



Ecological Impact Assessment – Rolleston Access Improvements – Roundabout (Package 1)

Ecological Impact Assessment

Prepared for New Zealand Transport Agency Waka Kotahi
Prepared by Beca Limited

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Revision History

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Action	Name	Signed	Date
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on behalf of	Beca Limited		

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Executive Summary

NZ Transport Agency (NZTA) has engaged Beca Limited (Beca) to prepare an Ecological Impact Assessment (EclA) to support a Notice of Requirement and resource consent applications (under the Resource Management Act 1991(RMA)) for works to upgrade the Rolleston transport network. This report sets out an assessment of the ecological values of the site that may be impacted by the proposed works to determine ecological effects and the need for any management measures.

Ecological values within the project corridor are confined to common native birds and southern grass skink (At Risk – declining) and their habitats. No significant indigenous vegetation or ecologically valuable freshwater habitat is present.

Adverse **ecological effects** associated with the proposed upgrades that impact on these ecological features are:

- Permanent loss of terrestrial habitat for avifauna and herpetofauna
- Temporary disturbance of avifauna and herpetofauna
- Injury/mortality of avifauna and herpetofauna

Effects management is required to avoid and minimise adverse effects on native fauna and includes:

- Minimisation of native fauna habitat clearance during construction.
- Implementation of native fauna management protocols including:
 - Southern grass skink salvage and relocation during construction.
 - Habitat enhancement at skink release site including provision of habitat features and predator control.
 - Avoid vegetation clearance of suitable native bird nesting habitat during breeding season for affected species.
 - Bird nest survey and protection if breeding season cannot be practicably avoided.
- Selection of native species for landscape design that are appropriate to the Ecological District and site-characteristics.

Following the implementation of these management measures, the overall level of ecological effects will be managed to **Low – Negligible** levels with no adverse residual effects expected.

Furthermore, positive ecological effects include an increase in the extent and diversity of native vegetation from landscape and amenity plantings within new stormwater wetlands.

1 Introduction

1.1 Purpose and Scope

NZTA has engaged Beca to prepare an EclA to support a Notice of Requirement and resource consent applications (under the Resource Management Act 1991(RMA)) for works to upgrade the Rolleston transport network, known as the State Highway 1 (SH1) Rolleston Access Improvements Project.

For context purposes, the SH1 Rolleston Access Improvements Project has been divided into two packages to enable practical delivery and operational efficiency. This EclA is in relation to Package 1 relating to the construction of a roundabout, shared path and associated improvements at the intersections of SH1, Dunn's Crossing Road and Walkers Road (referred to as "the Project" for the purposes of this EclA).

Package 2 is assessed separately and relates to works in the vicinity of Rolleston Drive including construction of an overpass and associated improvements at the intersections of SH1, Rolleston Drive, Hoskyns Road and Jones Road

The purpose of this EclA is to determine the ecological values of the Project site, identify and assess any adverse effects on these values (associated with the proposed works).

The scope of this report includes:

- A desktop-based review of information held by council databases, as well as other publicly accessible reports, data, and information;
- A site visit to the works area on 22 July 2024
- An assessment of the ecological features and values in the project corridor;
- An assessment of the ecological effects and recommended management prepared in general accordance with the EIANZ Ecological Impact Assessment Guidelines (Roper-Lindsay et al., 2018).

1.2 Statutory Context

The road improvements require a Notice of Requirement (NOR) to designate land under the RMA in the Selwyn District Plan (Partially Operative).

Further details can be found in the Assessment of Effects on the Environment Report for Rolleston Access Improvements: Package 1 – Roundabout (the AEE).

For this EclA consideration has been given, in relation to valuation of ecological features, to policy directives outlined in the National Policy Statement for Freshwater Management 2020 (NPS-FM), National Policy Statement for Indigenous Biodiversity (NPS-IB), and obligations under the Wildlife Act 1953 and Conservation Act 1987.

A designation, if confirmed, will override the provisions of the Partially Operative Selwyn District Plan (POSDP). For this reason, the rules of the POSDP have not been considered for this EclA, however consideration has been given to the relevant ECO-Objectives and Policies within the POSDP.

1.3 Project Overview

1.3.1 Site Location

The Package 1 project corridor is located in the vicinity of the intersection of SH1, Dunns Crossing Road, and Walkers Road (*Figure 1*). SH1, the rail line, Dunns Crossing Road, and Walkers Road have been present (in their current alignment) in the earliest available historical imagery from c. 1940s. Presently, the site is comprised of existing roads, road verges, pasture, and the railway crossing.

1.3.2 Summary of Works

Package 1 works in the vicinity of SH1 and Dunns Crossing Road involve the construction of a roundabout to the south-west of the existing intersection. This requires the realignment of all approach roads, and a pedestrian/cyclist subway to enable safe crossing of SH1, and ancillary activities including stormwater detention ponds. The proposed works are detailed in the project’s AEE.

