ASSESSMENT OF EFFECTS ON THE ENVIRONMENT

NZ Transport Agency Waka Kotahi
SH1 Rolleston Access Improvements – Package 2 - Overpass

BECA LIMITED

30 NOVEMBER 2024

NZ TRANSPORT AGENCY WAKA KOTAHI

Contents

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QUALITY REVIEW AND APPROVAL RECORD

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ACRONYMS, TERMS AND ABBREVIATIONS

Acronym/Term	Description
ACM	Asbestos Containing Material
ADP	Accidental Discovery Protocol
AEE	Assessment of Effects on the Environment
AIA	Archaeological Impact Assessment
CAG	Cultural Advisory Group
CAR	Cultural Advice Report
CARP	Canterbury Air Regional Plan
CCC	Christchurch City Council
CDWPZ	Community Drinking Water Protection Zone
CMA	Coastal Marine Area
Corrections	Department of Corrections
CRC	Canterbury Regional Council
CRETS	Christchurch Rolleston and Environs Transportation Study
CNVMP	Construction Noise and Vibration Management Plan
CRPS	Canterbury Regional Policy Statement
CSM2	Christchurch Southern Motorway 2
CTMP	Construction Traffic Management Plans
DBC	Detailed Business Case
DOC	Department of Conservation
DMP	Dust Management Plan
DSI	Detailed Site Investigation
EED	Engineering Exception Decision
ESC	Erosion and Sediment Control
ESCP	Erosion and Sediment Control Plan
GIZ	General Industrial Zone
GPG Dust	Good Practice Guide for Assessing and Managing Dust (2016)
GRZ	General Rural Zone
HAIL	Hazardous Activity and Industries List
HIA	Heritage Impact Assessment
HNZPT	Heritage New Zealand Pouhere Taonga
HNZPTA	Heritage New Zealand Pouhere Taonga Act 2014
ITA	Integrated Transport Assessment
KAC	Key Activity Centre
KiwiRail	KiwiRail Holdings Limited
KPI	Key Performance Indicators
LFRZ	Large Format Retail Zone
LMP	Landscape Management Plan
LoS	Level of Service
LTP	Long-Term Plan
LTMA	Land Transport Management Act 2003
LVA	Landscape and Visual Assessment
LWRP	Canterbury Land and Water Regional Plan
MCA	Multi Criteria Assessment
MDA	Marshall Day Acoustics
MfE	Ministry for the Environment
MKT	Mahaanui Kurataiao Limited
MRZ	Medium Density Residential Zone
NES-AQ	National Environmental Standards for Air Quality 2004
NES-CS	National Environmental Standard for Contaminated Soils
NES-F	National Environmental Standards for Freshwater 2020
NPS-FM	National Policy Statement for Freshwater Management 2020
NPS-UD	National Policy Statement on Urban Development 2020
NZGTTM	New Zealand Guide to Temporary Traffic Management
NZTA	NZ Transport Agency Waka Kotahi

NZUP	New Zealand Upgrade Programme
NOF	Network Operating Framework
NoR	Notice of Requirement
OSDP	Operative Selwyn District Plan
Outline Plan	Pursuant to s176a RMA
PAH	Polycyclic Aromatic Hydrocarbons
PBC	Programme Business Case
POSDP	Partially Operative Selwyn District Plan
PPFs	Protected Premises and Facilities
Project	Package 1 of Rolleston Access Improvements
PSI	Preliminary Site Investigation
PWA	Public Works Act 1981
RCA	Road Controlling Authority
RDN	Rolleston Drive North
RIA	Rolleston Industrial Area
RIZ	Rolleston Industrial Zone
RMA	Resource Management Act 1991
RoNS	Roads of National Significance
RoRS	Road of Regional Significance
RPS	Regional Policy Statement
RSNP	Rolleston Strategic Network Plan
SDC	Selwyn District Council
SH1	State Highway 1
SIMT	South Island Main Trunk
TCZ	Town Centre Zone
TI	Threshold Increment
ULDF	Urban and Landscape Design Framework
UOA	Underground Overground Archaeology
UWLR	Upward Waste Light Radio
Wider Project	State Highway 1 Rolleston Access Improvements (inclusive of Package 1 and Package 2)

1 INTRODUCTION

1.1 Report Purpose

NZ Transport Agency Waka Kotahi (**NZTA**) is, pursuant to s181(1) of the Resource Management Act 1991 (**RMA**), serving a Notice of Requirement (**NoR**) to alter the designation for State Highway 1 (**SH1**) in the Partially Operative Selwyn District Plan (**POSDP**) for the purpose of enabling the second stage of the SH1 Rolleston Access Improvements. In summary these improvements are to enable safe and efficient state highway and local network access including for active modes.

For context purposes, the SH1 Rolleston Access Improvements Project has been divided into two packages to enable practical delivery and operational efficiency. These are:

- Package 1 - comprising the construction and operation of a new roundabout and associated improvements at the intersections of SH1 and Dunns Crossing Road/Walker Road and associated works.
- Package 2 – comprising the construction and operation of the balance of the Rolleston Access Improvements including an overpass of SH1 connecting Rolleston Drive North and Jones Road, changes to nearby intersections (including Hoskyns Rd, Tennyson St, and Rolleston Drive South) and associated works.

This Assessment of Effects on the Environment (**AEE**) report has been prepared, in accordance with Schedule 4 of the RMA, in support of the Package 2 NoR.

1.2 NZ Transport Agency Waka Kotahi

NZTA is a Crown entity with its functions, powers and responsibilities set out in the Land Transport Management Act 2003 (**LTMA**) and the Government Roading Powers Act 1989. The primary objective of NZTA under Section 94 of the LTMA is to contribute to an effective, efficient, and safe land transport system in the public interest.

Its core functions can be summarised as:

- investing in land transport activities;
- managing the state highway network; and
- providing access to and regulation for land transport.

Section 96(1)(a) of the LTMA requires that NZTA exhibits a sense of social and environmental responsibility when undertaking its work. This statutory requirement is reflected in a raft of strategic and policy documents. One of the core position statements is that NZTA will responsibly manage the land transport system's interaction with people, places, and the environment.

NZTA is also a network utility operator approved as a requiring authority under Section 167 of the RMA.

The legal name for NZTA is the New Zealand Transport Agency. The abbreviated name NZTA is used throughout this AEE.

1.3 Project overview

The SH1 Rolleston Access Improvements project (**the Wider Project**) has been identified by the Minister of Transport as a Road of Regional Significance (**RORS**), previously recognised through New Zealand's Upgrade Programme (**NZUP**).

As noted, the Wider Project comprises two packages and sits within a broader strategic context seeking to improve the safety and efficiency of the state highway network. SH1 is high-volume transport corridor of strategic importance and as such is identified as an inter-regional connector in the One Network Framework[1]. These are national state highways that make it safe, reliable, and efficient to move people and goods between and within regions. State highways often run through farmland and natural areas so there are low levels of roadside activity. State highways carry significant levels of motor vehicle traffic,

[1] *As shown in NZTA MegaMaps GIS viewer (Accessed 12 September 2024)*

including freight. In a strategic context the Wider Project will help deliver the regional and national outcomes sought from the SH1 corridor and the network.

The Wider Project is intended to respond to both existing transport deficiencies in this location on the network, including safety, and to enable easier connections across the state highway corridor. Package 2 improvements contribute to safer and more efficient travel along the highway, more reliable and safer access for vehicles going to/coming from Rolleston and improve connectivity between the industrial land to the north and residential land to the south and west of Rolleston.

The works for Package 2, which for the purposes of this report is hereon referred to as “the Project”, are described below.

- Closure of the existing intersection of SH1 and Rolleston Drive North and construction of an overpass, over SH1 and the railway, to connect to Jones Road, with walking and cycling facilities.
- A new exit lane from SH1 southbound to Rolleston Drive North and a new service lane, to improve access to the Rolleston town centre, highway amenities and suburbs.
- Left turn only access / egress at Tennyson Street, Brookside Road, and Rolleston Drive South.
- A left turn only egress from Hoskyns Road onto SH1 northbound.
- Various ancillary works including, but not limited to, the construction of stormwater detention basins, reconfiguration of property access and associated road works within the local road network.

The Project is described further in Section 2 of this AEE.

1.4 NOR submitted and resource consents sought

NZTA is submitting the following NoR and resource consent applications:

- NoR to alter the existing designation (**NZTA-1**) for SH1 to designate land, under Section 181(1) of the RMA, for State Highway Purposes in the POSDP; the NoR will enable the construction, operation and maintenance of the proposed works including the overpass.
- National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011 (NESCS, 2011) Regulation 9(1) Reg 9(2) – Controlled activity for the discharge of contaminants during land disturbance
- Regional consents from the Canterbury Regional Council for:
  - s15 RMA Construction-phase stormwater discharge
  - s15 RMA Operational-phase stormwater discharge

In addition to the above, the proposed designation will cross the existing designation administered by KiwiRail Holdings Limited (**KiwiRail**). Section 176 RMA and Section 177 RMA written agreement is being sought from KiwiRail.

Written Agreement pursuant to s181 of the RMA is being sought from Selwyn District Council as owner of the following properties:

- Part Lot 1 DP 8775
- Part Lot 1 DP 63308
- Lot 414 DP 354134
- Lot 2 DP 326553
- Lot 2 DP 501225
- Lot 3 DP 501225
- Lot 4 DP 461560 (2 Norman Kirk Drive, Rolleston)
- Part Lot 1 Blk II DP 307 (4 Tennyson Street, Rolleston)

2 DESCRIPTION OF PROJECT

2.1 Location

The components that make up the Project are described above and include a proposed overpass of SH1 and the railway (connecting Rolleston Drive with Jones Road with provision for active modes (the overpass)), changes to intersections with SH1 and ancillary works in the vicinity of Jones Road, Hoskyns Road, Brookside Road and Tennyson Street.

The Project site is located on the eastern side of Rolleston, approximately 20km southwest of Christchurch. SH1 extends approximately 4km through Rolleston in a northeast to southwest orientation. To the north of the Project site, the land is largely industrial and is known as the iZone park.

The existing rail corridor separates SH1 from the land to the north. The formed corridors of SH1 and the South Island Main Trunk (**SIMT**) railway run parallel to each other with the NZTA and KiwiRail designations overlapping (in the POSDP), noting KiwiRail have the primary designation. The land to the south of the state highway corridor is comprised of residential housing (generally medium density, single storey and detached) and mixed-use commercial. Te Ahi Kaikōmako (Rolleston) School is located on Tennyson Street approximately 185m south of SH1.

In the vicinity of Rolleston Drive North the existing residential area is separated from SH1 by a 2 - 3m high earth bund, generally covered in amenity planting with a closed board and batten fence on its crest. This provides physical and visual separation along the northern residential edge of Rolleston.

Figure 2-1: Site and surrounding area (Source: Canterbury Maps)

The existing designations are shown above in Figure 2-1. The proposed alteration to 'NZTA-1' is shown below in Figure 2-2 and reflect the designation plans attached to the NOR.

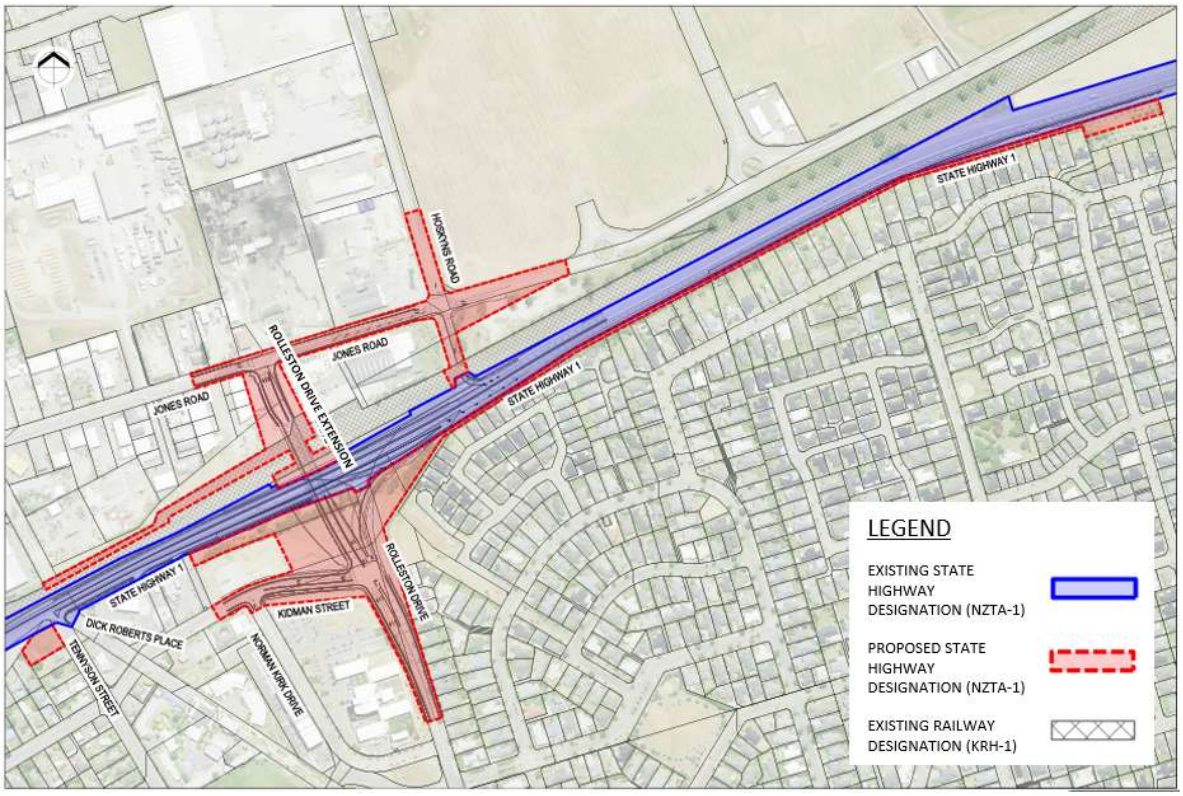


Figure 2-2: Proposed alteration to designation plan 'NZTA-1 in the POSDP

2.2 Reason for the Project

2.2.1 Project History

The need for transport and traffic safety improvements have been highlighted since early strategic studies in 2000 and the Christchurch Rolleston and Environs Transportation Study (**CRETS**) in 2007. The growth of Rolleston has been exacerbated since the sequence of Canterbury earthquakes (c.2011), primarily due to the relocation of residents from the red-zoned eastern suburbs of Christchurch. These studies identified the necessity to extend the Christchurch Southern Motorway 2 (**CSM2**) and improve connections between the satellite towns of Rolleston, Lincoln, and Prebbleton, as well as between Christchurch and Rolleston via SH1.

These early investigations demonstrated that a roundabout and associated features at Dunns Crossing Road/Walkers Road intersection and a multi-modal overpass at Rolleston Drive North (previously referred to as a flyover) would enhance connections between the residential and industrial sides of Rolleston, improve safety by reducing the number of fatalities and serious injuries in crashes (particularly at SH1 intersections), and provide a more resilient and sustainable transport network. The construction of both the Dunns Crossing Road/Walkers Road intersection improvements and the overpass and associated works would also enhance the ability for people to use active modes of transport.

As part of its Long-Term Plan (LTP) for 2015-2025, the Selwyn District Council (**SDC** or **the Council**) outlined major transport projects planned as part of CSM2, emphasizing the need to connect Rolleston Township with areas across SH1 and the SIMT railway. Public consultation was undertaken on draft proposals.

Building on the adoption of CRETS, in 2015, the transport partners (led by NZTA) developed the original Programme Business Case (**PBC**) for Rolleston Transport Improvements. This focused on the changes required to support the Rolleston Industrial Area (**RIA**) by providing safe, efficient, and effective transport access, including for a range of transport choices.

The PBC confirmed the 'case for change', developed a list of alternatives, and identified a recommended programme for investment. This recommendation then informed the scope for the government's NZUP investment and the Detailed Business Case (**DBC**).

2.2.2 Project Objectives

The Project will deliver a safer state highway corridor and improve the connection between the Rolleston Industrial Zone (**RIZ**), Rolleston Town Centre and the residential areas. Doing so also means that NZTA are responding to the land use changes that are occurring in a manner that improves safety and enables travel choices within the integrated network.

The Project objectives are outlined below in Table 2-1.

Table 2-1: Project Objectives

Project Objectives	
1	Improve the safety and efficiency of travel on the state highway and intersections with the state highway through Rolleston.
2	Provide safer connections and access for goods and people travelling between the residential and industrial areas of Rolleston enabling transport choices.
3	Improve the safety and travel time reliability of the regional journey on the state highway between Rolleston and Christchurch.

The Project objectives have been refined having regard to outcomes sought in the Investment Key Performance Indicators (**KPI**) and Objectives from the DBC, as outlined below in Table 2-2:

Table 2-2: Investment KPIs and Objectives from the DBC

KPIs	Investment Objective
Safety	Targeting 40% deaths and serious injury reduction along SH1 from 2032.
	75% reduction in 'near misses' and incidents across all level crossings in Rolleston by 2032.
Connectivity	Increase the number of people walking and cycling between Rolleston Town Centre and the Industrial Area by 100 people per day by 2032.
Sustainability and Resilience	Improve the reliability of the regional journey between Rolleston and Christchurch by delivering a peak journey time within 5 minutes of the off-peak journey time by 2032.
	Reduce train movement time between the Midland Line and Main South Line by 20 minutes by 2032.

2.3 Description of the Project

The Project involves the construction of an overpass of SH1 that will connect the residential and industrial areas of Rolleston and will provide improved facilities for walking and cycling. The associated works include the following:

- Upgrade of Jones Road/Hoskyns Road, Hoskyns Road/SH1 (left turn onto SH1, northbound only) and Rolleston Drive North/Kidman Street intersections.
- Safety improvements to intersections along SH1 through Rolleston, with a range of improvements to reduce deaths and serious injuries and better help manage the forecast future growth in traffic volumes.
- Extending second southbound lane from Christchurch South Motorway Stage 2 (**CSM2**).
- Wire rope median barrier along SH1 from CSM2 to south of Brookside Road.

- Left in / left out access arrangements at Tennyson Street, Brookside Road and Rolleston Drive South.
- Safer access, via a southbound off-ramp and service lane, to the town centre and service businesses alongside SH1.
- Associated works and ancillary activities relating to construction and operation, including provision of stormwater detention basins, reconfiguring property access and changes to local road/street environments.

The design information provided with the AEE is indicative and informs the footprint of the proposed alteration to the designation. It provides sufficient detail to identify and assess the actual and potential effects on the environment and to identify measures to avoid, remedy, or mitigate any adverse effects, where appropriate.

The design will be refined through the detailed design phase of the Project and the details may change. This will be undertaken within the scope of the final designation and consent conditions.

The relevant design of the project once finalised will be provided to SDC in an Outline Plan(s) (pursuant to s176a RMA), along with any other documentation required by conditions to be provided (via the Outline Plan process) to the Council prior to construction.

2.4 Indicative construction methodology

Construction of the Project is anticipated to commence in late 2026 and is expected to take 24 – 36 months to complete. This will be dependent on other factors including contractors, weather, and availability of materials. Construction is typically expected to take place during day-time hours, although exceptions may be required where night works are needed to enable work in periods of lower levels of traffic and/or when operational constraints constrain activity during the day.

Ancillary works will be required for the Project, these works include, but are not limited to:

- Traffic management including a long-term temporary speed restriction.
- Installation of temporary erosion and sediment control measures.
- Relocation of existing utilities including power, telecommunications, and 3-Waters infrastructure.
- Establishment of construction yards and laydown areas on Jones Road and Kidman Street.
- Stockpiling and storage of construction materials and equipment within the construction yards and laydown areas.
- Construction of stormwater infrastructure including soakage devices.
- Construction of a retaining wall in two locations on the southern side of SH1.
- Construction of the Jones Road/Hoskyns Road, Hoskyns Road/SH1, Rolleston Drive Nth/Jones Road and Rolleston Drive Nth/Kidman Street intersections together with removal of the existing SH1 traffic signals.
- Construction of the southbound off-ramp and service lane.
- Construction of the multi-modal overpass that will connect the residential and industrial areas of Rolleston.

As noted, the construction information is indicative at this stage and is intended to provide sufficient detail to assess the potential effects of construction on the environment and to identify measures to avoid, remedy or mitigate any adverse effects, where appropriate. Construction effects have been assessed within Section 7 of the AEE. Sequencing works are discussed in Section 7.3 and the ITA, in Appendix H.

It is worth noting that the final construction methodology may be influenced by:

- Final designation and consent conditions;
- Final detailed design;
- Construction duration and target completion date;
- Type of delivery contract; and
- Technological advances and innovation in construction methods.

Once a contractor is appointed, NZTA and the contractor will confirm the final construction methodology. This will be undertaken within the scope of the final designation and consent conditions. Should a

contractor wish to undertake construction activities beyond the scope of the proposed designation, or the consents granted, the need for any additional authorisations would be assessed at that time.

3 SECTION 171 OF THE RESOURCE MANAGEMENT ACT 1991

Section 171 of the RMA sets out the matters that a territorial authority must (subject to Part 2 of the Act) have regard to when considering the effects on the environment of allowing a NoR (should it be confirmed as a designation in the district plan).

Table 3-1 sets out the matters and identifies the relevant sections of the AEE in which the matters are primarily discussed.

