

Memo

40 Mahi Road: Ecologist s92 Comment

To:	Lance Hessel / Senior Planner / Civix Ltd.
From:	Karien Killian / Ecology Lead / Thomas Consultants
Date:	17/02/2025
Subject:	40 Mahi Road: Ecologist s92 Comment
Attachments	Revised Ecological Assessment and Maps

This memo provides a comment on ecology queries raised in the further information request letter dated 17 December 2024 from Austin Fox (Council's Senior Policy Planner), to assist you with preparing the s92 response. As per our scope dated 30 January 2025, I have confirmed and updated (as appropriate) vegetation mapping (E1 and E3), confirmed and elaborated on stream classifications (E2), and provided comments on E5 – E10 as needed. The Ecology Assessment Report has been updated and is appended to this memo.

If you have any further questions or matters to clarify, please get in touch.

RFI Question 1 (E1)

The vegetation assessment described in the Ecological Assessment report prepared by Thomas Consultants was carried out 21 months ago, and the report indicates that some changes to the vegetation cover have occurred since that time, particularly through the clearance of exotic scrub vegetation (Photo 1 in the Thomas Consultants report). Given how much time has elapsed, the fact that some vegetation has been removed, and how quickly regenerating mānuka and kānuka can establish, an updated vegetation assessment should be carried out either on foot or using high-resolution drone photography.

Please provide an updated vegetation map for the site.

Thomas Consultant's Ecologist Response

Our ecologists conducted a site visit 14 March 2023 and our soil contamination team went to site on 3 September 2024. Upon our request, the soils team took photos of the vegetation and some of the streams, noting the gorse clearance (Photo 1 on page 19 of the Ecology Assessment).

In response to this Clause 23 further information request, our survey team conducted a drone survey on 4 February 2025 which I used to revisit the ecosystem types/vegetation on site. In addition to verifying the two mapped ecosystem types (VS3 and ES), I have also mapped the Exotic Grassland (EG) areas on site.

An updated map is attached as Appendix A of the updated Ecological Assessment.

RFI Question 2 (E2)

There is some ambiguity regarding the stream classifications. The Ecological Assessment report indicates that “Stream 3” and “Stream 6” are both ephemeral, and therefore would not be subject to riparian margin/yard restrictions. However, the Proposed Precinct Plan prepared by Civix indicates “potential riparian areas” along these streams where they extend into the proposed SHZ. Clarity should be provided regarding the status of these streams.

Also, if some gorse has now been removed, areas of stream that were previously inaccessible may now be able to be assessed in more detail.

Please provide an updated watercourse map for the site that clearly illustrates the appropriate classification for each stream.

Thomas Consultant’s Ecologist Response

Refer to Section 5.4.1 and Appendix A of the updated Ecology Assessment for a description of all watercourses on site and a map of all watercourses and their classification. I am confident that Stream 6 is ephemeral, and that Stream 3, where it flows through the more ‘open’, proposed Single House Zone (SHZ) areas, is also ephemeral.

Watercourses were classified and delineated (where accessible) on site in general accordance with criteria outlined in the Auckland Unitary Plan (AUP:OP) Chapter J Definitions. Stream 3 and Stream 6, where they flow through proposed Single House Zone (SHZ), were both classified as ephemeral (and not intermittent) due to their small catchment size¹ (1.08 ha for Stream 3 and 1.1 ha for Stream 6), and because they did not contain flowing water and/or natural pools, did not have well-defined channels with the bed and banks easily distinguished, rooted terrestrial vegetation were established across the entire cross-sectional width of the channels, no organic debris was seen on the floodplains, and no evidence of substrate sorting or scour was visible. These streams therefore did not meet at least three of the of the intermittent stream criteria, which are:

- *it has natural pools;*
- *it has a well-defined channel, such that the bed and banks can be distinguished;*
- *it contains surface water more than 48 hours after a rain event which results in stream flow;*
- *rooted terrestrial vegetation is not established across the entire cross-sectional width of the channel;*
- *organic debris resulting from flood can be seen on the floodplain; or*
- *there is evidence of substrate sorting process, including scour and deposition.”*

Stream 3

Due to steep slopes and dense vegetation, the lower reaches of Stream 3, where it flows into the proposed Countryside Living Zone (CLZ) could not be accessed during the site visits. High resolution drone imagery taken on 4 February 2025 confirms that Stream 3 originates in an area of exotic grassland (ES) (Figure 2)

¹ The size of catchments where stream channels are initiated in Waitemata Sandstone in Auckland, is 1.68 hectares for intermittent streams (Storey, R.; Wadhwa, S. 2009).

transitioning into exotic scrub and ultimately VS3 manuka/ kanuka scrub towards the northwest. This vegetation was still intact at the time of the drone survey (see Fig 1 below). Classification for the lower reaches of Stream 3, could therefore not be confirmed (even with drone imagery) and it is possible (although unlikely) that part of the stream flowing through the CLZ is intermittent.

It is worth noting that a comprehensive topographical survey, confirming the exact location of any watercourses, would be completed when any future land use consent is applied for.



Figure 1: Within the proposed Single House Zone, Stream 3 flows through exotic grassland and a small area of exotic scrub. From there, it flows into VS3 manuka/ kanuka scrub within the Countryside Living Zone.



Photo 14: Stream 3 shows as a shallow depression in the landscape with no channel or water at the time of the site visit.

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Figure 2: Snip from ecology assessment, showing the characteristics of Stream 3.

Stream 6

The headwaters of Stream 6 originate in exotic scrub (ES) transitioning into VS3 manuka/ kanuka scrub (Figure 3), where the dense vegetation and steep slopes made it difficult to assess during the site visits. Further north in the proposed CLZ, the stream flows into a wider gully with wetland vegetation visible along its margins, mostly outside the site boundary (as seen in Figure 4).



Figure 3: Stream 6 originates in an exotic grassland/ scrub mix in the proposed SHZ, and then flows into an area of VS3 manuka/ kanuka scrub in the CLZ.



Photo 15: View of Stream 6, at the northern property boundary looking further north.

Figure 4: Snip from ecology report showing the northernmost extent of Stream 6.

The Precinct Plan’s legend has been amended to “Potential Riparian Areas (if the stream is classified as intermittent under any resource consent application)”. See Figure 5 next page.

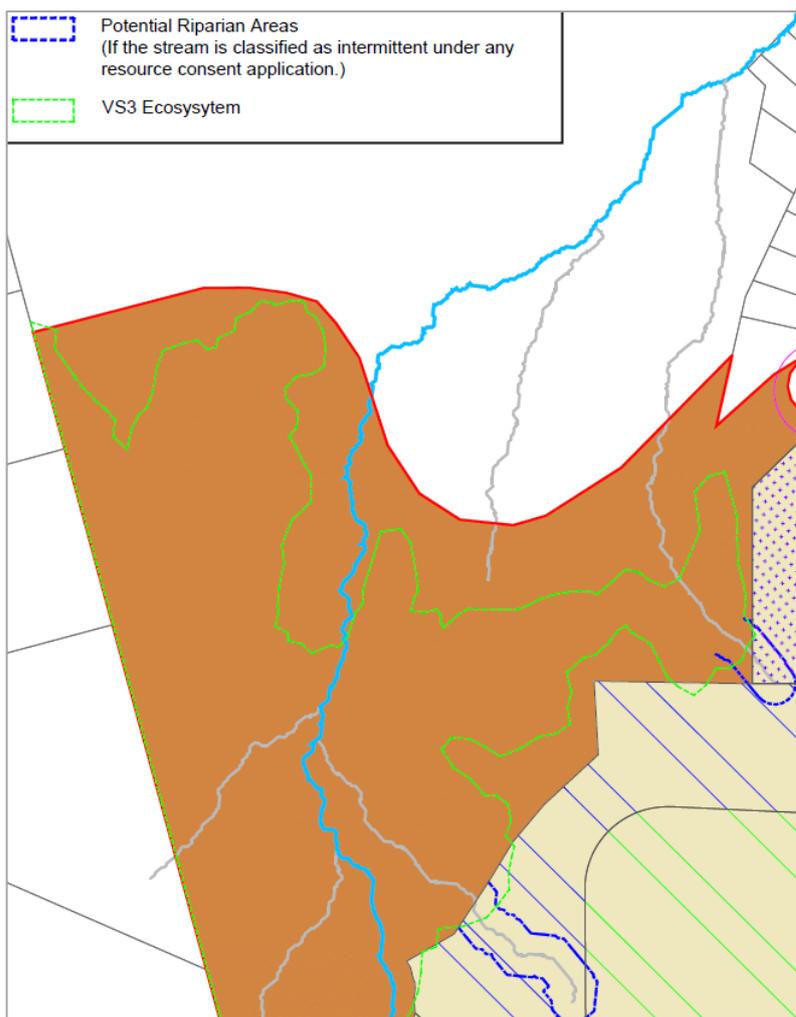


Figure 5: A snip from amended precinct plan (Civix Ltd.) showing amended legend and “Potential Riparian Areas”

RFI Question 3 (E3)

There is some ambiguity regarding the vegetation currently present in the riparian margins of the streams. For example, Photo 10 in the Thomas Consultants report shows Stream 1 flowing through open grassland, but the map appears to indicate that it flows through a mix of mānuka/kānuka scrub and gorse shrubland.

The vegetation present in the riparian margins is also relevant as it will influence an assessment of the potential ecological benefits associated with the proposed riparian margin planting.

Please provide a map that shows both the updated vegetation type extents and the updated watercourse classifications.

Thomas Consultant's Ecologist Response

After careful, detailed analysis of the high-resolution drone imagery, vegetation along Stream 1 was remapped, with a small area of exotic grassland (EG) in the southwestern corner of the site where Stream 1 enters the site. For the most part, Stream 1 flows through VS3 manuka/kanuka scrub which changes to a grassland / exotic scrub mix further north (refer to updated vegetation map in Appendix A of the updated ecology assessment attached).



Figure 6: Indicative riparian planting area (1,300m²) (if required at resource consent stage) showing existing riparian vegetation along part of Stream 1, comprising of exotic scrub and grassland adjacent to kanuka/ manuka scrub.

RFI Question 4 (E4):

The hatched area in this figure seems to reflect the “Existing Countryside Living Zone”, not the “existing Future Urban Zone” as currently stated in the legend.

Please update Figure 5 of the Ecological Assessment to correct an error in the legend.

Thomas Consultant’s Ecologist Response

I have updated Figure 5 in the updated Ecology Assessment attached to this memo.

RFI Question 5 (E5):

Stream 1 will still be within the CLZ, which means it should continue to be subject to 20-metre-wide riparian margin protections. However, the proposed boundary with the SHZ is <10 metres from the stream edge, substantially reducing the protected riparian margin width in this area. While 10 metres is consistent with other urban zoning provisions, the stream itself will still be in a Rural Zone and the proposal will result in a reduction from the level of protection provided currently.