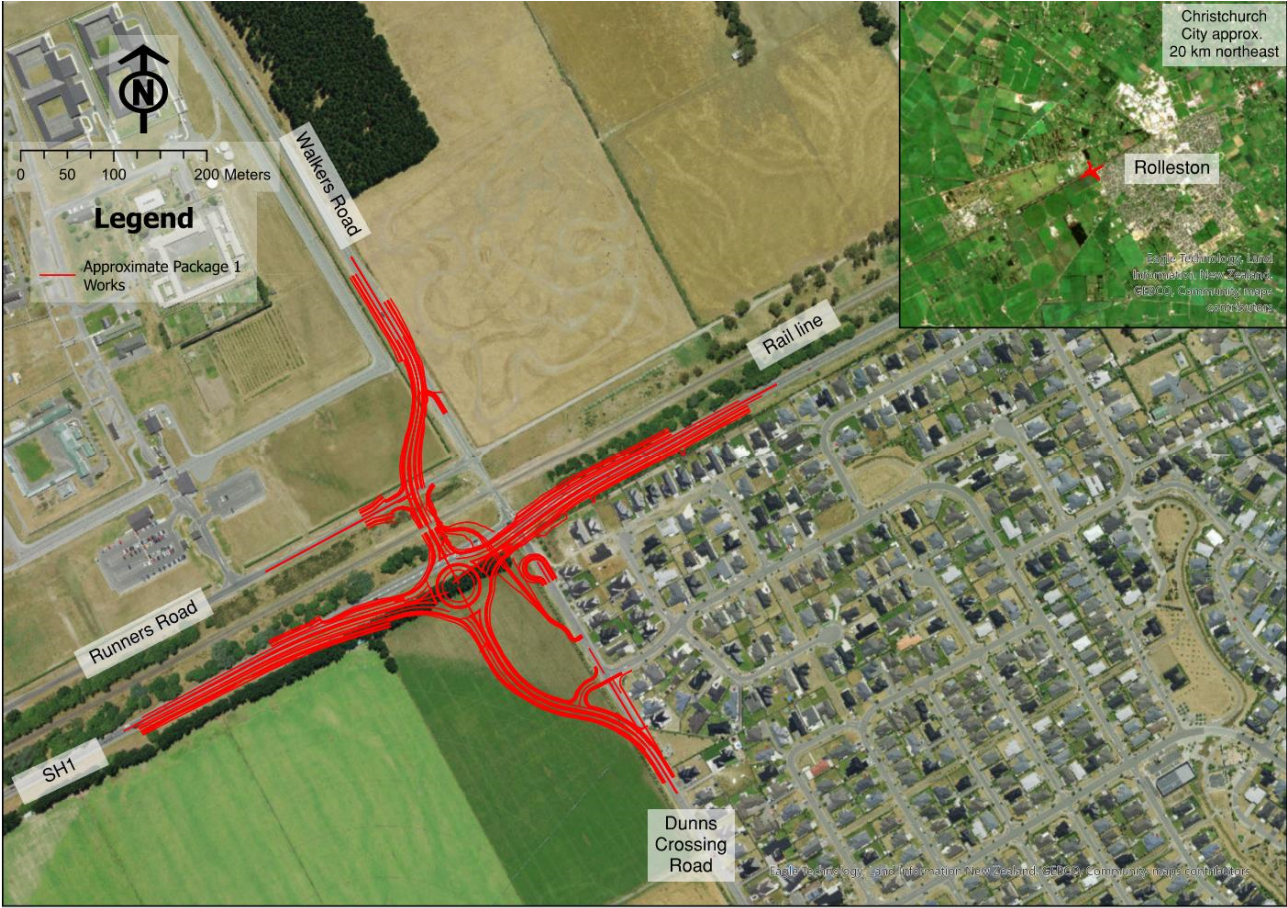


Figure 1. Approximate site location.

2 Methodology

2.1 Desktop Review

A desktop-based review was undertaken using ecological information from the following sources:

- Information held by Environment Canterbury (ECan), Selwyn District Council (SDC), and Department of Conservation (DOC) on the ecological values of the site;
- iNaturalist, eBird, and DOC Bioweb species data;
- Historical aerial imagery from Canterbury Maps and Retrolens; and
- Other publicly accessible reports or information (see Section 8)

2.1.1 Wetland Identification

A high-level aerial assessment for any possible wetlands was undertaken prior to undertaking the site visit. Contours and geomorphology were examined to indicate area where wetlands may naturally form. Recent historical aerials were assessed to identify any hydrological indicators as defined within the MfE wetland delineation hydrology tool (Ministry for the Environment, 2021). Additionally, DOC national wetland points and wetlands of representative importance were also reviewed¹. However, no wetlands or wetland indicators were identified.

2.1.2 Fauna

An initial desktop screen for presence likelihood of avifauna, herpetofauna, and bats was conducted to identify potential key ecological areas within the designation area. The methodology used is detailed in Section 2.2.2.

2.2 Field Investigation

A brief site visit was undertaken on 22 July 2024 to assess freshwater, terrestrial, and fauna habitat values. The weather was overcast. There was approximately 9 mm of rainfall² within the two weeks prior. Due to the nature of the site (State Highway 1), a full walkover was not practical for access and safety concerns. However, key areas were identified through the desktop review, and those key sites were visited.

2.2.1 Vegetation

A rapid vegetation assessment during the site walkover of accessible areas was undertaken. Where site access was not possible (due to the nature of the site – SH1), vegetation has been described using aerial and roadside photography (google street view, accessed 2024).

2.2.2 Fauna

Formal fauna surveys for the presence of avifauna, herpetofauna, and bats were not undertaken. Recent species records for herpetofauna, bats and avifauna records were used along with the vegetation survey to determine the range of fauna species likely to be present and to determine areas of suitable habitat that meet the ecological requirements for the identified species. Due to seasonal constraints, survey for lizards has

¹ Canterbury Maps; Wetland Points (DOC) and Wetlands of Representative Importance (DOC) layers from: <https://mapviewer.canterburymaps.govt.nz/> (accessed August 2024)

² MetService Te Ratonga Tiorangi - Measurements from the Christchurch Airport station (AWS-93781) (nearest to the site). Accessed 23 July 2024

been deferred to the summer months. Results and recommendations from these surveys will be provided as a supplementary report upon completion.

2.2.3 Likelihood for Presence

The likelihood of presence of fauna species based on a habitat assessed has been presented using a qualitative 5-point scale ranging from an occurrence being of low likelihood to one being of such high likelihood as to be almost certain (adapted from Ussher, 2015). A sixth point, “confirmed,” has been added based on confirmation during a site visit. The adapted likelihood scale is (from lowest to greatest likelihood of occurrence, or confirmation of presence):

- **Unlikely** – there is no evidence to support presence of that species, or the evidence available supports their absence.
- **About as likely as not** – the balance of evidence provides some small support for that species being present at the site.
- **Likely** – the balance of evidence provides a moderate degree of support for that species being present at the site.
- **Very likely** – the balance of evidence provides compelling support for that species being present at the site.
- **Virtually certain** – the balance of evidence is overwhelming (albeit still circumstantial) such that it is almost certain that the site supports that species; and
- **Confirmed** – observed during site visit.

2.3 Values and Effects Assessment

The ecological values and effects assessment was undertaken in accordance with *Ecological Impact Assessment (EclA) EIANZ guidelines for use in New Zealand: terrestrial and freshwater ecosystems* (Roper-Lindsay et al., 2018) in addition to the NZTA Ecological Impact Assessment Guidelines (2023). Professional opinion and expertise have been applied throughout the assessment.

3 Ecological Values

3.1 Ecological Context

The works for the Package 1 Project ('site') are located within the Low Plains Ecological District which forms part of the Canterbury Plains Ecological Region (McEwen, 1987). The district is characterised by relatively low rainfall (600-800 mm per annum) and cool winters with frequent frosts.