Table 3-1: Section 171 of the RMA

Matter to consider: **(1) When considering a requirement and any submissions received, a territorial authority must, subject to Part 2, consider the effects on the environment of allowing the requirement, having particular regard to-**	**Section of the AEE where the matter is primarily addressed**
(a) any relevant provisions of— (i) a national policy statement: (ii) a New Zealand coastal policy statement: (iii) a regional policy statement or proposed regional policy statement: (iv) a plan or proposed plan; and	Refer to Section 10.2.
(b) whether adequate consideration has been given to alternative sites, routes, or methods of undertaking the work if— (i) the requiring authority does not have an interest in the land sufficient for undertaking the work; or (ii) it is likely that the work will have a significant adverse effect on the environment; and	Refer to Section 4.
(c) whether the work and designation are reasonably necessary for achieving the objectives of the requiring authority for which the designation is sought; and	Refer to Section 10.7.
(d) any other matter the territorial authority considers reasonably necessary in order to make a recommendation on the requirement.	Refer to Section 10.8.

4 ASSESSMENT OF ALTERNATIVES

4.1 Assessment of Alternatives for Notice of Requirement

The AEE has been prepared to accompany the NoR to alter the designation, pursuant to s181(1) RMA.

4.1.1 Consideration of Alternatives under s171 (1)(b) RMA

Section 171(1)(b) of the RMA requires that when making a recommendation on a NoR, a territorial authority, SDC in this case, shall consider whether adequate regard has been given to alternative sites, routes, or methods of undertaking the work in circumstances where:

c) the requiring authority does not have an interest in the land sufficient for undertaking the work; or

d) it is likely that the work will have significant adverse effect on the environment.

In considering alternatives there are several principles and key considerations for a requiring authority to apply and adhere to when identifying a preferred option. Of note are the following:

- The Requiring Authority must not act in an arbitrary way when considering alternatives;
- The process should be adequately transparent and robust, and clearly recorded so that it can be understood by others;
- An appropriate range of alternatives should be considered;
- If an adequate process has been followed in the assessment of these options, the decision on preferred options is for the Requiring Authority to make; and
- The extent of options considered, and the assessment of these options, should be proportional to the potential effects of the options being considered.

The Project will generally be located within and adjacent to the existing state highway corridor; however, land is required adjacent to the corridor for the construction and operation of the proposed overpass, left-in-left-out ingress/egress changes, slip lanes and stormwater infrastructure along with ancillary works.

An assessment of alternatives has been undertaken to determine appropriate locations and design options for the works.

4.1.2 Assessment of Alternatives Methodology

This section provides an overview of the assessment of alternatives, including the methodology used to develop and assess design options for the Project.

The need for the Project was first identified in the CRETS study, then in the PBC in 2020, which was later followed by the SH1 Rolleston Access Improvements DBC in 2022. The DBC outlined preliminary design options and staging for the Wider Project. The findings of which have been used to inform a set of design requirements for this Project. These design options have been further tested through an assessment of the various alternatives. The methodology used for the assessment of alternatives throughout the DBC and through to Pre-implementation phase involved the following steps

1. **Technical analysis** - Consideration of problems and system performance, and assessment of the merits of various options. This involved extensive transport modelling and other technical considerations for the option assessments.

2. **Public Engagement** - NZTA presented the NZUP programme and asked the public what they thought – did the Project look about right, or were there things that NZTA needed to further explore?

3. **Assessment of all Options** - Not all the feedback received from the first round of engagement was positive, and subsequent to this, NZTA investigated some alternatives – most notably in relation to the overpass, then called a flyover. NZTA therefore took a step back to make sure all options had been explored robustly. The first part of that process was to try and establish the best versions of the interventions that were described by the NZUP – e.g. how could NZTA make the originally proposed 'skewed flyover' better?

4. **Long List, Short List, Technically Preferred Options** - This took the form of a multi-criteria analysis (**MCA**) (Appendix Q) that was informed by various technical assessments including traffic modelling and concept design. The outcome was a set of technically preferred options that had buy in from all the project partners – NZTA, SDC and KiwiRail.

5. **Public Engagement** - NZTA asked the public what they thought of the refined programme. The feedback was more positive than the first round of engagement, with general support. There were however some issues that the public raised, particularly regarding improving safety on local roads that would see more traffic.

6. **Refinement of Preferred Options** - NZTA took on board the feedback, undertook technical analysis and made some changes which looked to address the main feedback received. NZTA then completed technical assessments, design, cost estimates, safety audits and the overall business case.

4.1.3 Consideration of Alternative sites and routes /Design Options

The Project and all alternatives were assessed through a MCA in the DBC phase to determine the emerging preferred design options. These were progressed to design refinement alongside, the basic design requirements developed from the DBC, to determine the concept and pre-implementation design for the NoR.

The range of options considered for this Project in the MCA are depicted and colour-coded in Figure 4-2 below, and included:

1. **Tie-in on the southern side** (**purple**)
   - A. Connection between Kidman Street and Rolleston Drive north (PBC identified option).
   - B. Continuation of Kidman Street.
   - C. Continuation of Rolleston Drive.
2. **Bridge alignment** (**orange**)
   - A. Straight alignment across to Jones Road.
   - B. 60-degree bridge alignment.
   - C. 45-degree bridge alignment.
   - D. 30-degree bridge alignment.
   - E. Local road underpass (under SH and railway line).
3. **Tie-in on the northern side** (**blue**)
   - A. Connection into the development land
   - B. Connection into the south-west approach to the Jones Road/Carters development roundabout
   - C. Connection into a new south-eastern approach to the Jones Road/Carters development roundabout

Through the DBC phase, it was confirmed that a connection from the overpass into the service road was no longer part of the NZUP scope of works (**green**). Additionally, the extension of the local road, Moore Street (**red**), remained unknown given the land from the Ministry of Education school site (Rolleston School) is yet to be obtained.

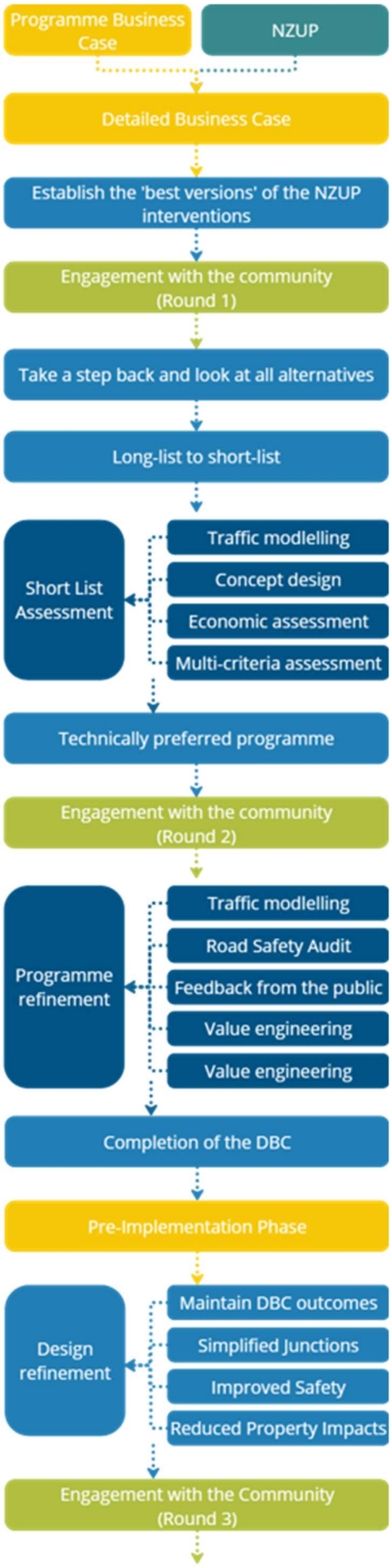


Figure 4-1: Alternatives Process

Figure 4-2: DBC Flyover MCA options (2022)

These options went through a long-list assessment against investment objectives and NZUP outcomes, and then through a medium-list and short-list assessment including a Multi Criteria Assessment (**MCA**). Various options were discounted due to safety issues, constructability issues, land constraints and cost, leaving the straight overpass as the preferred option.

Additional assessments were undertaken during design refinement stages to determine appropriate tie-ins to local road network, side of road widening and provision for safe and well-connected pedestrian and cyclist routes. Case law[2] has directed that the assessment process must be robust, transparent, and repeatable. The consideration of alternatives does not need to be exhaustive. However, the assessment should be proportional to the potential adverse effects of the activities being considered and the sensitivity of the environment being affected. Importantly, the assessment had a focus on the sustainable management purpose of the RMA, particularly those matters in Part 2 that are relevant to a proposal.

For completeness purposes, the MCA process followed the pathway set out below:

Phase 1: Pass/Fail vs Investment Objectives and NZUP Outcomes

Defined Criteria

The themes of the Investment Objectives (**IOs**):

[2] *Including Queenstown Airport Corp Ltd v Queenstown Lakes District Council [2013] NZHC 2347, NZ Transport Agency v Architectural Centre Inc [2015] NZHC 1991, and The Director-General of Conservation v Taranaki Regional Council [2019] NZEnvC 203*

1. Work towards zero injuries and deaths by reducing intersection conflicts.
2. Support a more connected community, resulting in liveability benefits.
3. Provide a more sustainable and resilient network.

The NZUP outcomes that the project must deliver are:

1. Improve safety for all road users by reducing the number of deaths and serious injuries (**DSIs**).
2. More inclusive access to economic and social opportunities in Rolleston by improving mode choice.
3. Enhance Rolleston's competitive advantage and business productivity by improving connectivity between the town centre and the industrial zone.
4. Reduce CO2 emissions associated with land transport.

KPIs

- IO 1: Work towards zero injuries and deaths
- IO 2: Support a more connected community, resulting in liveability benefits
- IO 3: Provide a more resilient and sustainable network

Phase 2: MCA against key risks

Defined Criteria

Theme	Definition
Investment Objectives	• Work towards zero injuries and deaths • Support a more connected community, resulting in liveability benefits • Provide a more sustainable and resilient network

Effects	• Engineering difficulty (inc. structures and stormwater)
	• Impact of construction (timeframes and temporary traffic management)
	• Property
	• Consentability
	  ◦ Noise and emissions
	  ◦ Visual effects
	• Wider traffic impact, capturing impact to other road users
	• Rail impact
	• Interdependencies

Mitigation	• Impacts on Te Ao Māori • Additional works required to mitigate negative environmental and social effects

Specific matters were excluded from the MCA, as per NZTA guidance, including:

- Wider economic benefits (included as a benefit on the Investment Logic Map)
- Safety in Design
- Climate change mitigation and adaptation
- Urban design
- Geotechnical
- Alignment with strategies

KPIs

The KPIs for Phase Two of the MCA are identified below:

Critical Success Factors

- **Engineering difficulty** – considering the difficulty of 'high ticket' items such as structures and potential stormwater treatments. The scale of engineering difficultly directly impacts cost. For the overpass, consideration was given to the ability to achieve the necessary grades to appropriately accommodate travel choices.

- **Impact of construction** – considering potential impact of traffic management, covering duration and impact to the state highway/local road network. Also considering the impacts on direct neighbours (e.g. noise, dust, visual amenity).
- **Property** – the number of properties that require acquisition, and number of properties where mitigation against negative effects (such as noise) would be required. The primary focus was on the number of different properties that would need to be required, with a secondary focus on the square meterage of land take required.
- **Consentability** – key consenting challenges were highlighted for each intervention, and these were be used to determine a 'consentability' score. Key considerations were related to potential effects such as noise, vibration, and visual impact.
- **Wider traffic impact** – the modelling was used to understand the extent to which the improvements deliver on the aspirational road network hierarchy, otherwise known as the network operating framework (**NOF**) and contribute to improved conditions for traffic across the wider network.
- **Rail impact** – the extent to which the proposed interventions deliver wider operational benefits to the rail network was considered.
- **Interdependencies** – the viability of some options were dependent on other infrastructure or availability of land.

Environmental, Social and Cultural Factors

Each of the environmental, social and cultural factors identified below were assessed using a standalone qualitative KPI that drew on quantitative analysis where appropriate:

- **Impacts on Te Ao Māori** – this factor acknowledged that this would be assessed through ongoing consultation with mana whenua.
- **Additional works required to mitigate negative effects** – this factor acknowledged that it may be possible to mitigate some of the negative effects of significant construction projects. It therefore considered the extent to which mitigation is possible for the intervention options. The impact of some options, such as banning turns, may also have wider traffic and network efficiency implications.

Following the completion of Phases 1 and 2, an evaluation of each option was undertaken against a defined scoring and weighting criteria. This is outlined in detailed in Appendix Q. As discussed in the DBC phase, a key conclusion of the 'long list' to 'medium list' process was that, to achieve the Project Investment Objectives and desired NZUP outcomes, grade separation across SH1 would be required. A number of 'at-grade solutions' were explored however traffic modelling analysis and the MCA processes found that there are no feasible solutions that could deliver sufficient network capacity or safety outcomes.

A more detailed assessment of the short-listed options has been carried out using the multi-criteria assessment (MCA) framework established in earlier project stages. While the same framework was applied, additional specialist analysis was undertaken. Experts were assigned to each KPI or effect and developed specific methodologies, which were peer-reviewed by specialists from NZTA, Selwyn District Council, and KiwiRail. The methodologies and outcomes are documented in specialist reports included in Appendix Q. These reports were used to score the options against the criteria on a seven-point scale (from -3 to +3) relative to the current situation.

The final MCA scores were also informed by discussions and insights gathered from the following engagement sessions:

- December 9, 2021 – NZTA challenge session No.1 (medium to short list)
- January 19, 2022 – NZTA challenge session No.2 (short-list review)
- February 1, 2022 – KiwiRail and SDC review
- February 22, 2022 – Workshop with Fire and Emergency New Zealand (**FENZ**)
- March 16, 2022 – Workshop with Canterbury Regional Council (**CRC**) (focused on public transport impacts)

Following the MCA, long-list, medium-list, and short-list process, the straight alignment emerged as the preferred option. Key features of the straight alignment included:

- A three-lane overpass.

- New signalised intersection for the overpass/Jones Road
- Signals at Kidman Street / Rolleston Drive North
- Footpath on one side, shared path on the other side on the overpass
- Vertical grade 7.65% approaching Jones Road and 7.61% approaching Kidman Street. Clearance is achieved over SH1 for Over Dimension (**OD**) vehicles and is achieved over KiwiRail line.
- Site distance achieved on the bridge for 60km/h design speed
- Accesses to properties on Rolleston Drive North side could be graded but may be a safety issue
- "Loop" provided from SH1 southbound, from the service lane around to a new signal.
- Land is required of a private property on Jones Road
- Challenge to integrate the weighbridge on Jones Road (immediately opposite the overpass landing) into the design.
- A left-out from Hoskyns Road onto SH1.

This option was preferred as it aligned overall with investment objectives, achieving a positive MCA score with the lowest negative effects. The other two options are acknowledged below:

- Skewed overpass: Initially preferred for its gentle grade and minimal access disruption, this option was less favourable due to convoluted routes from the Rolleston town centre to the industrial area, higher construction complexity, and greater carbon emissions. It also ranked lower economically due to higher costs for lower benefits.
- Tennyson-George Holmes Underpass: Though it offered a clear local connection, it would increase traffic on Tennyson and Kidman Street, compromising efficiency and traffic safety. It also required retention of the traffic signals on SH1 at Rolleston Drive North, which impacts safety and freight efficiency.

The MCA and Flyover Alternatives Assessment can be found in Appendix Q.

4.1.4 Consideration of Alternative Methods

Section 171(1)(b) RMA requires the adequate consideration of alternative methods of undertaking the work. An alteration to an existing designation is provided for under s181 RMA and was generally identified as the preferred method for approving and providing for the Project.

Alternative methods to authorise the works such as resource consents or plan changes do not provide for the ability to identify the works in the relevant district plan or would be cumbersome and time consuming without the ability to protect the land from other development in the interim.

The alteration to the existing NZTA-1 designation in the POSDP is the most logical and effective method to protect a corridor and authorise the proposed works in the POSDP for the following reasons:

a) A designation, once confirmed, is included in a district plan, and provides certainty to all parties including the community and affected landowners regarding the intended use and purpose of the land,
b) A NoR and subsequent designation are well-recognised and understood tools, provided for under the RMA, and are consistently used for major state highway projects to protect land for public works and support land acquisition or other property mechanisms through the Public Works Act 1981 (**PWA**),
c) A NoR, for land proposed to be designated, provides interim protection of the land from other uses which may otherwise hinder the intended purpose and provides a mechanism (s176 of the RMA) to manage landowners' interim use of the land to prevent compromise of the corridor,
d) Once confirmed in the relevant district plan the designation authorises the works and activities in a comprehensive manner and overrides other provisions of the district plan, negating the need for additional land use consents (s9(3) of the RMA),
e) A designation confirmed in the relevant district plan will provide for future operations and ongoing maintenance requirements within the designated footprint and;
f) A designation enables networks, such as the state highway network, to operate safely and efficiently, consistent with and linked into the existing corridor (designations NZTA-1 in the POSDP).

The preferred design option, the straight overpass and associated tie in works, for the Project has been selected by NZTA based on a comprehensive optioneering process taking into account specialist assessments, engagement with mana whenua and the community, and feedback from stakeholders and landowners.

As such, it is concluded that adequate consideration has been given to alternative sites, alignments, and methods for undertaking the work, satisfying the requirements of s171(1)(b) of the RMA.

5 STATUTORY CONTEXT

5.1 Introduction

The RMA, National Environmental Standards and Plans (under the RMA), and other legislation, listed below, are relevant to the Project:

- National Environmental Standards for Air Quality 2004 (**NES-AQ**)
- National Environmental Standard for Contaminated Soils 2011 (**NES-CS**)
- Wildlife Act 1953
- Heritage New Zealand Pouhere Taonga Act 2014 (**HNZPTA**)
- Canterbury Land and Water Regional Plan (**LWRP**)
- Canterbury Air Regional Plan (**CARP**)
- Partially Operative Selwyn District Plan (**POSDP**)

5.2 Proposed designation

The existing designation NZTA-1 in the POSDP provides for SH1 through the Selwyn District, from the Christchurch City Council boundary in the north-east (at Weedons Ross Road interchange) to the Ashburton District Council boundary to the south-west.

The existing designation varies in width to provide for some future widening of SH1 as outlined below:

- North of Hoskyns Road to south of Elizabeth Street;
- South of Elizabeth Street to the Selwyn River Bridge; and
- North of Rolleston.

Pertaining to the Project area, the existing designation has a width ranging from 40 – 42m.

To the north and west, the existing SH1 designation overlaps KiwiRail's designation for the SIMT. Where there is any overlap of the existing designation, or the alteration proposed under this NOR, the rail designation remains the primary designation for the purposes of s177 of the RMA. To the south and east, the existing SH1 designation is adjacent to privately owned land, SDC owned land and SDC road reserve.

The proposed alteration to the designation affects privately owned land, SDC road reserve, and the aforementioned Crown land (KiwiRail). The proposed designation footprint encompasses land sufficient for the operational infrastructure, its ongoing maintenance and the areas required for construction purposes. Should the designation be confirmed, and once the Project is complete, NZTA may partially uplift it (pursuant to s182(1) of the RMA) from land that is no longer required.

The proposed alteration to the designation extends across the land to the north, south, east and west of the existing Rolleston Drive North/SH1 intersection The largest area of the proposed alteration to the designation extends across the land to the south of the state highway corridor, adjacent to Kidman Street. The sites are legally described as Lot 2 DP 501225 and Lot 4 DP 461560 and are owned by SDC. Within these allotments, approximately 16,750m^2 of land is proposed to be designated for the Project, inclusive of construction laydown areas, stormwater basins, and operational infrastructure.

In addition to the 16,750m^2 discussed above, an additional 93,059m2 of land is proposed to be designated across two privately owned land parcels, several SDC owned land parcels, SDC road reserve, and KiwiRail rail reserve.

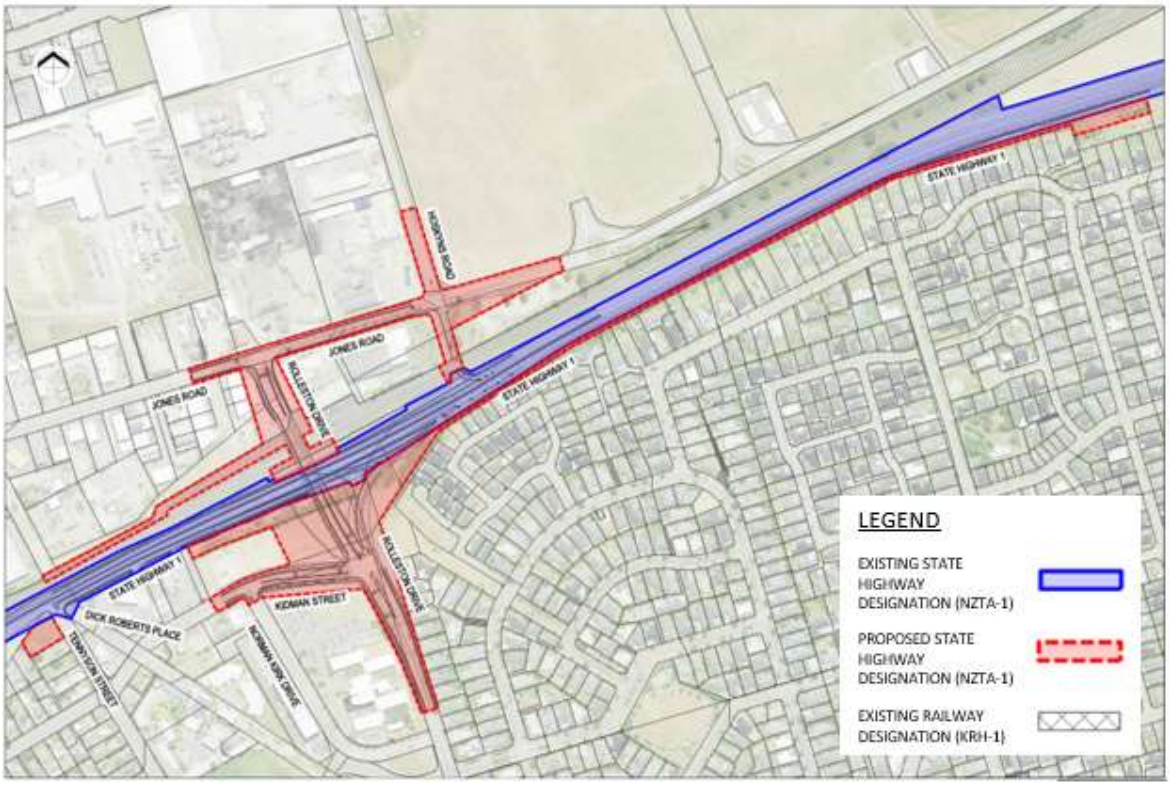


Figure 5-1: Proposed alteration to designation plan, listed as 'NZTA-1' in the POSDP

The Land Designation Plan Schedule (Appendix B) sets out the land required to be designated by legal description and area.

