

31 July 2025

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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.

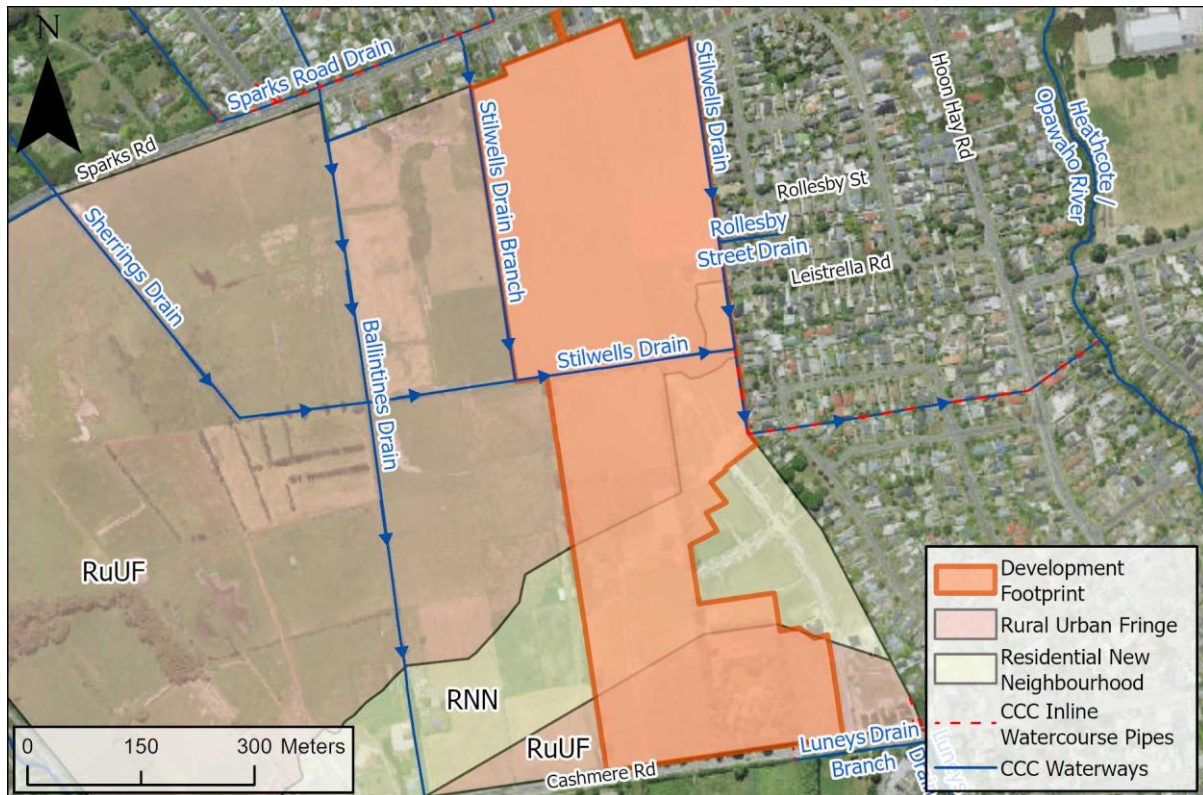


Figure 1: Site overview showing the Cashmere Fields Development Footprint (the Site) and the land within the Site currently zoned Rural Urban Fringe and Residential Urban Footprint.

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.

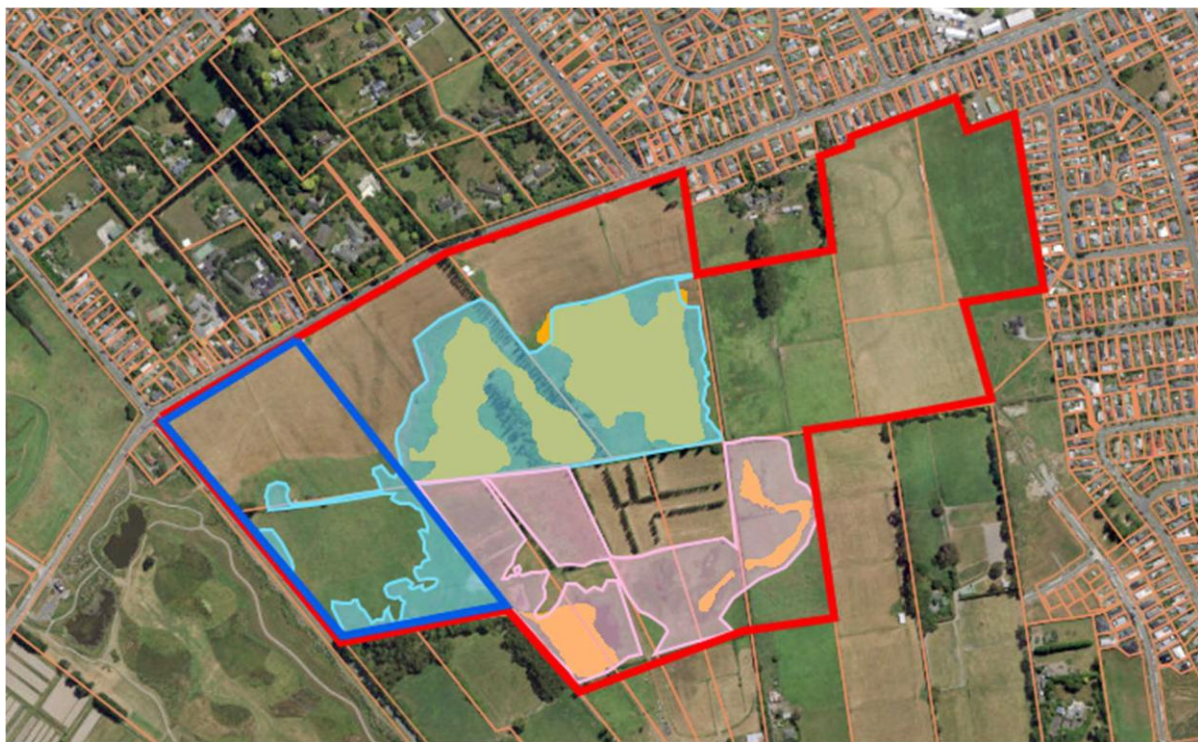


Figure 2. Sourced from the recent Council report by Head (2025) showing the extent of identified wetlands. Light blue shading shows wetlands determined by field survey; pink shows likely wetlands that are yet to be surveyed. The underlying orange is Environment Canterbury's indicative wetland layer.

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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