Former vegetation cover would have consisted of lowland short tussock land with some floodplain forest, supporting a diverse range of indigenous terrestrial fauna. However, the district has been highly modified for farming (sheep, cattle, and crops), exotic forest, as well as urban and suburbanisation (McEwen, 1987).

3.2 Indigenous vegetation

Vegetation within the project footprint is made up of mown grassland at the edge of the existing roads that widen out to areas of unmanaged rank grassland and exotic shelterbelt planting (Figure 2). Along SH1 and Dunns Crossing Road, a narrow strip of amenity roadside plantings are present. No Significant Natural Areas (SNAs) or key terrestrial features are present in or directly adjacent to the site.

Under the Selwyn District Plan (Partially Operative), only indigenous vegetation is protected and is defined as "*A naturally occurring community containing vascular plants, bryophyte or lichens that are native to the ecological district*". Amenity roadside planting does not meet the definition of indigenous vegetation as confirmed in discussion with Selwyn District Council.

Therefore, no indigenous vegetation values were identified for this project.

3.3 Exotic vegetation

The remainder of vegetation present within the project corridor is exotic grassland, pine shelter belts and scattered exotic trees. No plant pests (POSDP ECO-SCHEDI and the Canterbury Regional Pest Management Plan (2018)) or environmental weeds (Mcalpine & Howell, 2024) are present. Exotic vegetation, however, provides important habitat for native fauna and habitat values are discussed further in relation to native fauna values in Section 3.4-3.6.

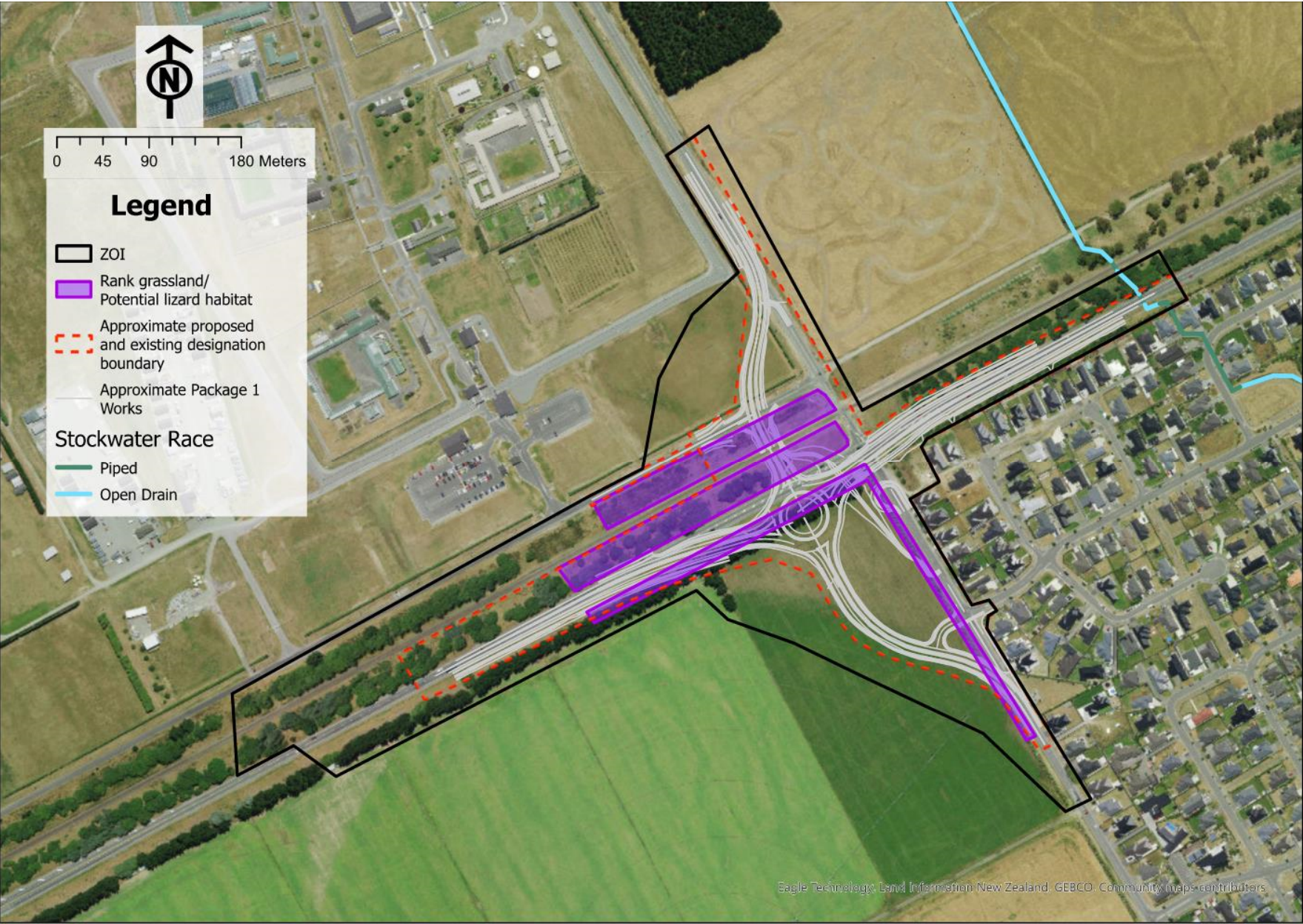


Figure 2. Proposed works and location of various vegetation types.

3.4 Avifauna

The avifauna value across the site is assessed as **Low** as all the avifauna species likely to be present at the site are commonly occurring “Not Threatened” native species and introduced species.

Species likely to be present were determined from records available from eBird within a 5 km radius of the proposed works and the presence of vegetation that provided suitable habitat for these species within the project corridor. Most of these observations were made away from the proposed works, and many species identified in this search area were excluded from the project footprint based on the lack of suitable habitat requirements.

The project corridor does however provide suitable habitat for native passerine birds (*Table 1*). These species are likely to roost, forage and possibly nest in mature trees and shrubs.

