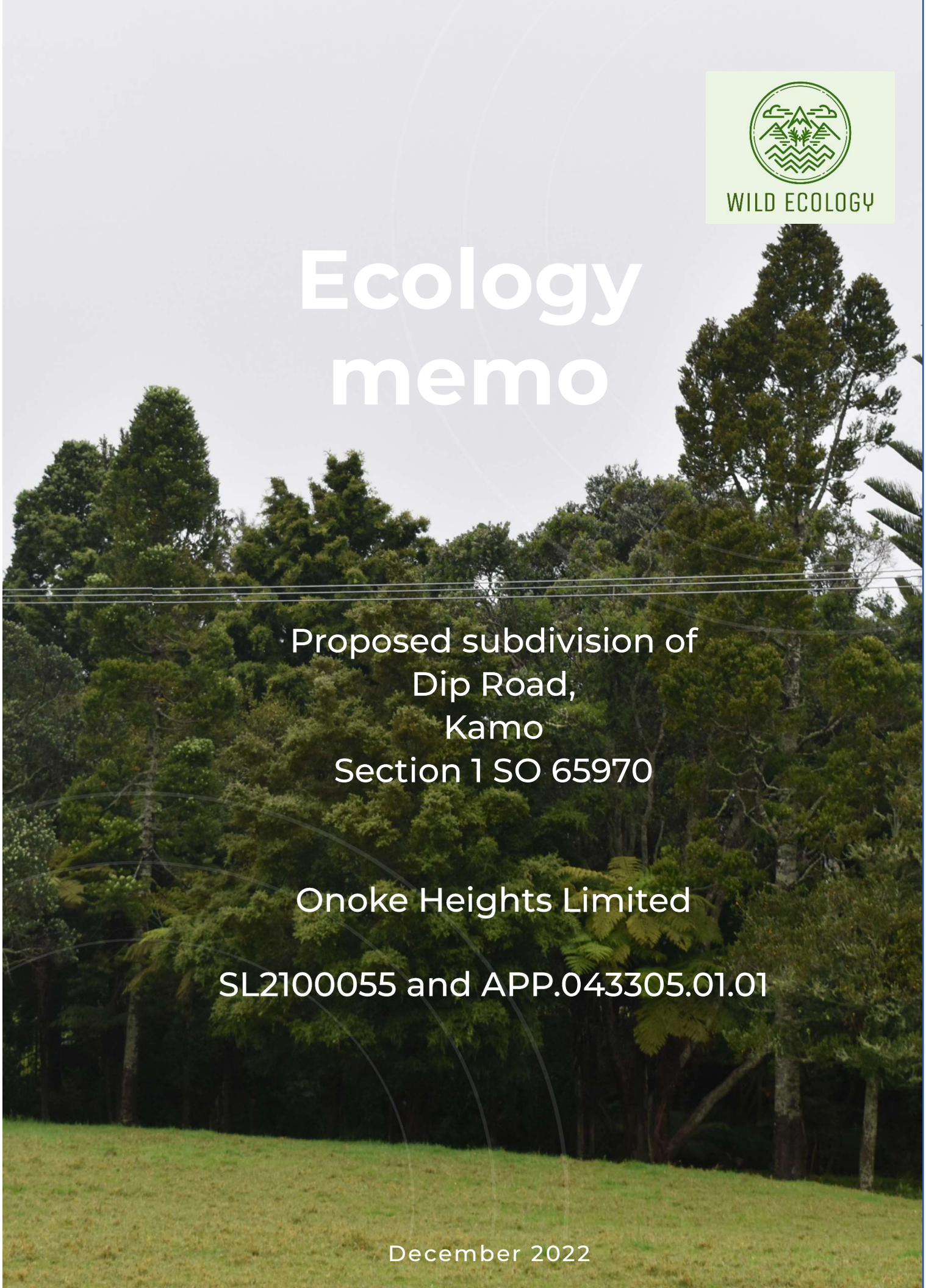

WILD ECOLOGY

Ecology memo

Proposed subdivision of
Dip Road,
Kamo
Section 1 SO 65970

Onoke Heights Limited

SL2100055 and APP.043305.01.01

December 2022

DOCUMENT QUALITY ASSURANCE

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Author:	Madara Vilde Principal Ecologist Wild Ecology	
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1.0 INTRODUCTION

1.1 Scope

A residential subdivision (SL2100055) is proposed for a site located Dip Road, Kamo by Onoke Heights Limited (the Applicant). Wild Ecology were engaged by the Applicant to carry out a site visit and address potential site constraints and opportunities relating to ecological features located within the confines of the site. The Applicant provided the associated subdivision consent package (including relevant S92 requests and responses) prepared for the subdivision Application to ensure that this Ecology Memo has been prepared based on accurate baseline information.