5.3 Resource Consents Sought

Resource consent is required pursuant to sections 12(1), 12(2), 12(3) and 15(2A) of the RMA, triggered by several provisions of the Canterbury Regional Plan, for the reasons (but not limited to) outlined below. Any district plan consent triggers associated with section 9(3) of the RMA are addressed by this NoR.

Based on the Project scope and indicative construction methodology, the following resource consents for discretionary activities are required from Canterbury Regional Council:

- A s15 RMA resource consent discharge of operational stormwater under Rule 5.97 of the LWRP.
- A s15 RMA resource consent discharge of construction phase stormwater under Rule 5.94B of the LWRP.

The overall activity status of the consents for the Project under the LWRP is **discretionary.**

5.4 National Environmental Standards

5.4.1 Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011

The Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011) (**NES-CS**) applies to land identified as having had an activity or industry described in the Hazardous Activity and Industries List (**HAIL**) undertaken in it.

A Preliminary Site Investigation (**PSI**) of the wider development area was undertaken by Stantec in May 2023. The Stantec PSI and additional information review undertaken as part of this investigation, identified the following HAIL activities and potential sources of contamination for the site:

- 21 off-site HAIL areas (located on adjacent properties within 50m of the site).

- HAIL activity F6 (Railyards) was identified for a portion of the site, in relation to a former railyard, located north of Main South Road (SH1) and the existing railway line.
- Potential use of coal tar in historic roading construction.
- Potential use of asbestos containing material (**ACM**) and lead-based paint, in an area of former farm buildings (demolished), and former railyard buildings (north of Main South Road), identified in review of historical aerial imagery.
- Accumulation of contaminants within road verges and the railway corridor from prolonged use of the site as a road and railway line.

Subsequent to the PSI, a Detailed Site Investigation (**DSI**) was undertaken. Soil sampling was undertaken between the 18 June and 29 of July 2024, from 44 machine excavated test pits (including 18 pavement pits and 7 infiltrations pits), 2 boreholes, and 3 utility services trenches; targeting the various areas of proposed development within the site, and the above HAIL activities/potential sources of contamination.

Based on indicative earthworks volumes for the proposed works in this area, the permitted activity criteria under the NES-CS is unlikely to be met, and resource consent under the NES-CS will likely be required. Once soil disturbance and disposal volumes are confirmed, these will be assessed against the permitted activity criteria. As soil analytical results exceeded published background concentrations in this area, should PA criteria not be met, resource consent is required under the NES-CS is required as a **controlled** activity.

5.4.2 Resource Management (National Environmental Standards for Freshwater Regulations 2020)

The National Environmental Standards for Freshwater 2020 (**NES-F**) sets requirements and standards for activities that pose risks to freshwater and freshwater ecosystems.

As infrastructure work that delivers a service operated by a life utility (i.e. NZTA) and as a project listed in the Regional Land Transport Plan, the Project qualifies as "specified infrastructure[3]" in the National Policy Statement for Freshwater Management 2020 (**NPS-FM)**. Specified infrastructure is provided for throughout the NES-F.

The Project work is not located within or in close proximity to any waterbodies, rivers, lakes, or wetlands. As such, the Project does not breach any regulations within the NES-F that warrant consent.

5.5 Other approvals

Additional approvals relevant to the Project set out in Table 5-1 below:

Table 5-1: Other approvals

Legislation	Approval type	Decision making authority	Activities
Resource Management Act 1991	RMA Approval	Requiring Authority – KiwiRail Holdings Limited	Written agreement under Section 177(1)(b) and s176 of the RMA from another requiring authority.
Wildlife Act 1953	Permit	Department of Conservation	Should any indigenous wildlife such as lizards or lizard habitats be discovered within the project area, subject to a survey, a Wildlife Permit will be required to handle, store, or release any indigenous lizards as part of any lizard management plan.

[3] *specified infrastructure has the meaning given by the National Policy Statement for Freshwater Management.*

5.6 Summary

The AEE supports the NoR to alter the NZTA-1 designation in the POSDP, along with all the necessary resource consent applications under the Canterbury Land and Water Regional Plan. The proposed designation, if confirmed, will authorise the construction, operation, and maintenance of the Project.

6 DESCRIPTION OF THE EXISTING ENVIRONMENT

6.1 Overview

Rolleston is a township with a population of approximately 28,000. It is located 22km southwest of Christchurch and 33km northeast of Rakaia. The settlement area has had a history of being located around Main South Road, as seen in Figure 6-2 and Figure 6-3: 1995 to 1999 from Canterbury Historic Aerial Imagery (Source: Canterbury Maps, Historic Aerial Imagery). In Figure 6-2 the existing residential developments can be seen to be located to the south-east of Main South Road. Figure 6-3 shows the allotment where majority of the proposed roundabout will be located, dominated by rows of pine trees during 1995 to 1999. Historical aerial imagery of the area illustrates the growth Rolleston has experienced since 1940 in terms of both density and urban sprawl.

In more recent years, the expansion of Rolleston has seen the population go from 16,000 residents in 2018 to 28,000 [2024]. The northern side of Rolleston did not start being developed for industrial use until around 2004, this can be seen through the historical aerial imagery of the area in Figure 6-2 and Figure 6-3. The area is anticipated to continue to grow and by 2043 it is expected to reach 39,000 with long-term capacity of up to 50,000[4], over the next 35 years. The land use change to accommodate growth of Rolleston has put a strain on the demand for north-south connections to Christchurch and east-west connections within Rolleston across SH1.

The zoning in Rolleston under the POSDP is predominantly made up of General Industrial, Port Zone, Large Format Retail zoning (north of Main South Road) and Medium Density Residential, Neighbourhood Centre, General Rural and Town Centre zoning (south of the Main South Road). The land in proximity to the Project is zoned as Department of Corrections (Corrections), General Industrial, Large Lot Residential and Medium Density Residential.

[4] *Rolleston Structure Plan 2009*

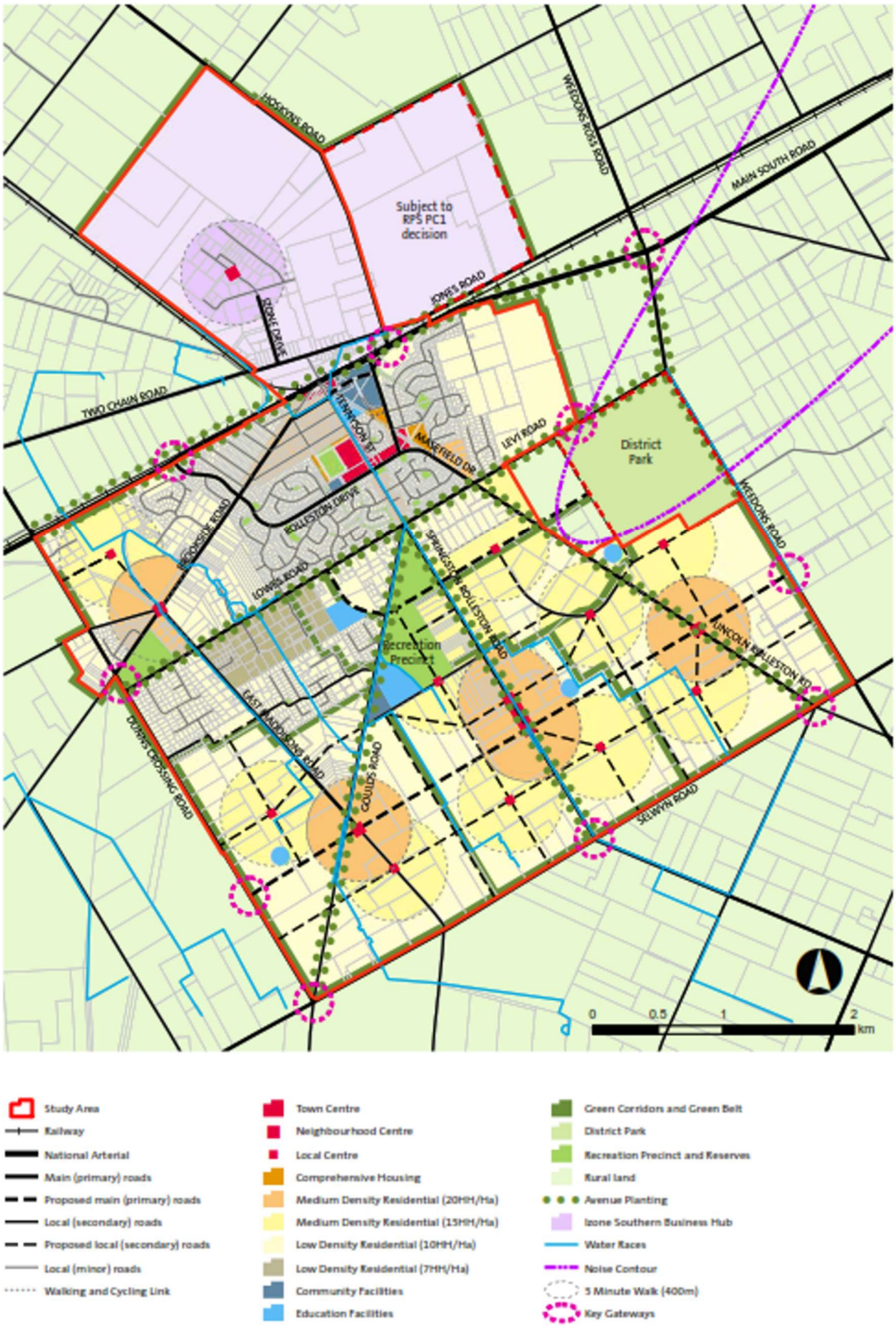


Figure 6-1: Rolleston Structure Plan 2009 (Source: Rolleston Structure Plan September 2009)

Rolleston has historically grown around Main South Road (SH1) and the rail network. Figure 6-2 and Figure 6-3 show the expansion of Rolleston in the last 25-30 years.

Figure 6-2: 2020 to Present Aerial Imagery (Source: Canterbury Maps)

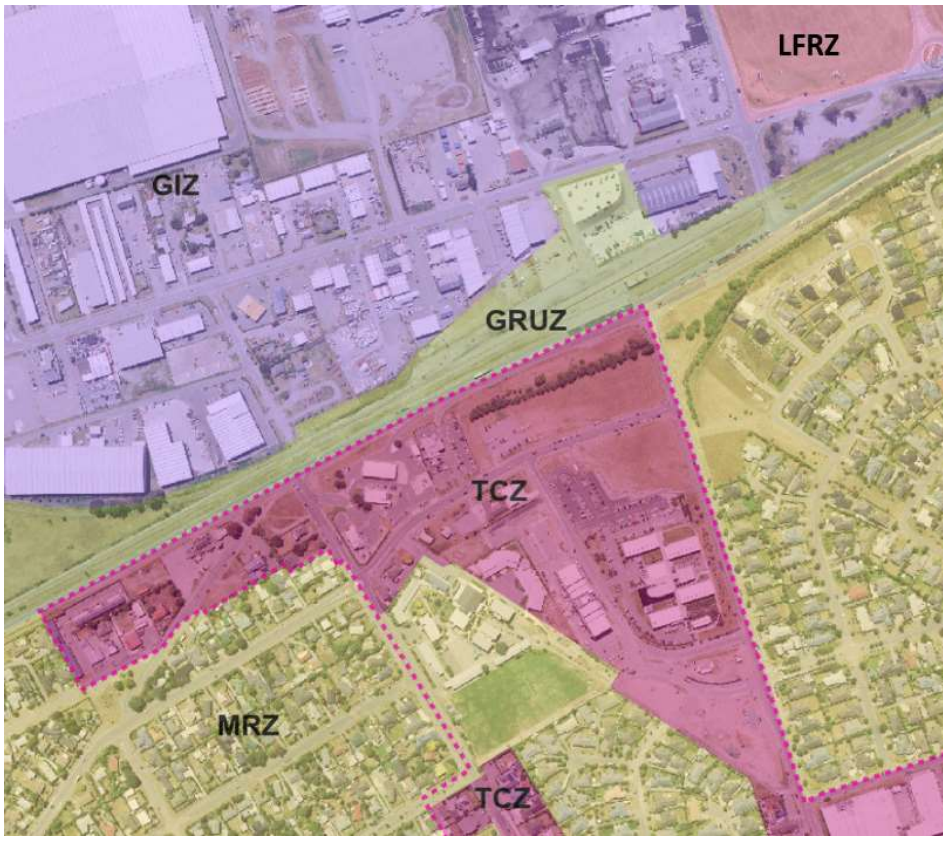
Figure 6-3: 1995 to 1999 from Canterbury Historic Aerial Imagery (Source: Canterbury Maps, Historic Aerial Imagery)

6.2 Project area

The following table (Table 6-1) sets out key features and provides a general description of the Project area including the relevant zones, precincts and overlays under the POSDP:

Table 6-1: Project area receiving environment

Features	Description
Current land use	• The land use surrounding the Overpass project area is comprised of residential, commercial and some retail activities within the Town Centre Zone.
Community and recreational facilities	• Selwyn Health Hub • Selwyn District Council • Park and Ride – Bus passenger parking
Vegetation	• Rank grassland • Road side amenity planting
Watercourses	• There are drains in proximity to the project area. • There are two identified artificial water courses on the northern side of the existing designation.
Historic heritage and archaeological values	• There are no identified historic heritage features within the Project area. • There are no archaeological values associated with the Project area.
Areas of cultural value	• There are no wāhi tapu or wāhi taonga sites identified within or adjacent to the Project area. • There are no identified NZAA Maori sites or sites of cultural significance in the Project area.
POSDP Existing designations	• KRH-1 Railway lines within Selwyn District (Main South Line and Midland Line) (KiwiRail Holdings Ltd) • NZTA-1 State Highway 1 • MEDU-10 Rolleston School (Minister of Education)
POSDP Precincts	• PREC2 Rolleston Fringe Precinct
POSDP Overlays	Hazards and Risks • Plains Flood Management Overlay • Liquefaction Damage Unlikely Overlay Noise Control Overlay • State Highway Noise Control Overlay • Railway Network Noise Control Overlay
POSDP zoning	General Rural Zone (**GRUZ**) Medium Density Residential Zone (**MRZ**) General Industrial Zone (**GIZ**) Town Centre Zone (**TCZ**) Large Format Retail Zone (**LRFZ**)


LFRZ
GIZ
GRUZ
TCZ
MRZ
TCZ

7 CONSULTATION

7.1 Overview

This section provides a summary of the consultation and engagement process, related to the Project, that NZTA has undertaken with mana whenua, landowners, network utility operators, community, and other stakeholders. A Consultation and Engagement Report is included in Appendix F, with the Community and Stakeholder Engagement Plan from the DBC in Appendix R and the publicly circulated The Path to a Flyover report included in Appendix S.

As the Project has progressed from PBC through to Pre-Implementation phase, a range of consultation and engagement has been undertaken, as depicted in Figure 7-1 below.

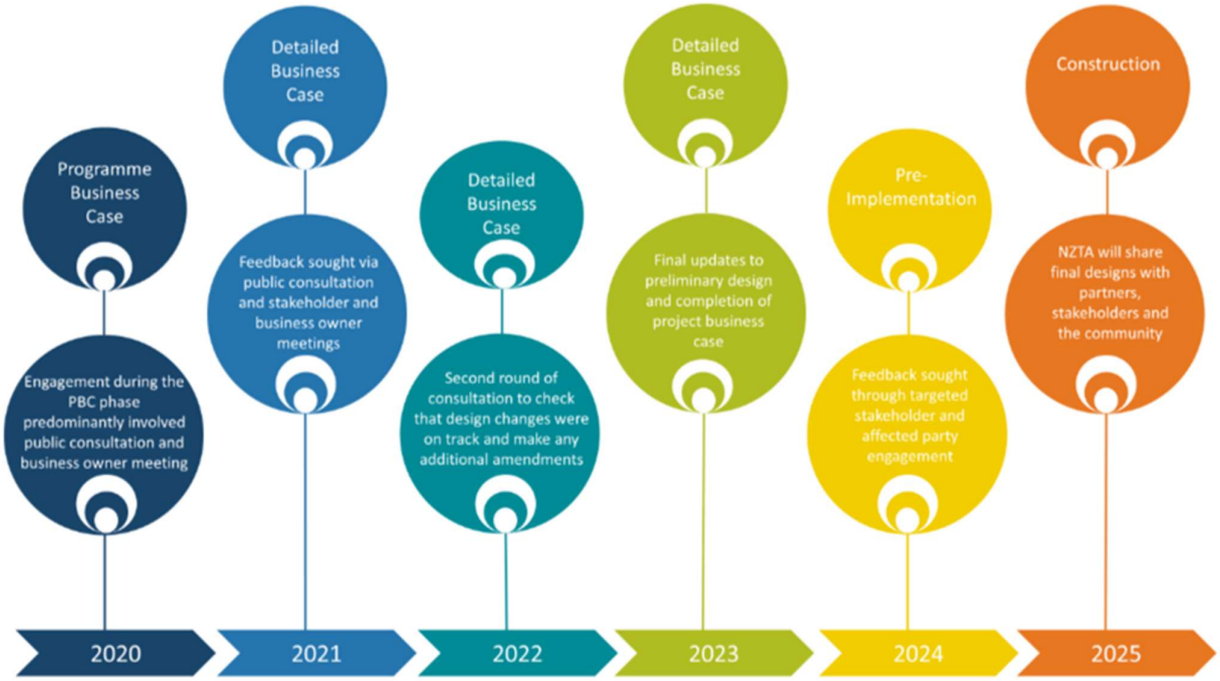


Figure 7-1: Project Phases

Engagement with stakeholders and the community is an essential part of the NZTA transport project planning process. It gives everyone an opportunity to have a say on the Project, identifies effects (including people's needs/ concerns) and helps inform the Project acknowledging that there are often competing issues.

2021 consultation

Consultation looked at both packages of the SH1 Rolleston Access Improvements. The first round of consultation revealed that while people acknowledged the need to connect both sides of Rolleston, there were concerns expressed about the *draft* proposal (the 'skewed' overpass option plus a package of intersection improvements) which prompted further investigation. Concerns related to network effects and included:

- Reduced highway access – multiple points should remain open
- The potential for overloading Weedons Interchange
- Emergency service response times potentially affected
- Increased traffic on local roads and past schools
- Removing the Hoskyns Road level crossing required travel through multiple roundabouts
- Closure of a section of Jones Road would affect access and be detrimental to businesses, services and facilities to the southwest industrial area.

Considering the feedback NZTA was able to undertake robust analysis of the options (Twenty-five options, with seven identified for Multi Criteria Analysis and three options shortlisted) before developing the next set of plans.

2022 consultation

Having listened to community feedback, NZTA undertook further transport analysis and revised the concept design. Accordingly, the second round of consultation revealed that people were generally more supportive of the Project. In relation to the Project (Package 2), engagement with property owners and key stakeholders (emergency services, Ia Ara Aotearoa Transporting NZ) was supportive overall of the recommended alignment.

