w: www.ecoLogicalsolutions.co.nz



31 April 2024

Colliers Project Leaders

Attn: Rob Dol Cc: Fraser McNutt, B&A Urban and Environmental

SL1 Fast Track Referral Application - Ecology

Introduction & Project Description

The proposed project for which a fast-track application is being applied for is the consenting and construction of:

Concurrent land and subdivision for residential development across a gross area of approximately 48ha (shown as areas shaded orange and denoted as 1A and 1B in the attached). This includes 1,000-1,200 units in a range of typologies, as well as the establishment of associated works, roads and infrastructure.

And,

Concurrent land and subdivision for general industrial use over an area of approximately 80ha (shown as areas shaded purple and denoted as IA and IB in the attached), as well as the establishment of associated works, roads and infrastructure;

SL1 is an extensive area of land that is exclusively contained within Waipa District Council and contiguous with Hamilton City Councils southern boundary. This project seeks to give effect through consent applications for the first stages of industrial and residential respectively.

The purpose of this project is to provide affordable housing with the associated infrastructure and pertaining to stormwater management and discharge along with critical roading connectivity to enable the residential development of SL1, a 'future urban enablement area in Hamilton south (Figure 1). The SL1 growth cell has a planned capacity of approximately 10,000 homes (noting this could increase with the recent proposed change under HCC's Plan Change, giving effect to the NPS UD).

Ecological Solutions are engaged to undertake the initial terrestrial and aquatic ecological assessment to support the application for a referred fast track project. This letter provides a high-level review of the ecological aspects of the proposal, including:

- Summary of the project;
- Site description and high-level ecological assessment of proposal including potential effects.



Figure 1. SL1 project area.

SL1 Fast Track Referral Application - Ecology

Anticipated Scope

Trained and experienced ecologists will deliver all of the ecological outputs for the project through to consenting including a description of the current ecological values, an assessment of ecological effects and methods to avoid, remedy, mitigate and, if necessary, offset or compensate for those effects and the preparation of management plans required to address any effects on ecological values.

Once the necessary resource consents are obtained, properly trained and qualified ecologists also assist with implementation of the environmental management plans as required.

Background Analysis and Receiving Environment

Information on which to assess the ecological values of SL1 has been gathered from a range of sources including Waipa District and Waikato Regional Council reports, national databases such as the New Zealand Freshwater Fish Database, Southern Links roading project reports, the Peacockes Structure Plan reports and the Mangakōtukutuku Stream Integrated Catchment Management Plan (Hamilton City Council 2020).

The northern boundary of the SL1 is the current southern limit of the Hamilton urban area and the Peacockes Structure Plan area. The Southern Links Road will form the southern boundary of the SL1 area except in the northern most portion of the SL1 area where the Southern Links Road will bisect the area. Ohaupo Road forms the eastern boundary of the SL1 area with Peacockes Structure Plan area located to the immediate east and north of Ohaupo Road.

Current land use within the project area and to the immediate south is intensive dairy farming with soils throughout the majority of the site being peat. Indicative flood maps indicate that a high proportion of the SL1 area is susceptible to flooding.

The eastern portion of the SL1 area is located in the middle reaches of the Mangakōtukutuku Stream catchment. The lower Mangakōtukutuku Stream catchment is one of six gully systems that enter the Waikato River within Hamilton City. The impervious portion of the lower urbanised part of the catchment is approximately 12% (Jones et al 2012 cited in Quilter and Miller 2014). The Mangakōtukuku Stream receives agricultural and urban stormwater and is subject to other pressures associated with urban land use such as reduced connectivity associated with piping, stream bank erosion and sediment inputs. Williamson (2001) cited in Quilter and Miller (2014) estimated that 70% of suspended sediment carried by the Mangakōtukutuku Stream is derived from rural areas in the catchment.

The upper reaches of the Mangakotuktuku Stream catchment are dominated by the now very highly modified Rukuhia Swamp, formerly a large peat bog that has been extensively drained since at least the 1920's. The water quality in the upper reaches is characterised by tannin staining from the peat geology of the catchment.

Terrestrial Ecological Values

There are **no** Significant Natural Areas (SNAs) located within the SL1 area. There are two SNA's in the downstream (urban) section of the Mangakōtukutuku Stream as shown in Figure 2.

The vegetation cover is as expected on farmland dominated by exotic pasture with hedgerow vegetation and occasional specimen trees spread across the SL1 area. The most significant vegetation within the SL1 area appears to be an area of indigenous forest located in the southern portion of the SL1 area. Based on our initial assessment this area of indigenous vegetation may be worthy of protection and restoration.