The site was visited on November 9th, 2022 and a site walkover was conducted to identify natural features present on the site and evaluate potential ecological effects associated with the subdivision proposal. A wider desktop analysis of the site was carried out an involved assessment of relevant ecological overlays (including proposed SNA's an review of 'Notable Tree' overlays) and review of the expert reporting prepared for the subdivision proposal.

2.0 ECOLOGICAL CONTEXT

The subject site is located in Kamo and zoned as 'General Residential Zone' under the Whangarei District Plan (WDP). The site is legally described as Section 1 SO 65970 and is approximately 6.8755 ha in size.

Figure 1 below provides an overview of the natural features present within the site boundaries. The site is currently primarily in grazed pasture and contains no existing dwellings. The site abounds the Waitaua Stream to the south, which generally meanders along the southern boundary of the site. Pockets of mixed indigenous and exotic vegetation encompass the southern boundary of the site nearby Waitaua Stream. The site also contains scattered mature trees located along the central aspect of the site, and a small area of mamaku scrubland located generally along the north-eastern aspect of the site.

The site to the east, west and north abounds proposed Significant Natural Area (SNA) Hurupaki Cone W081. No area within the subject site boundaries has been identified as a proposed SNA. From reviewing relevant ecological overlays of WDP, no vegetation on site has been identified as 'Notable Tree' or is subject to other protection mechanism.

Having reviewed aerial photography of the site and immediate surrounds in conjunction with NRC 'known wetland' overlay, there are no known natural inland wetland areas as defined by NPSFM (2020) on site or within a 100m setback from the site.