The main changes to design following consultation related to this Project (as opposed to Package 1) and are summarised in the following Table 7-1 in response to community and stakeholder concerns expressed:

Table 7-1: 2022 consultation

Feedback	Design outcome
Concern about cycle and pedestrian accessibility on the proposed flyover. Plans should integrate properly with existing and future local cycle paths and connections to a range of destinations within the industrial area, including shops and sports clubs	The proposed flyover (this was renamed to be an overpass) shared path connects with current and potential future paths planned by Selwyn District Council. A shorter, more direct route to all industrial and business areas was the preference for cyclists, instead of landing further east along Jones Road and having to backtrack to the other western business and industrial areas (as per initial skewed flyover). While the Rolleston Drive North – Jones Road alignment is shorter, the gradient is a little steeper at 7.5 per cent. We had some feedback saying this is unacceptable, however it does meet accessible guidelines of a 1 in 12 gradient, which over a short length is not a significant barrier as shown by bridges and overpasses elsewhere in Christchurch.
Concern about whether the recommended plan has enough northbound access into both the residential and industrial sides of Rolleston, and that a right-hand turn into Rolleston Drive South should be added	Turning right across the main flow of high-speed traffic is high-risk and increasingly dangerous as traffic volumes increase. The recommended changes remove right turning risks while providing access and connectivity at key locations. We have consulted with emergency services who are satisfied the recommended plan provides an improved level of highway access and connection. Signage will provide clear wayfinding for drivers.
Consolidating entry to Rolleston Interchange via key access points (such as Weedons Road) could impact the safety and efficiency of these roads	The main objective of this project is to create a connection between the residential and industrial sides of Rolleston and make it safer and easier for people to access and support local business and industry.
Left-in access to Hoskyns Road to industrial/business areas should be retained, and a northbound off-ramp to connect the flyover directly to the highway	A left turn into Hoskyns Road was not included as it was determined that this would still present an unacceptable rail level crossing short stacking risk with traffic queuing back from the Jones Road signals. Equally the rail level crossing when activated would cause vehicle traffic to back up down the highway, creating queues and increasing crash risks. Once the flyover is constructed, traffic from the residential side of Rolleston will no longer need the Hoskyns Road entry as they will access both sides of Rolleston via the Walkers/Two Chain/Jones Roads. We have designed the recommended flyover and traffic signals to provide a coordinated route for people travelling to the city. Vehicles

	will be able to travel from Rolleston Drive North to the Hoskyns Road on-ramp where people will get their own free-flowing lane, after the level crossing, joining the Christchurch Southern Motorway (this access was added following public consultation in 2021).
Make sure transport planning for Rolleston is future proof and provides for all forms of transport	The recommended plan offers improved and better integrated travel options and preserves even more land for future transport facilities than what was initially consulted on with the public. This includes two parcels of land (on Kidman Street and on the south-east corner of Jones and Hoskyns Roads) for potential expansion of existing / construction of new Park and Ride facilities.
Plan for future highway capacity (four lanes)	Current and predicted highway traffic volumes to 2038 show that one free flowing lane is all that is needed in the meantime, as will be available once the traffic signals are removed. The recommended flyover design provides for over dimension vehicles and there is sufficient space along the highway corridor so we will not be prevented from adding lanes to the highway in the future, if needed and the flyover support piers have been positioned to allow for this.
Preferences for a skewed flyover, an underpass or a Memorial Avenue-style alignment	All options have been reassessed alongside ongoing investigations and the plan was modified mainly due to: • Community feedback saying people wanted access to all of the industrial/business area. • A more direct connection was preferred by cyclists and emergency services. • Keeping Jones Road continuous for freight and business access. • Available space – bridge embankments, underground services and proximity to rail. • Safety – an underpass can feel unsafe for pedestrians, and if traffic is queued drivers can't see as far as they need to. • Size of structure – impacts on private land and property access, buildability, carbon footprint and environmental impacts, construction time and community disruption. Detailed information on how the flyover was decided can be found in the NZTA document **SH1 Rolleston transport improvements – the path to a flyover**, publicly available on the project website.
Concern about vehicle speeds on the highway and local roads, that limits should be lower	Once the signals at both Rolleston Drive North and Hoskyns Road are removed, we anticipate the proposed new infrastructure will support a safe and appropriate speed of 80km/h through Rolleston. Most intersections will change to 'left-in/left-out' which significantly reduces crash risks. To prevent head on crashes and keep people safe, flexible barriers in the middle of the highway will be installed from the end of the Christchurch Southern Motorway north of Rolleston, through to Dunns Crossing Road.

2024 consultation

In this phase of the project, NZTA is engaging with mana whenua and key stakeholders to inform design developments. Affected party agreements are being sought in relation to property (and any acquisition/entry agreements necessary are being pursued). Residents, property owners and stakeholders are being engaged about project effects, including changes to property access once the Project is built.

For a number of identified properties there will be construction effects, with potential for noise, vibration, dust and changes to access while the Project is being built. NZTA will continue to engage these residents

and property owners to firstly, inform them about what they can expect during construction, including what management or mitigation is proposed, and secondly, understand any specific requirements they may have so these can be considered during construction planning.

8 ASSESSMENT OF EFFECTS ON THE ENVIRONMENT

8.1 Overview

An assessment of actual and potential effects of the Project is set out in the following sections of the Report. The assessment considers whether these effects are positive or adverse, as well as the scale, duration, permanency and location of these effects. The assessment has been informed by reports undertaken by the relevant technical specialists.

Key transport outcomes, land use integration and the avoidance of adverse effects on areas or features of high value have informed the extent of the NoR boundaries and Project work. Where avoidance has not been possible, measures to remedy or mitigate adverse effects have been proposed in the NoR.

The assessments contained in the section below pertain to the NoR for the overpass and associated works (Package 2).

8.2 Positive effects of the Project

This section sets out the positive effects of the Project for the state highway and road users around Rolleston township and Selwyn District. Given the interconnected nature of the positive effects associated with the Project, these effects are summarised in this section as opposed to being broken down into the individual effects sections (Section 8.3 onwards).

The Project is key to improving safety and connectivity on and across the state highway in Rolleston. The Project will improve access into and out of Rolleston, as well as strengthen the north-south connections within the township. Currently, there are significant safety concerns at the SH1, Hoskyns Road and Jones Road intersection, identified as a high-risk area expected to worsen with future traffic increases. The overpass and associated works will result in transformative change to the intersection by addressing crash history and enhancing safety. It will also improve capacity, reducing delays for vehicles on local roads and allowing safer, more efficient access to and from Rolleston across the state highway.

At the Hoskyns Road level crossing, NZTA will work with KiwiRail to upgrade infrastructure and providing additional queuing space for vehicles. This will improve safety at the rail crossing and address existing queuing issues on Hoskyns Road, reducing near-miss incidents between trains and vehicles.

The overpass includes a shared path, creating a safe and continuous network connecting Rolleston and the industrial area while encouraging travel choices. Regarding noise, the majority of the Protected Premises and Facilities (PPFs) near the Project will experience imperceptible changes in traffic noise (less than ±2dB), resulting in minimal noise impacts.

Though the proposed designation affects several properties (owned by private parties and SDC), the Project will deliver considerable benefits to the community and road users, including:

- Improved safety for drivers with the conversion of existing SH1 intersections to left in/left out only.
- More reliable travel times along SH1 due to the removal of the existing traffic signals
- Enhanced travel choices across the SH1 and the railway via an overpass, resulting in improved protection for vulnerable road users; and consequentially, a reduction in deaths and serious injuries.
- Enhanced connectivity (including for pedestrians and cyclists) between Rolleston town centre and the northern industrial area.
- Not precluding future infrastructure that may be needed to support future development

Overall, the Project provides a significant improvement to safety, connectivity, and community well-being in Rolleston and the Selwyn District

8.3 Traffic and Transport

An Integrated Transport Assessment (**ITA**) has been prepared by Beca and is included in Appendix H. The following sections cover the methodology applied, the potential effects associated with the Project during both construction and operation and discuss the measures to effectively manage these effects.

The ITA addresses both Package 1 and Package 2 of the Wider Project and considers the anticipated effects within the context of the Greater Christchurch Settlement Plan. For the purposes of this AEE, the traffic and transport effects assessed have been limited to Package 2 only. Where reference is given to Package 1 (NoR reference D240002), this is only for contextual purposes, except where there are specific dependencies between the two packages.

The ITA has been based on both a 2028 and 2038 transport model to account for construction effects and operational effects, respectively. This aligns with the available transport models and the likely implementation timeframes for the Project. To consider the effects of the Project, transport networks with and without the Project were assessed in the context of land use scenarios that best represent the likely construction timeframe.

8.3.1 Assessment Methodology

The ITA has been undertaken both quantitatively and qualitatively, depending upon the transportation mode or element being assessed. The approach to the effects of construction were based on the following considerations:

- There will inevitably be temporary effects on the transport system during construction, such as temporary road closures, diversions, alternative property accesses, construction traffic using the wider network and potential disruption to public transport services and walking/cycling connections.
- Specific details of construction methodologies, material sources, haul routes, times of operation are not confirmed and will be subject to detailed development by NZTA and its contractor.
- To enable innovation and flexibility in construction methodologies it is intended that appropriate conditions are proposed that will manage temporary traffic effects.
- Construction matters and impacts has been considered in the Project design to assist management of potential effects.
- The use of Construction Traffic Management Plans (**CTMP**) is a common and well-understood approach to managing effects of construction traffic.

In addition to the above, the impact of CSM2 and crash history has been assessed. Construction commenced on CSM2 in November 2016 with the SH1 extent opening in 2020. During construction, there were reduced flows vehicle flows along SH1 during construction as vehicles re-routed to avoid construction and temporary reduced speed limits were put in place on SH1, particularly around SH1/Hoskyns Road and SH1/Rolleston Drive intersections.

As such, the crash history is likely to be underrepresenting the crash risk along SH1 as two years of the crash history are affected by the construction of CSM2. This further reinforces that the safety concerns identified at the SH1/Hoskyns Road, SH1/Rolleston Drive, SH1/Tennyson Street and SH1/Brookside Road intersections as highlighted in Section 5.5 of the ITA.

Approach to assessment of construction transport effects

The construction effects have been assessed on the basis that a CTMP is proposed to manage traffic effects at each stage of construction. The focus of the assessment is therefore on the specific considerations required for such a CTMP.

The Project works are generally aligned with the existing major road corridors, so movement of trucks for earthworks or bulk materials beyond the current routes is not anticipated. While construction traffic will be present, the corridors are generally within existing urban road networks (including SDC arterial routes) with multiple alternative routes.

Given this context and the uncertainty of the future construction methodologies, this assessment has not assessed detailed estimates of construction traffic movements. The impact of any temporary traffic management measures implemented to undertake the Project will be revisited, prior to construction, when a greater level of detail is available in terms of the specific construction methodology and traffic environment.

It is anticipated that most of the Project works will be undertaken 'online', within or immediately adjacent to operational corridors. Any future assessment will consider network capacity reductions through potential road closures, capacity reductions on key corridors through lane closures, effects on property access through road or lane closures, and any other ancillary effects such as shoulder closures or temporary loss of access to individual properties.

Construction methodologies are indicative to identify the general type of transport effects that are likely to eventuate, and thereby inform the scope of proposed management plans. The main construction effects assessment in this Report considers:

- Community access and the expected travel time under the different construction scenarios;
- Impact of the construction scenarios on the various transport modes including general traffic, freight, pedestrians and cyclists;
- issues including speed, potential impacts to pedestrians and cyclists and property access; and
- any works that should not occur at the same time

Approach to assessment of operational transport effects

The operational effects of the Project on the transport system are assessed by comparison against the 'existing' environment'. However, the current transport environment is likely to change, regardless of whether this Project proceeds. This is due to the combination of potential changes in land use in Rolleston and possible SDC transport network upgrades which are likely to increase traffic over time within the district.

As such, the operational effects of the project are best compared against a future environment that includes those wider changes but excludes this specific Project. For consistency with the DBC terminology, the future environment without the Project is referred to in the ITA as the **Do Minimum** scenario.

8.3.2 Temporary construction effects

There has been no contractor involvement at this stage of the Project, however the indicative methodology set out in this section represents a potential and feasible construction sequence in order to set an envelope of effects.

It is expected that the Contractor will develop their own methodology for the Project which will include more detail of construction sequence and effects. However, the procurement process will set the high-level objectives outlined in the ITA methodology as a baseline for Contractors to use in developing their methodology. The Indicative Construction Sequencing for Package 2 is outlined below:

Package 2 indicative construction sequence can be summarised as:

Table 8-1: Package 2 indicative construction sequence

Stage	Construction sequence (indicative)
Stage 1A - All ancillary works (unconstrained).	• All traffic on original alignments including all intersections movements. • Shoulder closures and temporary barriers on SH1. • Temporary speed limit – 30-50kph, dependant on lane width. • Possible option to close Kidman Street for construction efficiency, quality and safety. Potential to open new Kidman Street alignment earlier. • All works outside of road network - excavation, fill, piers, abutments, embankments, retaining walls, shoulder

	widening, pavements, footpaths, stormwater, services, traffic signals, lighting, landscaping. • Bridge beam and barrier placement during SH1 night closures (detour via Walkers, Two Chain, Jones, Hoskyns Roads or Tennyson, Kidman Streets, Rolleston Drive (north)). Bridge deck construction continues as unconstrained. • Service relocation enabling works - additional traffic management as required, possible lane shifts and night works when required.
Stage 1B - Tie-in works for Stage 2 construction (transfer alignment to Bridge).	• Traffic management as per Stage 1A • Additional Traffic management including lane shifts, night works, stop/go and possible night closures for pavement works. • Pavement levelling for tie-ins
Stage 2A - New ancillary works (unconstrained).	• Traffic moved to final layout, overpass in use, Hoskyns Road left turn exit only, Rolleston Drive (north) left turn entry only, SH1 traffic lights decommissioned, Jones Road traffic lights commissioned. • Traffic management as per Stage 1A • All works outside of road network - excavation, fill, shoulder widening, pavements, footpaths, stormwater, services, lighting, landscaping.
Stage 2B - Median barriers, final pavements, signs and line-marking	• Traffic management including shoulder closures, lane shifts, night works, stop/go and possible night closures for pavement works.

The Indicative Construction Sequencing for the Project can be seen in Figure 8-1 below.

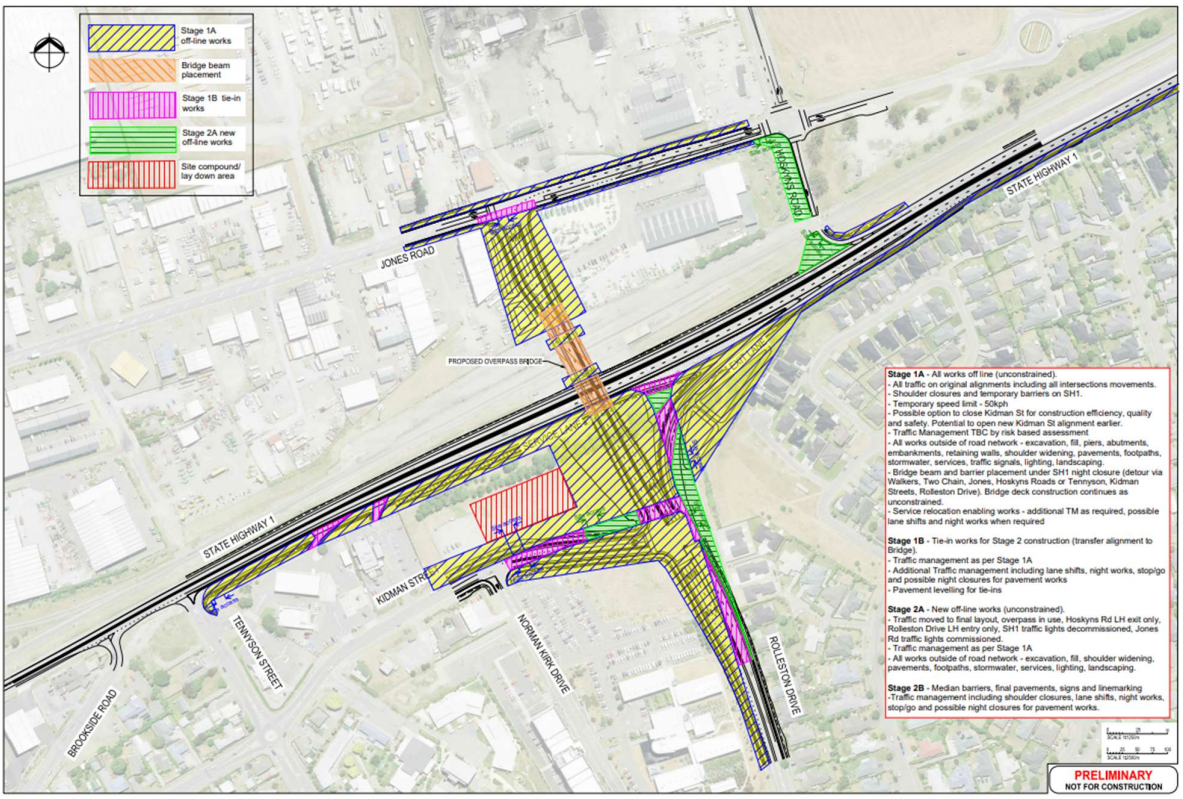


Figure 8-1: Package 2 Indicative Construction Sequencing

The construction sequencing may involve short-term closures of turning movements at Rolleston Drive North, Kidman Street, and Hoskyns Road with appropriate mitigation determined by the contractor in consultation with the Road Controlling Authority (**RCA**).

The potential traffic effects during construction associated with the Project are summarised in Table 8-2. This table also outlines the proposed mitigation measures (in addition to standard temporary traffic management) to minimise the anticipated effects.

The potential traffic effects associated with Package 2 are summarised in Table 8-2. This table also outlines the indicative impact of the works and the proposed mitigation measures (in addition to standard temporary traffic management) to minimise the anticipated effects.

Table 8-2: Summary of Main South Road Construction Traffic Effects

Stage	Activity	Effect	Mitigation
Stage 1A – Construction of the ancillary works	Overpass and approaches	Piling and piers completed largely offline. Beam and barrier placement will require closure of the state highway expected to be completed during a series of nights with traffic diversion via Walkers Road, Two Chain Road and Jones Road. Effects likely to be minor as most works are offline and safe diversions can be provided for night closures	Public communications to advise of diversion. Schedule diversion during periods of reduced traffic to minimise travel time disruption. Block of rail line closures are to be consulted with KiwiRail for timing and duration to minimise effects.

		Beam and barrier placement will require closure of the rail line and is expected to be completed over a series of block of line closures.	
	Widening SH1	Increased travel time due to temporary speed limits through work zones. Travel time disbenefits expected to be minor. Improved safety due to lower speeds.	Schedule works to minimise time where temporary speed limits are in place.
	Jones Road Widening	Increased travel time and additional delay from temporary speed limits through work zones and stop/go single lane operation for short durations. Effects likely to be minor as works can be completed as shoulder closures or short-term stop-go operations. May have minor impacts on access to adjacent business.	Schedule works to minimise time where temporary speed limits are in place. Schedule stop/go operations during periods of reduced traffic to minimise travel time disruption. Liaise with affected businesses to develop a plan to maintain access during construction. Public communications to advise of changes to access to businesses.
	Rolleston Drive North Widening	Increased travel time and additional delays for temporary speed limits through work zones and stop/go single lane operation for short durations. Effects likely to be minor as new alignments are largely away from the existing road.	Schedule works to minimise time where temporary speed limits are in place. Schedule stop/go operations during periods of reduced traffic to minimise travel time disruption.
Stage 1B – Tie-in works for Stage 2 construction (transfer alignment to overpass)	Off ramp exit	Short term diversion of traffic via Service Lane and Tennyson Street to allow construction. Effects likely to be minor.	Public communications and signed detour routes. Safer alternatives are available.
	Rolleston Drive North	Temporary closure of Kidman Street with diversion via Norman Kirk Drive Effects likely to be minor.	Public communications and signed detour routes. Safer alternatives are available.
	Kidman Street	Temporary closure of Kidman Street with diversion via Norman Kirk Drive. Diversion of bus routes on Kidman Street to Norman	Public communications and signed detour routes. Safer alternatives are available.

		Kirk Road and temporary closure of Kidman Street bus stops. Effects likely to be minor.	Will require coordination with bus operators about route and temporary bus stops.
Stage 2A – New ancillary works (unconstrained).	Reconstruction SH1	Increased travel time due to traffic diverted to one side and the other to allow staged pavement construction. Effects likely to be minor. Improved safety due to lower speeds.	Maintain one lane in each direction at all times. Schedule works to minimise time where temporary speed limits are in place.
	Reconstruction of Rolleston Drive North	Increased travel time due to traffic diverted to one side and the other to allow staged pavement construction. Effects likely to be minor. Improved safety due to lower speeds.	Maintain one lane in each direction at all times. Schedule works to minimise time where temporary speed limits are in place.
	Reconstruction of Hoskyns Road and level crossings	Increased travel time due to traffic diverted to one side and the other to allow staged pavement construction. Effects likely to be minor. Improved safety due to lower speeds.	Maintain one lane in each direction at all times. Schedule works to minimise time where temporary speed limits are in place. All works in the rail corridor are to be consulted with KiwiRail for methodology, timing and duration to minimise effects.
Stage 2B – Finishing works	Median barriers, final pavements, signs, line-marking and landscaping	Increased travel times due to temporary reduced speed limits through work zones. Additional delays from stop/go single lane operation for short durations.	Schedule works to minimise time where temporary speed limits are in place. Schedule stop/go operations during periods of reduced traffic to minimise travel time disruption.

A Construction Traffic Management Plan (**CTMP**) is proposed to manage the potential effects during the construction works. It will outline the procedures to produce Site-Specific Traffic Management Plans (SSTMPs) and the relevant standards that must be complied with.

The SSTMPs will detail the specific traffic management set ups at each stage of the worksite as well as any mitigation measures for impacts of the works. Each SSTMP will be developed in line with the current New Zealand guide to temporary traffic management (**NZGTTM**) and will set out the requirements for the planning, design and implementation of temporary traffic management.

The objectives of temporary traffic management for the construction of the Project are:

- Adherence to the standards set out in NZGTTM wherever reasonably practicable. Engineering Exception Decisions (**EEDs**), which authorise temporary traffic management measures, will need to gain approval and be signed-off by the Road Controlling Authority or authorised representatives;

- Minimise disruption on the state highway and local roads as far as is practicable and maintain existing flows and travel times;
- Minimise the number of construction vehicle trips and their effects on local roads and seek to avoid residential areas where practicable;
- Minimise the effects of construction vehicle parking;
- Develop traffic management plans that have consideration of all key stakeholders, including Selwyn District Council, business owners and residents;
- Gain approval of SSTMPs at least five working days ahead of implementation;
- Provide for effective communication and the gathering of feedback from key affected parties; and
- Provide a safe environment for the public and construction staff.

