to its long-term impact on aquatic environments. Natural alternative materials to plastic include jute and coconut fibres.

5. SUMMARY

The plan change has the potential to result in a net improvement for aquatic ecology values, through the naturalisation of Stilwell Drains west to east branch. A range of recommendations are provided to assist in detailed design. Input from Council ecologists is advised at an early design stage to ensure the Site's naturalisation aligns with the wider development area objectives.

6. REFERENCES

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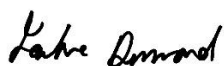
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Prepared by:



Faline Drummond
Ecologist
Instream Consulting Ltd

Reviewed by:



Laura Drummond
Principal Scientist
Instream Consulting Ltd

Appendix C. Response to Transport Matters (Stantec)



Stantec New Zealand
Level 3, 2 Hazeldean Road
Addington, Christchurch 8024
NEW ZEALAND
Mail to: PO Box 13052, Christchurch 8140

18 June 2025

Enquiries: Andrew Leckie
Project No: 310206381

Cashmere Park Limited
319 Worsleys Road, Cashmere

Attention: Warren Lewis

Dear Warren

Reference: Cashmere Fields Plan Change- RFI Transport Responses

This letter provides responses to the transport-related requests from the Christchurch City Council Request for Further Information received 18 May 2025.

1 SIDRA Intersection Modelling

Request 1: *Please provide additional SIDRA modelling outputs at two arterial intersections: Hoon Hay Road / Cashmere Road and Sparks Road / Hoon Hay Road (Existing and Proposed).*

Response 1: We have modelled the two signalised intersections using SIDRA Intersection 9.1. Modelled scenarios are 2038 without and with the additional residential development that will be enabled by the Plan Change. Intersection turning volumes are those from the CAST modelling exercise presented in the ITA.

Signal phasing and cycle times have been based on data provided by the CCC Real Time Operations Team, reflecting the existing operation of the intersections.

The following tables provide summaries of the forecast intersection performance and SIDRA output summaries are presented in Attachment 1.

Reference: Cashmere Fields Plan Change- RFI Transport Responses

Table 1: Sparks Road / Hoon Hay Road Intersection Performance Summary

Approach	AM Peak		PM Peak	
	Base	With Development	Base	With Development
Hoon Hay Road South	60s / LOS E	66s / LOS E	55s / LOS D	58s / LOS E
Sparks Road East	21s / LOS C	23s / LOS C	114s / LOS F	114s / LOS F
Hoon Hay Road North	51s / LOS D	48s / LOS D	98s / LOS F	98s / LOS F
Sparks Road West	47s / LOS D	53s / LOS D	22s / LOS C	22s / LOS C
All Vehicles	45s / LOS D	49s / LOS D	79s / LOS E	80s / LOS E

Table 2: Cashmere Road / Hoon Hay Road Intersection Performance Summary

Approach	AM Peak		PM Peak	
	Base	With Development	Base	With Development
Worsleys Road South	59s / LOS E	59s / LOS E	38s / LOS D	38s / LOS D
Cashmere Road East	14s / LOS B	15s / LOS B	15s / LOS B	15s / LOS B
Hoon Hay Road North	63s / LOS E	63s / LOS E	41s / LOS D	41s / LOS D
Cashmere Road West	55s / LOS E	53s / LOS D	32s / LOS C	32s / LOS C
All Vehicles	42s / LOS D	41s / LOS D	25s / LOS C	25s / LOS C

To summarise, the intersections are forecast to operate with satisfactory overall average delays into the future. Some movements face high delay, as they do currently, which is to be expected at arterial road intersections during peak times. The small changes in traffic volumes forecast as a result of development of the Plan Change area will not noticeably affect intersection performance.

2 CAST Model Outputs

Request 2: Please provide additional CAST model outputs of volume and delay difference plots between the existing and rezoning scenarios.

Response 2: These are provided in Attachment 2.

Request 3: Please provide additional modelling scenario in CAST for the vehicle access onto Cashmere Road to be connected at Penruddock Rise intersection through the proposed roundabout, as this may highlight further adverse increases in vehicle movements on existing and proposed residential roads.

Response 3: We understand that this request relates to the location of the western Cashmere Road intersection within the ODP area (circled below). As shown, the ODP has this intersection to the east of

Reference: Cashmere Fields Plan Change- RFI Transport Responses

Penruddock Road, whereas the request suggests that this road may be constructed opposite Penruddock Rise along with a roundabout on Cashmere Road.

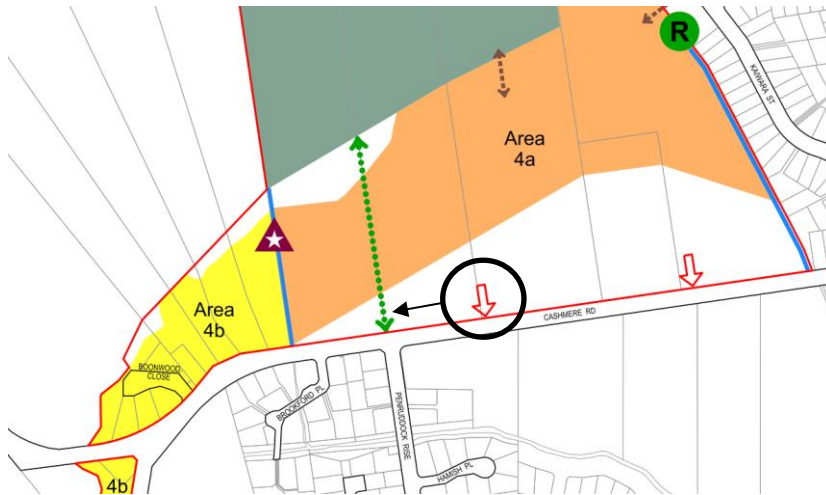


Figure 1: ODP Western Cashmere Road Intersection Location

Regardless of the position of this intersection, development of the site will only contribute low traffic volumes to this new local road. The CAST outputs, shown below, suggest the additional development that would be enabled through the proposed Plan Change could contribute approximately 20 – 30 vehicle movements per hour to the new road. This is a low traffic volume which would readily be accommodated on the local road network. The forecast increased use of Cashmere Road as a result of additional development enabled by the Plan Change is modest and would not impact the arterial road network. Accordingly, we are of the view that further CAST modelling with respect to this intersection location is not required and will not be of benefit.