This rezoning process provides an opportunity to maintain the existing riparian margin protections. A 20-metre-wide vegetated margin is more likely to establish as a self-sustaining indigenous ecosystem, which requires less maintenance than a narrower margin that is vulnerable to continuous pest plant invasion. Given the substantial increase in impervious surfaces at the site, retaining the 20-metre-wide setback requirement would be appropriate and would impinge little on the developable area.

I also note that:

1. The issue of the reduced riparian margin/yard widths will also be relevant to any other streams that are classified as intermittent or permanent following the reassessment requested in Question 2 above.
2. The proposed 10-metre-wide ‘planting’ to mitigate the effects of the reduced margin adjacent to Stream 1 is likely to provide little ecological benefit as this area appears to already be largely vegetated in mānuka/kānuka scrub. Also see Question 3, which seeks clarification of this point.

Please justify the reduction of the riparian margin/yard from 20 metres to 10 metres adjacent to Stream 1.

Thomas Consultant’s Ecologist Response

From our understanding, a 10m riparian yard applies, as the proposed future development area will be located in the SHZ. H3.6.8(1) in the AUP:OP states that “a building or parts of a building must be set back from the relevant boundary by the minimum depth listed in Table H3.6.8.1 Yards”. Which, for riparian yards, is 10m from the edge of all other permanent and intermittent streams.

Should any vegetation removal be required within 20m of Stream 1 (a rural stream) - for any future proposed buildings or structures within the SHZ - activity A16² in table E15.4.1 will apply. I agree that a 20m planted riparian margin will provide a better ecological outcome than a 10m planted margin. However, specific to this application and the applicable proposed SHZ, a 10m riparian yard measured from the edge of Stream 1 adjacent to the VS3 manuka/ kanuka scrub (with parts of it extending into exotic grassland and scrub) any planting, (including any required riparian planting where assessed as being required at resource consent stage) will also provide ecological benefits to the VS3 manuka/ kanuka scrub as it will provide protection to the bush against edge effects. As set out in the latest version of the Precinct provisions, assessment of any required 10m riparian margins can be provided under detailed assessments at the time of resource consent application, to assure the correct scope of riparian planting (if required) is provided in relation to the relevant provisions under E15 Vegetation management and biodiversity - and H3– Single House Zone.

Lastly, Streams 3 and 6 where they flow through the SHZ, are ephemeral and therefore the riparian yard rules do not apply.

RFI Question 6 (E6):

Policy I55X.3(5) states that all riparian margins across both zones will be planted with indigenous vegetation, and that buffers will also be planted around the edge of the existing indigenous vegetation at the site. However, there is no further mention of this requirement in the rest of the document, or in the Ecological Assessment.

The planting requirements proposed elsewhere in the precinct provisions are also somewhat contradictory as Standard I55X.6.4.2(1) restricts planting to “the riparian margins of any permanent or intermittent stream *within the SHZ*”, while the matters of discretion of restricted discretionary activities state that “any development or subdivision adjacent to intermittent or permanent watercourses as shown on the Precinct Plan must provide 10m riparian planting either side of the watercourse” (implying that this requirement also applies to streams outside the SHZ).

Please clarify what is anticipated to occur to meet Policy I55X.3(5) in the proposed precinct provisions.

Thomas Consultant’s Ecologist Response

Refer to amended map at Appendix A of the Ecological Assessment and responses to E1 – E3 above. Furthermore, the Precinct provisions are amended to require further detailed assessment of the streams adjacent to the proposed development areas within the SHZ at the time of resource consent, and if the stream classification is deemed such that riparian planting is required, this can be addressed at that stage.

² Vegetation alteration or removal within 20m of rural streams, other than those in Rural – Rural Production Zone and Rural – Mixed Rural Zone.

RFI Question 7 (E7):

The Ecological Assessment focuses on potential direct effects on indigenous fauna that may result from the proposed rezoning (such as harm to lizards resulting from vegetation removal and earthworks activities). However, there is no discussion of the potential ongoing effect of the resulting urban development on indigenous fauna. Such an assessment should be provided and should include (but not be limited to):

- Effects of lighting disturbance to long-tailed bats using the area for commuting, foraging, and roosting.
- Effects of domestic pets (particularly cats) on indigenous fauna residing in the indigenous vegetation to be retained at the site.

Precinct provisions to manage on-going effects of nearby urban development on indigenous fauna should be provided.

Please provide an assessment of the potential ongoing effects on indigenous fauna of the urban development that will result from the proposed plan change.

Thomas Consultant's Ecologist Response

Additional information regarding the potential future effects on fauna, resulting from subdivision and subsequent development of the site is included in Section 6.1.3 of the Ecology Assessment, with fauna management proposed in Section 7.5.

In summary, residential development can also lead to an increase in the number of domestic cats and thus their impacts on local wildlife. However, given that the site is already immediately next to residential development it is likely that the impact of local cats on native wildlife will already be reasonably high, and the effect of more cats is not likely to be significant. In terms of light impacts, best practice measures, like ensuring wildlife sensitive lighting, can minimise any adverse effects on native fauna.

RFI Question 8 (E8):

There is some ambiguity in the proposed precinct provisions regarding whether the removal of VS3 vegetation will be required. Policy I55X.3(4) requires the development to “ensure that subdivision and development of the SHZ and CLZ provides suitable access options to both zones and avoids development and subdivision requiring removal of ecological vegetation or works within watercourses in the ecological VS3 areas shown on the Precinct Plan.” However, Standard I55X.6.4.3(3) states that “The areas shown in the Precinct Plan as “VS3 – Ecological Area” must be avoided with respect to any vegetation clearance or earthworks for future subdivision and development in the SHZ or CLZ areas – *except where necessary to obtain reasonable access to any future CLZ subdivided lot*”. If policy I55X.3(4) is met, then the exception stated in Standard I55X.6.4.3(3) should not be required.

It is also not clear if removal of VS3 vegetation will be required to install stormwater outfall structures.

Please clarify if removal of VS3 (mānuka/kānuka scrub) vegetation is anticipated to allow for access to the CLZ or SHZ sites.

Thomas Consultant's Ecologist Response

Civix has amended the Precinct provisions as provided in CI23 responses to exclude the establishment of stormwater outfall structures to Policy I5XX.3(4) and reference is also included in Standard I55X.6.4.2(3).

Question 9 (E9):

It would be unusual to find whitehead in the Helensville area. There are no records of this species recorded in iNaturalist and the NZ Birds Online website states "its mainland distribution is south of a line connecting the Pirongia Forest, Hamilton and Te Aroha. It is locally common though patchily distributed south of this line".

Please clarify if whitehead (*Mohoua albicilla*) are considered likely to be present at the site (as stated in Table 4 of the Ecological Assessment).

Thomas Consultant's Ecologist Response

This was an oversight in the ecology report and has been removed from the table.

Question 10 (E10):

Table 7 in the Ecological Assessment states that weed control will be carried out "throughout the site" to remediate ecological effects. However, section 7.2 states that this is only proposed "in the riparian yard" and does not specify whether this includes all riparian yard areas on the property, or just in the area where the proposed development adjoins the stream.

Please clarify where weed control is proposed to be carried out at the site and how this will be enforced

Thomas Consultant's Ecologist Response

Section 7.2 in the Ecology Assessment states that "in areas where proposed development adjoins the stream (six lots within proposed subdivision Area 2 and part of Area 5), riparian planting is required under the Precinct Provisions". This refers to the 10m riparian margin along Stream 1 within the SHZ extent, if required at the time of resource consent application. As per the ecology report, weed control is only proposed in these riparian planting areas along Stream 1 if required at the time of resource consent. I have added the indicative riparian planting and weed control area to the watercourse and riparian areas map in Appendix A of the updated Ecological Assessment attached.

Table 7 in the updated ecology report has been corrected to refer to riparian areas only and not the entire site. Refer to Figure 6 under E3 showing proposed riparian planting area.

ATTACHMENT 1: REVISED ECOLOGICAL ASSESSMENT



Updated Ecological Assessment in Response to Council's Further Information Request

Property Address: 40 Mahi Road, Helensville

Project Number: 20230033EL

Date: 12 February 2025

Prepared for: Richard & Diane Kidd, Hounslow Holdings Ltd

DOCUMENT CONTROL & APPROVAL

Property Address:	40 Mahi Road, Helensville		
Project Number:	20230033EL		
Document Title:	Updated Ecological Assessment in Response to Council's Further Information Request		
File Name Path:	P:\Mahi Road, Helensville, 40\7 Ecology\7.2 Technical\7.2.3 Reports\40MahiRd_PlanChange_V2.docx		
Version:	2		
Date:	12 February 2025		
Prepared For:	Richard & Diane Kidd, Hounslow Holdings Ltd		
Author(s):	Lizette Venter / Intermediate Ecologist / TCL		
	Signature		Date 02/05/2023
	Karien Killian / Ecology Lead / TCL		
	Signature		Date 03/10/2024 (Updated on 11/02/2025 in response to Council's RFI)
Reviewed By:	Melanie Dixon / Principal Ecologist / TCL		
	Signature		Date 12/02/2025
Authorised By:	Melanie Dixon / Principal Ecologist / TCL		
	Signature		Date 12/02/2025

REVISION HISTORY

Revision Number	Prepared By	Description	Date
V1	Karien Killian	Private Plan Change – Ecological Assessment for Resource Consent Application	20/09/2024
V2	Karien Killian	Updated Ecological Assessment in response to Council's request for information	13/02/2024

Disclaimer: Thomas Consultants Ltd (TCL) have prepared this report for the use of Richard & Diane Kidd, Hounslow Holdings Ltd in accordance with the usual care and thoroughness of the consulting profession. It is prepared in accordance with the scope of work and for the purpose outlined in the scope of works dated 06/02/2023 and 14/05/2024. This report was prepared from 10/03/2023 to 12/02/2025 and is based on the information obtained and conditions encountered at that time. TCL disclaims responsibility for any changes that may have occurred after this time. This report should be read in full. No responsibility is accepted for use of any part of this report in any other context or for any other purpose or by third parties. This report does not purport to give legal advice. Legal advice can only be given by qualified legal practitioners. The electronic version of this report is the latest revision. It is the responsibility of the individual to ensure that any paper material is the current revision. The printed version of this report is uncontrolled.

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1 INTRODUCTION

Thomas Consultants was appointed by Richard & Diane Kidd of Hounslow Holdings Ltd, to provide initial advice and conduct an ecological assessment, including wetland delineation and assessment (if applicable), and stream classification for a private plan change (PPC) application for 40 Mahi Road, Helensville (“the site”).

Hounslow Holdings Ltd seeks this PPC to allow re-zoning of approximately 9.2 hectares (ha) of land within the southern half of the site from ‘Future Urban’ and ‘Countryside Living’, to ‘Residential – Single House’ zone. This part of the site is undeveloped, consisting predominantly of exotic scrub (primarily gorse) and ungrazed former pasture with a small area of regenerating bush in the southwestern corner of the site.

An initial feasibility study was conducted to determine which of these areas will be most suited for future development, and which areas should be avoided. The proposed zone boundaries were then finalised according to our feasibility advice to the Client (refer to figure 1 below).