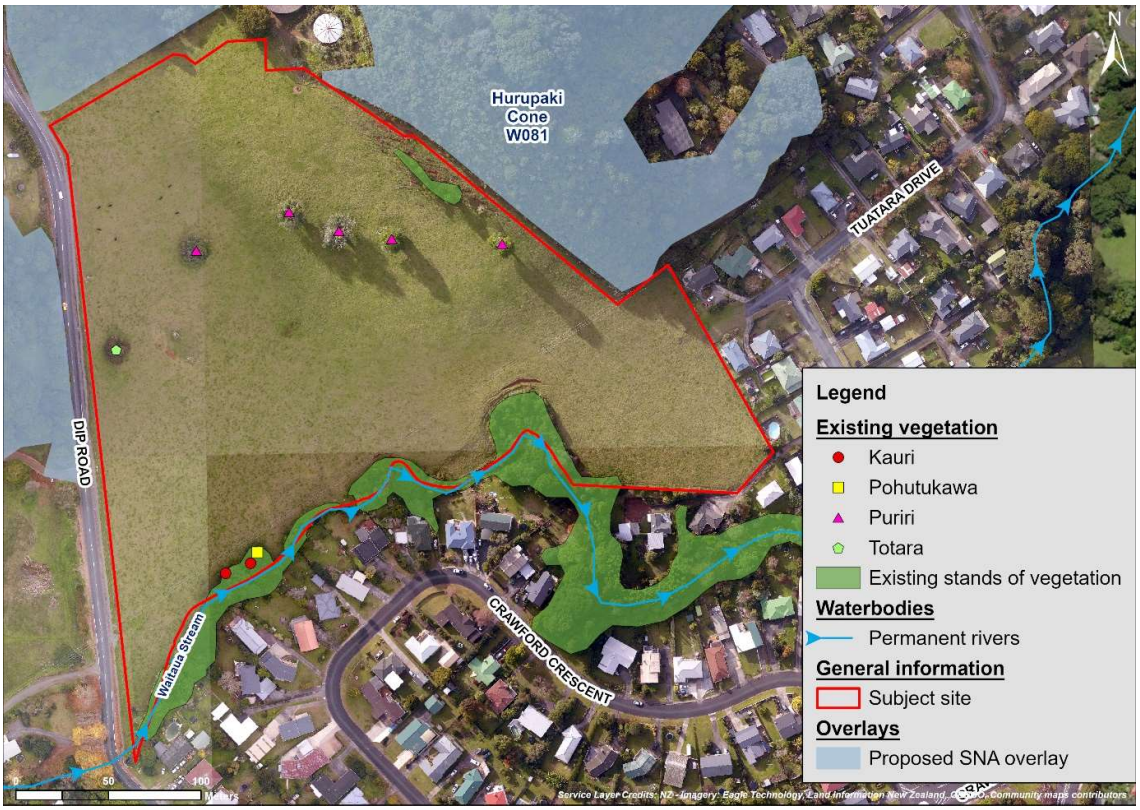

Figure 1: Showing an overview on natural features noted on site

2.1 Terrestrial vegetation

The vegetation encompassing the Waitaua Stream flowing along the sites southern boundary is comprised of a mixture of regenerating indigenous tree species and exotic shrubs/weedy species. Along the sites south-western boundary, the indigenous trees comprised of scattered regenerating totara (*Podocarpus totara*) and taraire (*Beilschmiedia taraire*) with a grazed pastoral understory (Figure 2). A single pohutukawa (*Metrosideros excelsa*) and two kauri (*Agathis australis*) trees were also recorded in this area (see Figure 1 above outlining their location). Both kauri and pohutukawa are listed as 'Threatened - Nationally Vulnerable' under (de Lange *et al.* 2018) New Zealand Threat Classification List.

Along the sites south-eastern aspect, a small, fenced area of common regenerating species such as kawakawa (*Piper excelsum*), mahoe (*Melicytus ramiflorus*), karamu (*Coprosma robusta*), five finger (*Pseudopanax arboreus*) and ponga (*Cyathea medullaris*) were observed (Figure 3). The vegetation sequence extends eastwards from the site along the margins of the Waitaua Stream.

Weedy species are common along the Waitaua Stream corridor area, many being 'garden escapees' spreading along the riparian margins downstream. Species such as Woolley nightshade (*Solanum mauritanum*), nasturtium (*Tropaeolum majus*), Montbretia (*Crocosmia x crocosmiiflora*), agapanthus (*Agapanthus praecox*), wild ginger (*Hedychium gardnerianum*), tree privet (*Ligustrum lucidum*) were common (Figure 4).

Figure 2: Showing small stand of totara, taraire, kauri and pohutukawa along the sites south-western boundary encompassing Waitaua Stream

Figure 3: Showing the small stand of regenerating indigenous vegetation located along the sites south-eastern aspect

Figure 4: Showing the vegetation along Waitaua Stream margins along the south-western aspect of the site - note existing fence is the boundary of the site

Along the central aspect of the site five individual mature puriri (*Vitex lucens*) trees and one totara tree were recorded (Figure 5). The trees are contained in grazed pasture and generally were assessed as being of fair ecological condition. The trees have been pruned historically (Figure 6) and some contraction of the crown was noted, albeit the trees appeared to be successfully fruiting at the time of the survey visit. Root zones of the trees were shallow and exposed and likely have suffered from continued grazing pressures, in particular root damage, ground pugging and stem damage over the years. While it is difficult to estimate the age, it is likely these trees are at least 80 years old, as they can be observed in the aerial imagery available for the site from 1942 (Retrolens). Root zones are extensive and can extend up to 10m radius of each individual tree.

Puriri are classified as 'Not Threatened' under the most recent (de Lange *et al*. 2018) New Zealand Threat Classification List. From reviewing the WDP no vegetation on site has been identified as a 'Notable Tree' or is subject to other protection mechanism.

Figure 5: Showing the isolated puriri trees scattered within pasture approximately within the central aspect of the site- some crown contraction can be seen

Figure 6: Showing evidence of historic pruning

A small stand of indigenous scrub (Figure 7) is present along the site's north-eastern aspect comprising of scattered mamaku and mahoe with a grazed pasture understory. The ecological quality, condition and significance of this small, scattered stand of trees is low.

Figure 7: Small scattered stand of mamaku and mahoe on the sites north-eastern aspect

2.2 Waitaua Stream

Waitaua Stream originates approximately 1 km west of the subject site and is likely fed by a combination of spring and several smaller tributary streams and overland flow paths. Waitaua Stream flows in an easterly direction along the site's southern boundary. Leaving the site, the stream flows through a combination of bush remnants, grazed pasture, residential and industrial areas for approximately 6 km where it enters the Hatea River and eventually discharges into the Whangarei Harbour.