A single record of an unidentified lizard exists at a location in the south eastern corner of the SL1 area. The potential lizard habitat within the SL1 area is likely to be limited to the area of indigenous forest as well as hedgerows and long rank grass associated with some boundary areas and watercourses. With the proposed protection and restoration of the better lizard habitat and suitable mitigation, such as implementing a lizard management plan including salvage and relocation, lizards are not considered to be a significant ecological constraint.

The Mangakōtukutuku Stream gully system has been identified as significant longtail bat habitat (Kesells and Associates 2012). The extent to which longtailed bats roost, forage or fly over the SL1 area will need to be investigated thoroughly to assess the extent of use by bats. Field survey findings will be needed to identify what, if any, longtailed bat habitat needs to be protected, or if that is not possible the significant residual effects avoided, remedied, mitigated or offset. With the implementation of suitable avoidance, remedies, mitigations and offsetting in accordance with a bat management plan effects on bats are able to be managed and bats are not considered a significant ecological constraint.

Wetland Values

No information was identified as to the formation, history or ecological habitat values of the two open water areas within the SL1 area (Figure 2). If these open water areas are, in fact, peat lakes or have taken on the characteristics of nearby peat lakes then they could potentially provide significant habitat for a range of indigenous flora and fauna. Irrespective of their history, based on this initial assessment the two open water areas appear to have the potential to be restored and protected and in time to support significant ecological values. Retaining and restoring these areas is a significant opportunity to enhance the ecological values within the SL1 and wider Mangakōtukutuku Stream catchment.

The SL1 area is located within the former Rukuhia Swamp, is low lying and has peat soils. Without drain clearance and management the SL1 area could potentially support more wetland habitat than currently exists. It appears, based on aerial photographs, that there are likely to be small and discontinuous areas that would qualify as NPS-FM natural inland wetlands particularly in the southern half of the SL1 area and an area near the northern end of the SL1 area.

Areas that could potentially qualify as NPS-FM natural inland wetlands are associated with the head of several drains in the southern portion of the SL1 area. Larger areas of potentially qualifying NPS-FM natural inland wetlands are associated with the open water areas. This larger potential wetland area is associated with the large area of indigenous forest within the SL1 area and could form part of an SNA depending on the results of field surveys.



Figure 2. Protected areas and ICMP wetlands within the SL1 area and surrounds.

ecoLogical Solutions

Freshwater Ecological Values

The SL1 area is located within the very highly modified Mangakōtukutuku Stream catchment. The freshwater habitat within the upper Mangakōtukutuku Stream catchment, including within the SL1 area, has been very highly modified through drainage and channelisation and as result the habitat values of the watercourses are currently very low (Figure 3). It is highly likely that field surveys of the SL1 area will identify other artificial and possibly some other highly modified streams beyond those shown on Figure 3. There is considerable opportunity to naturalise and restore channelised streams within the SL1 area by introducing meanders, woody debris and through riparian planting and the removal of farm culverts.

Despite the high level of modification, the Mangakōtukutuku Stream catchment supports at least ten native fish species including longfin eel, giant kokopu and torrentfish. Based on this initial assessment there appears to be little if any suitable habitat within the SL1 area for giant kokopu or torrentfish. Shortfin and longfin eel are likely to be common throughout the highly modified watercourses within the SL1 area.

Black mudfish have not been recorded in the NZFFDB within the SL1 area, nor in the nearby Peacockes Structure Plan area. Black mudfish are patchily distributed in wetlands and drains with suitable habitat and hydrological conditions throughout the Waikato and it is quite possible this species does occur in suitable habitat within the middle and upper catchment including within the SL1 area. Freshwater crayfish (koura) are reported as abundant in parts of the Peacockes branch of the Mangakōtukutuku Stream and have also been recorded in small numbers in other parts of the catchment.

Based on our initial assessment it is possible that the two open water bodies support a range of aquatic biodiversity values similar to those found in nearby peat lakes such as Lake Cameron including aquatic plants and invertebrates that area adapted to the peat-stained low pH environments typical of peat lakes and ponds.

With effective application of the effects management hierarchy, in accordance with a fish management plan, watercourses and native fish are not considered to be a significant ecological constraint.



Figure 3: Watercourses within the SL1 area and wider Mangakōtukutuku catchment.

Actual and Potential Ecological Effects

Despite its highly modified state and long history of agricultural development, parts of the SL1 area support significant terrestrial (e.g., longtail bats) and freshwater (e.g., giant kokopu) ecological values. The urban development of SL1 creates considerable opportunities to enhance and protect the ecological values within the SL1 area and wider catchment. Opportunities to enhance the existing ecological values include:

- Improving connectivity of stream habitat through the removal of farm culverts.
- Improving the connectivity along the streams by undertaking riparian restoration.
- Improving key habitat integrity (indigenous forest remnant, streams and wetlands) through restoration and protection.
- Undertaking development in a manner that reduces stormwater erosion effects within the SL1 area and downstream.
- Restore and protect, where achievable, all highly modified streams.
- Restore and protect, where achievable, all NPS-FM qualifying natural inland wetlands.
- Identify and where achievable restore and protect black mudfish, longfin eel and giant kokopu habitat.
- Identify and where achievable restore and protect longtail bat habitat.
- Identify and where achievable restore and protect native lizard habitat.
- Identify and where achievable restore and protect native bird habitat.