Figure 2: CAST Change in Flow with Development Forecasts, AM Peak (Left) and PM Peak

Reference: Cashmere Fields Plan Change- RFI Transport Responses

3 Cashmere Road Access

Request 4: *The Operative Hendersons Outline Development Plan (East) in Appendix 8.10.18 shows two access points onto Cashmere Road. Considering the construction of a roundabout at the intersection of Penruddock Rise/Cashmere Road along with the existing access from Leistrella Road, Council requests further information on any potential effects that may arise from the construction of an additional access onto Cashmere Road.*

Response 4: Section 11.3 of the ITA addresses the proposed new Cashmere Road intersection. This is proposed to provide local access and connectivity within the new residential area.

The intersection is proposed approximately 150m west of Leistrella Road. We have assessed in the ITA that this separation will be adequate to ensure that vehicle movements at the intersections and conflict points are suitably separated. The design of the intersection and associated upgrades to Cashmere Road can be considered at the subdivision stage to ensure the safety of all road users.

We note that the proposed intersection location is approximately 190m from the western Cashmere Road intersection location shown on the proposed ODP. If the western Cashmere Road connection shifts to opposite Penruddock Rise, this separation will increase to approximately 290m. This is more than adequate in the urban speed environment.

4 Network Interventions at Arterial Road Intersections

Request 5: *Please clarify when interventions will be needed at Cashmere Road/Hoon Hay Road intersection and Sparks Road/Hoon Hay Road intersection, as development progresses northward from Cashmere Road toward Hoon Hay and Sparks Roads.*

Response 5: The traffic effects assessment presented in the ITA and the further information provided in this letter confirm that the additional development enabled through the proposed Plan Change will not have a noticeable effect on the performance of these two major, arterial road intersections. Accordingly, no interventions to accommodate additional traffic volumes need to be contemplated.

5 Public Transport

Request 6: *The Integrated Transport Assessment notes that the nearest public transport bus route/stop is between 600m-800m from the central and northern blocks of the site and thus the site would be 'relatively well served by public transport'. It is outlined in Council's Infrastructure Design Standards at Figure 4 that 90% of all residential development shall be located within 500m of a bus route. The Council requests further information on the potential effects of the greater distances to public transport proposed by the request.*

Response 6: Section 8.2 of the ITA provides assessment of the accessibility of the site by public transport.

The southern portion of additional residential land is very well located for public transport uptake, being within a short distance of Cashmere Road where there is the existing Westmorland / Shirley bus service.

The central block is similar to the surrounding zoned residential land in terms of accessibility for public transport. It is approximately 400m from Cashmere Road and 600m from Hoon Hay Road via the Kaiwara Street reserve and Blakiston Street. The high-frequency Orbiter service as well as the Westmorland / Shirley service run along this part of Hoon Hay Road.

The northern block is similar to the existing Leistrella Road / Rydal Street residential catchment in terms of accessibility for public transport. The northern part of the block will be approximately 600m from the Hoon Hay Road / Sparks Road intersection, through which the Hillmorton / Southshore service runs. The southern part of the block will be approximately 600m from Rose Street, along which both the Orbiter and Westmorland / Shirley services run.

Almost all, if not all, of the site will be within 800m of the Orbiter bus stops on Rose Street or Hoon Hay Road.

As outlined in the ITA, it is considered that the 600m – 800m distances from the central and northern blocks to the nearest existing bus stops are acceptable. While they may be at the higher end of walking distances to bus stops that people are prepared to take, residents would have options of using other modes, for example, bicycle or scooter, to connect to the bus routes.

Further to the assessment provided in the ITA and the above, NZTA public transport guidance¹ suggests that up to an 800m walking distance is suitable for accessing high frequency public transport

¹ <https://www.nzta.govt.nz/walking-cycling-and-public-transport/public-transport/public-transport-framework/integrated-planning-and-design/public-transport-design-guidance/>

Reference: Cashmere Fields Plan Change- RFI Transport Responses

stops. In this location, the Orbiter is a high frequency service and as above, almost all, if not all, of the site will be within 800m of the Orbiter bus stops on Rose Street or Hoon Hay Road.

As concluded in the ITA, we consider that development of the site will be relatively well served by public transport when compared to many parts of the city. Also, we note that bus routes are regularly reviewed and additional bus services can be expected in the south-west of the city given the level of development that has been and still is occurring. The South-West Area Plan anticipated a bus route on Sparks Road and such a service would offer improved public transport accessibility to the site as well as existing residential areas north of Sparks Road.

Please do not hesitate to contact the undersigned if you have any queries.