While flowing along the subject site's southern boundary (Figure 8) the stream was observed to have moderate flows, with an average depth of approx. 0.5 - 0.7m, and several deeper pools (>1m), with the stream channel averaging 1 - 1.5m wide and bank height averaging approximately 0.3 - 0.5m. No existing stream crossings or barriers to fish passage were observed within this section of the stream.

The stream currently appears to be of good ecological condition considering the residential/urban context of the surrounding areas and is primarily encompassed by a mixture or indigenous and exotic vegetation, albeit some sections are in open pasture.

Figure 8: Showing a representative cross section of Waitaua Stream while flowing along the sites southern boundary

3.0 ASSESSMENT OF POTENTIAL ECOLOGICAL EFFECTS

According to the Subdivision Scheme Plan (Figure 9) prepared by Blue Wallace Surveyors (20253-01-PL-102, Revision 18) it is understood that the entirety of the southern aspect of the site (identified as Lot 200 and Lot 201) abounding the Waitaua Stream is to be vested as a recreational reserve to Whangarei District Council. Lot 200 is approximately 6,081 m^2 in size and Lot 201 is approximately 6,337 m^2, totalling 1.2418 ha.

A pedestrian footpath is proposed to be created on Lot 201 and a stormwater pond is to be located on Lot 200. The remainder of the site is proposed to be utilised for residential lots and associated services. This will result in the clearance of the 5 individual scattered puriri, 1 totara and a small stand of mamaku as identified within Figure 1.

The following sections briefly assess the potential effects associated with the subdivision proposal and makes recommendations for avoidance, remediation, mitigation or off-setting (as appropriate).

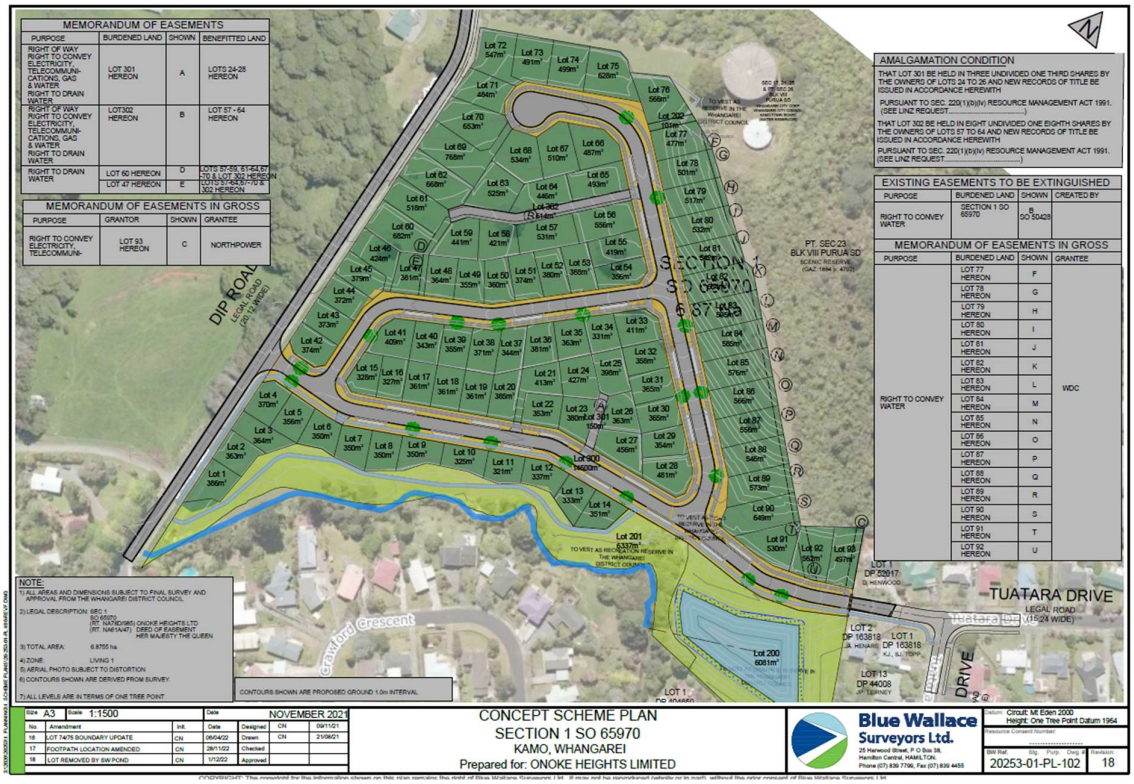

Figure 9: Showing the proposed subdivision/development footprint and associated infrastructure

3.1 Earthworks and Construction Effects

From reviewing the subdivision proposal for the site, it is understood that active site development works post subdivision are likely to involve earthworks and construction effects that would include stripping of soil, formation of driveways and building platforms, and establishment of associated drainage, stormwater and wastewater infrastructure and connections.