The SSTMP will address the following potential construction related effects in Table 8-3:

Table 8-3: Potential construction related effects

Effect	Mitigation and Management
Cumulative effects - Coordination of Traffic Management	A construction sequencing plan (prepared by the Contractor) that identifies the various activities that will take place and when these will occur. The details of the temporary traffic management will be included in the construction sequencing plan to identify the potential cumulative traffic effects associated with several construction locations being active at the same time. One aim of the sequencing plan will be to avoid and/or mitigate significant cumulative traffic effects arising from multiple construction activities (which individually would only result in minimal effects). The Contractor will be required to restrict impact on the surrounding areas, such as predetermined haul routes and site access points or amendments to NZGTTM to impose a greater lead in time for submissions of SSTMPs. Any controls will need to be agreed by the relevant RCA.
Traffic Effects	Traffic modelling will be required of some temporary traffic management activities to identify potential delays. Alternative methodologies may need to be considered or mitigation measures to minimise the effects. These may include: • Undertaking works at times of low traffic flow (school holidays or night works); and • Advanced communication of the works to pre-warn the public or enable them to think of alternative routes.
Site Access	Construction site access points will be required and managed as part of the SSTMPs. These access points will need to operate in a safe manner and not cause undue disruption to general traffic flows (noting some disruption and inconvenience may occur). The SSTMPs will need to consider the following regarding site access points: • Signage to identify the accesses for delivery vehicles and suppliers; • Permitted vehicles (trucks/articulated trucks/cars) and permitted uses (visitors/deliveries/staff); • Permitted movements and/or movement restrictions e.g. left in/left out; • Pedestrian, cyclist, and public safety; and • Deceleration and acceleration requirements to minimise traffic disruption and provide for safe access/ egress.

Diversions	Temporary road closures are anticipated to be required on some of the local roads. These closures and the proposed diversion routes will be discussed with the relevant RCA prior to implementation. Diversion routes will utilise arterial roads and avoid residential areas where possible. It is expected that any diversions would generally take place during the night when traffic flows on the state highway and local road networks are low. Any diversions that would take place over a number of consecutive days would be run as a series of night works, with 'make good' works to reinstate traffic during the day.
Property Access	The SSTMPs will include measures to minimise the effects on property access (including turning restrictions) and on-site parking/manoeuvring. Consultation will be undertaken with affected property owners to identify the impact on access, duration and date of work. All reasonable steps will be taken to maintain property access during construction including providing satisfactory alternatives if necessary.

In addition to the above, the SSTMP will manage pedestrian and cyclist movements through the work site with temporary foot and cycle paths (where existing facilities are impacted). No temporary pedestrian and cycle provision will be installed along the state highway for safety reasons.

8.3.3 Operational effects

The Project will provide significant improvements to the transport network around Rolleston. At a local level, the Wider Project demonstrates a 5.0%-14.6% reduction in total vehicle hours travelled during each of the time periods modelled[5] in 2038. The Project will result in significant improvements in safety on the network, with a predicted 40% reduction in deaths and serious injuries, primarily as a result of changes at SH1, Hoskyns Road and Jones Road intersection.

SH1 Access Changes

Right-turning movements to and from SH1 have been identified as significant crash risks. To mitigate these risks, median barriers are being installed, and some intersections are being reconfigured to left-in/left-out access. The removal of existing right turns along SH1 will necessitate adjustments to access routes for both Rolleston Township to the south of SH1 and the industrial area to the north. The Project introduces the following changes to SH1 access, outlined below in Table 8-4:

Table 8-4: Project SH1 Access Changes

Access	Current Configuration	Proposed Configuration
SH1 / Hoskyns Road	All movements, traffic signals	Left out only
SH1 / Rolleston Drive North	All movements, traffic signals	Left in only via SH1 exit lane
SH1 / Tennyson Street	All movements, give-way	Left in (via service lane) and left out only
SH1 / Brookside Road	All movements, give-way	Left in and left out only
SH1 / Rolleston Drive South	All movements, give way	Left in and left out only

Most movements between SH1, Rolleston, and the RIZ involve minor increases in access length (<500m), except for movements from SH1 east into the RIZ and from the RIZ to SH1 west. These two movements will utilise existing local roads, with the new typical routes being less than 1km longer than the current routes. As outlined in the ITA, travel times for these movements are projected to be faster by 2038,

despite the slightly longer routes. This improvement reflects the delays and congestion anticipated at future at-grade intersections. When factoring in reduced travel times and enhanced safety, the changes to access routes for Rolleston and the industrial area are considered to significantly improve overall accessibility.

Property Access Changes

Jones Road Properties

There are currently two accesses formed on Jones Road for Tailored Energy Solution Ltd (804 Jones Road, legally described as Lot 2 DP 336463). The new overpass will connect to Jones Road opposite the western access to Tailored Energy Solutions. The western access will be upgraded with a traffic signal-controlled intersection on the northern side of the Rolleston Drive Extension/Jones Road intersection, retaining all movements to and from this access. The eastern access will remain unchanged, allowing for all movements to and from the site. Additionally, a flush median on Jones Road will provide a safe space for vehicles turning right into the site's easern access. These changes will have less than minor effects on access to the property while significantly improving safety.
For U-Tow NZ (808 Jones Road, legally described as Lot 1 DP 336463), located immediately adjacent to the new Rolleston Drive Extension/Jones Road signalised intersection, the existing driveway west of the intersection will remain accessible. During peak traffic periods, right turns may become challenging due to increased traffic flow. To address this, property owners and customers will be encouraged to use left-in/left-out movements. Alternative access routes are available, including the nearby George Holmes Road cul-de-sac turning facility, which provides a safe turnaround point for vehicles travelling from the east or Rolleston township. This adds 1.1km or 700m to their journey, respectively. Vehicles leaving U-Tow NZ can undertake U-turns at the Jones Road roundabout, adding 1km for east bound trips and 650m for Rolleston township trips, equating to approximately two additional minutes of travel time. The land parcel associated with U-Tow NZ Ltd is owned by Tailored Energy, as such, there is an opportunity to realign access arrangements within the two sites enabling vehicle movements in and out of U-Tow via the signalised entrance to the Tailored Energy site. Given the low traffic generation at the U-Tow site, the effects of these changes will be minor and ongoing discussions with the business's regarding access arrangements aim to further reduce any inconvenience.

For the commercial properties at 790 and 799 Jones Road, access arrangements will remain unchanged, with all movements maintained. The Project also provides a flush median on Jones Road to facilitate safer right turns into these properties and additional traffic lanes will accommodate increased traffic volumes.

The signalised intersection, flush median, and safer turning options prioritise safety and connectivity for road users. The changes to Jones Road, as a result of the Project, retain access to the aforementioned properties, albeit with some challenges when turning right in and out of these properties during peak hours. Effects on 790 and 799 Jones Road as a result of the Project will be less than minor, and effects on 808 Jones Road (U-Tow) will be minor.

Rolleston Drive North

To enable construction of the new overpass between Rolleston Drive North and Jones Road, a realignment of Rolleston Drive North and Kidman Street is required. A 60m long solid median will be installed along Rolleston Drive North between Kidman Street and Norman Kirk Drive, restricting access for six residential properties (13A to 19B Rolleston Drive) to left-in/left-out movements. These changes will prioritise safety and efficiency and effects on the owners and occupiers of these properties will be less than minor

SH1/Main South Road

The BP service station and McDonald's, which currently have westbound access off SH1, will gain access via a new westbound service lane connected to the Rolleston Drive off-ramp from Hoskyns Road to Tennyson Street. Eastbound SH1 access will require a short detour of 1.3 km via Dunns Crossing Road and Brookside Road, adding approximately three minutes of travel time. Vehicles will continue to exit onto Kidman Street. While these changes may result in minor inconvenience, they are necessary for safety improvements and will have less than minor effects on access to these properties.

Summary

Vehicle access changes for U-Tow NZ, BP, and McDonald's have been designed to improve safety while keeping the effects on these properties less than minor. Alternative arrangements have been provided wherever feasible to maintain access, providing safe and practical routes for all affected users. These changes are essential for improving safety and managing increased traffic efficiently.

8.3.4 Effects on the local road network

The ITA has predicted change in daily[6] traffic flows (vpd) on the network between the Project and the Do Minimum scenario for 2038. Figure 8-2 indicates the direction of change (red reflecting a reduction in traffic flow is predicted whilst blue indicates an increase), as well as the scale of change (reflected in the relative width of the lines).

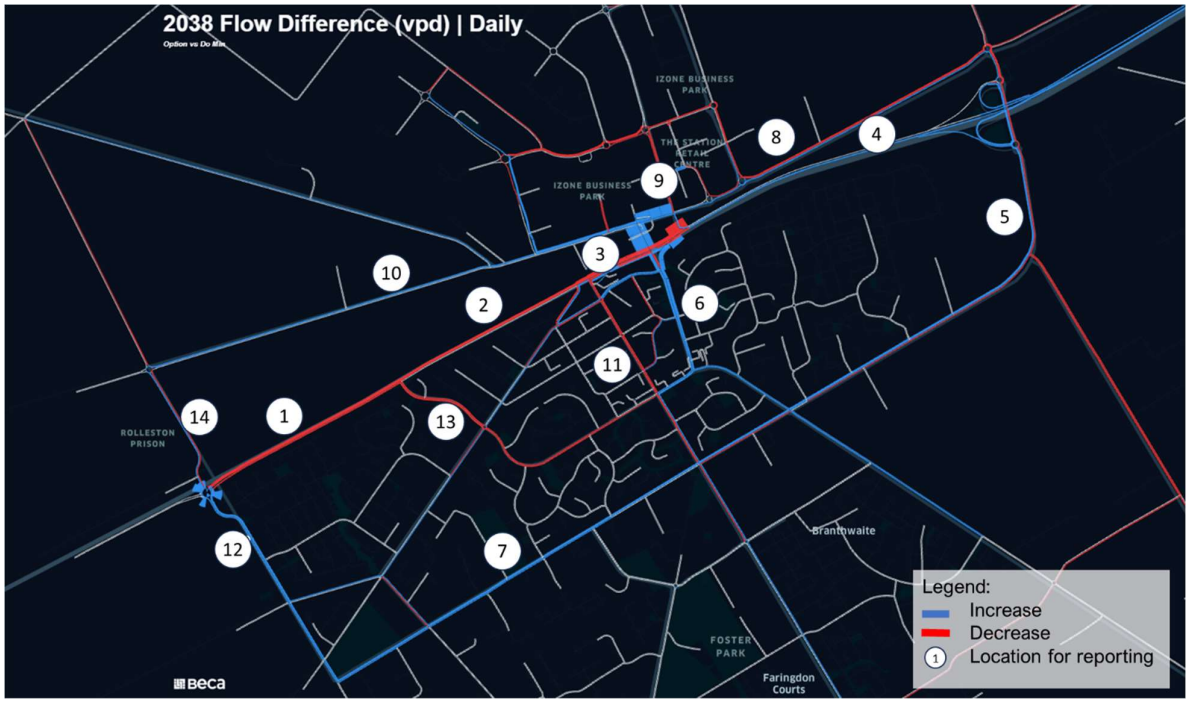


Figure 8-2: Flow Difference Plot – 2038 Daily (key locations for reporting shown).

By 2038, significant congestion is predicted[7] at the SH1 / Rolleston Drive North and SH1 / Hoskyns Road intersections under the Do Minimum scenario. The Project mitigates this by providing faster access to SH1, resulting in increased traffic on Rolleston Drive North and Jones Road, which aligns with the road categorisations as Primary Traffic Roads in the Rolleston Strategic Network Plan (**RSNP**).

Reduced traffic on SH1 between Dunns Crossing Road and Rolleston Drive North is also anticipated due to restricted right-turn movements at key intersections. As a resulted, increases in traffic on Dunns Crossing Road, Levi Road, and Weedons Road are anticipated. As discussed in Section 3.1 of the ITA, the Project was developed with consideration of the SDC network framework and road hierarchy to focus traffic movements on arterial and major movement corridors. Site 6 and Site 9 represent Rolleston Drive

[7] *The future growth assumptions are documented in the ITA, Section 2.2.2 of Appendix S - Rolleston DBC - Scheme Modelling and Economics report of the DBC are outlined below. of additional trips between the 2021 and 2038 demand scenarios are as follows Industrial Area, Bulk Retail Site South of Link Drive: 85% turn-over level of published 'almost 2,000 car park spaces' during typical weekday PM peak; Southwest Acland Park Residential Area: 750-1000 additional households; Northeast Branthwaite Residential Area: 400-500 additional households; Southeast Farringdon Residential Area: 250-350 additional households and Falcons Landing Residential Area: 250-350 additional households.*

and Jones Road respectively. These are primary traffic corridors and are expected to accomodate high volumes.

With the scale of growth in these areas, it is expected that there will be capacity constraints particularly at intersections. Site 9 (Jones Road / Hoskyns Road) is proposed to be widened as part of the Project. While the model shows some delay at the critical intersections, it does not indicate that the links are overcapacity. As such, these arterial roads can accomodate the flows predicted as a result of this Project.

The modelled increases on the local road network are consistent with the surrounding roads intended function and capacity. Additionally, reduced traffic volumes on Site 13 (Tennyson Street – identified as a Collector Road[8]) and Site 19 (Rolleston Drive South – identified as a Collector Road) will contribute to quieter residential and commercial areas within west Rolleston.

Traffic volumes near West Rolleston Primary School on Dunns Crossing Road (identified as an Arterial Road[9]) are expected to rise as a result of this Project, once operational, but these increases are manageable, complemented by safety improvements proposed by SDC and noted in the DBC. These projects include the Moore street extension, Lowes/Levi/Lincoln Rolleston Road intersection, Selwyn/Lincoln-Rolleston Road intersection and Dunns Crossing Road/Burnham School Road intersection. While these projects will complement the efficiency and safety of the Rolleston arterial ring road system, the Project is not reliant on these improvements progressing.

As discussed in the ITA, the removal of traffic signals on SH1 results in fewer short, local trips using SH1 through Rolleston however increases traffic on key roads such as Jones Road, Levi Road, and Rolleston Drive North as shown in Figure 8-3. These three roads are identified as Arterial Roads deemed suitable for through traffic and aligns with the RSNP.

8.3.5 Travel choices

The Project provides improved walking and cycling facilities that enable travel choices and integrate with the existing and proposed network in Rolleston. This includes:

- A new 4m-wide SUP on the west side of the overpass, providing north-south connectivity.
- Widening the existing footpath to form a 3m-wide SUP on the north side of Jones Road between the Overpass and Hoskyns Road.
- 4m-wide shared-use crossings at the new traffic signals and widening the existing crossings at the Jones Road / Hoskyns Road intersection.
- Retaining the connection from the future Park & Ride (P&R) site on Jones Road (east of the Jones Road / Hoskyns Road intersection) across the signalised intersection and from Jones Road across the rail crossing on Hoskyns Road to the rail station.
- Upgrading the pedestrian crossing at the Hoskyns Road level crossing.

There are existing or planned cycleways/shared-use path networks within Rolleston on both the northern and southern sides of SH1, connecting to Lincoln, West Melton, and Christchurch. Currently, the only dedicated cycle facilities for safely crossing SH1 are grade-separated facilities at the Weedons Road interchange, which require significant detours for Rolleston cyclists.The Project addresses this by providing grade-separated cycling connections across SH1, creating a more convenient and integrated network for cyclists.

These new connections will align with road network links across SH1, providing a cohesive cycle network similar to that shown in Table 8-3. The Project forms a critical link in the Rolleston cycle network, enabling expanded and contiguous connections within Rolleston and to surrounding areas.

[8] *POSDP Definition - The primary role of a* Collector Road *is to distribute and collect local traffic within and between neighbourhood areas. In some situations, they may link smaller rural communities to the Arterial Road network.*

9 POSDP Definition - Arterial Roads connect areas of district importance not already provided by State Highways. They also connect the districts townships and other important places and activities together, including across district boundaries.

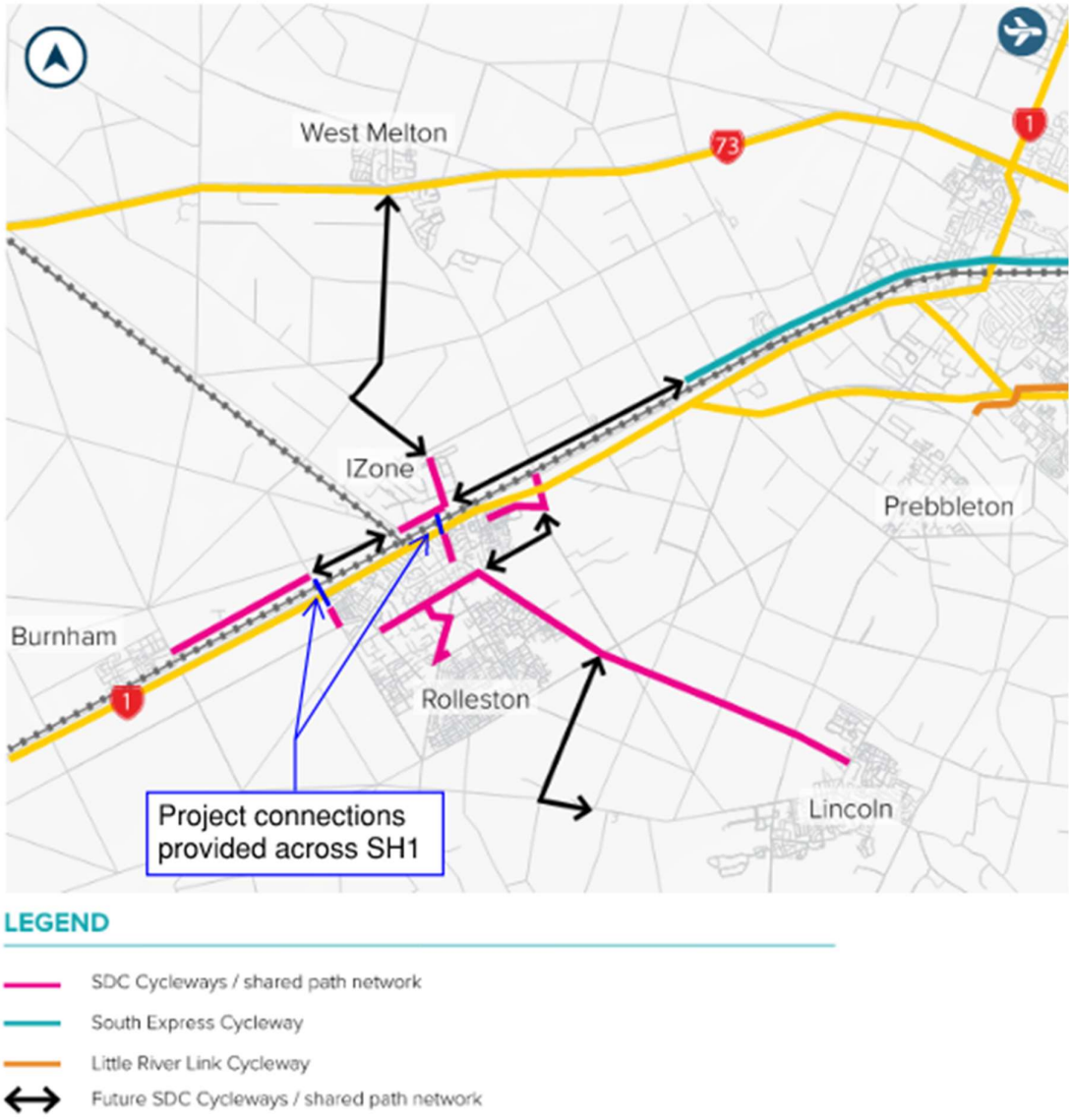


Figure 8-4: Key Cycling Connection provided across SH1 and Integration with SDC Cycleway/Shared Path Network

8.3.6 Recommended measures to avoid, remedy or mitigate potential adverse effects

The following sections summarise the measures proposed to mitigate adverse traffic effects during both the construction phase and operational phase of the Project.

Construction traffic effects mitigation measures

The Transport Assessment recommends measures to address the potential impacts arising during the construction phase as outlined earlier in Table 8-2. These measures are summarised below:

- An overarching CTMP, supported by individual site-specific temporary traffic management plans. This is proposed in draft conditions.
- An overall philosophy to construct ancillary works first, to minimise the impact on the travelling public.
- Package 1 of the Wider Project will be constructed prior to this Project, Package 2, thereby accommodating alterative traffic movements at the SH1 / Rolleston Drive North and SH1 / Hoskyns Road intersections. Completion of Package 1 will reduce the impact of any effects from this Project and the roundabout (replacing Dunns Crossing Road/ Walkers Road intersection with SH1) will be operational before any turning movement are removed at other intersections along SH1.

- The existing number of lanes on SH1 (one lane in each direction, with left and right turn bays) will be maintained as far as possible to preserve the capacity of all roads and minimise the impact for the travelling public duration of the construction.

The Project is anticipated to commence construction works in 2026, following the completion of Package 1 in 2025/2026.