Yours sincerely

Stantec New Zealand



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andrew.leckie@stantec.com

Encl Attachment 1 SIDRA Modelling Summaries
 Attachment 2 CAST Outputs

Reference: Cashmere Fields Plan Change- RFI Transport Responses

Attachment 1: SIDRA Modelling Summaries

Cashmere Road / Hoon Hay Road - 2038 AM Peak Without Development:

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total HV]		Arrival Flows [Total HV]		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			veh/h	%	veh/h	%	v/c	sec		[Veh. veh	Dist] m				km/h
SouthEast: Worsleys Road															
21a	L1	All MCs	1	2.0	1	2.0	0.243	61.3	LOS E	2.7	19.4	0.95	0.72	0.95	28.2
22	T1	All MCs	48	2.0	48	2.0	0.243	54.2	LOS D	2.7	19.4	0.95	0.72	0.95	28.6
23b	R3	All MCs	21	2.0	21	2.0	0.269	69.8	LOS E	1.3	9.2	1.00	0.70	1.00	25.2
Approach			71	2.0	71	2.0	0.269	58.9	LOS E	2.7	19.4	0.97	0.71	0.97	27.5
East: Cashmere Road (East)															
4b	L3	All MCs	19	2.0	19	2.0	0.278	7.9	LOS A	6.2	44.1	0.29	0.28	0.29	49.9
5	T1	All MCs	394	2.0	394	2.0	0.278	5.7	LOS A	6.2	44.1	0.29	0.28	0.29	51.4
6a	R1	All MCs	191	2.0	191	2.0	* 0.429	32.5	LOS C	8.3	59.4	0.82	0.78	0.82	36.7
Approach			603	2.0	603	2.0	0.429	14.2	LOS B	8.3	59.4	0.46	0.44	0.46	44.5
NorthWest: Hoon Hay Road															
27a	L1	All MCs	93	2.0	93	2.0	* 0.599	64.3	LOS E	5.5	39.3	1.00	0.80	1.03	27.2
28	T1	All MCs	13	2.0	13	2.0	0.062	52.5	LOS D	0.7	4.8	0.93	0.64	0.93	30.4
29b	R3	All MCs	27	2.0	27	2.0	0.210	63.2	LOS E	1.6	11.2	0.97	0.72	0.97	27.4
Approach			133	2.0	133	2.0	0.599	62.9	LOS E	5.5	39.3	0.99	0.77	1.01	27.5
West: Cashmere Road (West)															
10b	L3	All MCs	219	2.0	219	2.0	0.921	46.1	LOS D	60.6	431.5	0.97	1.00	1.10	34.0
11	T1	All MCs	771	2.0	771	2.0	* 0.921	57.9	LOS E	60.6	431.5	0.97	1.00	1.10	34.7
12a	R1	All MCs	1	2.0	1	2.0	0.002	31.7	LOS C	0.0	0.2	0.43	0.52	0.43	43.8
Approach			991	2.0	991	2.0	0.921	55.3	LOS E	60.6	431.5	0.97	1.00	1.10	29.7
All Vehicles			1797	2.0	1797	2.0	0.921	42.2	LOS D	60.6	431.5	0.80	0.78	0.87	33.1

Cashmere Road / Hoon Hay Road - 2038 AM Peak With Development:

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total HV]		Arrival Flows [Total HV]		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			veh/h	%	veh/h	%	v/c	sec		[Veh. veh	Dist] m				km/h
SouthEast: Worsleys Road															
21a	L1	All MCs	1	2.0	1	2.0	0.237	61.3	LOS E	2.7	19.0	0.95	0.72	0.95	28.2
22	T1	All MCs	47	2.0	47	2.0	0.237	54.1	LOS D	2.7	19.0	0.95	0.72	0.95	28.6
23b	R3	All MCs	22	2.0	22	2.0	0.285	69.9	LOS E	1.4	9.6	1.00	0.70	1.00	25.1
Approach			71	2.0	71	2.0	0.285	59.2	LOS E	2.7	19.0	0.97	0.71	0.97	27.4
East: Cashmere Road (East)															
4b	L3	All MCs	20	2.0	20	2.0	0.283	7.9	LOS A	6.3	44.9	0.29	0.28	0.29	49.9
5	T1	All MCs	399	2.0	399	2.0	0.283	5.8	LOS A	6.3	44.9	0.29	0.28	0.29	51.4
6a	R1	All MCs	195	2.0	195	2.0	* 0.434	33.4	LOS C	8.7	61.9	0.84	0.78	0.84	36.4
Approach			614	2.0	614	2.0	0.434	14.6	LOS B	8.7	61.9	0.46	0.44	0.46	44.3
NorthWest: Hoon Hay Road															
27a	L1	All MCs	94	2.0	94	2.0	* 0.606	64.4	LOS E	5.6	39.8	1.00	0.80	1.03	27.1
28	T1	All MCs	13	2.0	13	2.0	0.062	52.5	LOS D	0.7	4.8	0.93	0.64	0.93	30.4
29b	R3	All MCs	29	2.0	29	2.0	0.225	63.3	LOS E	1.7	12.0	0.97	0.73	0.97	27.4
Approach			136	2.0	136	2.0	0.606	63.0	LOS E	5.6	39.8	0.99	0.77	1.01	27.5
West: Cashmere Road (West)															
10b	L3	All MCs	194	2.0	194	2.0	0.913	43.2	LOS D	57.7	410.6	0.95	0.97	1.07	34.8
11	T1	All MCs	782	2.0	782	2.0	* 0.913	54.9	LOS D	57.7	410.6	0.95	0.97	1.07	35.5
12a	R1	All MCs	1	2.0	1	2.0	0.002	31.7	LOS C	0.0	0.2	0.44	0.52	0.44	43.5
Approach			977	2.0	977	2.0	0.913	52.5	LOS D	57.7	410.6	0.95	0.97	1.07	30.4
All Vehicles			1797	2.0	1797	2.0	0.913	40.6	LOS D	57.7	410.6	0.79	0.77	0.85	33.6

18 June 2025

Attention: Warren Lewis

Page 8 of 18

Reference: Cashmere Fields Plan Change- RFI Transport Responses

Cashmere Road / Hoon Hay Road - 2038 PM Peak Without Development:

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%				[Veh. veh]	Dist]				
SouthEast: Worsleys Road															
21a	L1	All MCs	1	2.0	1	2.0	0.073	37.7	LOS D	0.9	6.1	0.86	0.63	0.86	34.1
22	T1	All MCs	23	2.0	23	2.0	0.073	31.8	LOS C	0.9	6.1	0.86	0.63	0.86	34.7
23b	R3	All MCs	22	2.0	22	2.0	0.131	44.2	LOS D	0.9	6.2	0.94	0.71	0.94	30.5
Approach			46	2.0	46	2.0	0.131	37.9	LOS D	0.9	6.2	0.90	0.67	0.90	32.6
East: Cashmere Road (East)															
4b	L3	All MCs	43	2.0	43	2.0	0.747	10.0	LOS B	20.1	143.2	0.70	0.66	0.70	46.1
5	T1	All MCs	718	2.0	718	2.0	0.747	13.2	LOS B	20.1	143.2	0.70	0.66	0.70	47.3
6a	R1	All MCs	179	2.0	179	2.0	* 0.370	24.3	LOS C	5.3	37.5	0.79	0.75	0.79	40.5
Approach			940	2.0	940	2.0	0.747	15.2	LOS B	20.1	143.2	0.72	0.67	0.72	44.0
NorthWest: Hoon Hay Road															
27a	L1	All MCs	108	2.0	108	2.0	0.382	40.2	LOS D	4.2	29.9	0.94	0.77	0.94	33.1
28	T1	All MCs	64	2.0	64	2.0	0.192	32.9	LOS C	2.3	16.5	0.89	0.68	0.89	36.4
29b	R3	All MCs	152	2.0	152	2.0	* 0.654	44.5	LOS D	6.4	45.2	0.99	0.84	1.06	31.8
Approach			324	2.0	324	2.0	0.654	40.8	LOS D	6.4	45.2	0.95	0.79	0.99	33.1
West: Cashmere Road (West)															
10b	L3	All MCs	86	2.0	86	2.0	0.734	20.9	LOS C	21.4	152.2	0.86	0.79	0.86	41.1
11	T1	All MCs	565	2.0	565	2.0	* 0.734	33.3	LOS C	21.4	152.2	0.86	0.79	0.86	42.1
12a	R1	All MCs	2	2.0	2	2.0	0.012	46.8	LOS D	0.1	0.5	0.83	0.61	0.83	35.2
Approach			654	2.0	654	2.0	0.734	31.7	LOS C	21.4	152.2	0.86	0.79	0.86	36.8
All Vehicles			1964	2.0	1964	2.0	0.747	25.4	LOS C	21.4	152.2	0.81	0.73	0.81	39.0

Cashmere Road / Hoon Hay Road - 2038 PM Peak With Development:

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%				[Veh. veh]	Dist] m				
SouthEast: Worsleys Road															
21a	L1	All MCs	1	2.0	1	2.0	0.073	37.7	LOS D	0.9	6.1	0.86	0.63	0.86	34.1
22	T1	All MCs	23	2.0	23	2.0	0.073	31.8	LOS C	0.9	6.1	0.86	0.63	0.86	34.7
23b	R3	All MCs	22	2.0	22	2.0	0.131	44.2	LOS D	0.9	6.2	0.94	0.71	0.94	30.5
Approach			46	2.0	46	2.0	0.131	37.9	LOS D	0.9	6.2	0.90	0.67	0.90	32.6
East: Cashmere Road (East)															
4b	L3	All MCs	44	2.0	44	2.0	0.752	10.0	LOS B	20.3	144.4	0.70	0.66	0.70	46.0
5	T1	All MCs	718	2.0	718	2.0	0.752	13.3	LOS B	20.3	144.4	0.70	0.66	0.70	47.3
6a	R1	All MCs	182	2.0	182	2.0	* 0.378	24.4	LOS C	5.4	38.4	0.79	0.76	0.79	40.4
Approach			944	2.0	944	2.0	0.752	15.3	LOS B	20.3	144.4	0.72	0.68	0.72	44.0
NorthWest: Hoon Hay Road															
27a	L1	All MCs	107	2.0	107	2.0	0.378	40.2	LOS D	4.2	29.6	0.94	0.77	0.94	33.1
28	T1	All MCs	63	2.0	63	2.0	0.189	32.8	LOS C	2.3	16.3	0.89	0.68	0.89	36.4
29b	R3	All MCs	146	2.0	146	2.0	* 0.631	44.1	LOS D	6.1	43.3	0.99	0.83	1.04	31.9
Approach			317	2.0	317	2.0	0.631	40.6	LOS D	6.1	43.3	0.95	0.78	0.98	33.2
West: Cashmere Road (West)															
10b	L3	All MCs	83	2.0	83	2.0	0.731	21.2	LOS C	21.3	151.9	0.86	0.79	0.86	41.2
11	T1	All MCs	568	2.0	568	2.0	* 0.731	33.1	LOS C	21.3	151.9	0.86	0.79	0.86	42.2
12a	R1	All MCs	2	2.0	2	2.0	0.013	47.6	LOS D	0.1	0.5	0.84	0.61	0.84	34.9
Approach			654	2.0	654	2.0	0.731	31.6	LOS C	21.3	151.9	0.86	0.79	0.86	36.8
All Vehicles			1961	2.0	1961	2.0	0.752	25.4	LOS C	21.3	151.9	0.81	0.73	0.81	39.1

Reference: Cashmere Fields Plan Change- RFI Transport Responses

Sparks Road / Hoon Hay Road - 2038 AM Peak Without Development:

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%		sec		[Veh. veh	Dist]				km/h
South: Hoon Hay Road (South)															
1	L2	All MCs	84	2.0	84	2.0	0.903	66.7	LOS E	28.6	203.8	1.00	1.10	1.27	33.1
2	T1	All MCs	459	2.0	459	2.0	* 0.903	59.1	LOS E	28.6	203.8	1.00	1.10	1.27	34.0
3	R2	All MCs	22	2.0	22	2.0	0.179	64.0	LOS E	1.0	7.0	0.96	0.71	0.96	32.0
Approach			565	2.0	565	2.0	0.903	60.4	LOS E	28.6	203.8	1.00	1.09	1.26	30.0
East: Sparks Road (East)															
4	L2	All MCs	19	2.0	19	2.0	0.493	24.1	LOS C	13.6	97.0	0.67	0.60	0.67	46.9
5	T1	All MCs	472	2.0	472	2.0	0.493	15.1	LOS B	13.6	97.0	0.67	0.60	0.67	48.6
6	R2	All MCs	84	2.0	84	2.0	0.696	55.0	LOS E	4.1	29.2	1.00	0.87	1.19	31.0
Approach			575	2.0	575	2.0	0.696	21.2	LOS C	13.6	97.0	0.72	0.64	0.75	44.2
North: Hoon Hay Road (North)															
7	L2	All MCs	220	2.0	220	2.0	0.821	54.8	LOS D	21.6	153.8	0.99	0.95	1.11	35.7
8	T1	All MCs	252	2.0	252	2.0	0.821	47.3	LOS D	21.6	153.8	0.99	0.95	1.11	36.7
9	R2	All MCs	20	2.0	20	2.0	0.212	66.2	LOS E	0.9	6.6	0.99	0.70	0.99	31.0
Approach			492	2.0	492	2.0	0.821	51.4	LOS D	21.6	153.8	0.99	0.94	1.11	32.1
West: Sparks Road (West)															
10	L2	All MCs	1	2.0	1	2.0	0.899	54.8	LOS D	39.5	281.5	0.97	1.03	1.15	37.6
11	T1	All MCs	796	2.0	796	2.0	* 0.899	47.3	LOS D	39.5	281.5	0.97	1.03	1.15	38.7
12	R2	All MCs	83	2.0	83	2.0	0.233	40.7	LOS D	2.6	18.5	0.72	0.75	0.72	40.2
Approach			880	2.0	880	2.0	0.899	46.7	LOS D	39.5	281.5	0.94	1.00	1.11	33.8
All Vehicles			2512	2.0	2512	2.0	0.903	44.9	LOS D	39.5	281.5	0.91	0.93	1.06	34.3

Sparks Road / Hoon Hay Road - 2038 AM Peak With Development:

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%				[Veh. veh	Dist]				
			veh/h		veh/h		v/c	sec			m				km/h
South: Hoon Hay Road (South)															
1	L2	All MCs	88	2.0	88	2.0	0.931	73.0	LOS E	32.5	231.4	1.00	1.17	1.34	31.6
2	T1	All MCs	489	2.0	489	2.0	* 0.931	65.4	LOS E	32.5	231.4	1.00	1.17	1.34	32.4
3	R2	All MCs	22	2.0	22	2.0	0.162	63.7	LOS E	1.0	6.9	0.95	0.71	0.95	32.3
Approach			600	2.0	600	2.0	0.931	66.4	LOS E	32.5	231.4	1.00	1.15	1.32	28.6
East: Sparks Road (East)															
4	L2	All MCs	22	2.0	22	2.0	0.520	25.9	LOS C	14.5	103.3	0.69	0.62	0.69	46.4
5	T1	All MCs	481	2.0	481	2.0	0.520	16.7	LOS B	14.5	103.3	0.69	0.62	0.69	48.1
6	R2	All MCs	82	2.0	82	2.0	0.760	59.0	LOS E	4.1	29.4	1.00	0.90	1.29	30.2
Approach			585	2.0	585	2.0	0.760	23.0	LOS C	14.5	103.3	0.74	0.66	0.78	43.3
North: Hoon Hay Road (North)															
7	L2	All MCs	219	2.0	219	2.0	0.793	51.4	LOS D	20.7	147.4	0.97	0.91	1.06	36.7
8	T1	All MCs	254	2.0	254	2.0	0.793	43.9	LOS D	20.7	147.4	0.97	0.91	1.06	37.8
9	R2	All MCs	19	2.0	19	2.0	0.219	66.7	LOS E	0.9	6.4	0.99	0.69	0.99	30.7
Approach			492	2.0	492	2.0	0.793	48.1	LOS D	20.7	147.4	0.97	0.90	1.05	33.1
West: Sparks Road (West)															
10	L2	All MCs	1	2.0	1	2.0	0.922	61.9	LOS E	43.4	309.2	0.99	1.10	1.24	35.4
11	T1	All MCs	808	2.0	808	2.0	* 0.922	54.3	LOS D	43.4	309.2	0.99	1.10	1.24	36.4
12	R2	All MCs	77	2.0	77	2.0	0.230	43.2	LOS D	2.5	17.6	0.74	0.75	0.74	39.6
Approach			886	2.0	886	2.0	0.922	53.3	LOS D	43.4	309.2	0.97	1.07	1.20	31.9
All Vehicles			2563	2.0	2563	2.0	0.931	48.5	LOS D	43.4	309.2	0.92	0.97	1.10	33.2

18 June 2025

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Page 10 of 18

Reference: Cashmere Fields Plan Change- RFI Transport Responses

Sparks Road / Hoon Hay Road - 2038 PM Peak Without Development:

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Hoon Hay Road (South)															
1	L2	All MCs	129	2.0	129	2.0	0.819	59.1	LOS E	20.5	146.0	1.00	0.95	1.13	34.5
2	T1	All MCs	293	2.0	293	2.0	0.819	50.4	LOS D	20.5	146.0	1.00	0.95	1.13	35.5
3	R2	All MCs	32	2.0	32	2.0	0.671	75.1	LOS E	1.7	12.2	1.00	0.78	1.23	28.5
Approach			454	2.0	454	2.0	0.819	54.6	LOS D	20.5	146.0	1.00	0.94	1.14	31.3
East: Sparks Road (East)															
4	L2	All MCs	26	2.0	26	2.0	1.069	139.0	LOS F	79.0	562.8	1.00	1.71	1.91	20.4
5	T1	All MCs	866	2.0	866	2.0	* 1.069	127.8	LOS F	79.0	562.8	1.00	1.71	1.91	20.7
6	R2	All MCs	178	2.0	178	2.0	0.572	43.9	LOS D	6.9	48.9	0.83	0.81	0.83	38.3
Approach			1071	2.0	1071	2.0	1.069	114.2	LOS F	79.0	562.8	0.97	1.56	1.73	20.8
North: Hoon Hay Road (North)															
7	L2	All MCs	154	2.0	154	2.0	0.998	107.0	LOS F	34.9	248.2	1.00	1.36	1.62	24.9
8	T1	All MCs	334	2.0	334	2.0	* 0.998	98.1	LOS F	34.9	248.2	1.00	1.36	1.62	25.3
9	R2	All MCs	45	2.0	45	2.0	0.361	71.8	LOS E	2.2	15.5	0.98	0.74	0.98	30.9
Approach			533	2.0	533	2.0	0.998	98.4	LOS F	34.9	248.2	1.00	1.31	1.57	22.8
West: Sparks Road (West)															
10	L2	All MCs	12	2.0	12	2.0	0.564	27.9	LOS C	17.8	126.9	0.67	0.60	0.67	47.5
11	T1	All MCs	605	2.0	605	2.0	0.564	20.3	LOS C	17.8	126.9	0.67	0.60	0.67	49.3
12	R2	All MCs	24	2.0	24	2.0	0.299	66.5	LOS E	1.2	8.7	1.00	0.70	1.00	29.6
Approach			641	2.0	641	2.0	0.564	22.2	LOS C	17.8	126.9	0.68	0.61	0.68	43.8
All Vehicles			2698	2.0	2698	2.0	1.069	79.2	LOS E	79.0	562.8	0.91	1.18	1.35	25.9

Sparks Road / Hoon Hay Road - 2038 PM Peak With Development:

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%				[Veh. veh	Dist] m				
South: Hoon Hay Road (South)															
1	L2	All MCs	132	2.0	132	2.0	0.849	62.7	LOS E	22.0	156.9	1.00	1.00	1.17	33.7
2	T1	All MCs	304	2.0	304	2.0	0.849	54.0	LOS D	22.0	156.9	1.00	1.00	1.17	34.6
3	R2	All MCs	37	2.0	37	2.0	0.806	77.8	LOS E	2.0	14.5	1.00	0.84	1.45	28.1
Approach			473	2.0	473	2.0	0.849	58.3	LOS E	22.0	156.9	1.00	0.98	1.20	30.4
East: Sparks Road (East)															
4	L2	All MCs	26	2.0	26	2.0	1.069	139.3	LOS F	79.3	564.5	1.00	1.71	1.91	20.3
5	T1	All MCs	868	2.0	868	2.0	* 1.069	128.1	LOS F	79.3	564.5	1.00	1.71	1.91	20.6
6	R2	All MCs	180	2.0	180	2.0	0.583	44.8	LOS D	7.0	50.2	0.85	0.82	0.85	38.0
Approach			1075	2.0	1075	2.0	1.069	114.4	LOS F	79.3	564.5	0.97	1.56	1.73	20.7
North: Hoon Hay Road (North)															
7	L2	All MCs	154	2.0	154	2.0	0.999	107.3	LOS F	34.4	244.6	1.00	1.36	1.63	24.7
8	T1	All MCs	324	2.0	324	2.0	* 0.999	98.5	LOS F	34.4	244.6	1.00	1.36	1.63	25.2
9	R2	All MCs	65	2.0	65	2.0	0.566	73.8	LOS E	3.2	23.1	1.00	0.78	1.05	30.3
Approach			543	2.0	543	2.0	0.999	98.0	LOS F	34.4	244.6	1.00	1.29	1.56	22.8
West: Sparks Road (West)															
10	L2	All MCs	16	2.0	16	2.0	0.568	28.0	LOS C	18.0	128.0	0.67	0.61	0.67	47.4
11	T1	All MCs	604	2.0	604	2.0	0.568	20.4	LOS C	18.0	128.0	0.67	0.61	0.67	49.2
12	R2	All MCs	25	2.0	25	2.0	0.312	66.6	LOS E	1.3	9.1	1.00	0.70	1.00	29.6
Approach			645	2.0	645	2.0	0.568	22.4	LOS C	18.0	128.0	0.68	0.61	0.68	43.7
All Vehicles			2736	2.0	2736	2.0	1.069	79.8	LOS E	79.3	564.5	0.91	1.18	1.36	25.8