Physical works associated with developing the site have the potential to result in the mobilisation of fine sediment and runoff entering the Waitaua Stream habitat flowing along the southern boundary of the site. The addition of fine sediment to aquatic environments has the potential to alter water chemistry, result in sediment build-up, increase turbidity and decrease light penetration that affects primary production and feeding for some aquatic species.

It is deemed that new lot boundaries which are located nearby the Waitaua Stream environment are setback a minimum 15m from the stream edge, and given that the immediate building platforms will be physically separated from the stream edge by the proposed recreational reserves (Lot 200 and Lot 201 – see Figure 10) it is unlikely that effects associated with earthworks and site preparation for construction would result in adverse ecological effects, should good sediment control practices be employed and maintained during active site development works.

Figure 10: Showing the proposed recreation reserve boundary (yellow line indicates the boundary of Lots 200 and 201) in relation to the Waitaua Stream, existing vegetation and proposed stormwater pond

Having reviewed the Geotechnical Report and supplementary earthworks letter prepared by Land Development and Engineering (LDE), it is deemed that all silt and sediment control measures are proposed to be implemented in accordance with the Erosion and Sediment Control Guidelines for Land Disturbing Activities in the Auckland Region (2016) for the duration of the activity.

Nevertheless, to further reduce any residual effects that may affect the quality of the Waitaua Stream it is proposed that the proposed recreational reserve areas Lot 200 and Lor 201 are planted with indigenous revegetation planting suited for the locality of the site. This will aid treatment of residual surface flows/discharges, filtration of sediment and contaminants, improving water quality for the Waitaua Stream. The planting is expected to give rise to positive ecological effects, such as improving the ecological condition of the Waitaua Stream by offering a vegetated buffer zone, improved fauna habitat quality and higher vegetation diversity. The revegetation in this zone will also aid to achieving a higher level of visual amenity and enjoyment of the residents of the proposed subdivision. For Lot 200, the revegetation would create a separation between the proposed stormwater pond infrastructure and Waitaua Stream environment, in addition to creating a functional artificial aquatic environment that will enhance the overall amenity values and could over time become utilised by common avifauna species, as seen in nearby residential developments.

It is recommended that the preparation of a standalone document such as a Revegetation Planting Plan setting out planting requirements, including site preparation for planting

and weed control, plant specifications (species, grades, spacings) and overall ongoing management of the recreational reserve planting areas for a minimum of 5 years is to be conditioned as a part of the Resource Consent.

This will significantly reduce the potential for adverse effects on the Waitaua Stream environment, so the overall effects of earthworks on the identified aquatic environments are assessed as 'less than minor'.

3.2 Stormwater management and discharges

Having reviewed the AEE prepared by Barker and Associates (B&A) and Three Waters Design Report prepared by LDF it is understood that the proposed development will be supported by a comprehensively designed stormwater system to be vested with Whangarei District Council. The servicing strategy and detail has been set out in the Integrated Three Waters Design report by LDE and Engineering Drawings by Blue Wallace Surveyors. It is considered that a comprehensively designed integrated stormwater management is proposed for the development which will manage any potential negative environmental effects (both source and cumulative). The stormwater network for the development has been designed to transport surface water, slow runoff down before it enters the Waitaua Stream, provide areas to store water in natural contours and can be used to allow water to soak (infiltrate) into the ground or evaporated from surface water and lost or transpired from vegetation.

The proposed primary stormwater pond is located in the south-eastern corner of the subdivision located on land that is currently in exotic grazed pasture (Figure 11). The proposed stormwater pond is to be located approximately 15m at its closest point from the Waitaua Stream, with the majority of the stormwater pond being located between 20m and 67m from the stream edge. The proposed system will not result in any changes or alterations to the course of Waitaua Stream, no riparian vegetation is proposed to be altered, and fish passage within the Waitaua Stream will not be affected. It is understood that an outlet pipe from the stormwater pond will be installed to discharge stormwater into the Waitaua Stream environment and appropriate erosion and sediment controls will be in place to avoid scour or erosion of the stream.