The proposed urban development of the SL1 area will involve significant works which have the potential for adverse effects if not managed appropriately. Anticipated effects include:

- Removal of poor quality, predominantly exotic terrestrial vegetation and habitats and the effects of this loss on any terrestrial fauna (birds, lizards, bats) resident within the project area.
- Restoration of highly modified stream habitats. Although the medium- to long- term effects are expected to be positive due to the proposed restoration efforts, effects on fish living in the drains will need to be managed through the development process.
- Unavoidable loss of low-quality wetland habitat (via groundwater draw down and/or earthworks).
- Unavoidable loss or modification (via groundwater draw down and/or earthworks) of artificial drains which may provide habitat for black mudfish and native fish such as eels.
- Potential adverse effects on water quality and aquatic life due to the sediment and/or contaminant discharges.
- Depending on timing, the potential disturbance of fish migration and spawning during the works.
- The potential for the temporary restriction of fish passage.
- The potential for introduction of weed and pest species.

The approach to addressing each of these effects is set out in the following section.

Approach to Addressing Effects

- The removal of predominantly exotic vegetation (or habitats) can be managed to avoid adverse effects on native fauna. A management plan approach is proposed to address any effects on birds, lizards and bats so that they are avoided or adequately mitigated. Management of fauna would subject to the provisions of the Wildlife Act 1953 and will likely require specific authorisation under that legislation.
- Effects due to the implementation of the stormwater management plan on native fish can be addressed via the timing of any instream works, watercourse diversions, fish relocation and aquatic habitat creation in the new watercourses.
- Effects on wetlands would likely include the removal of some highly modified wetlands within the project footprint, and the potential for varying degrees of effect due to groundwater draw down in other wetlands.
- The loss of low quality natural inland wetland habitat will be addressed via avoidance where practicable, and where loss cannot be avoided, remedied or mitigated in accordance with the effects management hierarchy, biodiversity offsetting and/or aquatic compensation will be implemented. In addition to any specific offsetting or compensation, stormwater treatment wetlands constructed as part of the development of the SL1 area would be designed to maximise their ecological value as habitat for native species. The potential for wetland loss and the approach to wetland offsetting is discussed in further detail in the following section.
- The loss of black mudfish habitat (if any is identified) will be addressed through a Black Mudfish Management Plan.
- The magnitude of adverse effects on water and aquatic habitat quality will be substantially reduced via best practice approaches to the timing of works and through careful construction methodologies and erosion and sediment control measures implemented in accordance with existing Waikato Regional Council guidelines.
- Construction within the SL1 area will involve instream works and physical habitat changes which have the potential to disrupt migration and spawning for native fish. These effects will be reduced by managing the timing of the works and use of welldesigned temporary diversion channels as required to allow fish passage around any active works.
- There is the potential for fish to be directly affected during construction. Timing the works to ensure new habitats are created before existing habitats are removed, diversions are in place and fish capture and transfer can be used to manage the direct impacts of harm or habitat loss on native fish. These effects, including on black mudfish, would be addressed via dedicated management plan(s).
- If inappropriately designed or installed, the stormwater and other infrastructure has the potential to affect fish passage. To address this, fish passage will be designed in accordance with best practice solutions, drawing on the New Zealand Fish Passage Guidelines (NIWA, 2018).
- The potential for the introduction of weeds and pests can be managed via a weed management plan which includes biosecurity protocols (e.g., for earthworks machinery entering the site) and including weed and pest management as part of habitat restoration.

Potential Wetland Loss and Offsetting Approach

Once the extent of the effects of any unavoidable loss of wetlands has been confirmed, the options for remedying and mitigating any effects have been identified and more detailed surveys and/or monitoring have been completed within both affected wetlands and any potential restoration sites, the extent of offsetting required will be calculated using a transparent modelling tool such as the Biodiversity Compensation Model (Baber *et al.* 2021). The goal of offsetting will be to achieve a net gain in wetland biodiversity. Best practice restoration activities for wetlands include a combination of the following activities:

- Retirement from livestock grazing/access.
- Fencing to exclude livestock.
- Planting of ecologically appropriate species.
- Weed control.
- Animal pest control.
- Formal legal protection (covenanting or similar).

Depending on the extent of overall effects, wetlands outside of the SL1 area may be required. If offsite wetland restoration is required, opportunities will be sought via regional and district councils as a priority, followed by conservation groups and private landowners.