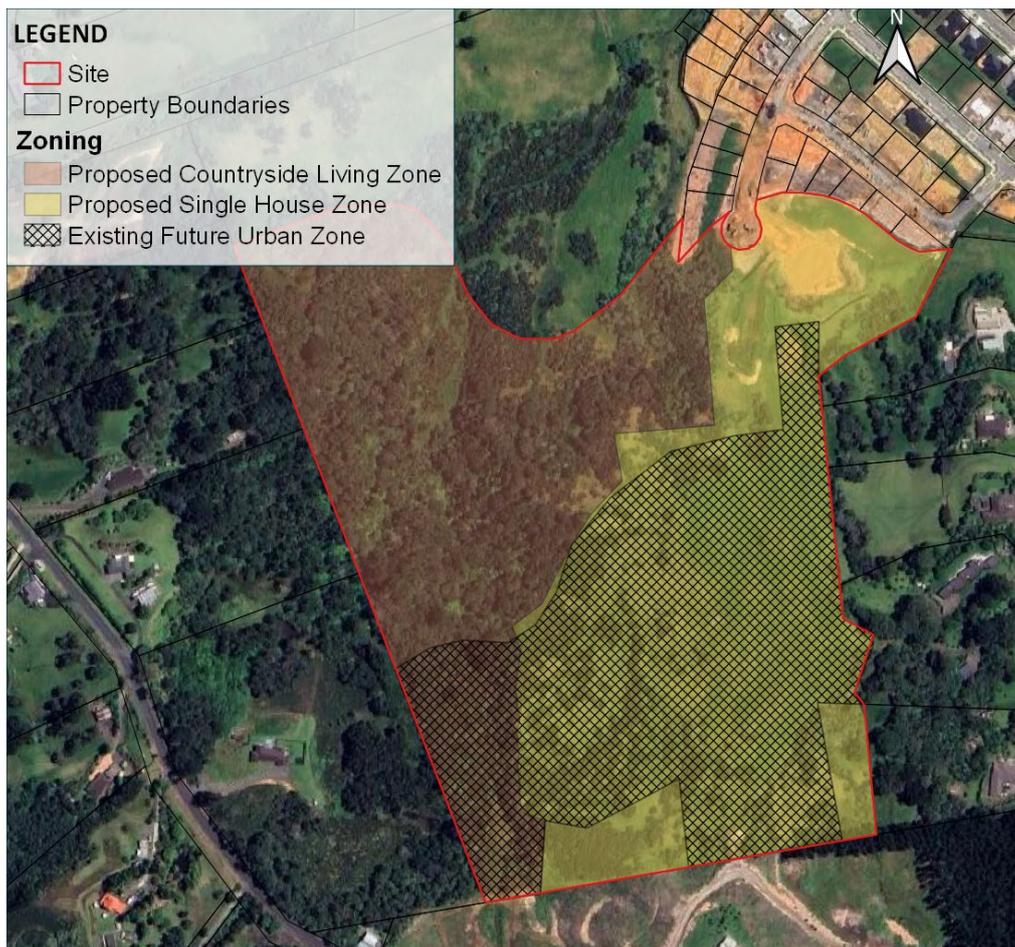


Figure 1: Existing future urban zone (with balance being the existing Countryside Living Zone), compared to proposed Single House and Countryside Living Zones

This ecological assessment describes the terrestrial and freshwater ecological characteristics of the proposed plan change area, assesses the potential effects of the proposed plan change on these values, and recommends measures to avoid, remedy or mitigate these effects where appropriate.

Specifically, this report includes the following:

- Identification of wetlands and watercourses within 100m of the proposed development plan change
- Classification of streams according to AUP:OP Chapter J stream definitions

- Assessment of the ecological values of the area and the effects of the proposal on these values
- Recommendations to minimise potential ecological impacts associated with future development of the site where appropriate
- A brief review of the proposal against the Unitary Plan and National Environmental Standards for Freshwater 2020 (NES-F) to provide recommendations for future development of the site.

Refer to Table 1 below for a list of reports consulted as part of this assessment. This assessment was compiled following a site visit by the ecologist on 14 March 2023.

This version (version 2) of the report has been updated in response to a request for further information from Auckland Council. Changes are as follows:

- Updated Fig. 5 legend
- Section 5.2.2 vegetation descriptions
- Table 4
- Section 6.1.3 fauna impacts
- Added 6.1.4
- Amended Table 7
- Section 7.2
- Section 7.5 fauna management
- Table 8 – added bat impacts

Table 1: List of reports and plans used

DATE	TITLE	PREPARED BY
24/09/2013	Preliminary Site Investigation (PSI): Soil Contamination Assessment	Soil & Rock Consultants
01/05/2023	Preliminary Site Investigation Report Addendum	Thomas Consultants Limited
12/09/2024	Preliminary Site Investigation: Technical Memo	Thomas Consultants Limited
24/09/2013	Geotechnical Investigation for proposed Scheme Change	Soil & Rock Consultants
02/10/2014	Rautawhiri SHA Stormwater Management Plan	Morphum Environmental Ltd.
10/05/2023	Stormwater Management Plan	Thomas Consultants Limited
08/05/2023	Flood Assessment Report	Thomas Consultants Limited
08/2024	Proposed Concept Master Plan	Civix
08/2024	Proposed Precinct Plan	Civix
08/2024	Proposed Zoning Plan	Civix

2 SITE DESCRIPTION AND PROPOSAL

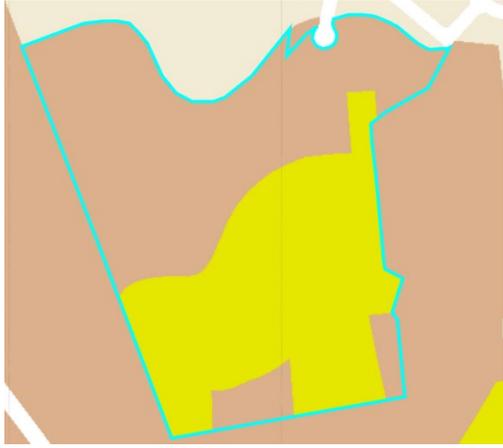
The site is situated in Helensville, approximately 800m south-east of the town centre on the southern side of Rautawhiri Road. The property is currently accessible from Rautawhiri Road to the north-east.

The northern half of the site is currently zoned 'Countryside Living', and the southern half is predominantly 'Future Urban' (which is the subject of this assessment). There is also a small area zoned 'Countryside Living' on the southern boundary and southeastern corner of the property.

The overall site is irregular in shape with rolling hills comprising a mixture of farmland, dense scrub, and bush areas. Rural homes border the west, south and eastern boundary of the site, while residential development is situated to the north and north-east.

A stream with associated floodplain is indicated on Auckland Council Geomaps as flowing through the site from south to north. Overland flow paths are also modelled throughout the site which join the stream at various points. No wetlands are indicated as present on the site. The site is not affected by any Significant Ecological Areas (SEA) or covenants. Refer to Figure 1 for the sensitivity map according to Auckland Council GEOMaps¹.

Table 2: Property description

Address	40 Mahi Road, Helensville
Legal Description	LOT 2 DP 586879
Property Area	17.366 hectares
Local Board	Rodney
Zones	<p>Future Urban (yellow) Rural- Countryside Living (darker brown)</p> 

¹ <https://geomapspublic.aucklandcouncil.govt.nz/viewer/index.html>



Figure 2: Site locality and sensitivity overlays. Source: Geomaps

The proposal is to rezone the 'Future Urban' and part of the 'Countryside Living' to 'Single House' zone in order to allow future subdivision and development of the site. Currently, five 'subdivision areas', each with different sized lots, are proposed in the proposed Single House Zone. Lot sizes range from 200m² to more than 600m² per lot. In addition, a drainage reserve is also proposed as well as a local road. See Figure 3 below.

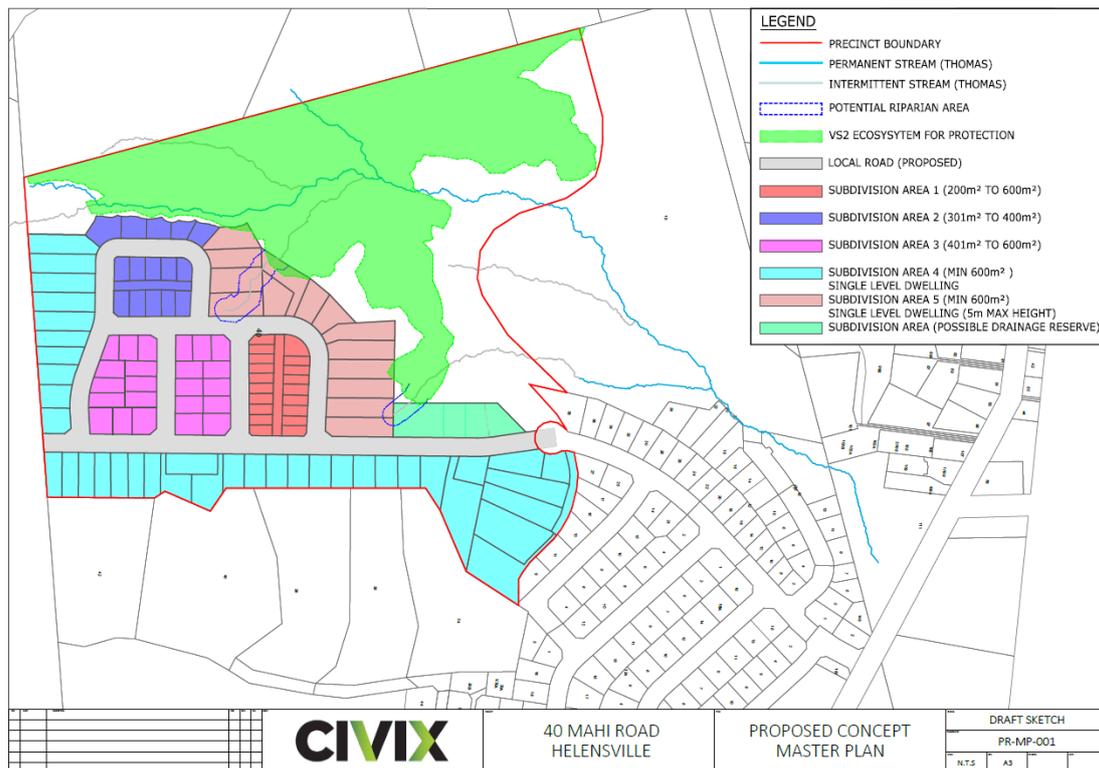


Figure 3: Proposed draft concept master plan by Civix, dated August 2024.

Proposed changes to zoning are shown in Figures 4 below and 5 below.