Figure 11: Showing the approximate location of the proposed stormwater pond

Generally, it is considered that the proposed stormwater system will result in high quality water treatment associated with the proposed development and will not result in adverse effect on the ecological functioning or condition of the Waitaua Stream environment. The proposal will likely result in positive effects to the environment and neighbouring properties reducing potential of downstream flooding and treating stormwater before entering the Waitaua Stream.

As mentioned above, it is proposed that the immediate recreational reserve area (Lot 200) where the proposed stormwater pond is to be located is to be appropriately revegetated with indigenous revegetation plants suited for the locality of the site. The proposed plantings on site will provide further reduction in the total runoff from the site entering the Waitaua Stream. If appropriately revegetated and maintained in the future, the proposed new stormwater pond will provide habitat for common native avifauna species moving within the landscape such as pukeko, and paradise shelduck, among others.

Therefore, if stormwater management and stormwater quality are to meet industry standards and physical construction and maintenance works are carried out as described within the Three Waters Design Report prepared for the site stormwater related effects are expected to be 'less than minor' to the receiving environment.

3.3 Vegetation clearance

It is understood that the majority of vegetation contained along the southern boundary of the site is to be retained within the proposed recreation reserve areas (Lot 200 and 201). It is also recommended that the reserve areas are appropriately revegetated with

indigenous revegetation plantings to offer a further buffer area to the Waitaua Stream and associated riparian vegetation. No vegetation clearance is proposed in this area.

However, it is understood that individual scattered trees present within the wider developable area are proposed to be felled and removed from site. As noted above this will result in the clearance of the 5 individual scattered puriri, 1 totara and a small stand of mamaku as identified within Figure 1. The trees proposed to be felled are classified as 'Not Threatened' under the most recent (de Lange *et al.* 2018) New Zealand Threat Classification List. From reviewing the WDP the trees have not been identified as 'Notable Trees' and are not subject to any other protection mechanism. There are no relevant policies or rules associated with indigenous vegetation clearance within the 'General Residential Zone' as per WDP.

The small, scattered stand of mamaku along the site's north-eastern extent is of low ecological value and condition and their removal is not deemed to result in any adverse ecological effects.

The five individual mature puriri and single totara tree are contained in grazed pasture and generally were assessed as being of fair ecological condition. Root zones of the trees were shallow and exposed and likely have suffered from continued grazing pressures in particular root damage, ground pugging and stem damage over the years. While it would be beneficial to retain these trees for their amenity value, it is likely that over time the trees will either adversely affect the wider built development surrounding the trees through root penetration of sealed surfaces (i.e. roading, pavements) or foundations of homes, or die off due to the compaction and sealing of their root system. In either scenario these trees could pose a significant risk to the proposed wider infrastructure including roading, building platforms and potentially wastewater and stormwater infrastructure, and ultimately also pose a health and safety concern to the future residents of the subdivision. Puriri trees are known for their extensive root zones (root zone spread often is 10m or more from the base of the tree) which are able to penetrate built surfaces, and thus they are deemed as largely incompatible with a residential built environment.

There is potential to offset the 6 individual tree loss through planting a suitable percentage of puriri trees of sufficiently large size/grade (grade of 160L or higher as per Figure 12) to achieve an instant impact and amenity value by planting larger trees within the proposed recreational reserve areas (Lot 200 and 201). This is deemed as sufficient compensation of the individual scattered tree loss, and the proposed revegetation planting will enhance the ecological and amenity values of the recreational reserve and remain as a landscape feature for the future subdivision resident and wider area users enjoyment.

Figure 12: It is proposed to utilise larger grade 'instant impact' puriri trees within the proposed recreational reserve revegetation planting areas

Generally, it is deemed that the felling of these individual trees and the small, scattered group of mamaku is a permitted activity for General Residential Zone. The proposed revegetation planting and use of large grade puriri trees within the proposed recreation reserve planting zones would achieve a sufficient off-set related to the proposed indigenous vegetation clearance on site.

3.4 Kauri Dieback Management

Policy EARTH-P3 – Kauri Dieback Disease of WDP aims to discourage earthworks within the vicinity of New Zealand Kauri tree (Agathis Australis) and to ensure that earthworks are designed so as to avoid the spread of plant pathogens including Phytophthora Agathidicida (Kauri Dieback Disease).