Common Name	Scientific Name	New Zealand Status	National Conservation Status	Habitat present within Site	Habitat Use
New Zealand Fantail	<i>Rhipidura fuliginosa</i>	Endemic	Not Threatened	Hedgerows and plantings	Foraging and roosting
Silvereye	<i>Zosterops lateralis</i>	Native	Not Threatened	Farmland, suburban gardens and plantings	Foraging and roosting
Swamp Harrier	<i>Circus approximans</i>	Native	Not Threatened	Farmland, pine forest remnants	Foraging

Table 1. List of native/protected avifauna species that have been recorded within 5 km of the site based on eBirds (eBird, 2022) that may be present at the site and their conservation status.

3.5 Herpetofauna

Herpetofauna values are assessed as **High** on the basis it is very likely that southern grass skinks are present within rank grassland within the project footprint.

No herpetofauna records available on the DOC database were found within proximity to the proposed works, however, this is likely due to a lack of herpetofauna surveys to date. Native skink and gecko species that have regional/national habitat ranges that overlap with the site include:

- Canterbury spotted skink (*Oligosoma lineoocellatum*) Nationally Vulnerable
- Waitaha gecko (*Woodworthia cf. brunnea*) At Risk–Declining
- McCann’s skink (*Oligosoma maccanni*) Not Threatened
- Southern grass skink (*Oligosoma aff. polychroma* Clade 5) At Risk–Declining

Of these species, only southern grass skinks are likely to be present given their preferred habitat requirements. The lack of preferred habitat characteristics and the lack of ecological connectivity to other natural areas rules out the presence of the other lizard species listed above. Suitable habitat for the southern grass skink is shown in *Figure 2*.

Additionally, a recent project, within the same Ecological District, relocated a total of 575 native southern grass skinks from rank exotic grasslands in similar roadside habitat as part of the Christchurch Southern Motorway Stage 2 (CSM2) development in 2016. This further supports the likelihood that southern grass skink could be present within the project footprint.

Due to the extensive modification of the Low Plains landscape, rank exotic grasslands along road corridors have generally become important habitat refuge for these native skinks, enabling populations to persist as a highly fragmented meta-population.

All native herpetofauna are legally protected from catching, holding captive, exportation and/or destruction by the Wildlife Act 1953.



Figure 3. Examples of potential lizard habitat at the site.

3.5.1 Herpetofauna habitat

Two distinct vegetation types providing potential suitable skink habitat have been identified in the Project area and are described in Table 2. A values assessment for the vegetation types is provided in Table 3.

Table 2. Summary of the lizard habitat at the site. See Figure 2 for their combined extent.



Vegetation Type	Description	Photographs
Roadside amenity planting (potential lizard habitat)	Typical roadside planting dominated by common native species such as flax, sedges, <i>coprosma</i> sp. and <i>pittosporum</i> sp.	
Rank grassland (potential lizard habitat)	Various grass species that are infrequently mown. Notably, near the rail line and the pine shelterbelt near the pasture.	

Table 3. Scoring and justification for assigned ecological value of vegetation at the site.

Matters	Value attribute ratings	Justification
Rank Grassland & Roadside Amenity Planting		
Representativeness	Negligible	<ul style="list-style-type: none"> Degraded example of habitat for indigenous fauna (southern grass skink)
Rarity/ Distinctiveness	Moderate	<ul style="list-style-type: none"> Rank, exotic grassland and the type of amenity roadside planting are both common throughout the Canterbury Plains, Rank grassland potentially supports populations of the At Risk – Declining southern grass skink.
Diversity and Pattern	Negligible	<ul style="list-style-type: none"> Low level of diversity Likely to support limited fauna assemblages
Ecological Context	Negligible	<ul style="list-style-type: none"> Potentially provides habitat for At Risk – Declining southern grass skink Surrounded by active roads, suburban areas, and managed pasture.
	Overall Value: Low	

3.6 Bats

It is very unlikely that native bats will be present in the project footprint due to the large distance to the nearest recorded population of long-tailed bats, coupled with the lack of suitable bat habitat e.g., the relatively young shelterbelt (~15 years) is the only area with mature trees present, without roost features and no nearby waterways.

Bat records sourced from DOC indicates that the nearest recorded population of long-tailed bats (*Chalinolobus tuberculatus*) is near Peel Forest and Geraldine (approximately 90 km southwest of the site) (Department of Conservation, n.d.). The nearest survey sites were 22 km southeast, 38 km east, and 45 km north of the site. No bats were recorded at any of these monitoring sites (Department of Conservation, 2023).

Although native bats have a large home range, they generally make use of vegetation (both exotic and indigenous) along streams or rivers that provide good foraging resources. They are also known to forage along forest edges adjacent to linear features such as roads however, this is usually in proximity to waterways.

As such, native bats have not been considered further within this report.

3.7 Native Fish

There is a single stockwater race that flows from the north to the south (towards the Pacific Ocean) and just crosses the planned works at the eastern-most extent. It is part of the Paparua Water Race network. The water travels through a mix of open drain and culverted/piped sections before reaching the site. Water level fluctuates, but the race is managed to maintain water flows.



Figure 4. Images of the southern (left) and northern (right) sections of the stockwater race.

The stockwater race is culverted beneath the road corridor but is an open drain on either side. The open drain portions adjacent to the road are relatively narrow (approximately 0.3 m), relatively unshaded, and surrounded by exotic vegetation. It remains above ground for approximately 5 m to the south before being piped beneath the residential area, and approximately 20 m to the north before being culverted beneath the railway line. It has a fine sediment bottom with approximately 20 cm of water. Under the Canterbury LWRP and the Selwyn District Plan (Partially Operative), stockwater races are included under the definition of “artificial watercourse” which excludes them from rules pertaining to “rivers.”

Review of the New Zealand Freshwater Fish Database (NIWA, 2023b) has identified four species in the connected stockwater race channels upstream of this section. They are listed, along with their NZ conservation status, in Table 4. Two species are “Not Threatened,” while the others (longfin eel and torrentfish) are “At Risk – Declining.”

Juvenile eels prefer shallow (<0.5 m), faster moving water with coarse substrate, where adults prefer to be in environments with large debris and/or undercut riverbanks (G. J. Glova & Bonnett, 1998; Jellyman, 2007). Neither of these habitats are found at this section of the stockwater race. Torrentfish were detected through eDNA at a sample location approximately 25 km upstream of the site. These inhabit swift moving water (torrents) within stony rivers and streams, using this substrate to anchor to the riverbed while feeding (NIWA, 2023a).

Table 4. List of species detected (electrofishing, traps, and/or eDNA) upstream of this section of stockwater race (NIWA, 2023b).