Operational traffic and transport mitigation measures:

The following measures are proposed to manage transport effects arising from the operation of the Project:

- **Staging of the Wider Project** – The Wider Project has been staged in a manner that the traffic movements associated with the operation of this Project will not commence until Package 1 is fully operational by providing for safer connectivity to and from the state highway into the residential and industrial areas. As left in / left out changes are proposed to Tennyson Street and Rolleston Drive South for the Project, road users travelling from the west can access the southern areas of Rolleston via the roundabout. This will be supported by way-finding signage.
- **Local road network** – Wayfinding signage is proposed throughout the Project area to direct road users onto the preferred routes. While traffic volumes along several local roads will increase as a result of the Project, these roads are primary traffic corridors, identified as Collector and Arterial Roads, and are expected to accomodate high volumes.
- The preparation of a **Construction Traffic Management Plans** (CTMP) (parallel to the Outline Plan process) – prior to the construction and implementation of the Project, the detailed design process will be undertaken to determine the final CTMP will then be required to be submitted to SDC.
- **The development of a ULDF** – the ULDF provides a mechanism for determining how the Project is designed to integrate with the adjacent urban and landscape context, provides appropriate walking and cycling connectivity, promotes inclusive access and a sense of personal safety by aligning with best practice guidelines such as CPTED principles, and Safety in Design requirements. It also requires details of roadside elements such as wayfinding and signage.
- **Ongoing consultation regarding property access** – Consultation with landowners whose vehicle access to their property will be altered by the Project (U-Tow and Tailored Energy sites) to demonstrate how safe (reconfigured or alternative) access will be provided.

In summary as outlined in the ITA, the network performs well with the Project improvements in 2028 with most intersections operating at Level of Service (**LoS**) D or better. Similarly, the network performs well in 2038 compared to the Do Minimum network with the Level of Service improving at all key intersections except one. The Project effectively addresses the congestion issues identified in the Do Minimum network. The Project also provides notable improvements in safety for SH1 traffic as well as improving the safety of the rail level crossing at Hoskyns Road and Walkers Road.

8.4 Landscape and Visual

The Landscape and Visual Assessment (**LVA**) has been prepared by Beca and is included in Appendix I. The following sections cover the methodology applied, the potential effects associated with the Project during both construction and operation and discuss the measures to manage these effects.

The LVA focused on potential effects on urban character and amenity, while also addressing the nature of the residential interface with the road corridors. With mitigation measures in place, the LVA concludes that the Project is appropriate within this setting from a landscape and visual perspective.

In terms of the effects, the scale of the Project is also consistent with other roading upgrades forming a continuation of interventions across the state highway network which appear localised within the context of Greater Christchurch. Potential effects are driven by several factors, including the earthworks required for construction of the Project and the resulting loss of vegetation, particularly in regard to the residential interface. The location of the Project in the Rolleston Key Activity Centre (**KAC**) necessitates a well-integrated design response which maintains and improves connectivity, supports good urban form and considers adjacent residential areas. For road users, the experience of the Project is likely to be positive, with improved and safe connectivity. For the residential area to the southeast of the Project, effects may

arise from the extension of the southbound lane, elevated nature of the overpass and a sense of overlooking, contributing to a perceived loss of privacy and increased presence of traffic and lighting.

The Project in the Rolleston KAC necessitates a well-integrated design response which maintains and improves connectivity, supports good urban form and considers adjacent residential areas. For road users, the experience of the Project is likely to be positive, with improved and safe connectivity. For the residential area to the south-east of the Project, effects may arise from the extension of the southbound lane, elevated nature of the overpass and a sense of overlooking, contributing to a perceived loss of privacy and increased presence of traffic and lighting. Overall, adverse effects on perceptual values are considered to be low-moderate, underpinned by the retention of the existing earth bund with associated planting and fencing. With implementation of proposed recommendations, this may reduce to low.

For the majority of viewing audiences, the Project will result in negligible effects. This is primarily influenced by the existing earth bund with associated planting and fencing which largely screens the overpass structure and the associated components from the residential area. For residents along the northern end of Rolleston Drive, Wyndham Mews and Maitland Crescent, potential effects may arise from the elevated nature of the overpass and a sense of overlooking, contributing to a perceived loss of privacy and increased presence of traffic and lighting. Visual effects for these residents are likely to be moderate.

8.4.1 Assessment methodology

The LVA assessment methodology is based on, and consistent with, the Te Tangi A Te Manu Aotearoa New Zealand Landscape Assessment Guidelines (the Guidelines), Tuia Pito Ora New Zealand Institute of Landscape Architects, July 2022. The Guidelines emphasise the need for the scope and method of assessment to be tailored to consider three key aspects:

- The relevant landscape setting;
- The nature of the proposal and associated degree of change in the landscape; and
- Associated policy framework.

Appendix 6 of the LVA sets out the full Landscape and Visual Assessment methodology and terms used when assessing the potential landscape and visual effects of the proposal. A desktop review of the available data relating to the existing landscape, project proposal and statutory planning context was undertaken, a site visit to the Project site and surrounding landscape was also undertaken in April 2024. The operational effects associated with the Project on the surrounding landscape are best described as physical effects and perceptual.

8.4.2 Effects on the physical landscape

Potential effects on the physical landscape values are driven by several factors, namely:

- bulk and scale of earthworks to support the overpass,
- loss of mature trees and vegetation, and
- changes to surface water run-off resulting from the Project and requiring stormwater devices and associated earthworks, to be constructed.

The proposed earthworks will create a landform which is relatively typical in the context of the SH1 corridor. The scale of the Project is consistent with other roading upgrades forming a continuation of interventions across the state highway network. The physically elevated components of the Project are largely set back from the proposed designation boundaries adjacent to the MRZ and are likely to avoid physical shading effects.

There will be adverse effects on the physical values due to loss of mature street trees along in front of residential properties on Rolleston Drive as well as loss of native trees and vegetation in front of the Selwyn District Council buildings. Existing mature trees located around the Rolleston Drive intersection and ‘gateway’ area will be removed to enable construction of roading and stormwater management devices. The existing vegetation and man-made bund along the northern edge of the MRZ adjacent to SH1 is to be retained, but with some excavation at the toe of the slope to construct a retaining wall. This may result in further vegetation removal.

The proposed designation allows for improvements to local roads in the GIZ including Jones and Hoskyns Road but given these changes are within the existing road corridor, no effect on physical landscape values will occur.

Overall, given the extent of existing roading infrastructure, compatible land zoning (TCZ and GIZ) and proposed earthworks and vegetation removal, the overpass and connecting road changes are likely to have moderate adverse effect on physical landscape values.

8.4.3 Perceptual effects

Perceptual effects are related to how people perceive or experiences places. The POSDP highlights that the location of the Project in the Rolleston KAC necessitates a well-integrated design response which maintains and improves connectivity, supports good urban form and considers adjacent residential areas. A high level of finish is expected for highways in urban areas due to the close interaction between people and the roading network [10]. Wayfinding and visual amenity are key considerations in this context - the location of the proposed overpass at the 'gateway' to Rolleston aims to improve function of this major intersection and provide a better overall experience for road users. Once constructed road users will benefit from safety improvements, decongestion of traffic and a higher level of on-ground legibility provided by signage elements and layout of the routes which contributes to easy navigation of the corridor. Additionally, the overpass overcomes the challenge to connectivity arising from the physical demarcation and location of the SIMT.

Changes to Rolleston Drive are likely to result in adverse effects on the perceptual values of this streetscape. In combination with the extended areas of roading infrastructure, loss of vegetation along the street in front of the Selwyn District Council building and loss of mature trees from the residential interface will reduce the visual amenity of the streetscape, with less visual softening to balance the existing and proposed built form.

The TCZ land bordered by Kidman Street and Rolleston Drive is currently undeveloped and the Project will introduce earthworks and an obvious new element within the landscape. While this change will be obvious in the current setting, the proposed infrastructure will be in keeping with the intended future scale and density of built form of the TCZ. It will support the function of activities expected for the TCZ through improved access and stormwater infrastructure. Views for these users are addressed further in Section 6.2.4 of Appendix I.

The Project will enhance the existing pedestrian and cyclist connectivity and experience to businesses in the industrial zones. The provision of a 4m wide separated shared path will increase the sense of safety when moving through this area and there is likely to be new views from the top of the overpass.

For the residential area to the southeast of the Project, effects on perceptual values may arise from the elevated nature of the overpass and a sense of overlooking, contributing to a perceived loss of privacy and increased presence of traffic and lighting. This is discussed in more detail in section 6.2 Visual Effects Analysis of Appendix I. For some dwellings, the proposed interventions (such as extension of the second southbound lane) will mean that the vehicle movements will be at a physically closer proximity and may therefore be more readily noticeable, for example at 5A Seymour Drive (refer to Appendix 7 General Arrangement Sheet 3 of 7 of Appendix I) where the proposed retaining wall comes with 2m of the property boundary (demarcated by the fence atop the earth bund). The degree of perceptual effect relates to the extent of the vegetation able to be retained - noting the earth bund, planting and vegetation is proposed to be retained. Long term adverse effects on the perceptual values of these dwellings may arise from construction of the proposed retaining wall in locations where there is limited space for protecting existing planting or implementing replacement planting.

Overall, the Project will have a low-moderate adverse effect on perceptual landscape values.

8.4.4 Associative effects

The co-location of infrastructure along existing lineal road corridors will have **no effect** on associative values. In creating a new connection across SH1 and the SIMT, the Project is consistent with the pattern of development in the area. It will enhance the transitional character of the corridor and support associative values by providing a high-quality linkage between Rolleston and Christchurch, making the

[10] NZTA Landscape Guidelines, 2018, page 45

township a more accessible and therefore, favourable place to live in and commute from. At the time of preparing this assessment the author is not aware of any cultural values that may influence the associative effects assessment – noting that engagement with mana whenua is ongoing, as outlined in Section 2.2.2 of Appendix I.

8.4.5 Construction effects

Potential adverse effects arising from construction activities are likely to relate to the Project enabling works (refer Section 6.3) and there may be a moderate to high moderate degree of effect on perceptual values due to the proximity to the works, disruption to access and visual clutter experienced in views. Following the completion of the works, all road users the Project improves the overall quality of the viewing experience, resulting in **positive effects**. In particular, the Project will serve to amplify the openness and enable views to the wider landscape while the proposed planting will soften its edges.

8.4.6 Recommended measures to avoid, remedy or mitigate potential adverse effects

The Project will have landscape, visual and natural character effects that are consistent with what is anticipated in this location from an upgrade of state highway infrastructure. An Urban and Landscape Design Framework (**ULDF**) is being developed to achieve landscape design outcomes and these outcomes will feed into a Landscape Management Plan (**LMP**).

8.5 Noise and Vibration

The Assessments of Construction and Operational Noise Effects have been prepared by Marshall Day Acoustics (**MDA**) and are included in Appendix J. The following sections cover the methodology applied, actual and the potential operational effects associated with the Project and measures to manage effects using the methods recommended in the POSDP and New Zealand Standard NZS 6806:2010 Acoustics - Road-traffic noise - New and altered roads (NZS 6806).

The positive effects relating to operational noise are covered as part of Section 8.2 above.

8.5.1 Assessment methodology

The assessment methodology for the operational phase has been modelled using the SoundPLAN 9.0 software with inputs for both the Do-Nothing and Do-Minimum situations. MDA has advised that modelling outputs have been assessed against measurements of the existing ambient noise environment and provide a margin of conservatism of 2 to 3 dB across the Project.

Traffic noise levels have been predicted for each façade of any PPF and the highest level used for assessment against the NZS 6806 altered road criteria as set out below:

> *The Do-minimum noise environment would be greater than or equal to 64 $dB_{LAeq,24h}$, and if no specific noise mitigation was undertaken, the alterations would increase road traffic noise at this assessment position by 3dB or more at the design year when compared to the Do-nothing noise environment; OR*
>
> *The Do-minimum noise environment would be greater than or equal to 68 $dB_{LAeq,24h}$, and if no specific noise mitigation was undertaken, the alterations would increase road traffic noise at this assessment position by 1dB or more at the design year when compared to the Do-nothing noise environment.*

Neither of the above criteria are triggered by the Project on the basis of the input data. A schedule of predicted Do-nothing and Do-minimum noise levels are provided in within Appendix J.

MDA advise that the below methods were followed in the assessment of operational effects:

- Traffic noise levels were assessed at sensitive receivers along the Project extent and evaluated how future noise levels will change as a result of the Project.
- The Project is assessed using New Zealand Standard NZS 6806:2010 Acoustics - Road-traffic noise - New and altered roads.

8.5.2 Construction effects

The assessment prepared by MDA acknowledges that construction activities, although temporary, have the potential to exceed the recommended noise criteria from NZS 6803 when work is occurring close to residential properties – within approximately 60 metres – noting that noise will be of relatively short duration at any single dwelling.

Construction noise effects can be mitigated by various means, such as through the use of temporary site hoardings, the selection of quieter equipment, and effective communication with residents. MDA has identified a number of PPFs (being residential properties) within 100m of the Project as depicted in Figure 8-5.

Figure 8-5: Residential units (highlighted green) considered PPFs within 100 metres of construction activities

8.5.3 Operational effects

The potential effects during operation of the Project on PPFs to the south and east of the Project footprint are as follows.

- For the majority of PPFs, there will be no significant change in traffic noise level (less than ±2dB) due to the Project implementation, resulting in a negligible change in traffic noise effects.
- The assessment identified 323 noise sensitive locations PPFs within 100 metres of the Project and has calculated the likely change in traffic noise levels as a result of the Project for a future design year of 2038.
- The change in noise level as a result of the Project does not trigger the “altered road” criteria set out in NZS 6806, and no specific noise mitigation is required to be considered under the Standard. MDA noted, that as part of the proposed design, the overpass will feature a minimum 1-metre-high concrete safety barrier on both sides of the bridge that will also serve as an effective noise barrier.

Overall, the assessment concludes that the change in operational noise as a result of this Project will not trigger the NZS 6806 altered road criteria at any PPF.

8.5.4 Recommended measures to avoid, remedy or mitigate potential adverse effects

No specific measures are recommended for operational phase noise as the calculations show that the Project will not trigger the NZS6806 altered road criteria at any PPF.

In regard to the construction phase, MDA have recommended several measures to mitigate potential adverse effects associated with noise and vibration, as outlined below:

- **Preparation and implementation of a Construction Noise and Vibration Management Plan (CNVMP) –** A CNVMP will mitigate adverse effects by providing for measures that may include:

    - *Noise barriers* - Placing temporary noise barriers, such as sheets of plywood or construction noise curtains, between dwellings and construction activities can reduce noise levels by up to 10 decibels.
    - *Restriction on night work* - Night work can cause the greatest disturbance to residents and should generally be avoided. Where works cannot be undertaken in daytime hours, additional engagement should be undertaken with the nearest residents.

8.6 Terrestrial Ecology

An Ecological Impact Assessment for the Project is included in Appendix K. This section provides a summary of the assessment, including the methodology applied and the recommended measures to manage effects. The following potential adverse ecological effects associated with the Project relate to:

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

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

Based on the scale of the Project, to reduce the risk of injury/mortality of herpetofauna where possible a lizard survey will be undertaken. This will assess lizard presence/absence and abundance at the site. If a population is present, a Lizard Management Plan will be prepared and will likely inlcude the staged vegetation removal to encourage relocation of lizard populations where applicable. This approach will be discussed with the Department of Conservation (**DOC**), and if required, a Wildlife Permit will be sought.

The Project design will include measures to minimise the low-level effects of the terrestrial vegetation clearance. 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 will be managed to Low – Negligible levels with no adverse residual effects expected.

8.6.1 Assessment methodology

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

- Information held by CRC, 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.

In addition to the desktop review, a site visit was undertaken by ecologists to assess freshwater, terrestrial, and fauna habitat values.

8.6.2 Construction effects

In relation to herpetofauna and potenital permanent loss of habitat, rank grassland provides habitat for southern grass skink and is classified as ecologically significant under the Canterbury RPS and Selwyn District Plan.

The identified areas of potential habitat, depicted below in Figure 8-6, are part of contiguous stretches of similar habitat types. The portions of habitat that are to be impacted are currently at the edges of the contiguous habitat and are largely located within the bounds of the existing NZTA and KiwiRail designation. As such, any effects relating to loss of habitat will be less than minor, particularly when considering the scale of habitat already within designation boundaries.

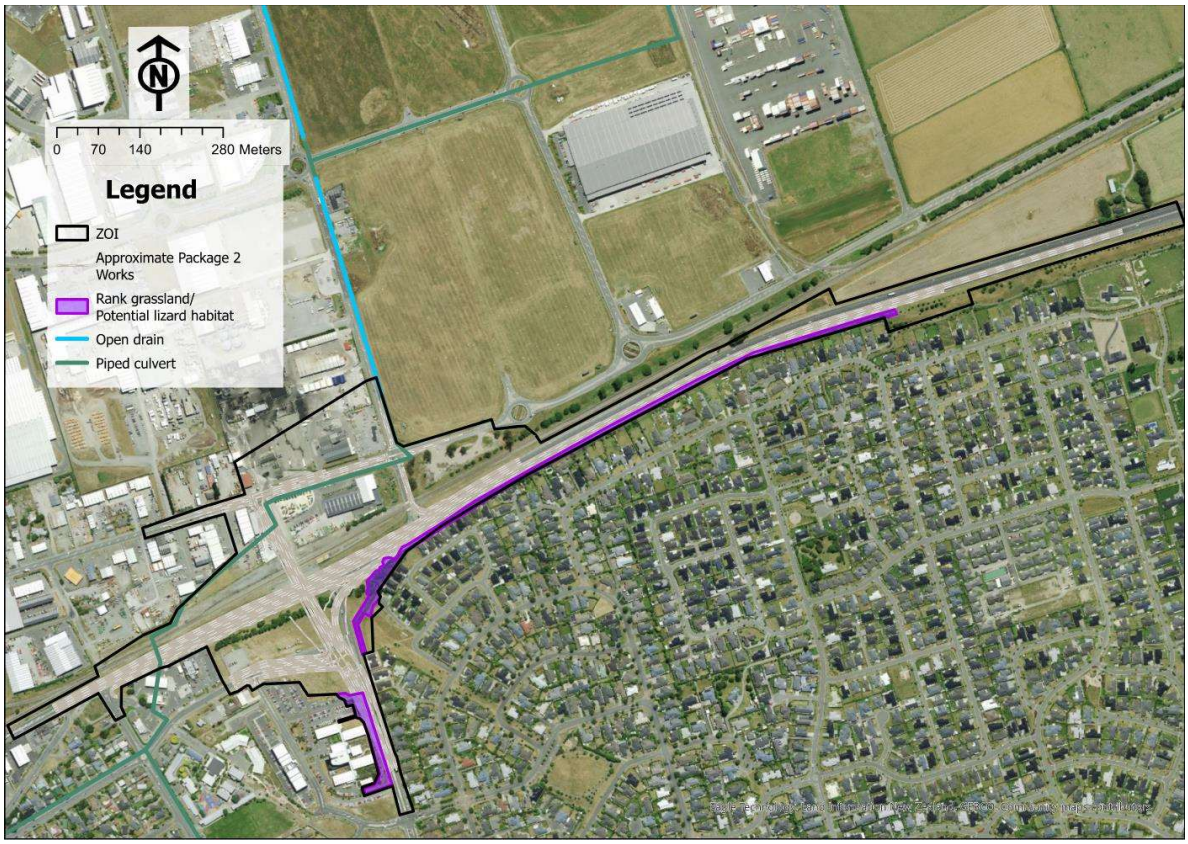


Figure 8-6: Project area with potential lizard habitat and stockwater races identified

In relation to avifauna, the disturbance to the avifauna will be neglible and there will be no effects on flight paths as a result of the Project. 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, silveryeyes and fantails will be able to retreat to other available and connecting habitat in the wider surroundings once works commence, such as the contiguous amenity planting along SH1 and the suburban parks in the residential areas of Rolleston. Furthermore, a baseline level of disturbance already exists from the vehicle traffic along SH1 and Rolleston Drive North.

8.6.3 Operational effects

In terms of operational effects,planting of vegetation within stormwater basins and roadside plantings as part of the stormwater infrastructure design, will may add to potential habitat. Planting is proposed at the following locations:

- At the existing intersection of Rolleston Drive and SH1 (eastern section)
- Within the industrial park between the rail line and Jones Road

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

8.6.4 Recommended measures to avoid, remedy or mitigate potential adverse effects

Subject to a survey to confirm the presence or otherwise of lizards a Lizard Management Plan is proposed to be prepared at Outline Plan stage and will identify specific actions to protect lizards and their habitats during the construction and operational phase of the Project (if required).

If required, a Lizard Management Plan will be prepared by a suitably qualified specialist and will be consistent with DOC guidelines[11]. Ongoing engagement with DOC will occur and should lizards be located during the lizard survey and staged vegetation management[12] is not applicable; a Wildlife Permit will be sought for handling and relocation.

The Lizard Management Plan will also be provided through the Outline Plan.

8.7 Stormwater

The Stormwater Management Report which assesses the stormwater and flooding effects for the Project is included in Appendix L. This section provides a summary of the assessment, including the methodology applied and the recommended mitigation measures to manage effects.

The potential and actual stormwater effects relate to:

- Water quantity
- Water quality
- Groundwater levels
- Groundwater quality
- Construction effects

In relation to the NoR it is acknowledged that ineffective management of stormwater can be a district planning matter.

The design of the proposed stormwater management system has been carried out using the design philosophy, set out within Section 3 of Appendix L. As a minimum, the design includes the treatment, attenuation and disposal to ground for an area equivalent to at least the additional impervious area of the Project.