Two individual kauri trees were recorded within the site boundaries with their location shown in Figure 1. These trees (Figure 13) are to be contained within the proposed recreational reserve (Lot 201). It is understood that some minor earthworks associated with establishment of the walking track proposed for the recreational reserve will take place nearby the kauri trees, albeit it is deemed that the earthworks will likely not occur within three times the maximum radius of the canopy dripline of the kauri trees (i.e the

kauri hygiene area as defined in WDP), given that the proposed setback of the walking track as shown on the Scheme Plan from the kauri trees is approximately 10 metres and will not encroach on the kauri tree root zones/kauri tree hygiene areas. Therefore there is no requirement for a Kauri Tree Dieback Management Plan to be prepared for this application.

Figure 13: Showing the two individual kauri trees recorded on the site's southern boundary abounding Waitaua Stream

4.0 RECOMMENDATIONS

A number of recommendations have been made to ensure that the proposed subdivision proposal and subsequent site development avoids, minimises, remedies or appropriately offsets potential adverse ecological effects on the ecological features and habitats contained within the boundaries of the site. From reviewing the overall subdivision proposal and associated expert reporting for the site it is deemed that the application recognises the importance of protecting and enhancing natural features where practically feasible and compatible with the underlying zoning of the site and associated policies and objectives.

Based on a site visit carried out on November 9th, 2022 and desktop analysis of the subdivision proposal and the site's ecological context, it is considered that the potential adverse ecological effects can be sufficiently avoided, remedied, mitigated or off-set through a combination of integrated design principles, current WDP and NRC controls, and following recommendations made within the relevant expert reporting prepared for the application, in addition to the recommendations made within the body of this Ecology Memo. Should any subsequent land development within the subdivision site be carried out in accordance with the applicable performance standards it would provide an

opportunity to protect and enhance the current ecological features contained within the site boundaries and adequately off-set any vegetation loss, and deliver overall ecological and amenity enhancement outcomes for the site.

It is considered that the application sufficiently addresses potential effects on Waitaua Stream environment, noting that the immediate development footprint and Waitaua Stream environment is to be physically separated though the establishment of recreational reserves (being Lot 200 and 201) which are proposed to be appropriately revegetated with indigenous revegetation plantings. This will aid treatment of residual surface flows/discharges, filtration of sediment and contaminants, improving water quality for the Waitaua Stream. The planting is expected to give rise to positive ecological effects, such as improving the ecological condition of the Waitaua Stream by offering a vegetated buffer zone, improved fauna habitat quality and higher vegetation diversity. The revegetation in this zone will also aid to achieving a higher level of visual amenity and enjoyment of the residents of the proposed subdivision and other people using this area for recreation.

It is recommended that the preparation of a standalone document such as a Revegetation Planting Plan setting out planting requirements, including site preparation for planting and weed control, plant specifications (species, grades, spacings) and overall ongoing management of the recreational reserve planting areas for a minimum of 5 years is to be conditioned as a part of the Resource Consent. The Revegetation Planting Plan should take into the consideration the recommendations made within the body of this report, in particular recommendation of the use of larger grade puriri trees within the proposed revegetation areas to off-set the removal of the existing puriri trees within the immediate development footprint.

5.0 REFERENCES

de Lange, P. J., Rolfe, J. R., Barkla, J. W., Courtney, S. P., Champion, P. D., Perrie, L. R., . . . Ladley, K. (2017). *Conservation status of New Zealand indigenous vascular plants, 2017*. Wellington: Department of Conservation.

NIWA. (2018). New Zealand Fish Passage Guidelines. Retrieved from https://niwa.co.nz/static/web/freshwater-and-estuaries/NZ-FishPassageGuidelines-upto4m-NIWA-DOC-NZFPAG.pdf

Singers, N.J.D., Rogers, G.M. (2014) A classification of New Zealand's terrestrial ecosystems. Retrieved from https://www.doc.govt.nz/documents/science-and-technical/sfc325entire.pdf

Singers N., Osborne B., Lovegrove T., Jamieson A., Boow J., Sawyer J., Hill K., Andrews J., Hill S., Webb C. (2017). Indigenous terrestrial and wetland ecosystems of Auckland. Auckland Council.

Whanagrei District Council (2022). District Plan Operative in Part 2022. Retrieved from https://www.wdc.govt.nz/Services/Planning/Operative-District-Plan#section-1