Common Name	Scientific Name	NZ Conservation Status	Canterbury Abundance ³
Shortfin eel	<i>Anguilla australis</i>	Not Threatened	Common
Longfin eel	<i>Anguilla dieffenbachia</i>	At Risk – Declining	Common
Upland bully	<i>Gobiomorphus breviceps</i>	Not Threatened	Common
Torrentfish	<i>Cheimarrichthys fosterae</i>	At Risk – Declining	Common

The consent relating to the water take from the Waimakariri River upstream of this stockwater race has attached conditions to “construct and commission fish exclusion structures” designed to “prevent the entrainment of fish in the race system.”⁴ With the measures in place to exclude fish from entering the stockwater race, combined with the habitat preferences of the identified species and the overall condition of the stockwater race, it is unlikely that the potential identified species will be present, and freshwater fish have not been considered further in this report.

³ NIWA Known Distribution maps (N.D.) <https://niwa.co.nz/freshwater/nz-freshwater-fish-database/niwa-atlas-nz-freshwater-fishes>

⁴ Consent conditions for CRC233859; issued 22 September 2014.

4 Ecological Effects

4.1 Proposed activities

The key project elements as they pertain to ecological effects include:

- Vegetation clearance of roadside plantings along Dunns Crossing Road and SH1
- Vegetation clearance of rank grassland surrounding the rail crossing and along Dunns Crossing Road

4.2 Zone of Influence/Scale of Assessment

The zone of influence (ZOI) is defined by the EIANZ guidelines as all land, water bodies, and receiving environments that could be potentially impacted by the proposed project and associated activities (Roper-Lindsay et al., 2018). For this assessment, the ZOI encompasses:

- The vegetation within the footprint of the proposed roundabout and associated works, extending to the new proposed designation area in some locations.
 - As construction methodology is not yet finalised, it is anticipated that some vehicle tracking may extend beyond the designation boundary between the rail line and Runners Road. This has also been considered as shown in *Figure 2*, with areas of potential lizard habitat outlined beyond the designation boundary.
- The Canterbury Plains Region for fauna, to capture local impacts on the subpopulations and capture highly mobile species that may utilise the site.

4.3 Effects Assessment

The ecological effects are associated with the actual or potential effects arising from the construction phase of the proposed works. No adverse effects will occur once the construction is complete as the project does not result in a change in land use and associated disturbance (noise, lighting, vibration) compared to existing conditions.

Potential adverse ecological effects due to the proposed works include the following:

- Permanent loss of southern grass skink habitat
- Temporary disturbance of indigenous avifauna and herpetofauna
- Injury/mortality of indigenous fauna

4.4 Construction Effects Level

4.4.1 Permanent loss of southern grass skink (At Risk-declining) habitat

a. Herpetofauna

Rank grassland and roadside amenity planting identified in *Figure 2*, provides potential habitat for southern grass skink.

A **Low** magnitude and **Low** overall level of southern grass skink habitat loss will occur because even though southern grass skink habitat is substantively reduced in the Canterbury Plains Region, the project footprint is situated in a wider, contiguous mosaic of similar habitat. In addition, the clearance area is a narrow strip within the proposed designation offering marginal habitat values. Southern grass skink can also be found in high densities in comparatively small pockets of suitable habitat and although habitat loss is low, there is risk of injury or mortality of southern grass skink (see Section 4.4.3).

4.4.2 Temporary disturbance of indigenous fauna

a. Avifauna

i. Swamp Harrier

The magnitude of effect of disturbance to the swamp harrier is assessed as **Low**, with the overall level of effect assessed as **Very Low**. While construction-related noise and movement, as well as human traffic (workers) can lead to disturbance of native fauna using the site, it is expected that a mobile species like the swamp harrier will be able to retreat to other available and connecting habitat in the wider surroundings once works commence. Furthermore, a baseline level of disturbance already exists from the vehicle traffic along SH1, Dunns Crossing Road, and Walkers Road.

ii. Silvereeye and Fantail

The magnitude of effect is assessed as **Low**, with the overall level of effect assessed as **Very Low**. As stated above, a baseline level of disturbance already exists along SH1 and Dunns Crossing Road. Additionally, it is anticipated that any potential silvereeyes and fantails currently utilising the site will relocate to nearby refuges (such as suburban gardens and parks) once works commence.

b. Herpetofauna

The magnitude of effect is assessed as **Moderate** and overall level of effect is assessed as **High** for herpetofauna. Construction-related noise and movement can lead to disturbance and displacement of native herpetofauna utilising the site. While it is expected that some of the southern grass skinks will relocate to nearby refuges in the contiguous rank grass outside of the project area, others will be fragmented between the vehicle tracking and the edges of the existing habitat.

4.4.3 Injury/mortality of fauna

a. Avifauna

i. Swamp Harrier

Due to their high mobility, swamp harriers have a reduced risk of injury/mortality; however, this risk increases during nesting/breeding seasons. Vegetation clearance during this time can potentially harm nesting birds, their eggs, or chicks, but this is considered a **Low** magnitude and **Very Low** overall effect due to the lack of nesting habitat for the Swamp Harrier within the ZOI. The existing habitat for Swamp Harrier related to the project consists of foraging habitat. As such, the likelihood of encountering an active nest is low, and any potential adverse effects would impact only a small proportion of the population since swamp harriers are regionally and nationally abundant. Outside nesting season, adult birds can likely relocate to other viable habitats as works commence.

ii. Silvereeye and Fantail

Vegetation clearance during earthworks can potentially harm nesting silvereeyes and fantails, as well as their eggs or chicks. This is considered a **Low** magnitude and **Very Low** overall effect due to the low likelihood of encountering active nests. Any potential injury/mortality would impact only a small proportion of the population, given their regional and national abundance. Outside the nesting season, adult birds are expected to self-relocate to other viable habitats as works commence.

b. Herpetofauna

Vegetation clearance, foot traffic, and vehicle traffic associated with earthworks can cause injury/mortality to native skinks. Given that southern grass skink can occur in high densities (as found on the CSM2 salvage and relocation) taking into account the small scale of habitat clearance, the magnitude of effect is assessed as **Moderate** magnitude of effect and a **High** overall level of effect.

4.4.4 Spread of weed species

Vehicle movements through the project corridor for construction have the potential to spread weed species, however, the existing vegetation values of the site are **Low**. Several exotic vegetation species are currently found within the ZOI, therefore, the magnitude of effect would be **Low**, with the overall level of effect of **Very Low**.