Figure 8-7 below depicts the catchment areas and indicative stormwater basin locations as part of the Preliminary Design for the Project. The impervious areas of each catchment are shown in blue, and the

[11] *Guidelines and model for producing management plans for New Zealand lizards (Department of Conservation Lizard Technical Advisory Group)*

[12] *Staged vegetation management can also be referred to as a Vegetation Removal Protocol (VRP). VRP involves progressive mowing and subsequent removal of rank grass. This progressive mowing and removal of habitat will encourage lizards to vacate the site and disburse into adjacent habitat. Making and keeping an area unattractive to lizards from well before the works start and when works are staged is possible through applying the VRP early on.*

pervious areas shown in green. These are defined for the purpose of calculating the runoff generated from the road corridor.

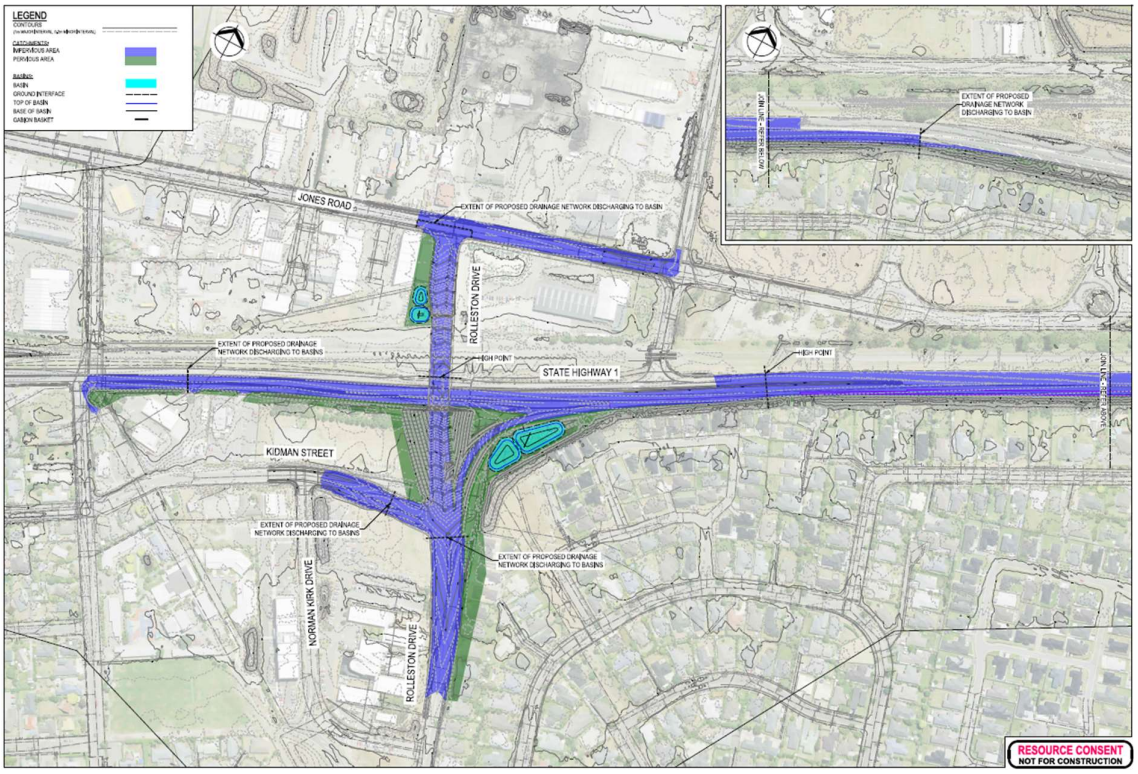


Figure 8-7: Project area, catchment areas and indicative stormwater basin locations

The Project's additional impervious area within the defined catchment areas in Figure 8-7 is 12,300m^2 as depicted below in Figure 8-8 and quantified in Table 8-5:

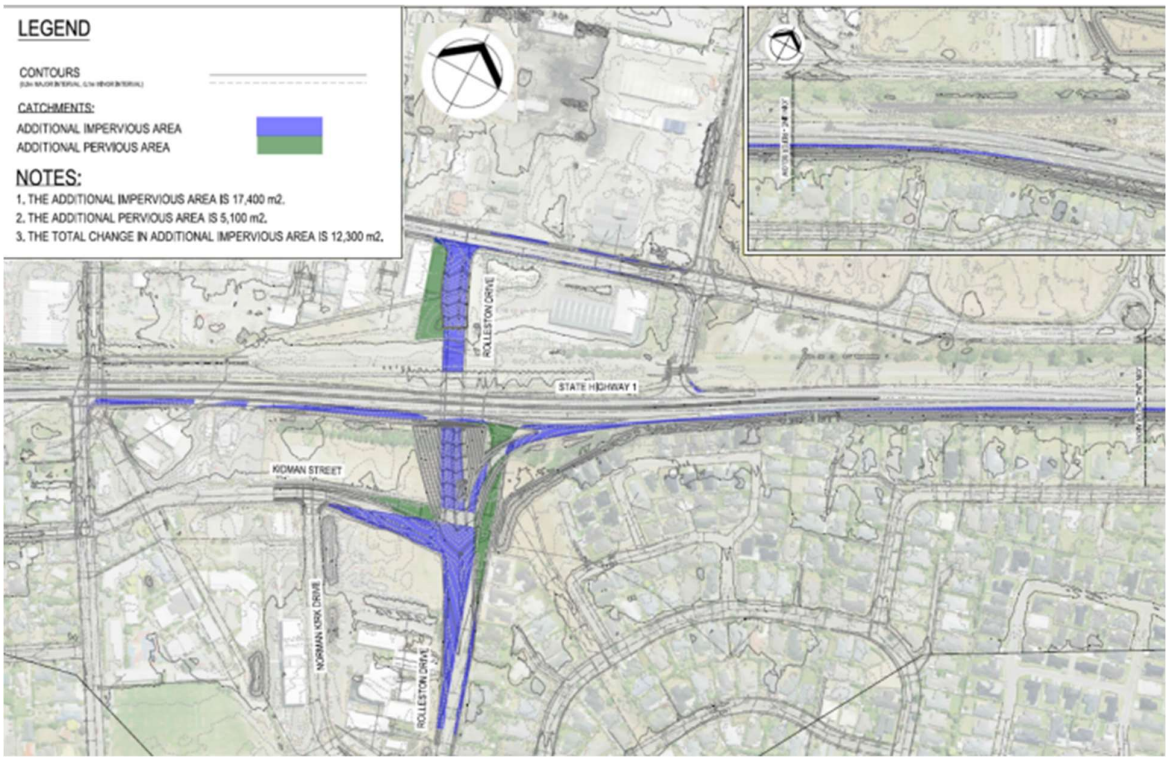


Figure 8-8: Additional impervious and impervious area.

Table 8-5: Proposed impervious and pervious areas within catchment areas

Description	Area (m^2)
New impervious area within catchment areas	17,400
New pervious area within catchment areas	5,100

8.7.1 Assessment methodology

A number of design standards and guidelines have been used in the development of the stormwater design for the Project to manage effects. The design philosophy is outlined in Section 3 of Appendix L.

8.7.2 Construction Effects

During construction, there is the potential for adverse effects to arise as a result in discharges of sediment from earthworks during road construction, and from construction of pipes, culverts, swales and stormwater basins.

The Project footprint and surrounding area is relatively flat and low lying. Run-on to site is unlikely to be an issue during lower intensity rainfall events due to existing stormwater infrastructure. However, during more intense periods of rainfall there is the potential for the existing stormwater infrastructure to become inundated and for cross-catchment flows to discharge onto State Highway 1, resulting in temporary run-on effects.

8.7.3 Operational Effects

Road runoff and effects on flood risk

The additional impervious areas constructed as part of the Project will increase stormwater runoff. If not managed appropriately, this has the potential to:

- Increase peak discharges to surface water, potentially causing erosion and increasing flood levels.
- Increase the volume of water discharged to surface water during the critical duration event for the catchment, increasing flood levels.

Existing overland flow paths and effects on flood risk

There are existing flow paths across SH1 in the Project area, as shown by SDC's flood modelling below in Figure 8-9:

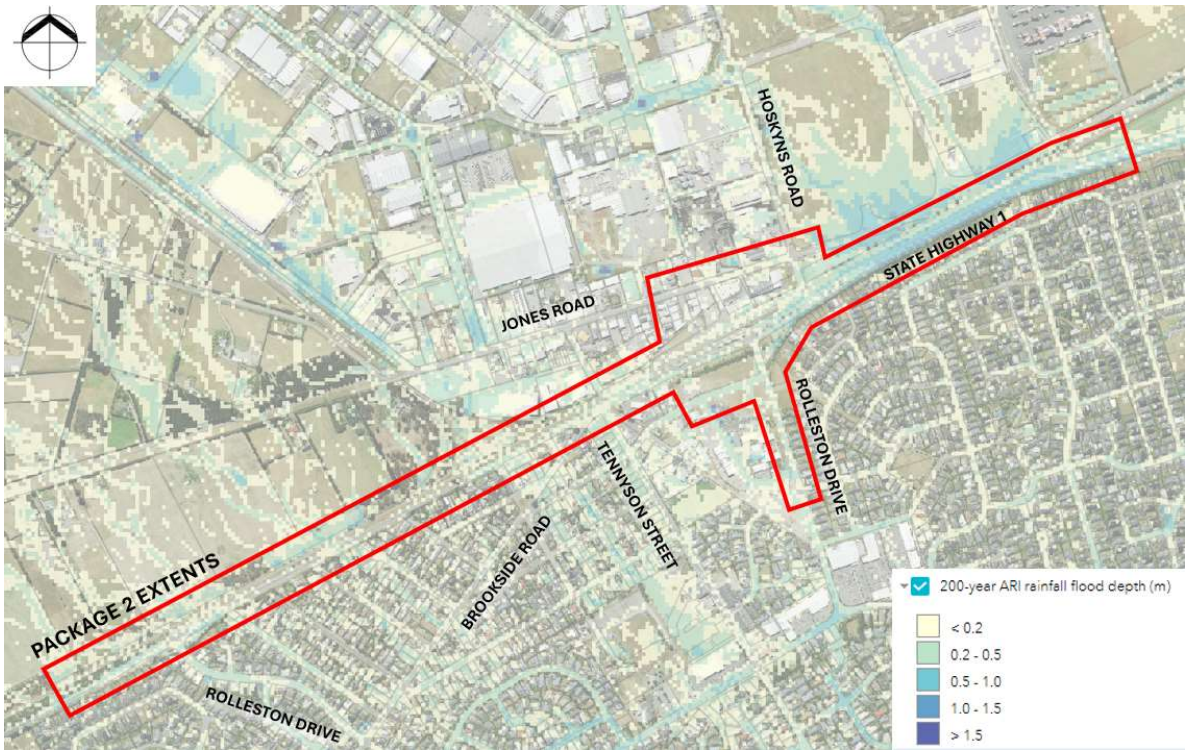


Figure 8-9: SDC 200 Year ARI Flood Map

The existing overland flow paths that are generally spread across the length of the Project, albeit with some concentration east of the Hoskyns Road intersection as depicted in Figure 8-9. The upgraded alignment crosses these flow paths. This has the potential to affect existing flow paths, and changing flow paths, flood extents and flood levels.

Effects on water quality

The Project may result in additional contaminant loads from vehicular traffic, littering, pavement and landscape activities. The main contaminants will be gross pollutants (litter), suspended sediments, heavy metals (including zinc and copper from vehicle wear), hydrocarbons, and to a lesser extent nutrients. If not managed there is the potential for additional contaminant load to have a negative effect on the receiving environment (i.e. the local groundwater).

Effects on groundwater quantity and quality

The stormwater system for the Project discharges to ground via basins and soak pits, which has the potential to locally increase groundwater levels and affect nearby groundwater users. While the proposed basins will not increase the total volume of water infiltrated to the water table, the basins will redirect infiltration to a smaller area (i.e., at the basins and soak pits). This localised infiltration will temporarily raise the water table directly beneath the basins and soak pits. As pressures equalize, groundwater levels will adjust, resulting in changes comparable to natural groundwater responses to rainfall events, i.e., within the seasonal range.

Discharges to ground and potential effects on the water table can also influence drinking water supply and quality. The proposed soakage basins in the overpass north catchment are located in an area where elevated levels of contaminants have been detected in the shallow fill. This raises the potential for increased mobilization of contaminants into the groundwater due to the proposed discharges.

Within the Project area, there are five registered bores, including four geotechnical bores (requiring no further consideration) and one domestic bore reported as "buried, unlikely to exist," which can be disregarded. Approximately 200m downgradient of the Project area, 18 bores are registered, of which 10 are sealed, buried, or not in use. The remaining eight active bores include five for domestic supply, two for community water supply, and one for groundwater observation. Notably, bore M36/0009 is likely non-existent, as it was not located at its registered position during a 2013 survey.

Four domestic bores, each approximately 45–48m deep, are located near Haymakers Crescent. Two community drinking water bores (BX23/0918 and M36/2298) are deeper and high yielding. Bore M36/2298 has a consent (CRC193859) to take up to 52.8 L/s, while BX23/0918 is not associated with a water take consent. The likely protection zone for BX23/0918 (100m radius) overlaps with a proposed first flush and soakage basin. However, discussions with the Selwyn District Council (SDC) confirm no water take consent has been sought for this bore.

There is no proposed increase in soakage or changes to the existing treatment measures in the area where the aforementioned bores are located. Therefore, no adverse effects on groundwater quality or quantity are expected at these bores. Additionally, the presence of an 8m vadose zone and more than 35m of vertical transport through the aquifer between the Project area and the bore intakes will provide sufficient treatment and attenuation of state highway related contaminants.

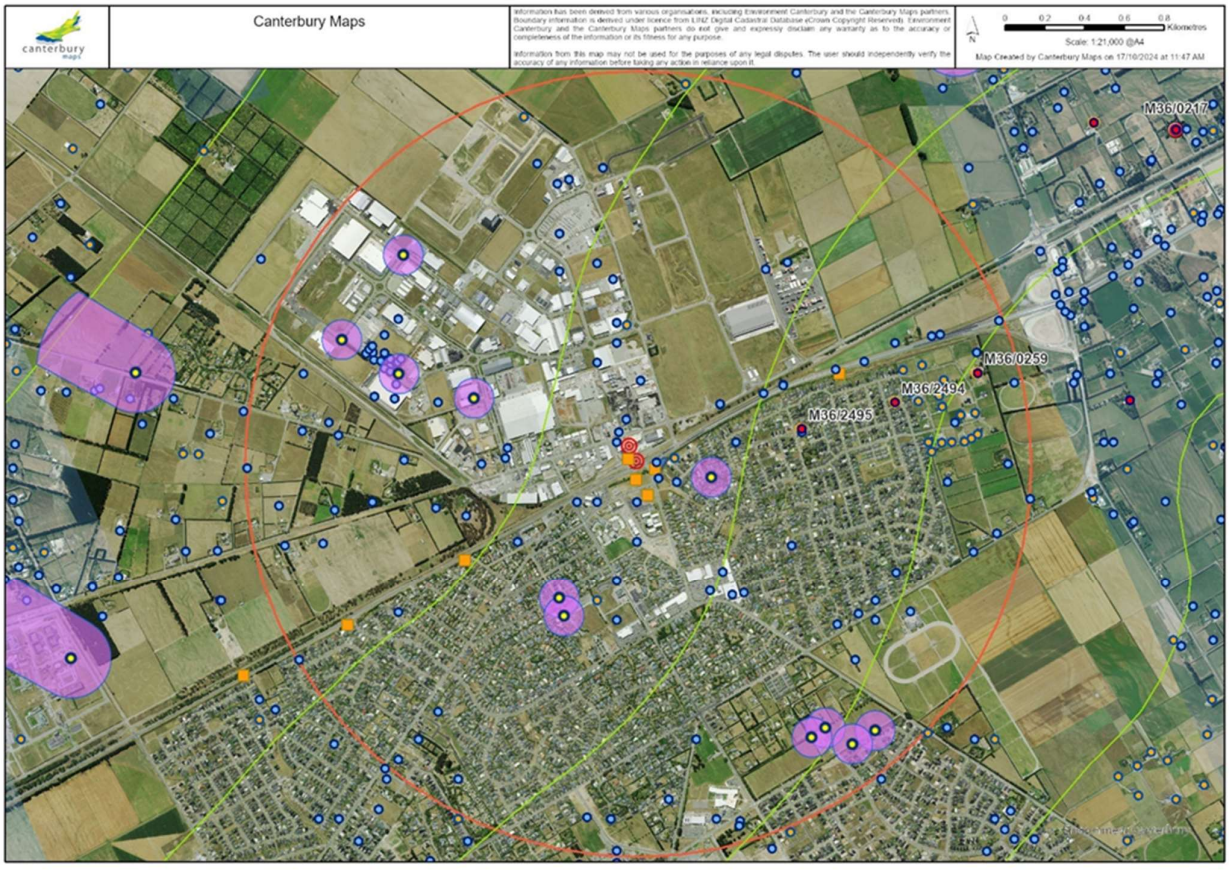


Figure 8-10: Wider Project area showing local ground investigation information and groundwater bores within 2km).

8.7.1 Recommended measures to avoid, remedy or mitigate potential adverse effects

Construction phase mitigation

Soil in the Project area is generally free draining to the gravel layers below and the groundwater level is sufficiently deep so that natural drainage is likely to occur across most of the Project area. Dewatering is not expected to be required for the Project, however if this is found to be required, this would be disposed of in a manner which effectively manages erosion and sediment. During construction, the potential discharge of sediment will be avoided, remedied, or mitigated via the preparation and implementation of an Erosion and Sediment Control Plan (**ESCP**). To achieve this the ESCP will employ various ESC measures including:

- Construction staging to limit stripped/open areas and stabilising surfaces as soon as practicable.
- Diversion of run-on water.
- Silt fences.

- Decanting earth bunds.
- Sediment ponds.
- Construction soakage basins – not in locations where long-term soakage is proposed.

Construction runoff will be able to be effectively managed within the Project footprint, avoiding areas of contaminated land. Movement of soils and the potential discharge of sediment during construction will be mitigated via the preparation and implementation of a CSMP and Erosion and Sediment Control Plan, including maintenance of the erosion and sediment control (E&SC) measures such as:

- Construction staging to limit stripped/open areas and stabilising surfaces as soon as possible
- Diversion of run-on water
- Silt fences
- Decanting earth bunds
- Sediment basins
- Construction soakage basins – not in locations where long-term soakage is proposed.

Additionally, a CEMP will be prepared prior to the commencement of the construction which will include locations and details of E&SC devices, where the E&SC devices discharge to, and the construction methodology and how this methodology will minimise the amount of sediment being controlled and released.

The CEMP will also outline procedures to be undertaken should heavy rain be forecast, in terms of implementing erosion control measures as well as checking that devices are working adequately and monitoring these during and after the event. This will minimise, if not avoid, potential run-on effects.

Water quality mitigation

During operation, effects on water quality will be mitigated through the capture of first flush runoff and treatment via infiltration (also called biofiltration) through a designed sand media. The Project stormwater system includes first flush basins for infiltration treatment of first flush stormwater before soakage to land, mitigating these effects.

Swales have been provided where space allows. While the swales have been designed primarily for conveyance purposes and are not part of the formal treatment design, they will provide some pre-treatment before the first flush infiltration basin (i.e., treatment train).

There are small sections of new impervious area at the extremities of the Project footprint that are not able to be conveyed to the first flush infiltration basins. This is because the proposed highway vertical alignment and the distance from the proposed basins mean that stormwater from these areas cannot drain to the basins. In these areas, stormwater will run off the road over the grass berm, as stormwater from the existing adjacent road does. This will provide some treatment (via filtration through the grass berm) prior to discharge to land, either via infiltration through the berm or an existing soak pit.

The proposed first flush and soakage basins for the Project do not fall within any existing Community Drinking Water Protection Zones (CDWPZ), as currently indicated on Canterbury Maps. Where swales or basins are located in areas with elevated levels of contaminants in the soil, the stormwater basins will be constructed with mitigation measures to prevent the potential mobilisation of contaminants due to additional soakage. These measures may include the removal of contaminated material and/or lining the sidewalls of infiltration devices with, for example, an appropriate depth of clean cover or an impermeable liner to mitigate the risk of contaminant mobilisation from adjacent soils. Implementation of these measures will prevent the mobilisation of contaminants in the soil and migration into groundwater within the swales or basins. As such, the groundwater quality effects will be less than minor.

The proposed stormwater design for the Project includes first flush treatment of a larger area than the increase in impervious area across the Project footprint. As such, the water quality effects for the Project will be less than minor.

Water quantity mitigation

Once operational, effects on water quantity will be managed through attenuation and soakage to ground. The Project stormwater system includes attenuation basins and soak-pits with discharge to ground (via soakage), mitigating the water quantity effects. Stormwater runoff from an area equivalent to at least the additional impervious area of the Project will be discharged to ground, up to the 1% AEP event.

Stormwater runoff will be collected and conveyed to stormwater basins or soak pits. Attenuation will be provided in the soakage basins (and in some locations, soak pits), which discharge to the ground below the basins (or soak pits). Attenuation storage in the basins (or soak pits) provides a buffer between the inflow of runoff into the basins (or soak pits) and the discharge to ground via soakage.

The basins and swales will be located and designed so that, during a larger-than-1%-AEP design event, stormwater will follow the existing overland flow paths. The geometric design manages the improvements to the road corridor network by maintaining the existing critical levels within the Project extents and retaining the existing overland flow paths.