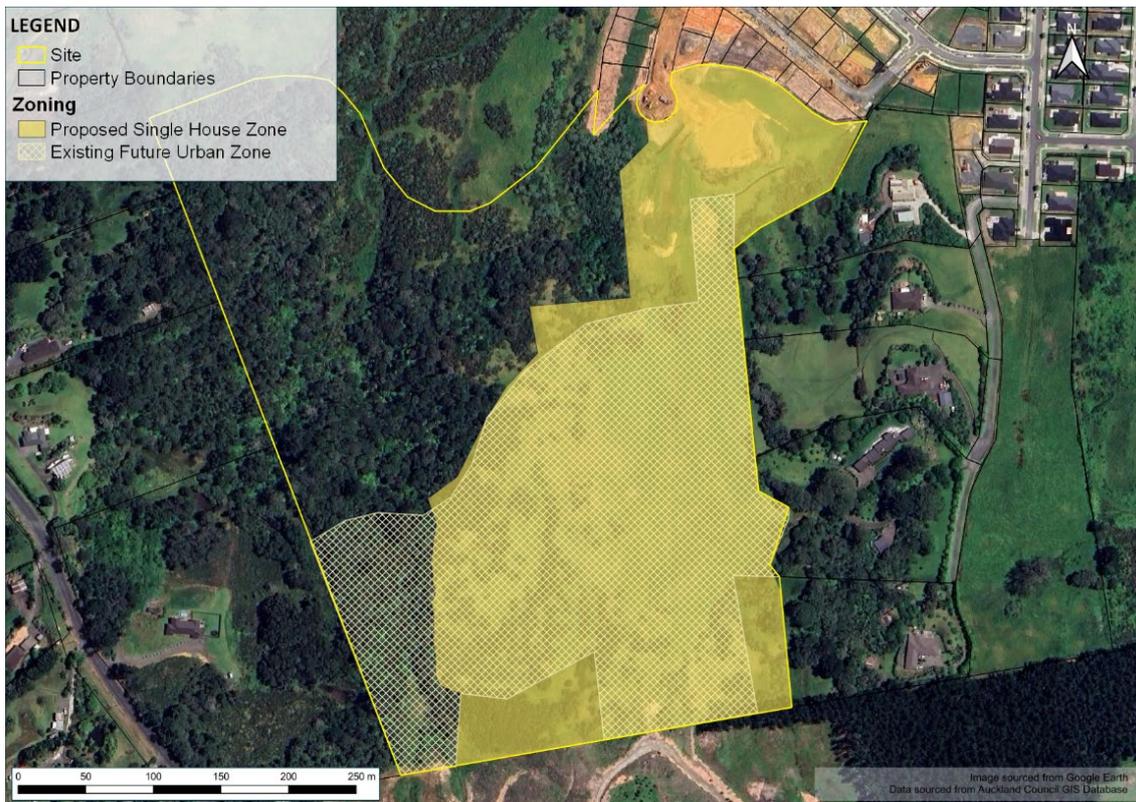


Figure 4: Existing Future Urban zone in comparison to proposed Single House zone.

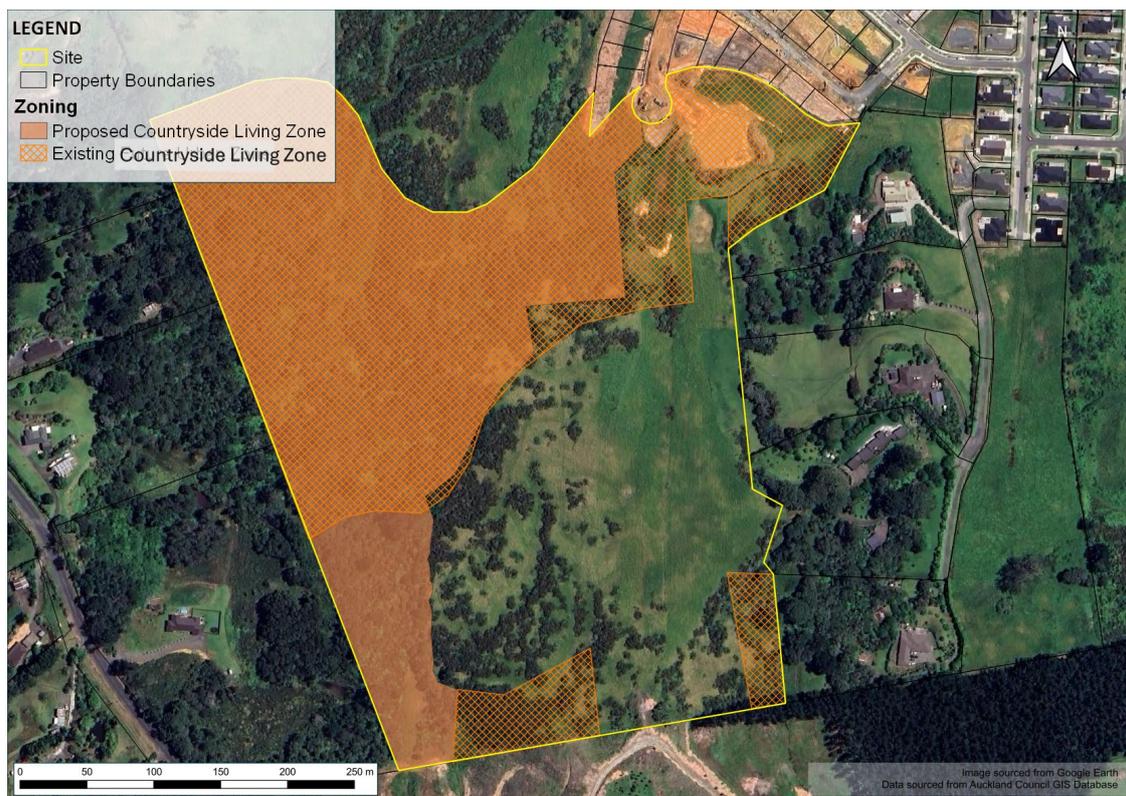


Figure 5: Existing Countryside Living zone in comparison to proposed Countryside Living zone.

3 REGULATORY FRAMEWORK

3.1 Resource Management Act, 1991 (As amended in 2020)

The Resource Management Act, 1991 (RMA) is the main law governing the sustainable management of physical and natural resources in New Zealand. Section 6 of the Act lists matters of national importance with the use, development, and protection of these resources.

Under the RMA, an Ecological Assessment is required to assist in the decision-making process by addressing the matters set out in Section 88 and Schedule 4 of the RMA.

3.2 National Policy Statement for Indigenous Biodiversity (NPS-IB)

The National Policy Statement for Indigenous Biodiversity (NPS-IB) came into force 4 August 2023 and is relevant for any consents for activities that may have adverse effects on indigenous biodiversity. The NPS-IB directs councils to identify Significant Natural Areas (SNAs – equivalent to Significant Ecological Areas (SEAs) in the Auckland Unitary Plan Operative in Part) and places a stronger emphasis on avoiding impacts on SNA areas. Significant adverse effects of new subdivision, use, or development on indigenous biodiversity outside of SNAs are also required to be managed by applying the effects management hierarchy included in the NPS-IB. Section 3.24 contains details the contents of an ecological assessment must include, for any applications that would have more than minor adverse effects on indigenous biodiversity.

3.3 National Environmental Standards for Freshwater 2020 (NES-F)

3.3.1 Wetland Definition

The relevant definition for wetlands is ‘natural inland wetland’ as defined in the National Policy Statement for Freshwater Management (NPS-FM) 2020 - Amended December 2022. The NPS-FM definition of ‘natural inland wetland’ uses the Resource Management Act (1991) definition of ‘wetland’² as a starting point, but provides for five prescribed exclusions in subpart 3.21 definitions relating to natural inland wetlands.

“A natural inland wetland means a wetland (as defined in the Act) that is not:

- a) in the coastal marine area; or*
- b) a deliberately constructed wetland, other than a wetland constructed to offset impacts on, or to restore, an existing or former natural inland wetland; or*
- c) a wetland that has developed in or around a deliberately constructed water body since the construction of the water body; or*
- d) a geothermal wetland; or*
- e) a wetland that:*
 - (i) is within an area of pasture used for grazing; and*
 - (ii) has vegetation cover comprising more than 50% exotic pasture species (as identified in the National List of Exotic Pasture Species using the Pasture Exclusion Assessment Methodology (see clause 1.8)); unless*
 - (iii) the wetland is a location of a habitat of a threatened species identified under clause 3.8 of this National Policy Statement, in which case the exclusion in (e) does not apply”.*

² “wetland includes permanently or intermittently wet areas, shallow water, and land water margins that support a natural ecosystem of plants and animals that are adapted to wet conditions.”

3.3.2 Wetland Rules

Rules protecting 'natural inland wetlands' are contained in the National Environmental Standards for Freshwater (NES-F) Amended Regulations (No 2) 2022.

Under the NES-F, an application to carry out earthworks (or water takes or discharges) that will damage or destroy a 'natural inland wetland' cannot be consented because it is a prohibited activity as per Regulation 53 in the NES-F. Controls also apply for activities within 100m of natural inland wetlands.

Vegetation clearance and earthworks within 10m of a natural inland wetland is a non-complying activity in accordance with Regulation 54(a) and (b) of the NES-F.

Any potential discharge within 100m of a natural inland wetland, such as wastewater, stormwater, and sediment-laden water from earthworks, is a non-complying activity in accordance with Regulation 54(c) of the NES-F if there is a hydrological connection between the discharge and the wetland, and the discharge will enter the wetland, thereby changing the water level or hydrological function of the wetland.

3.4 Auckland Unitary Plan

3.4.1 Watercourse Definitions

With respect to watercourses, the relevant definitions are in the Auckland Unitary Plan (AUP) Chapter J. This provides definitions of rivers, streams, overland flow paths, and artificial watercourses as follows:

Rivers or stream *"A continually or intermittently flowing body of fresh water, excluding ephemeral streams, and includes a stream or modified watercourse; but does not include any artificial watercourse (including an irrigation canal, water supply race, canal for the supply of water for electricity power generation, and farm drainage canal except where it is a modified element of a natural drainage system)."*

Intermittent stream *"Stream reaches that cease to flow for periods of the year because the bed is periodically above the water table. This category is defined by those stream reaches that do not meet the definition of permanent river or stream and meet at least three of the following criteria:*

- *it has natural pools;*
- *it has a well-defined channel, such that the bed and banks can be distinguished;*
- *it contains surface water more than 48 hours after a rain event which results in stream flow;*
- *rooted terrestrial vegetation is not established across the entire cross-sectional width of the channel;*
- *organic debris resulting from flood can be seen on the floodplain; or*
- *there is evidence of substrate sorting process, including scour and deposition."*

Ephemeral stream *"Stream reaches with a bed above the water table at all times, with water only flowing during and shortly after rain events. This category is defined as those stream reaches that do not meet the definition of a permanent river or stream or intermittent stream."*

Overland flow path *"Low point in terrain, excluding a permanent watercourse or intermittent river or stream, where surface runoff will flow, with an upstream contributing catchment exceeding 4,000m²."³*

³ Note The Council holds publicly available information showing the modelled Overland Flow Paths in its GIS viewer for specific properties. The Overland Flow Path map is indicative only. A party may provide the Council with a site-specific technical report prepared by a suitably qualified and experienced person to establish the location, depth or flow characteristics of the Overland Flow Path. Council will continually update the Overland Flow Path map to reflect the best information available.