4.5 Operational Effects Levels

4.5.1 Increased indigenous vegetation extent and diversity

Planting of vegetation within stormwater wetlands and possibly roadside plantings as part of the stormwater infrastructure design, as follows:

- Between Walkers Road, Runners Road and the northern leg of the roundabout
- Between Dunns Crossing Road and the southern leg of the roundabout

Although amenity and stormwater plantings are not considered suitable ecological mitigation, they will increase the extent of vegetation types within the project corridor and over time, will provide habitat for native fauna and result in an overall positive effect.

5 Effects Management

The threshold for effects management is generally for a level of effect that is Moderate or higher. Professional judgement is also applied where the management of Low levels of effect is deemed necessary by a suitably qualified ecologist, for example, native wildlife management.

Adverse effects are managed by applying the effects management hierarchy in accordance with the policy direction set out in the NPS IB 2023. Consideration has also been given to meet the policies and objectives stated in the Selwyn District Plan (Partially Operative), such as ECO-01 and ECO-P6. Adverse effects that meet the management threshold include:

- Permanent loss of at-risk declining indigenous fauna habitat
- Temporary disturbance of at risk declining indigenous fauna
- Injury/mortality of at risk declining indigenous fauna

5.1 Minimisation Measures

5.1.1 Southern Grass Skink Avoidance Measures

a. Habitat retention

The intent of the project is to minimise vegetation clearance where it may provide southern grass skink habitat, where possible. The design team will continue working collaboratively to facilitate the minimisation of such vegetation clearance.

5.1.2 Minimisation measures:

Habitat loss, disturbance, injury and/or killing of native skinks will be managed to minimise adverse effects on their populations. A Lizard Management Plan (LMP) is recommended to guide the implementation of effects management measures for southern grass skink.

Effects management measures with detailed methods and management protocols will be set out in the LMP. The measures can include the following:

a. Survey

A survey will be undertaken in the 2024/2025 season, prior to the commencement of physical works to determine the abundance and diversity of native skink species (only southern grass skinks presumed present) within the Package 1 footprint. This will enable the development of appropriate lizard management techniques such as staged vegetation removal and/or salvage and relocation methods required immediately prior to and during vegetation clearance.

b. Onsite lizard management

Dependent on the population density recorded at the site, as informed by the survey, a potential option for lizard management at the site could be through staged vegetation management. This option may allow for onsite management of lizards without the need to disrupt the population through relocation. Methods for any potential onsite lizard management will be detailed in the LMP.

c. Salvage and Relocation

If salvage is deemed the most appropriate method of management, native skinks will be captured using live capture trapping (or other suitable salvage methodology, dependent on population determined during the survey) immediately prior and during vegetation clearance in accordance with a Wildlife Act Authorisation and overseen by the nominated, suitably experienced herpetologist. Capture and holding methods will be set out in detail in the LMP.

d. Relocation and Release site selection

Any lizards seen will be captured and handled by skilled field staff trained by the nominated, suitably experienced project herpetologist. Capture protocols will be detailed in the LMP but will include the following requirements at a minimum:

- Keeping the captured lizards in the shade,
- Details on methodology to prevent dehydration,
- Data to be collected for each captured individual,
- All captured lizards are to be released as soon as practicable to the nominated Release Site (within eight hours)

Release site selection will be based on criteria such as:

- Suitable habitat size and complexity
- To be located within similar habitat and climatic environments to the impacted site.
- Located close to the source population,
- Consideration around likelihood of future development

5.2 Weed spread hygiene measures

Though the overall level of effect has been assessed as **Very Low**, it is recommended that measures are taken to minimise the spread of pest plants as identified in the Selwyn District Plan (Partially Operative), ECO-SHEDI the Canterbury Regional Pest Management Plan and the List of Environmental Weeds in New Zealand ((Mcalpine & Howell, 2024).

To avoid the potential spread of these species, it is recommended that machinery is suitably sprayed down before it enters the site. This measure should be included in a site management plan.

5.3 Ecological Benefits / Positive Effects

5.3.1 Increased indigenous vegetation and native fauna habitat

The draft Urban Design and Landscape Framework (Beca, 2024) for the Project includes the following considerations, relevant to ecological values:

- Provide planting that focuses indigenous revegetation to address indigenous landcover loss.

This outcome can be maximised to achieve co-benefits as below:

- Preferential selection of native species that provide fauna habitat within roadside plantings to increase habitat complexity and foraging resources for fauna.
- Preferential selection of native species appropriate to the Ecological District.
- Eco-sourcing to maintain genetic integrity and fitness of native plantings.

Though the Landscape Plan has not yet been finalised, the above considerations will be integrated into design with collaborative input between the project ecologist and landscape architect.

6 Summary of Effects

A summary of the overall level of ecological effects before and following any related management measures is provided in Table 5.

Table 5. A summary of the overall ecological effects.

Potential Ecological Effect	Ecological Component	Ecological Value (RPS Significance)	Magnitude of Effect (unmitigated)	Overall Level of Effect (unmitigated)	Recommended Management	Magnitude of Effect (post-management)	Overall Level of Effect (post-management)
Permanent loss of indigenous fauna habitat	Herpetofauna	High	Low	Low	-	-	Low
Temporary disturbance of indigenous fauna	Swamp Harrier	Low	Low	Very Low	-	-	Very Low
	Silvereye and Fantail	Low	Low	Very Low	-	-	Very Low
	Herpetofauna	High	Moderate	High	Lizard survey, and potential relocation	Negligible	Negligible
Injury/mortality of indigenous fauna	Swamp Harrier	Low	Low	Very Low	-	-	Very Low
	Silvereye and Fantail	Low	Low	Very Low	-	-	Very Low
	Herpetofauna	High	Moderate	High	Lizard survey, and potential relocation	Negligible	Negligible
Spread of weed species	Vegetation	Low	Low	Very Low	-	-	Very Low
Increase in vegetation diversity	Various	N/A	Positive in the moderate to long-term	N/A	N/A	N/A	Positive

7 Conclusions

NZTA has proposed to undertake road access improvements in Rolleston, which has the potential to adversely affect the terrestrial vegetation, as well as the residential native avifauna and herpetofauna.