18 June 2025

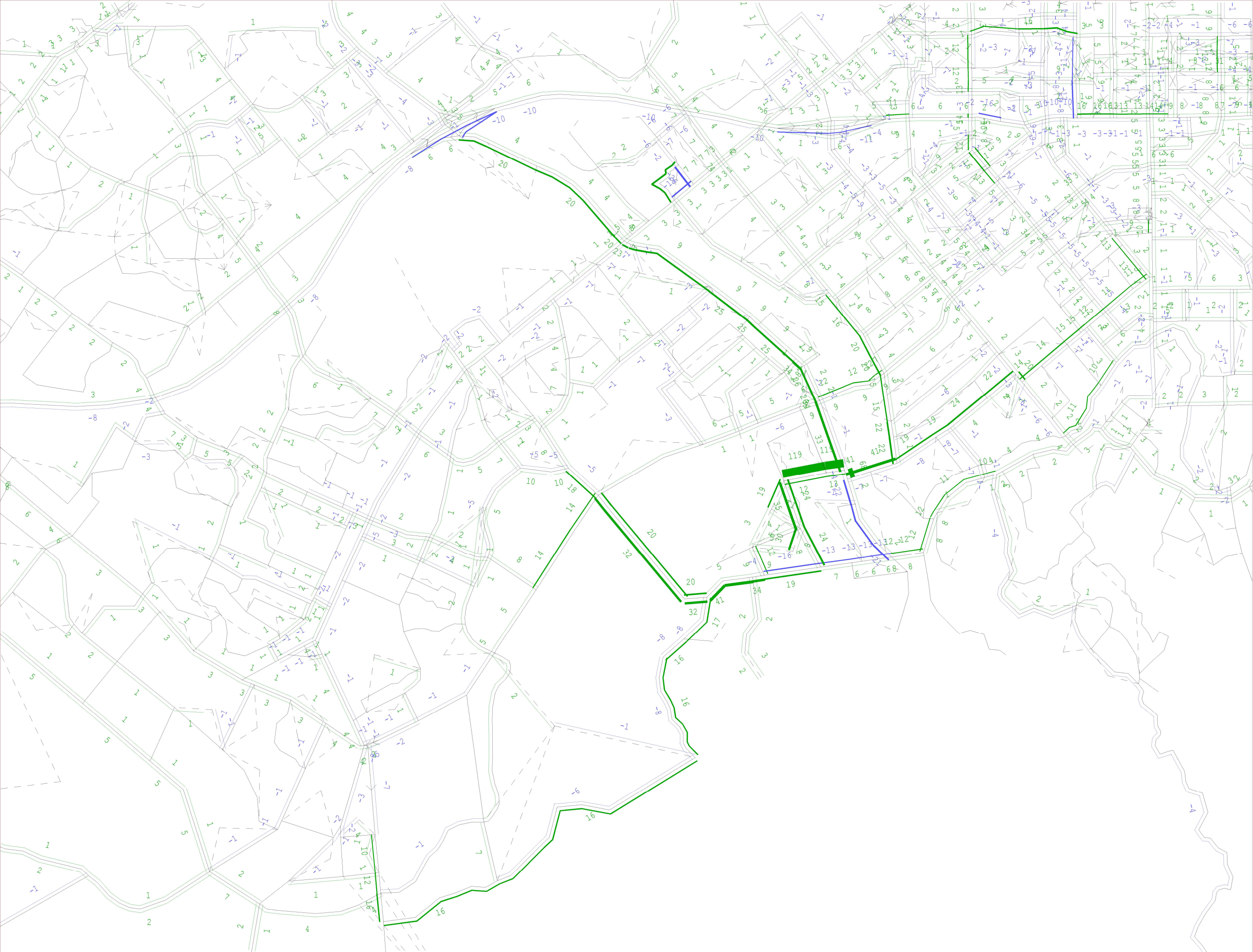
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Page 11 of 18

Reference: Cashmere Fields Plan Change- RFI Transport Responses

Attachment 2: CAST Outputs

AM Peak Flow Difference Plot- 2038 'With Development' minus 2038 'Without Development'



SATURN

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ario2\v21a_3
8_AM_00C.UFS
1a_38_AM_00C

Scale 22409

Link Annot:

+ Actual flo
- Actual flo

Differ: 1-2

Bandwidths =
50.00/mm

17/04/23
STANTEC UK L

18 June 2025

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Page 13 of 18

Reference: Cashmere Fields Plan Change- RFI Transport Responses

AM Peak Delay Difference Plot- 2038 'With Development' minus 2038 'Without Development'



SATURN

Atkins Ltd /
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ario2\v21a_3
8_AM_00C.UFS
1a_38_AM_00C

Scale 22409

Link Annot:

+ Delay sec
- Delay sec

Differ: 1-2

Bandwidths =
50.00/mm

17/04/23
STANTEC UK L

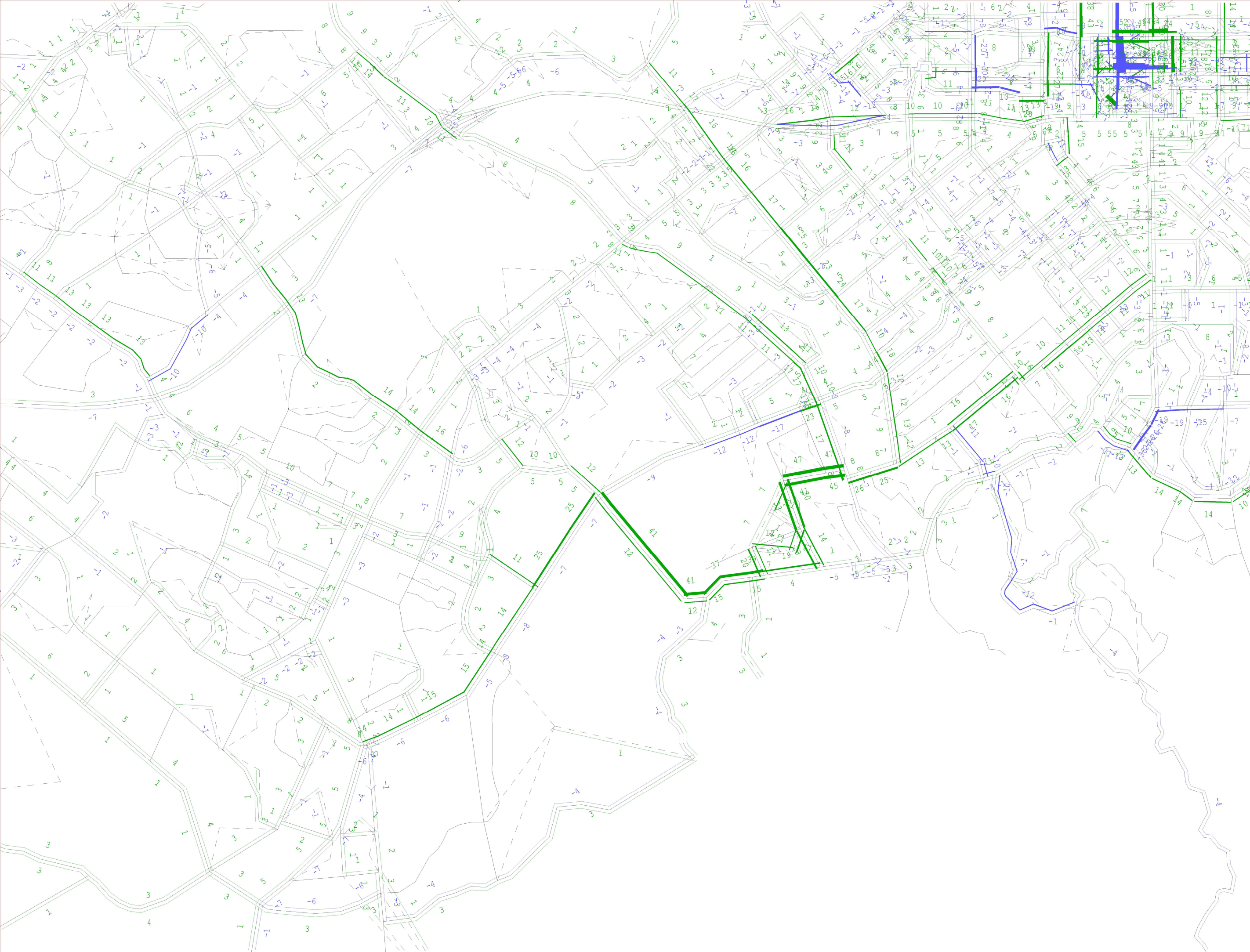
18 June 2025

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Page 15 of 18

Reference: Cashmere Fields Plan Change- RFI Transport Responses

PM Peak Flow Difference Plot- 2038 'With Development' minus 2038 'Without Development'



SATURN

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ario2\v21a_3
8_PM_00B.UFS
1a_38_PM_00B

Scale 22409

Link Annot:

+ Actual flo
- Actual flo

Differ: 1-2

Bandwidths =
50.00/mm

17/04/23
STANTEC UK L

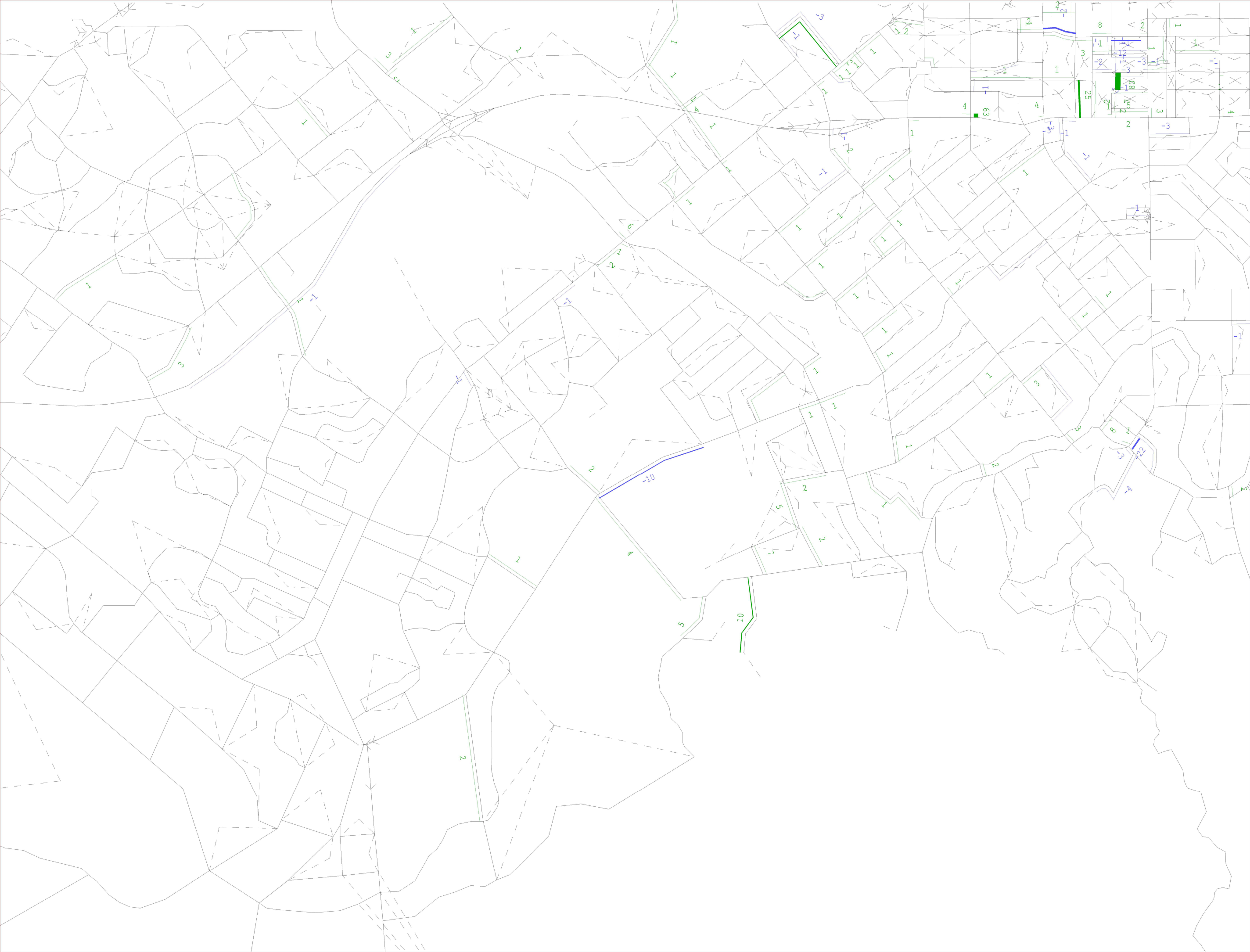
18 June 2025

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Page 17 of 18

Reference: Cashmere Fields Plan Change- RFI Transport Responses

PM Peak Delay Difference Plot- 2038 'With Development' minus 2038 'Without Development'



SATURN

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ario2\v21a_3
8_PM_00B.UFS
1a_38_PM_00B

Scale 22409

Link Annot:

+ Delay sec
- Delay sec

Differ: 1-2

Bandwidths =
50.00/mm

17/04/23
STANTEC UK L