Artificial watercourse “Constructed watercourses that contain no natural portions from their confluence with a river or stream to their headwaters. Includes: canals that supply water to electricity power generation plants; farm drainage canals; irrigation canals; and water supply races. Excludes: naturally occurring watercourses.”

3.4.2 Watercourse Rules

The objectives of the AUP seek to (amongst other things) minimise the loss of streams. Rules in Chapter E3 apply to perennial (permanent) and intermittent streams, but not to ephemeral streams.

High level objectives in the Auckland Unitary Plan (Operative in Part), specifically objectives B7.2.1 (1), B7.2.1 (2) and B7.3.2 (6) all seek to protect freshwater systems, particularly at the time of development. Specifically, Objective B7.2.1(1) seeks to protect areas of significant biodiversity value from subdivision and development.

In degraded areas or where development is occurring, Objective B7.2.1(2) seeks to maintain indigenous biodiversity through protection, restoration and enhancement. Policy B7.4.2 (6) aims to improve areas of degraded water quality by managing development, while Policy B7.4.2(7) seeks to avoid or minimise effects of discharges on freshwater and coastal water, particularly at the time of development.

Under Chapter H Zones, yard setbacks apply to ensure a building or parts of a building are adequately set back from the edge of intermittent and permanent streams. The purpose of this yard is to ensure activities are adequately set back from the stream edge to maintain water quality and provide protection from natural hazards. The setback applied will depend on the proposed zone (i.e., 20m for ‘Future Urban’ and ‘Countryside Living’, and 10m for ‘Single House’ zones). Development is planned only in the proposed ‘Single House’ zone, with no development proposed in the Countryside Living zone. A 10m riparian yard setback is therefore applicable. The main stream flowing through the site is located in the ‘Countryside Living’ zone, to which a 20m riparian yard applies. Should any vegetation removal be required in this 20m riparian yard, under Activity Table E15.4.1 Auckland-wide vegetation and biodiversity management rule A16, a restricted discretionary activity consent will be required for vegetation alteration or removal within 20m of a rural stream.

4 METHODOLOGY

4.1 Desktop Studies

A review of published and unpublished reports and literature, as well as available spatial databases, was carried out to understand existing the terrestrial, wetland and stream values of the site and impact of the proposed development was conducted.

With respect to wetlands, a desktop review was undertaken to identify potential wetlands (e.g. non-wetland areas, artificial wetlands, or natural wetlands) on the site and within 100m of the site, in accordance with the New Zealand Wetland Delineation Protocols (Clarkson, 2018; Ministry for the Environment, 2020, 2021). The review considered ecology, hydrology, wetland and catchment characteristics. Any landforms that generally support wetlands were identified on site. These include any:

- Stream or river floodplains;
- Margins of lakes, rivers and estuaries;
- Low-lying areas among flat landscapes; and
- Change in slope or geology, that allows groundwater discharge.

As surveys for cryptic fauna (such as bats and lizards) require specialised studies, are very labour intensive and often inconclusive, no targeted surveys were undertaken. Desktop Information was instead used to inform the current

assessment with a conservative approach taken. Unless otherwise stated, the threat status provided in this report is per the latest Department of Conservation’s (DOC) New Zealand Threat Classification System (NZTCS) and publications. The spatial databases and other information assessed are listed in Table 4 below.

Table 3: Databases and information sources used for the desktop review

DATABASE AND/OR INFORMATION SOURCE	SOURCE(S)
Auckland Council GIS layers: <ul style="list-style-type: none"> Catchment layers (overland flow paths, flood plains, flood prone areas, permanent streams) Contours (1m intervals) Current and Potential Ecosystems (potential ecosystems incorporate soils information). 	https://data-aucklandcouncil.opendata.arcgis.com/
<ul style="list-style-type: none"> Herpetofauna records 	Auckland Council biodiversity officer
Aerial photography and satellite imagery: <ul style="list-style-type: none"> Google Earth aerial photography Retrolens historical imagery 	https://earth.google.com/web/ https://retrolens.co.nz/
New Zealand Freshwater Fish Database	https://niwa.co.nz/information-services/nz-freshwater-fish-database
Department of Conservation (DOC) bat records	https://www.doc.govt.nz

4.2 Field Assessment

The site investigation on 14 March 2023 consisted of:

- Assessing the vegetation ecosystems present on the site
- Classifying and assessing watercourses on the site
- Assessing habitats with the potential to support lizards, bats, birds and aquatic species
- Assessing the ecological values of the site

4.2.1 Wetland and Watercourse Assessments

For the assessment of wetlands and watercourses, the following methodology was used:

- Rapid hydrophytic vegetation test, in accordance with the New Zealand Wetland Delineation Protocols (Figure 6); and
- Classification of identified overland flow paths in accordance with AUP definitions (AUP: Chapter J Definitions) for rivers, streams, overland flow paths, and artificial watercourses.

The New Zealand Wetland Delineation Protocols (2022)⁴ outlines four main steps that should be followed when assessing wetlands (Figure 6). The procedure involves assessing hydrophytic vegetation, hydric soils and wetland hydrological characteristics.

⁴ Clarkson, B. (2018). Wetland Delineation Protocols. Contract Report: LC3354.

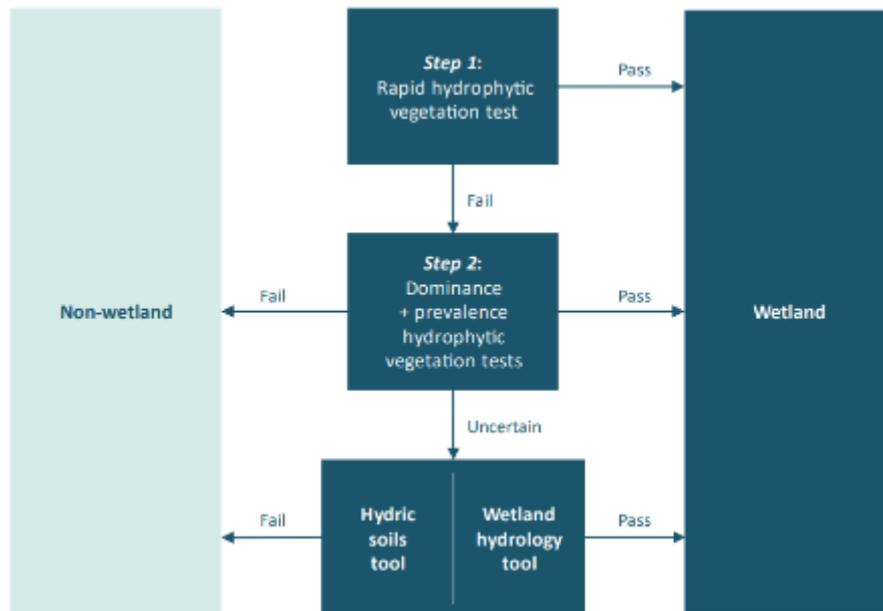


Figure 6: Simple flow chart of steps for determining an RMA wetland using the hydrophytic vegetation, hydric soils and wetland hydrology tools⁵.

With respect to timing, wetland assessments should be undertaken when climatic and hydrologic conditions are normal; that is, not in drought or flood⁶ and within the growing season. Auckland’s growing season is considered to be from 12 July to 23 June of the following year.

Soil samples should be taken in any wetland areas dominated by hydric vegetation, with a hand auger up to a depth of 40cm, and assessed for hydric conditions in accordance with Figure 7 below, using Fraser *et al.* (2018)⁷ and the Munsell Soil Colour Book.

⁵ Ministry for the Environment. 2022. Wetland delineation protocols. Wellington: Ministry for the Environment.

⁶ Site was assessed one week after cyclone Gabrielle, however, flooding impacted only some of the hydrology indicators of the potential wetlands while hydric soils and hydrophytic vegetation could still be assessed as per normal.

⁷ Fraser, S., Singleton, P, and Clarkson, B. (2018). Hydric Soils – Field Identification Guide. Contract Report: LC3233.

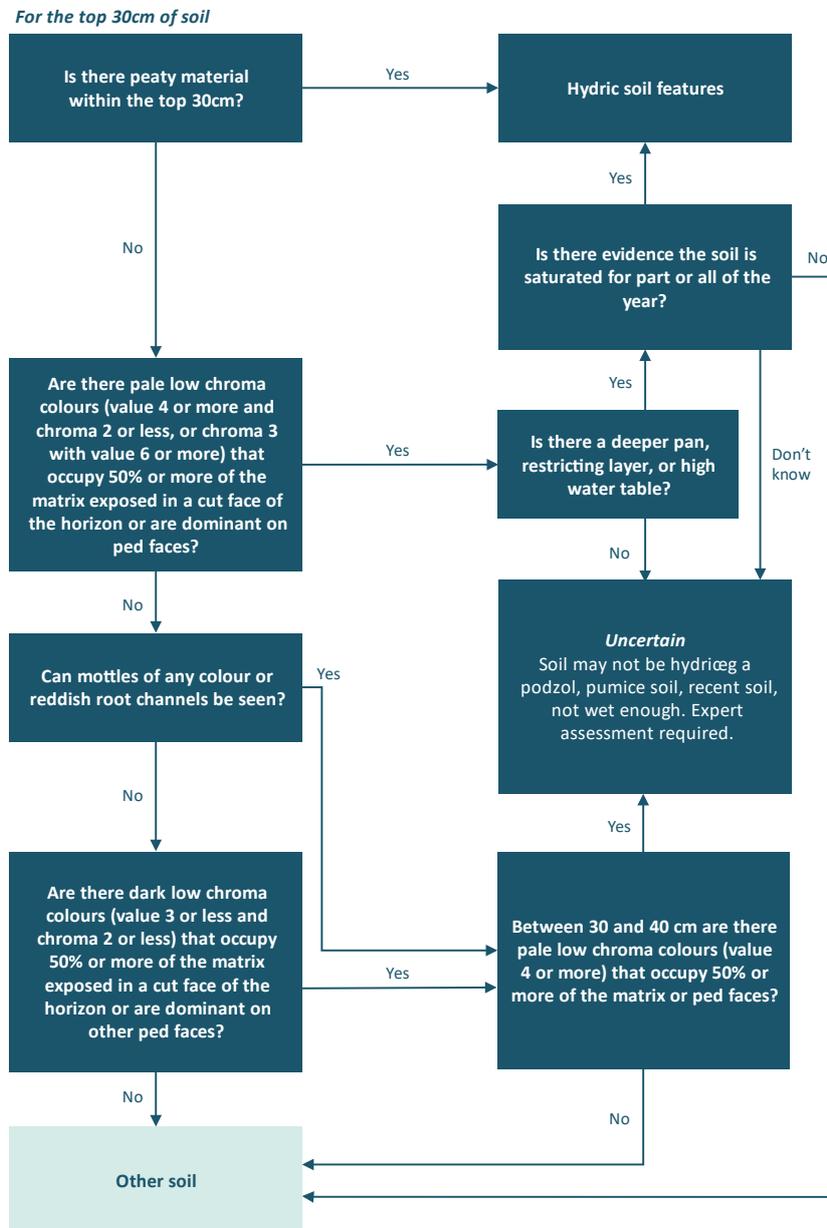


Figure 7: Simple key to identify hydric soil features (Fraser et al., 2018)

In addition to the rapid hydrophytic vegetation test, the dominance and prevalence tests and wetland hydrology tool was also applied where appropriate⁸(refer to Figure 8 below) to confirm the presence or absence of a wetland based on the results of the abovementioned assessments.