Public Good

The SL1 project is expected to improve the overall ecological values (both terrestrial and aquatic) within the SL1 and wider area in the medium – long term. Revegetation of the riparian areas will increase the extent and improve the quality of habitats for terrestrial indigenous species and improve ecological resilience and integrity as well as connectivity.

Stage One

The proposed Stage 1 development comprises an industrial area immediately south of Deanwell/Glenview and a residential area south of the suburb of Glenview (Figure 4).

The proposed Stage 1 industrial land is very highly modified and comprises a northern portion which is occupied by the Hamilton refuse transfer station. The northern portion of the Stage 1 industrial area is bound by what are likely to be artificial drains on the southern and eastern edges. The southern portion of the Stage 1 industrial area is currently used for pasture and maize growing. This area has what appear to be artificial drains on its southern and northern edges with at least one lateral drain running between the two. The Stage 1 industrial land is characterised by a very high level of ecological disturbance and is expected to support minimal indigenous terrestrial vegetation or habitats for lizards, birds or bats.

The proposed Stage 1 industrial land may contain NPS-FM qualifying natural inland wetlands and the drains could support black mudfish. If field surveys confirm the presence of NPS-FM qualifying wetlands or black mudfish the effects of development will need to be managed as set out above.

The Stage 1 residential land and watercourses have also been very highly modified by farming and drainage activities. The Stage 1 residential area is bound by the western edge of Hamilton City (suburb of Deanwell). The Stage 1 residential area is bisected by what appear to be the highly modified (through channelisation), but recently fenced and planted, upper Mangakōtuktuku Stream channels. There are a number of large specimen trees scattered in the southern portion of the Stage 1 residential area. The Stage 1 residential area is characterised by a very high level of ecological disturbance and is expected to support minimal indigenous terrestrial vegetation or habitats for lizards, birds or bats.



Figure 4: Stage 1 industrial and residential areas.

SL1 Fast Track Referral Application - Ecology 11/12

ecoLogical Solutions Environmental Consultants The proposed Stage 1 residential land may contain NPS-FM qualifying natural inland wetlands and the highly modified streams and artificial drains could support black mudfish. If field surveys confirm the presence of NPS-FM qualifying wetlands or black mudfish the effects of development will need to be managed as set out above.

Conclusion

The anticipated adverse ecological effects of developing SL1 are manageable through the development and implementation of suitable conditions of consent and the use of site-specific management plans for particular species (bats, lizards, black mudfish) and habitats (streams and wetlands). With respect to wetlands and black mudfish, any unavoidable loss of habitat would require biodiversity offsetting either within or near the SL1 area. A detailed ecological assessment and ecological management/ offsetting plan will be included in the resource consent application, should the application be accepted as a referred project.

Qualifications and Experience

Ecological Solutions Ltd. are expert freshwater and terrestrial environmental consultants with offices in Auckland, Tauranga and Northland from where we service our national client base. Richard Montgomerie is Ecological Solutions Managing Director and a freshwater ecologist with over 26 year experience. Dr Gary Bramley (former owner and director of The Ecology Company, founded 2016) is the terrestrial team lead and Nick Carter is the freshwater team lead, each with more than 20 years' experience managing a diverse range of environmental projects, including significant infrastructure and housing projects, throughout the country.

Ecological Solutions has extensive experience in the Waikato Region, having provided ecology services for numerous land development projects and primary sector clients there for many years. Gary is currently the project manager for the Rotokauri Greenway Project together with Rebecca Bodley one of our senior terrestrial ecologists. Ecological Solutions are experienced in developing appropriate mitigation and biodiversity offsets required to offset terrestrial, wetland and stream habitat loss for a range and flora and fauna, including wetlands and black mudfish for the Rotokauri Greenway Project. The most recent example of black mudfish offsetting they have undertaken included the development and implementation of an enhancement plan for Lake Waiwhakareke to offset loss of habitat for mudfish associated with another local project.

References

- Baber, M, Dickson, J, Quinn, J, Markham, J, Ussher, G, Heggie-Gracie, S, and Jackson, S (2021). A Biodiversity Compensation Model for New Zealand A User Guide (Version 1). Prepared by Tonkin & Taylor Limited. Project number 1017287.0000P.
- B. Quilter and D. Miller 2014: Urban Stream Restoration Erosion Control and Fish Habitat Engineering. New Zealand 2014 Stormwater Conference Paper.
- Hamilton City Council 2020: Mangakōtukutuku Integrated Catchment Management Plan Consultation Version. November 2020.

Kessels and Associates 2012: Hamilton City Bat Survey 2011 – 2012.

NIWA. 2018. New Zealand Fish Passage Guidelines for structures up to four metres. Unpublished NIWA Client Report No: 2018019HN version 1.2. April 2018. National Institute of Water and Atmospheric Research, Hamilton. 160pp + appendices.