Potential adverse effects from the proposed works include:

- Permanent loss of terrestrial fauna habitat
- Temporary disturbance of fauna
- Injury/mortality of fauna

It should be noted that the works will also produce a positive outcome, as the creation of stormwater wetlands will increase vegetation diversity of the area.

Where possible, 'avoidance' (i.e., the first order of the effects management hierarchy) has been achieved through consideration in reducing the overall amount of vegetation clearance required, and thus the effects on the inhabiting fauna.

However, effect management is still recommended to reduce the risk of injury/mortality of fauna where possible through lizard management protocols guided by a detailed Lizard Management Plan (LMP).

No other effects were identified above a Low overall level of effect, and the designation will override the provisions of the POSDP. However, the design should take measures to achieve the ECO-Objectives and Policies within the POSDP. This can include the selection of native species in landscape design, as well as taking any opportunity to reduce the area of vegetation clearance necessary to complete the project.

Following the implementation of these management measures, the overall level of ecological effects associated with the project work will be managed to **Low – Negligible** levels with no adverse residual effects expected.

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Appendix A – Ecological Impact Assessment Guidelines

Assigning Ecological Value

Terrestrial and Freshwater Habitat/Community

The terrestrial and freshwater habitat features were assessed considering attributes in Table A6. Features of interest were subjectively given a rating on a scale of 'Very Low' to "High" for each attribute and assigned a value in accordance with the description provided in Table A7.

Table A6. Attributes to be considered when assigning ecological value or importance to a site or area of vegetation/habitat/community.

Matters	Attributes to be Assessed
Representativeness	<p>Criteria for representative vegetation and aquatic habitats:</p> <ul style="list-style-type: none"> • Typical structure and composition • Indigenous species dominate • Expected species and tiers are present • Thresholds may need to be lowered where all examples of a type are strongly modified <p>Criteria for representative species and species assemblages:</p> <ul style="list-style-type: none"> • Species assemblages that are typical of the habitat • Indigenous species that occur in most of the guilds expected of the habitat type
Rarity/Distinctiveness	<p>Criteria for rare/distinctive vegetation and habitats:</p> <ul style="list-style-type: none"> • Naturally uncommon, or induced scarcity • Amount of habitat or vegetation remaining • Distinctive ecological features • National priority for protection <p>Criteria for rare/distinctive species or species assemblages:</p> <ul style="list-style-type: none"> • Habitat supporting nationally Threatened or At Risk species, or locally uncommon species • Regional or national distribution limits of species or communities • Unusual species or assemblages • Endemism
Diversity and Pattern	<ul style="list-style-type: none"> • Level of natural diversity, abundance, and distribution • Biodiversity reflecting underlying diversity • Biogeographical considerations, considerations of lifecycles, daily or seasonal cycles of habitat availability and utilisation
Ecological Context	<ul style="list-style-type: none"> • Site history, and local environmental conditions which have influenced the development of habitats and communities • The essential characteristics that determine and ecosystem's integrity, form, functioning, and resilience (from "intrinsic value" as defined in RMA) • Size, shape, and buffering • Condition and sensitivity to change • Contribution of the site to ecological networks, linkages, pathways, and the protection and exchange of genetic material • Species role in ecosystem functioning – high level, key species identification, habitat as proxy

Table A7. Rating system for assessing ecological value of a freshwater or terrestrial system (Roper-Lindsay et al. 2018).

Value	Description
Negligible	Feature rates Very Low for at least three assessment attributes and Low to Moderate for the remaining attribute(s)
Low	Feature rates Very Low to Low for most assessment attributes and moderate for one. Limited ecological value other than provided habitat for introduced or tolerant indigenous species.
Moderate	Feature rates High for one assessment attribute and Low to Moderate for the remainder, <u>OR</u> the project area rates Moderate for at least two attributes and Very Low to Low for the rest. Likely to be important at the level of the Ecological District.
High	Feature rates High for at least two assessment attributes and Low to Moderate for the remainder, <u>OR</u> the project rates High for one attribute and Moderate for the rest. Likely to be regionally important.
Very High	Feature rates High for at least three assessment attributes. Likely to be nationally important.

Species

The EIANZ provides a method for assigning value (Table A8) to species for the purposes of assessing actual and potential effects of activities.

Table A8. Criteria for assigning ecological values to species (Roper-Lindsay et al. 2018).

Ecological Value	Species
Very High	Nationally Threatened species, found in the ZOI either permanently or seasonally
High	Species listed as At Risk – Declining, found in the ZOI, either permanently or seasonally
Moderate	Species listed as any other category of At Risk, found in the ZOI either permanently or seasonally
Moderate	Locally (ED) uncommon or distinctive species
Low	Nationally and locally common indigenous species
Negligible	Exotic species, including pests, species having recreational value

Assigning Magnitude of Impacts

The magnitude of impacts is determined by the scale (temporal and spatial) of potential impacts identified and the degree of ecological change that is expected to occur as a result of the proposed activity (Roper-Lindsay et al., 2018).

Based on the assessor's knowledge and experience, the magnitude of identified impacts on the ecological values within the project area and zone of influence were assessed and rated on a scale of 'Very High' to 'Negligible' based on the description provided in Table A9.

Table A9. Summary of the criteria for describing the magnitude of effect (Roper-Lindsay et al., 2018).

Magnitude	Description
Very High	Total loss of, or very major alteration to, key elements/features of the existing baseline conditions, such that the post-development character, composition, and/or attributes will be fundamentally changed and may be lost from the site altogether; AND/OR Loss of a very high proportion of the known population or range of the element/feature
High	Major loss or major alteration to key elements/features of the existing baseline conditions such that the post-development character, composition, and/or attributes will be fundamentally changed; AND/OR Loss of a high proportion of the known population or range of the element/feature
Moderate	Loss or alteration to one or more key elements/features of the existing baseline conditions, such that the post-development character, composition, and/or attributes will be partially changed; AND/OR Loss of a moderate proportion of the known population or range of the element/feature
Low	Minor shift away from existing baseline conditions. Change arising from the loss/alteration will be discernible, but underlying character, composition, and/or attributes of the existing baseline condition will be similar to pre-development circumstances or patterns; AND/OR Having minor effect on the known population or range of the element/feature
Negligible	Very slight change from the existing baseline condition. Change barely distinguishable, approximated to the 'no change' situation; AND/OR Having negligible effect on the known population or range of the element/feature

Assessment also considered the temporal scale at which potential impacts were likely to occur:

- Permanent (>25 years)
- Long-term (15-25 years)
- Medium-term (5-15 years)
- Short-term (0-5 years)
- Temporary (during construction)

Assessing the Overall Level of Effects

The overall level of effect on each ecological feature identified within the zone of influence were determined by considering the Value of impacted ecological habitat and species, and the Magnitude of impacts identified above (Roper-Lindsay et al., 2018).