⁸ Following temporary alteration of wetland hydrology by recent flooding caused by cyclone Gabrielle (14/02/2023)

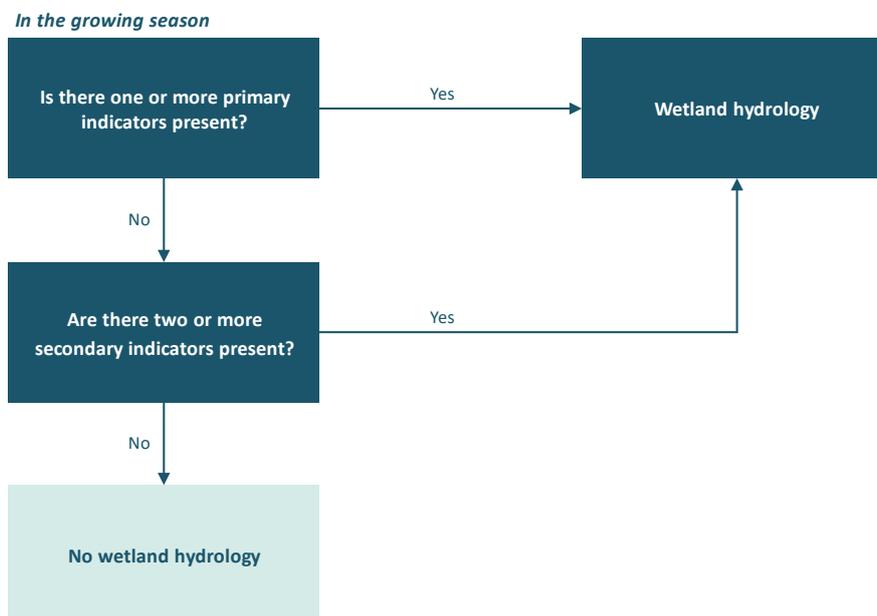


Figure 8: Simple key to describing wetland hydrology

At the time of the site visit, access could not be gained to all stream reaches due to the thick growth of gorse and bush, therefore, historic aerial images and Geomaps data were relied on to evaluate the site in inaccessible areas. Streams were classified according to the AUP(OP) criteria as well as using the Auckland Unitary Plan Practice and Guidance note on River/Stream Classification.

4.2.2 Assessment of Ecological Effects

The methodology for assessing the level of ecological effects was based on the Ecological Impact Assessment Guidelines prepared by the Environment Institute of Australia and New Zealand (EIANZ Guidelines)⁹.

In summary, this assessment involved:

- Assigning ecological value;
- Calculating a magnitude of ecological effect; and
- Assessing the level of ecological effect using the decision matrix presented in Table 10 of the EIANZ Guidelines.

⁹ Roper-Lindsay, J., Fuller S.A., Hooson, S., Sanders, M.D., Ussher, G.T. 2018. Ecological impact assessment. EIANZ guidelines for use in New Zealand: terrestrial and freshwater ecosystems. 2nd edition. Prepared by the Environment Institute of Australia and New Zealand.

5 ECOLOGICAL DESCRIPTION AND VALUES

5.1 Ecological Context

The site is situated within the Rodney Ecological District in the Auckland Ecological Region¹⁰. The Rodney Ecological District (ED) is characterised by low altitude hills extending to the eastern coast. The original vegetation consisted of extensive inland forests with a few reedlands present. Towards the coastal areas, forest would have given way to saltmarsh and mangrove forest in tidal inlets, and pingao-spinifex communities on the sand dunes. Most of the ecosystem is highly modified and fragmented due to farming, urbanisation and pine forestry. Much of the original primary kauri forest has been replaced by regenerating forest of kānuka and/or mānuka, shrubland and bracken. Only 15% of the remaining native vegetation in the Ecological District currently has legal protection, and very few freshwater wetlands remain.

Priority species for protection in the Ecological District include kauri forest, sites of sneezeweed (*Centipeda minima*), *Pseudowintera inseperrata*, native fireweed (*Senecio scaberulus*), stalked adder's tongue fern (*Ophioglossum petiolatum*), parahebe (*Parahebe aff. spathulate*) and copper beard orchid (*Calochilus aff. herbaceous*).

According to the Auckland Unitary Plan Operative in Part (AUP-OP), the site does not contain any vegetation designated as Significant Ecological Area (SEA). To the south of the site are two SEA's (SEA_T_1072 and SEA_T_1073) which have vegetation characteristics similar to the site on aerial imagery, as well as watercourses that are within the same catchment. It is likely that these systems were connected as a single system historically but have been fragmented by the farming and urban development activities in the area.

The potential ecosystem for the site is classified as WF11 – kauri, podocarp, broadleaved forest.

5.2 Terrestrial Habitats

The site has been highly disturbed by historic and current activities, with large areas covered in dense kikuyu (*Cenchrus clandestinus*) and stands of gorse (*Ulex europaeus*). The main vegetation types identified in the proposed plan change area includes Exotic Scrub (ES) and dense, rank kikuyu grass classified as Exotic Grassland (EG). The wider site contains regenerating manuka/ kanuka scrub (VS3), predominantly confined to the existing Countryside Living Zone in the northwest, and the southwestern corner of the site (currently zoned as future urban). This regenerating ecosystem shows natural succession that will develop into more diverse and mature forest over time if left undisturbed.

Vegetation types currently present on site is shown in Figure 9 on the next page.

¹⁰ This description has been taken from Lindsay H, Wild C and Byers, S. Auckland Region Protection Strategy, Natural Heritage Fund. June 2009. ISBN 978-0-478-146326-4



Figure 9: Current mapped ecosystems on site. Manuka/ kanuka scrub (VS3) shown in green and Exotic Scrub (ES), consisting of predominantly gorse, shown in brown. The remainder of the site is covered in kikuyu grass (Exotic Grassland (EG)). The red dashed line shows the boundary between proposed single house zone and proposed countryside living zone.

5.2.1 VS3 – Mānuka, kānuka scrub

This ecosystem covers approximately 5.73ha of the site and is the most diverse vegetation type present in terms of species with several growth layers visible. Tall kānuka trees (*Kunzea robusta*) are the dominant canopy species within the central forested area, with smaller and younger trees in the subcanopy. Shrubs are dominant along the edges but are also present in the understory. The shrub and understory layer consists of karamū (*Coprosma robusta*), ponga/silver fern (*Alsophila tricolor*), hangehange (*Geniostoma ligustrifolium* var. *ligustrifolium*), supplejack (*Ripogonum scandens*), mangemange (*Lygodium articulatum*) and cabbage trees (*Cordyline australis*). Abundant leaf litter and other organic material is present on the forest floor.

Weed species are widespread along the bush edge and stream margins, most notably woolly nightshade (*Solanum mauritianum*), wild ginger (*Hedychium gardnerianum*) and Chinese privet (*Ligustrum sinense*). A few emergent pine trees (*Pinus* sp.) are also present in the bush.

5.2.2 ES – Exotic scrub

Gorse and woolly nightshade are the main vegetation in these areas, with kikuyu grass forming the groundcover. The gorse bush has a visibly defined edge, growing mostly along the bush edge. Where gorse has been controlled, kikuyu-dominated grassland remains with a few smaller gorse bushes scattered throughout. The kikuyu forms a thick mat, which is very dense and reaches up to 1m in height.

It is worth noting that a lot of the gorse existing on site at the time of the site visit (May 2023) has since been cleared (Photo 1 below). A high-resolution drone survey completed on 4 February 2025 was used to update the vegetation map (Appendix A). Areas of exotic scrub (ES) and kanuka/ manuka scrub (VS3) appears to be quite similar as to what was mapped during the site visits with only minor adjustments made to the boundaries of these vegetation types. In addition, exotic grassland (ES) areas have also been added to the updated vegetation map in Appendix A.



Photo 1: Some of the areas mapped as Exotic Scrub (ES) has been cleared since the time of the ecology site visit. Cleared areas are shown in an updated photo from September 2024 (taken by our soil contamination team).



Photo 2: Site overview of the landscape looking towards the north (from the southern boundary). Dense kikuyu and gorse growth is visible throughout, with regenerating native bush visible in the background.



Photo 3: Wild ginger (pest plant in the front) occurs along the outer edges of the forest of taller kānuka.



Photo 4: Bush edge vegetation consisting of gorse, karamū and kikuyu. Taller pine trees and kānuka are visible in the background.



Photo 5: Bush understory contains silver fern, hangehange, supplejack and cabbage trees, amongst other species.



Photo 6: Semi-mature kānuka trees forms the main canopy layer. Gorse and karamū form the outside/ edge scrub layer before giving way to kikuyu grasslands.

5.4 Freshwater Habitats

5.4.1 Watercourses

The main watercourse on site is a headwater tributary of the Awaroa Stream, and is located towards the site's western boundary, labelled Stream 1. A further 5 streams (or potential streams) were identified on the site. These are shown in Figure 10 below and discussed in this section.



Figure 10: Watercourses identified and mapped on site. Proposed zone boundary between Countryside Living to the northwest and Single House to the southeast is shown in red dashed line.

Stream 1

Stream 1 is the main water course present. To the south, Stream 1 flows in a steep, densely vegetated gully which gradually opens up into a wider valley towards the north. The watercourse is shallow, with water depth less than 10cm where it enters the site from the south, gradually increasing up to a depth of ~30cm where it enters the neighbouring property to the north. Channel width is between 30cm and 2m with the widest section where the stream flows closest to the eastern boundary. Throughout its length, the stream channel varies from shallow and wide to more incised in places. This watercourse was classified as intermittent to permanent, based on the presence of pools and flowing water, a defined channel in places, and catchment size.



Photo 7: Surface and groundwater flow south of the site at the headwaters of the intermittent stream.



Photo 8: Section of the intermittent stream entering the southern site boundary through a culvert.



Photo 9: The upper hillslopes/ southern part of the intermittent stream, has densely vegetated riparian margins consisting of exotic/ native scrub mix.



Photo 10: Further downstream, to the north, the intermittent stream flows into a more open valley floor, with associated (potential) wetland along its margin.



Photo 11: The stream widens slightly as it enters forested areas and water flow is more evident.

Stream 2

This stream enters the site along the eastern boundary to the south. It flows from south to north where it joins Stream 1 toward the centre of the site. Stream 2 is located in a densely vegetated area and did not have a defined channel throughout its length, nor did it have flowing water, although some shallow ponding was visible in places. It has been classified as ephemeral.



Photo 12: Stream 2 where it flows through more forested areas.



Photo 13: Ponding visible along some parts of Stream 2, within the forested areas.

Stream 3

Stream 3 is mapped as an overland flow path on AC Geomaps. No water was present along the upper reaches at the time of the site visit, however, a shallow depression was visible in the landscape (see photo 13 below). No defined channel could be distinguished, and terrestrial vegetation was growing throughout its width. No ponding or damp areas were present at the time of the site visit. Stream 3 has been classified as ephemeral. The stream connects to Stream 1 further northwest, where it enters the more forested areas.



Photo 14: Stream 3 shows as a shallow depression in the landscape with no channel or water at the time of the site visit.

Streams 4 & 5

Streams 4 and 5 were not assessed during the site visit as these were furthest from the proposed development, and unlikely to be impacted by the proposal. They have been conservatively classified and mapped as ephemeral, however, these may need further investigation and survey at the time of land use consent.

Stream 6

This stream is located in the northeastern corner of the site, and flows towards the north where it connects to Stream 1 outside the site boundary. Further downstream, at the northern site boundary and beyond, the stream channel becomes shallow and wide, with some wetland vegetation (predominantly swamp millet) along the channel.

This stream, where it flows within the site, has been classified as ephemeral.



Photo 15: View of Stream 6, at the northern property boundary looking further north.



Photo 16: Stream 6 downstream, just outside the property boundary.



Photo 17: Swamp millet along Stream 6 (outside northern site boundary)

5.4.2 Potential Wetlands

As described in Section 4.2 above, a desktop review of aerial photos and geospatial data was conducted to determine the potential of wetlands occurring on or within 100m of the site. No wetlands were identified during the desktop study.

Potential Seep Wetland

During the site visit, an area of approximately 300m² was noted where rushes (*Juncus effusus*) were growing between the kikuyu grass. The area had not been grazed for some time (as is evident by the dense growth of kikuyu) and is in an area of the hillside that forms a shallow depression, and it was thought possible that seep wetland conditions could be present. Species cover consisted of more than 50% kikuyu grass (a facultative upland pasture species), however, in order to confirm whether the area required further investigation, a 2m x 2m vegetation plot, with Dominance and Prevalence tests were conducted to determine if this area is a natural inland wetland or not. The results of both Dominance and Prevalence tests indicated that this area is not a natural inland wetland.



Figure 11: Small area of rushes at the base of a slope, amongst predominantly kikuyu grass.



Photo 18 and 19: Potential hillside seep area with rush growth amongst the kikuyu.

Constructed Wetland

An artificial dammed area is present approximately 70m south of Mahi Road. The earthen walls are 2m high at maximum and only border the west, south and north of the area. In addition, the eastern wall has a 2m wide gap. The reason for this walled area is unclear as the surrounding slope will not allow water to exit through the gap. Water pools in the southern section, providing damp conditions for the growth of rush species.

This area meets the constructed wetland exclusion “h) a wetland that has developed in or around a deliberately constructed water body since the construction of the water body.”



Figure 12: Small area of wetland habitat has formed in association with the surrounding dam wall (indicated in brown lines).



Photo 20: Constructed dam wall up to 2m high



Photo 21: Constructed dam walls where ponding from recent summer rainfall has provided suitable conditions for sedges to grow. No wetland conditions occur on the site in terms of soils, landscape and hydrology.



Photo 22: Opening in the eastern wall. It is unknown what the purpose of the walled area is or when it was constructed.

5.4.3 Freshwater Fauna

A fish survey was not completed as part of the ecological assessment, however, the presence of streams on the site provides habitat for freshwater species to occur. According to the New Zealand Freshwater Fish Database (NZFFD)¹¹, no native fish records exist for the site itself, and the closest record are for short-finned eel (*Anguilla australis*), more than 3km to the south-west. The streams on site are likely to support some common native fish and aquatic macroinvertebrates.

5.4.4 Terrestrial Fauna

A fauna survey has not been specifically conducted as part of this assessment and therefore habitat types and quality were identified to determine the species that could potentially be present.

Birds

Vegetation on the site provides suitable habitat for a variety of native bird species to roost. Suitable habitat ranges from tall kānuka trees to karamū, as well as riparian vegetation which provides habitat for a variety of species. Species seen on the site during the site visit included fantails and pūkeko.

The table below lists the bird species likely to occur on the site.

Table 4: Avifauna species likely to be present on the subject site

COMMON NAME	SPECIES	THREAT STATUS ¹²
Blackbird	<i>Turdus merula</i>	N/A – introduced and naturalised
Pīpīwharau/roa/Shining cuckoo	<i>Chrysococcyx lucidus</i>	Not threatened
Pīwakawaka/Fantail	<i>Rhipidura fuliginosa</i>	Not threatened
Pūkeko	<i>Porphyrio melanotus</i>	Not threatened

¹¹ <https://niwa.co.nz/freshwater/nzffd/NIWA-fish-atlas/fish-species/>

¹² Robertson et al. 2017. Conservation Status of New Zealand Birds, 2016. Department of Conservation

COMMON NAME	SPECIES	THREAT STATUS ¹²
Riroriro/Grey warbler	<i>Gerygone igata</i>	Not threatened
Rosella	<i>Platycercus eximius</i>	N/A – introduced and naturalised
Sparrow	<i>Passer domesticus</i>	N/A – introduced and naturalised
Tauhō/Silvereye	<i>Zosterops lateralis</i>	Not threatened
Thrush	<i>Turdus philomelos</i>	N/A – introduced and naturalised
Tūī	<i>Prosthemadera novaeseelandiae</i>	Not threatened

Bats

Records show that native long-tailed bat (*Chalinolobus tuberculatus*) has been recorded in forested areas within 5km of the site (DOC, 2020). Native bats nest and roosts in the cavities and hollows of large old trees. They are also highly mobile and typically only remain in a roost site for approximately 2 days before moving on. Bats typically use linear landscape features such as bush edges, gullies and watercourses to transit between roosting and foraging sites. They forage along open areas, including clearings, along forest edges, over wetlands, open water, and along riparian margins and roadways.

Removal of large trees are not proposed, and therefore a bat management plan will not be required.

Lizards

Note that as surveys for cryptic fauna, particularly herpetofauna, are very labour intensive and often results are inconclusive, we have assumed that threatened lizard species are present, without recent confirmation. The Auckland Council lizard database shows no lizard records within proximity of the study site. Forest geckos (*Mokopuririakau granulatus*) have been recorded within 5km of the site.

The kanuka scrub on the site, as well as the rank kikuyu grass throughout the site provide habitat for native lizards. Lizard management is therefore recommended during land use consent, which may also include an initial lizard survey.

Refer to Table 8 below for species known to occur and their threat status.

Table 5: Lizard species potentially present within 5km of the subject site and their threat status.

COMMON NAME	SPECIES	THREAT STATUS ¹³
Auckland green gecko	<i>Naultinus elegans</i>	At risk - declining
Common gecko	<i>Woodworthia maculatus</i>	Not threatened
Copper skink	<i>Oligosoma aeneum</i>	Not threatened
Forest gecko	<i>Mokopuririakau granulatus</i>	At risk – declining
Ornate skink	<i>Oligosoma ornatum</i>	At risk – declining

¹³ Robertson et al. 2017. Conservation Status of New Zealand Birds, 2016. Department of Conservation

5.5 Summary of Ecological Values Of the site

The assessment of ecological values considered the significant differences between the gorse/kikuyu vegetation and the native bush on site, as these areas do not have the same ecological values.

Table 9 below summarises the ecological values of the site. Based on this assessment, the site has an overall ecological value of **high**. However, the value for the gorse/kikuyu vegetation is **low**.

Table 6: Assessment of ecological value

ECOLOGICAL CHARACTERISTIC	ASSESSMENT OF ATTRIBUTES	ECOLOGICAL VALUE
Vegetation	The regenerating VS3 bush on site provides good quality habitat for native lizards and birds. It also provides a riparian buffer to the main watercourse through the site. If development is avoided in this area, the forest will continue to improve in vegetation quality and ecological value, moving towards the original characteristics of the WF11 – kauri, podocarp, broadleaved forest ecosystem over time.	Moderate
	Gorse (ES) provides some buffering to the regenerating bush, however, it lacks diversity and native species.	Low
	Kikuyu (EG) areas provide some habitat for threatened skinks. It lacks native vegetation and diversity.	Low
Watercourses	<p>The main watercourse flows through a forested area and opens into a valley north of the site where the floodplain appears to have some associated wetland characteristics. It provides habitat for native fish species. Although the stream is part of a larger catchment, the stream itself is small in terms of depth and width. The stream is largely unmodified and there was no sign of erosion, and bank vegetation is still relatively intact.</p> <p>The riparian margins of streams also have important functions such as:</p> <ul style="list-style-type: none"> • Habitat for fauna • Shading the stream which prevents water temperature from getting high and prevents algal blooms/excessive aquatic plant growth. • Stabilising stream banks • Filtering run off (e.g., sediment, debris and nutrients) from adjacent land • Slowing runoff which reduces erosive potential. 	Moderate
Wetlands	No natural inland wetlands were observed during the site visit.	N/A
Fauna	Available records indicate that some threatened and at-risk species could potentially occur on the site. The potential for occurrence is higher within the forest areas which provide good habitat for various species.	High

6 ASSESSMENT OF EFFECTS

6.1 Overview

Based on our initial advice, all areas of regenerating bush (VS3) are either to remain or are to be added to the Countryside Living Zone and with the plan change to Single House Zone limited to areas within exotic grassland and exotic scrub. Development within areas of regenerating bush have thus been *avoided* through initial design. In addition, no stream crossings or culverts are required for Stream 1. The stream will be located in the Countryside Living Zone which is proposed for avoidance, and lot boundaries have been set back 10m from the stream edge. Impacts to Stream 1 have also been *avoided* through design.

The proposed change in land use has the potential to result in a range of adverse effects on terrestrial and freshwater ecosystems. The following assessment of effects is based on the impacts generally expected from future residential development in a Single House zone. Effects are assessed based on the extent, intensity, duration and timing of effects associated with the project after measures have been undertaken to further avoid, remedy or mitigate adverse effects from future development.

The change in land use will potentially have the following adverse ecological impacts:

- Vegetation loss due to clearance, earthworks and stormwater management.
- Degradation of streams from erosion, sedimentation, and loss of riparian vegetation.
- Loss of habitat for lizards.
- Increased soil erosion from vegetation clearance and earthworks in the gorse/kikuyu areas.

6.1.1 Vegetation Clearance

The majority of the site consists of kikuyu and gorse and these areas, when cleared, will not have significant adverse effects on the ecological value of the site. No clearance is proposed within the VS3 bush.