Results from the assessment of ecological value and the magnitude of identified impacts were used to determine the level or extent of the overall impacts on identified ecological features within the project area and zone of influence using the matrix below.

Table A10. Matrix combining magnitude and value for determining the overall level of ecological impacts (Roper-Lindsay et al., 2018).

Effect Level		Ecological and/or Conservation Value				
		Very High	High	Moderate	Low	Negligible
Magnitude	Very High	Very High	Very High	High	Moderate	Low
	High	Very High	Very High	Moderate	Low	Very Low
	Moderate	High	High	Moderate	Low	Very Low
	Low	Moderate	Low	Low	Very Low	Very Low
	Negligible	Low	Very Low	Very Low	Very Low	Very Low
	Positive	Net Gain	Net Gain	Net Gain	Net Gain	Net Gain

Results from the matrix were used to determine the type of responses that may be required to mitigate potential direct and indirect impacts within the project area and within the zone of influence, considering the following guidelines (Roper-Lindsay et al., 2018):

- A ‘Low’ or ‘Very Low’ level of impact is not normally of concern, though design should take measures to minimise potential effects.
- A ‘Moderate’ to ‘High’ level of impact indicates a level of impact that qualifies careful assessment on a case-by-case basis. Such activities could be managed through avoidance (revised design) or appropriate mitigation. Where avoidance is not possible, no net loss of biodiversity values would be appropriate.
- A ‘Very High’ level of impact is unlikely to be acceptable on ecological grounds alone and should be avoided. Where avoidance is not possible, a net gain in biodiversity values may be appropriate.

B

Appendix B – Full List of Avifauna Records

Common Name	Scientific Name	New Zealand Status	Conservation Status
Australasian Shoveler	<i>Spatula rhynchotis</i>	Native	Not Threatened
Australasian Swamphen (Pūkeko)	<i>Porphyrio melanotus</i>	Native	Not Threatened
Australian Magpie	<i>Gymnorhina tibicen</i>	Introduced	Introduced and Naturalised
Black-billed Gull	<i>Chroicocephalus bulleri</i>	Endemic	Declining
Black-fronted Tern	<i>Chlidonias albostratus</i>	Endemic	Nationally Endangered
California Quail	<i>Callipepla californica</i>	Introduced	Introduced and Naturalised
Canada Goose	<i>Branta canadensis</i>	Introduced	Introduced and Naturalised
Common Chaffinch	<i>Fringilla coelebs</i>	Introduced	Introduced and Naturalised
Dunnock	<i>Prunella modularis</i>	Introduced	Introduced and Naturalised
Eurasian Blackbird	<i>Turdus merula</i>	Introduced	Introduced and Naturalised
Eurasian Skylark	<i>Alauda arvensis</i>	Introduced	Introduced and Naturalised
European Goldfinch	<i>Carduelis carduelis</i>	Introduced	Introduced and Naturalised
European Greenfinch	<i>Chloris chloris</i>	Introduced	Introduced and Naturalised
European Starling	<i>Sturnus vulgaris</i>	Introduced	Introduced and Naturalised
Gray Warbler	<i>Gerygone igata</i>	Endemic	Not Threatened
Gray Teal	<i>Anas gracilis</i>	Native	Not Threatened
Great Cormorant	<i>Phalacrocorax carbo</i>	Native	Relict
House Sparrow	<i>Passer domesticus</i>	Introduced	Introduced and Naturalised
Kelp Gull	<i>Larus dominicanus</i>	Native	Not Threatened
Lesser Redpoll	<i>Acanthis cabaret</i>	Introduced	Introduced and Naturalised
Little Owl	<i>Athene noctua</i>	Introduced	Introduced and Naturalised
Mallard	<i>Anas platyrhynchos</i>	Introduced	Introduced and Naturalised
Masked Lapwing	<i>Vanellus miles</i>	Native	Not Threatened
New Zealand Bellbird	<i>Anthornis melanura</i>	Endemic	Not Threatened

Common Name	Scientific Name	New Zealand Status	Conservation Status
New Zealand Fantail	<i>Rhipidura fuliginosa</i>	Endemic	Not Threatened
New Zealand Pigeon	<i>Hemiphaga novaeseelandiae</i>	Endemic	Not Threatened
New Zealand Pipit	<i>Anthus novaeseelandiae</i>	Endemic	Naturally Uncommon
Pacific Black Duck	<i>Anas superciliosa</i>	Native	Nationally Vulnerable
Paradise Shelduck	<i>Tadorna variegata</i>	Endemic	Not Threatened
Pied Stilt	<i>Himantopus leucocephalus</i>	Native	Not Threatened
Ring-necked Pheasant	<i>Phasianus colchicus</i>	Introduced	Introduced and Naturalised
Rock Pigeon	<i>Columba livia</i>	Introduced	Introduced and Naturalised
Sacred Kingfisher	<i>Todiramphus sanctus</i>	Native	Not Threatened
Shining Bronze-Cuckoo	<i>Chrysococcyx lucidus</i>	Native	Not Threatened
Silver Gull (red-billed gull)	<i>Chroicocephalus novaehollandiae</i>	Native	Declining
Silvereye	<i>Zosterops lateralis</i>	Native	Not Threatened
Song Thrush	<i>Turdus philomelos</i>	Introduced	Introduced and Naturalised
South Island Oystercatcher	<i>Haematopus finschi</i>	Endemic	Declining
Swamp Harrier	<i>Circus approximans</i>	Native	Not Threatened
Tomtit	<i>Petroica macrocephala</i>	Endemic	Not Threatened
Variable Oystercatcher	<i>Haematopus unicolor</i>	Endemic	Recovering
Welcome Swallow	<i>Hirundo neoxena</i>	Native	Not Threatened
White-faced Heron	<i>Egretta novaehollandiae</i>	Native	Not Threatened
White-fronted Tern	<i>Sterna striata</i>	Native	Declining
Yellowhammer	<i>Emberiza citrinella</i>	Introduced	Introduced and Naturalised