6.1.2 Stream Impacts

Stream 1 is located in the Countryside Living Zone. Overall, no development is proposed within 10m of Stream 1. Proposed Area 2 and part of Area 5 will be close to Stream 1, but their lot boundaries are set back 10m from the stream, however, these lots will encroach into the 20m riparian yard (associated with the Countryside Living zone). Native restoration planting of the 10m riparian yard (where assessed as required at the time of resource consent) as set out in Table 8, and referred to in the Precinct Provisions¹⁴, will mitigate any potential adverse effects associated with vegetation clearance in the 20m riparian yard.

Stream works are not required for any crossings or culverts, therefore no disturbance to stream beds and banks are anticipated.

Stormwater infrastructure has not been confirmed for the proposed development at this stage, but it is assumed that stormwater management will be required for the site due to increased impervious surfaces. The outlets for the stormwater structures will likely be located close to the stream edge.

¹⁴ Precinct Provisions are being drafted by Civix, which provides for a 10m planted/enhanced riparian yard where the stream adjoins proposed development or roads.

Without mitigation, the impact to streams (in particular to Stream 1) from the current proposed design will be **moderate** as the potential for decreased water quality, erosion and sedimentation increases due to the additional dwellings and impervious surfaces.

6.1.3 Disturbance of Fauna

Habitat for birds, lizards, and aquatic species to live, forage and breed, is present on site. Although detailed studies have not yet been conducted for the site, threatened and at-risk species could potentially be present, which would be adversely impacted by development if no fauna management is in place. Threatened or 'At Risk' lizards, particularly copper skink, may be present in otherwise low value areas of vegetation such as kikuyu/gorse habitat, but with appropriate lizard management, including a full lizard management plan, the impacts are expected to be **low**.

Although potential bat roosting habitat exist on site, no trees are proposed to be removed, and therefore no impacts to bat roosting habitat are anticipated. Stream 1 and its riparian margin potentially provides a foraging corridor for bats. However, enrichment planting within the riparian margin will enhance foraging habitat for bats, over time. In addition to riparian planting, best practice measures like ensuring wildlife sensitive lighting can minimise any adverse effects on native fauna such as bats. Therefore, the impacts on bats are expected to be **very low**.

6.1.4 Impact of Pet Cats on Native Fauna

Residential development can lead to an increase in the number of domestic cats and thus their impacts on local wildlife. However, given that the site is already immediately next to residential development it is likely that the impact of local cats on native wildlife will already be reasonably high, and the effect of more cats is not likely to be significant.

6.1.5 Indirect Effects

The following potential indirect adverse effects are of note:

- Erosion and sedimentation during construction can result in decreased water quality in streams. In turn, this will impact the habitat quality for vegetation and aquatic species.
- Increased impervious surfaces and stormwater discharge will result in changes to the catchment hydrology and the resultant adverse effects on stream quality. Flood risk also increases if stormwater management is not designed accordingly. The effects will increase if development occurs within 10m of the streams.

7 EFFECTS MANAGEMENT

7.1 Overview and Application of the Effects Management Hierarchy

Potential adverse effects on ecological values have been **avoided** by locating the development outside the higher value manuka/kanuka (VS3) scrub areas. Potential adverse effects on streams have also been **avoided** by having the Single house zone lot boundaries at least 10m from the stream edge. **Avoidance** has also been demonstrated by not requiring crossings and culverts in the intermittent/ permanent stream on site and not developing within the 10m riparian yard.

The impact of future development can be **minimised** by planting the 10m riparian yard adjacent to all development areas and road (as prescribed by the Precinct Provisions and where assessed as required at the time of resource consent), thereby **minimising** adverse effects from development closest to the stream. Impacts can further be minimised through preparation of a lizard management plan, ensuring herpetologist supervision during vegetation removal, and a bird nesting survey if vegetation is being cleared in the main bird breeding season. Trees with suitable bat roosting habitat should be retained, or alternatively, bat management will be required.

Below in Table 7, the effects management hierarchy has been summarised.

Table 7: Effects hierarchy according to NPS-IB

Effects hierarchy component	Description
<p>Avoid: Measures taken to anticipate and prevent adverse impacts on biodiversity.</p>	<ul style="list-style-type: none"> • Development in regenerating VS3 bush has been avoided. • Tree clearance within the VS3 ecosystem has been avoided. • Development in the 10m riparian margin will be avoided (refer to the Precinct Provisions). • Impacts to streams have largely been avoided.
<p>Minimise: Moderate the severity or minimise.</p>	<ul style="list-style-type: none"> • Impacts to the 20m riparian yard will be minimised by planting a 10m buffer along the riparian margin (where assessed as required at the time of resource consent). • Fauna management (lizards, birds, bats) will minimise adverse impacts on native fauna.
<p>Remedy: Make good temporary impacts at the site, rehabilitate, restore, or reinstate.</p>	<ul style="list-style-type: none"> • Infill/ enrichment planting within 10m riparian margin. • Weed control within riparian margins/ planting areas.
<p>Offset: 'Measurable conservation outcomes resulting from actions designed to compensate for significant residual adverse biodiversity impacts arising from project development following appropriate prevention and mitigation measures have been taken.</p>	<ul style="list-style-type: none"> • No requirement to offset.
<p>Compensate: Measures to recompense, make good or pay damages for loss of biodiversity caused by a project that can fall short of achieving no net loss or a net gain.</p>	<ul style="list-style-type: none"> • No compensation required.

The remaining residual adverse impacts of the proposed clearance and earthworks associated with the proposed private plan change are *minor* and will be **remedied** as follows:

7.2 Enhancement of Riparian Areas

In areas where proposed development adjoins the stream (six lots within proposed subdivision Area 2 and part of Area 5), a 10m planted riparian margin is required under the Precinct Provisions (where assessed as required at the time of resource consent). This mitigation planting will increase diversity and habitat for fauna, improve stormwater management of the site, and increase the filtration of pollutants from overland flow. A planting plan will need to be prepared according to Te Haumanu Taiao: Restoring the natural environment in Tāmaki Makaurau¹⁵. The Planting Plan must be compiled by a suitably qualified person at subdivision and/or land use consent stage. Weed control is also

¹⁵ <https://www.tiakitamakimakaurau.nz/media/dzwilya2/te-haumanu-taiao-restoring-natural-environment-t%C4%81maki-makaurau.pdf>

recommended in the riparian yard where planting is required. Refer to updated vegetation map in Appendix A, showing indicative riparian planting and weed control area, noting this may vary under detailed resource consent application where the boundaries may differ such that this is not required.

7.3 Stormwater Management

When planning the stormwater infrastructure for the proposed development, measures must be included that do not increase the flood risk of the site. In addition, diffuse flow of stormwater must be encouraged over the property to ensure that the formation of erosion gullies is prevented since the site has steep inclines.

7.4 Erosion and Sediment Control

Erosion and sediment control measures must be applied where works are proposed close to the stream and along steep hillsides throughout the construction phase.

7.5 Fauna Management

To minimise the impact that the proposed clearance of exotic scrub and rank kikuyu grass may have on the resident skink population, a lizard management plan is recommended. Vegetation clearance should also be under the supervision of a herpetologist to ensure the salvage and relocation of lizards on the site.

The removal of potential bat roosting trees is not proposed, and therefore a bat management plan is not deemed necessary. However, wildlife sensitive lighting should be used throughout the site to minimise ongoing disturbance to bats that may be foraging on site.

7.6 Summary of Ecological Impacts

Refer to Table 8 for the summary of impacts prior to and after mitigation.

Table 8: Level of effects before and after mitigation

ECOLOGICAL CHARACTERISTIC	ECOLOGICAL VALUE	MAGNITUDE OF EFFECTS BEFORE MITIGATION	MITIGATION MEASURES	MAGNITUDE OF EFFECTS AFTER MITIGATION
Vegetation				
Gorse/Kikuyu (ES and EG)	Low	Low	Clear vegetation during the dry season to limit chances for stormwater impacts, erosion and sedimentation. Appropriate erosion and sediment control measures.	Very low
Watercourses				
Stream 1 (intermittent/permanent)	Moderate	Moderate	Native restoration/enhancement planting and weed control within the 10m riparian yard where development is proposed close to Stream 1 (as required by the Precinct Provisions).	Low

ECOLOGICAL CHARACTERISTIC	ECOLOGICAL VALUE	MAGNITUDE OF EFFECTS BEFORE MITIGATION	MITIGATION MEASURES	MAGNITUDE OF EFFECTS AFTER MITIGATION
			Stream 1 (plus its 10m planted riparian margin) will be avoided.	
Ephemeral streams/ Overland flow paths	Low	Low	Not required	None
Fauna				
Lizards/Skinks	High	High	Lizard management plan to be compiled and vegetation clearance supervised by a herpetologist.	Low
Bats	Very High	Moderate	Avoid removal of trees within CLZ (no removal proposed). Enhancement planting within riparian margins.	Very Low

8 CONCLUSION AND RECOMMENDATIONS

Development in areas on site having higher ecological value, such as the regenerating VS3 bush and Stream 1 and its 10m riparian yard have been avoided. The precinct provisions require avoidance of development in the VS3 area which has been demonstrated by having all identified VS3 vegetation within the proposed Countryside Living Zone.

Impacts to these areas have been reduced by avoidance of development within the VS3 bush, Stream 1, and associated 10m riparian yard, (including areas currently zoned as future urban) which should result in a net gain of biodiversity values over time as the vegetation regenerates.

Furthermore, the impacts from proposed plan change can be effectively mitigated and managed to acceptable levels, provided that the abovementioned measures are implemented during the next phase of planning (land use consent).

Refer to Appendix A for the map denoting the setback areas applicable for the site, and the forest areas proposed to be avoided.

APPENDIX A: UPDATED ECOLOGY MAPS



LEGEND

-  Property Boundaries
-  Site
-  Single House Zone Boundary
-  Intermittent Streams
-  Ephemeral Streams

Ecosystems_2025

-  EG Exotic Grassland
-  ES Exotic Scrub
-  VS3 Manuka/kanuka scrub
-  Proposed Road
-  Lot Boundaries

MAP TITLE:

UPDATED VEGETATION MAP

CLIENT NAME:	HOUNSLOW HOLDINGS
ADDRESS:	40 MAHI ROAD HELENSVILLE
JOB CODE:	20230033EL
DATE:	12/02/2025
REVISION NO:	V02



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Image source: Thomas Consultants Drone Survey/Google Earth
 Data sourced from Auckland Council GEOMaps



LEGEND

-  Property Boundaries
-  Site
-  Single House Zone Boundary
-  Intermittent Streams
-  Ephemeral Streams
-  10m Riparian Yard (Single House Zone)
-  20m Riparian Yard (Countryside Living Zone)
-  Proposed Road
-  Lot Boundaries
-  Riparian Planting (if required at resource consent stage)

MAP TITLE:
WATERCOURSE AND RIPARIAN AREAS MAP

CLIENT NAME:	HOUNSLOW HOLDINGS
ADDRESS:	40 MAHI ROAD HELENSVILLE
JOB CODE:	20230033EL
DATE:	12/02/2025
REVISION NO:	V02



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Image source: Thomas Consultants Drone Survey/Google Earth
Data sourced from Auckland Council GEOMaps