With regard to the existing flow paths across SH1, runoff from the cross-drainage catchments up to the 1% AEP event will be captured and conveyed (within the footprint of the Project) before being discharged into the existing overland flow route (that it currently travels on). The Project cross-drainage stormwater management system is proposed to include a series of swales, inlets, and culverts/pipes to capture and convey these overland or flood flows across the highway. The cross-drainage system will be designed to manage the 1% AEP critical duration event without increasing flood levels or extents of flooding outside the designation or NZTA land.

Due to the existing overland flow paths being managed as described above, no additional cross-drainage infrastructure is proposed. Consequently, the flood risk effects for the Project will be less than minor.

With the proposed stormwater management system and cross-drainage measures, the water quantity and flood risk effects for the Project will be less than minor.

8.8 Land Contamination Effects

A Detailed Site Investigation (DSI) Report has been prepared and is included in Appendix G.

This section provides a summary of the assessment, including the methodology applied and the recommended mitigation measures to manage land contamination effects on human health.

8.8.1 Assessment methodology

The HAIL activities and other potential sources of contamination identified in the DSI were targeted during the investigation. The investigation scope and rationale were based on the following considerations:

- *Soil sampling targeting areas of proposed soil disturbance that intersect HAIL areas/sources of contamination identified or provisionally identified in the Stantec PSI.*
- *Soil sampling undertaken to inform soil management required to protect human health and the environment; and to provide re-use and disposal options for works within HAIL areas and the wider site (i.e., outside of the identified HAIL areas).*
- *Soil sampling targeting areas proposed for stormwater basins and swales.*

The investigation scope comprised soil sampling from 49 locations, comprising 14 machine excavated test pits, 18 pavement pits, 7 infiltrations pits, 2 boreholes, and 3 utility services trenches. A targeted approach was undertaken to target HAIL areas. Within HAIL areas, either grid-based coverage was employed, or targeting of specific features such as former buildings.

The Rolleston Drive section of the site has been partially identified as:

- HAIL F6 (Railyards) – in relation to a former railyard area (originally identified in the Stantec PSI).
- HAIL G3 (Landfill Sites) – in relation to uncontrolled, buried waste identified in pavement pit PP10 (south of Main South Road, south-west of the proposed overpass).

Asbestos and lead were identified as contaminants of concern in the information review of this assessment, in relation to an area of former farm buildings (demolished), within the road berm south-east corner of the easternmost Rolleston Drive/Main South Road intersection. Lead concentrations in this area

were below human health criteria, and no asbestos was detected in any sample analysed. On this basis, HAIL codes E1 and I are not considered applicable to this area of the site.

The sampling methodology is outlined in Section of the DSI.

Figure 8-11: HAIL Map for the site, as informed by the Stantec PSI and additional information review. Note potential sources of contamination and adjacent HAIL areas are not included in the figure as they are not confirmed as having occurred onsite or having migrated to site in sufficient quantities to meet HAIL H. Adjacent HAIL areas identified in the Stantec PSI are included in Appendix B of the DSI.

8.8.2 Land contamination effects

Surface seal was sampled in 18 pavement pits located within the existing road carriageway to target to potential use of coal tar in historic roading construction. Three samples returned concentrations of naphthalene and/or B(a)P TEF above the human health criteria. The WasteMINZ Coal Tar Guidelines8 outline that a total PAH concentration of 20 mg/kg or greater, and/or a Benzo(a) Pyrene Toxic Equivalent (BaP TEQ) concentration >1 mg/kg in roading material, along with other evidence such as road construction era, can be adopted as an indication that coal tar is present.

Three samples, collected from a second asphalt layer in pavement pits PP22, PP23 and PP24 (Main South Road) returned total PAH concentrations between 1,600 and 5,000 mg/kg, two of which also recorded BaP TEQ concentrations >1 mg/kg. Therefore, surface roading material in this section of the site is considered to be consistent with coal tar and there is a human health risk to workers from exposure to this material during construction. The Project will be undertaken in line with the procedures set out in a Contaminated Soils Management Plan (CSMP) to manage the associated risks.

Based on the investigation results, the risk to human health from soils associated with the proposed works is considered low. However, uncontrolled, buried waste was encountered in a pavement pit (PP10), located within the road carriageway of the Main South Road section of the site, south-west of the proposed overpass (see Appendix D of the DSI). While contaminant concentrations in this location were below human health criteria and asbestos was not detected, the horizontal extent of the buried waste was not determined in this investigation. As such, there remains a risk in this area as different types of fill material to what was observed during the investigation may be encountered. This risk and residual risk across the remainder of the site during the proposed works can be managed with robust unexpected discovery protocols and the procedures outlined in a CSMP.A surface sample collected at SA03 was

reported with an Arsenic level exceeding expected background levels. A deeper sample from SA03 however, was reported with metal concentrations not exceeding expected background. Arsenic is a contaminant known to be associated with poultry farming. A single trace detection of asbestos was also identified in SA03. Asbestos is known to be associated with older buildings and the potential source is related to the shedding of fibres from asbestos containing material (ACM) in building fabric outside of the proposed work site. .

Depending on the depth of required excavations for the proposed development, soils at 0.5m bgl or greater depths across the site may be accepted at clean fill facilities, or managed fill facilities with lower acceptance criteria

8.8.3 Recommended measures to avoid, remedy or mitigate potential adverse effects

Potentially contaminated soils may be disturbed during the earthworks stage of the proposed work, and off-site soil removal may occur. In addition, land disturbance may generate dust that needs to be controlled at source. Contaminated sites may have isolated hotspots of contamination that may not be uncovered during site investigations.

To manage potential effects of contaminated land disturbance during construction works, a Contaminated Soils Management Plan (CSMP) will be prepared. The CSMP will set out the requirements for the management of soil during the works in the event of encountering unexpected contamination. The CSMP outlines the summary of contaminant conditions at site, and the health, safety, and environmental measures that will be implemented prior to works commencing.

The methods employed to minimise dust generation and distribution will prevent objectionable dust emissions from beyond the work area boundary. The procedures for the management of contaminated soil during the earthworks are also outlined in the CSMP including control measures designed to eliminate or manage the potential for human exposure to contaminated soils and contaminated discharges to the environment. An unexpected discovery protocol (UDP) will be prepared as part of the CSMP to assist with identifying further contamination and steps to be taken.

Key measures to avoid, remedy or mitigate potential effects of encountering or disturbing contaminated land during construction are:

- Following the procedures in the CSMP which provide a framework for managing contamination related effects at the site.
- Delineation of the construction area to provide for containment. The asbestos and arsenic sample found at the location of SA03 lies outside of the proposed designation boundary and will not be disturbed by earthworks or required for construction purposes (i.e. access or laydown).
- Consideration of all uses within the construction area should be reviewed pre-construction in accordance with the CSMP.
- Works be undertaken with an erosion and sediment control plan (ESCP).

8.9 Air Quality

The Assessment of Discharges to Air Report has been prepared by Beca and is included in Appendix M.

Discharges to air will occur during construction of the Project, as well during the operation of the completed transport network. These discharges can have potential health and amenity effects. The existing residential dwellings located adjacent at 13-19 to 23-31 Rolleston Drive are the nearest sensitive receptors to the Project.

Air quality at these receptors is currently impacted by vehicle emissions from existing road traffic and it is noted that the proposed road corridor for the Project will be setback a greater distance than existing thereby having a positive effect on air quality for the owners and occupiers of the aforementioned properties.

8.9.1 Assessment methodology

The methods for the assessment of construction effects are summarised as follows:

- Analysing the Good Practice Guide for Assessing and Managing Dust (2016) (**GPG Dust**).

The methods for the assessment of operational effects are summarised as follows:

- The AERMOD (v23132) dispersion model has been used to predict the downwind concentration of contaminants emitted from motor vehicles.
- The air impact has been assessed by comparing the predicted maximum contaminant concentrations against relevant air quality criteria concentrations.
- Dispersion models have been constructed for the Project area.

8.9.2 Construction Discharges to Air

The primary discharge to air during construction is dust (particulate matter). The emitted dust has the potential to have adverse nuisance effects at the adjacent residential properties. The risk of dust nuisance effects being experienced at these properties, when no dust mitigation is implemented, is assessed as being low to medium (based on the CASANZ[13] classification of dust risk for motorway projects).

As discussed in the Air Quality report in Appendix M, the risk of an amenity effect decreases with increasing separation distance. At distance of 50m or more the risk is expected to be low. Potential adverse dust effects will be minimised by implementing standard dust control procedures such as watering and avoidance of dust inducing activities during windy periods. Provided these procedures are maintained any discharges during construction will be negligible.

Dust control procedures in the Project area will be implemented through the Dust Management Plan (**DMP**). The DMP will be compliant with Schedule 2 of the CARP, compliant with Rule 7.32 of the CARP, and consistent with current guidance (dated 2016) provided by the Ministry for the Environment (**MfE**) GPG Dust.

8.9.3 Operational Discharges to Air

Air contaminants are discharged to the atmosphere from motor vehicles when travelling on roads. While the primary discharges are from the combustion of petrol and diesel, discharges of particulate matter also occur from brake and tyre wear.

During operation of the new overpass and associated transport upgrades, the primary discharges to air will likely be vehicle emissions. Figure 8-12 below shows the location of the residential dwellings which have been considered. These receptors have been grouped into Receptor Area 3, 4 and 5.

[13] CASANZ, 2023. *The Good Practice Guide for the Assessment and Management of Air Pollution from Road Transport Projects*.

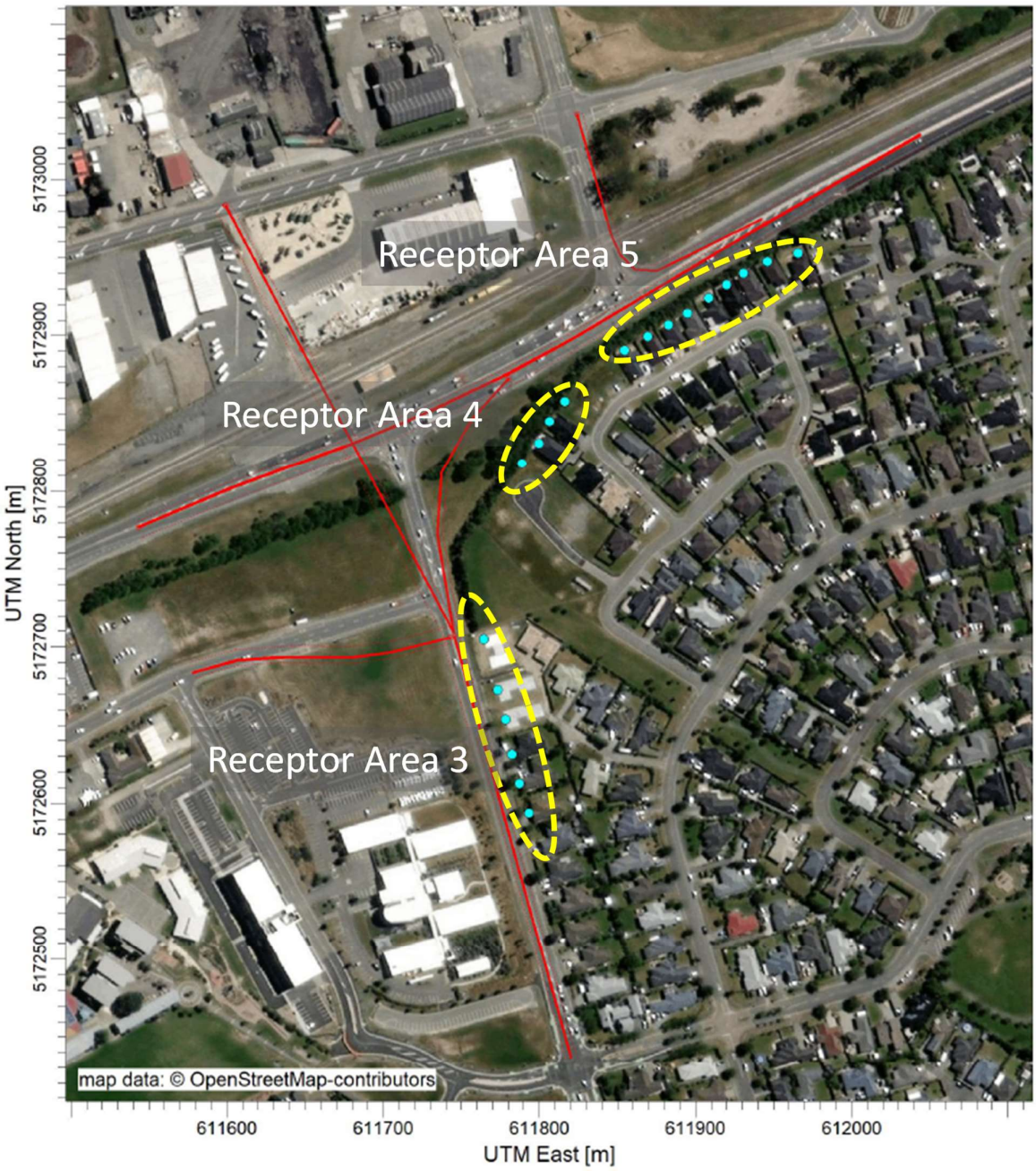


Figure 8-12: Package 2 location of sensitive receptors

The modelling results outlined in the Air Quality assessment demonstrate that the ambient air contaminant concentrations are unlikely to exceed the relevant air quality concentration criteria limits at any existing sensitive receptor in the Project area.

Vehicle emission rates are predicted to decrease over time as the emission performance of the national vehicle fleet improves, including the move to electric powered vehicles. Therefore, the contribution from vehicle emissions to ambient air contaminant concentrations in the Project area are also expected to decrease over time, as the emission performance of vehicle fleet improves, even though some increase in traffic volumes is predicted.

The potential air quality effects of the project are predicted to be comparable to those associated with the 'do minimum' traffic scenarios. Overall, the results indicate that vehicle emissions from the Project would not have an adverse health or environmental effect.

8.9.4 Construction effects

The potential discharge to air effects, anticipated during construction, relate to the risk that the residential dwellings at 13-19 to 23-31 Rolleston Drive experience dust effects unless appropriate mitigation is implemented.

8.9.5 Operational effects

It is acknowledged that the potential discharge to air effects anticipated during operation of Project of this type relate to discharge of air contaminants from motor vehicles which have potential adverse health effects where people are exposed to contaminant concentrations with exceed ambient air criteria over the prescribed averaging period. Based on the scale of this Project and the findings discussed in the Air Quality assessment, the operational effects of the Project would not have any adverse health or environmental effects.

8.9.6 Recommended measures to avoid, remedy or mitigate potential adverse effects

The Project is proposed to provide and implement a DMP which is compliant with Schedule 2 of the CARP and will generally be consistent with current guidance provided by the MfE GPG Dust.

Preparation of, and adherence to, a DMP will appropriately mitigate potential adverse effects on air quality associated with the temporary stockpiling of construction materials within 100m of the sensitive receivers on Rolleston Drive North.

8.10 Archaeological and Heritage

An Archaeological Impact Assessment (**AIA**) and Heritage Impact Assessment (**HIA**) for the NoR is included in Appendix N, prepared by Underground Overground Archaeology (**UOA**). This section provides a summary of the assessment, including the methodology applied and measures to manage effects.

The results of the archaeological research found that the Project area is located at least 2.5 km from any previously recorded archaeological sites. The historical research indicates that the area was predominantly pastoral in use well into the 20th century, with no evidence for pre-1900 occupation likely to result in archaeological remains. The exception for pre-1900 occupation in the affected parcels is related to the first Rolleston railway station and associated buildings, first constructed in the 1860s. Although some of the parcels to be affected by the proposed works are within the former rail reserve, the proposed works are outside the area of the pre-1900 railway station, and no evidence was found that pre-1900 archaeological remains would be encountered during works. As such, it is unlikely that the Project works will affect unrecorded archaeological sites. Likewise, this assessment has not identified any significant heritage places that will be impacted by the Project.

8.10.1 Assessment methodology

UOA consulted numerous sources of documentary evidence in order to determine the historical context of the Project area. Archaeological and heritage research undertaken for the AIA and HIA included reviewing the following:

- ArchSite.
- New Zealand Heritage List/Rārangi Kōrero.
- Christchurch City Council (**CCC**) District Plan.
- Ngāi Tahu Kā Huru Manu website.
- Mahaanui Iwi Management Plan, 2013 (Silent files).
- W.A. Taylor's (1952), *Lore and History of the South Island Maori.*
- Historical maps of Canterbury.
- Historical aerial imagery.

- Historical photographs.
- Christchurch City Library name indices.
- Historic newspapers.
- Canterbury Deeds Indexes.
- Certificates of title.
- Deposit plans and survey office plans.
- Local documentary resources.

This was followed by a site visit to assess the results of the research and to determine if any unrecorded archaeological sites or heritage items were visible. The survey was limited to publicly accessible areas and was a surface assessment only; invasive techniques such as probing, and test pitting were not used due to the high likelihood of services being present near the roads.

8.10.2 Construction effects

Across the Project area, there is potential for unrecorded archaeological and heritage sites to be encountered during construction. This will be managed through the implementation of an ADP throughout the course of construction.

8.10.1 Operational effects

No potential or actual operational effects on archaeology and heritage have been identified through the Archaeological Impact Assessment and Heritage Impact Assessment.

8.10.2 Recommended measures to avoid, remedy or mitigate potential adverse effects

An authority under the HNZPTA is not required based on the current scope and location of the Project. The Project works will take place in accordance with Accidental Discovery Protocol (**ADP**). In the event of archaeological discoveries works will cease and Heritage New Zealand Pouhere Taonga (**HNZPT**) and an archaeologist will be contacted.

8.11 Lighting Effects

A Lighting Assessment for the Project is included in Appendix O. This section provides a summary of the assessment, including the methodology applied and the recommended measures to manage effects.

Lighting is proposed within the Project area to clearly identify the proposed roading infrastructure, to illuminate the road corridor, changes in alignment, road surface markings and kerb locations, as well as to illuminate any stalled or stationary vehicles. Pedestrian footpath and shared path lighting is proposed on Rolleston Drive north and on the overpass.

Luminaires used in the design, and the design itself meet the requirements NZTA M30, and AS/NZS1158 series of standards. Luminaires are generally pole mounted at a height of 14m above ground level, and aimed away from residential units, providing less glare and spill light than might otherwise be observed.

AS/NZS 1158 requires a Threshold Increment (glare control) below 15% and Upward Waste Light Ratio (UWLR) shall not exceed 1%. Because of these factors, and the use of full cut-off luminaires, the effects of glare, unwanted spill light, and upward waste light (that would contribute to sky-glow) on the environment are considered to be less than minor.

Along the majority the Project, there are sufficient setback distances (>5m to the property boundaries and >10m to the existing dwellings) between the road carriageway and the adjacent residential properties on Rolleston Drive North. The setback distances will assist in mitigating any effect of headlights on the owners and occupiers of the existing residential units at 13-19 to 23-31 Rolleston Drive North. Furthermore the vehicles will not be moving directly towards aforementioned residential properties.

8.11.1 Spill lighting

Light spill, which occurs when light extends beyond intended boundaries, can be either intrusive or beneficial depending on the situation. While excessive light spill can disturb residents and transportation users, it is sometimes necessary for safety, particularly on state highways, arterial roads and subways to illuminate users of footpaths and shared paths for vehicular road users.

The indicative lighting design shows that there will be no adverse light spill effects at the windows of adjacent residential properties at 13-19 to 23-31 Rolleston Drive North. The modelled results from the indicative lighting design of spill lighting at existing residential windows along Rolleston Drive North are below the permissible limits noted within AS/NZS4282:2023 after curfews.

Based on the assessment, given the requirements of the Standard and the Guideline are met, the spill lighting levels on neighbouring residential properties will be less than minor.

8.11.2 Headlight sweep

Headlight sweep refers to the movement of a vehicle's headlights as the vehicle approaches, passes, and moves away from a particular point. This sweeping motion of light can momentarily brighten areas not illuminated by fixed lighting, such as the sides of roads or adjacent properties.

It is anticipated that effects from headlights are most likely to affect residential properties on 13-19 to 23-31 Rolleston Drive North and Wyndham Mews when headlights are directed toward a dwelling as vehicles travel southward on the overpass. Where headlights are visible from passing traffic, with headlights oriented at obscured angles, the effects would be less than if headlights were directed towards the existing residential units at 13-19 to 23-31 Rolleston Drive North. Within the Project area, there are adequate setback distances (>5m to the property boundaries and >10m to the existing dwellings) between the proposed road carriageway and the adjacent residential properties to the east at 13-19 to 23-31 Rolleston Drive North, this will further assist in mitigating the effect of headlights.

The separation distance between the Project and existing residential properties and the design of the overpass grade and edge protection will minimise light from headlights beyond the proposed state highway designation. As such, any effects associated with headlight sweep will be less than minor.

8.11.3 Glare

Glare is the brightness of a luminaire when compared with the brightness of the background against which the luminaire is visible. For example, a road luminaire looks brighter (and has higher glare) when viewed against a dark sky than when viewed in the surroundings of an illuminated urban environment. There are two forms of glare:

- Disabling glare; and
- Discomforting glare.

The light technical parameter used in the Standard and the Guideline is Threshold Increment (**TI**), which is “a measure of the loss of visibility caused by the disability glare from the road lighting luminaires”. The indicative lighting design carried out for the Project shows that the TI achieved by the design is well within the limits specified in both the Standard and the Guideline. Given the separation of the road carriageway and therefore the lighting from the closest existing residential units at 13-19 to 23-31 Rolleston Drive North, the glare effects from the road lighting can be controlled to the point where these effects will be less than minor.

8.11.1 Construction lighting effects

Temporary flood lighting for construction activities, where installed adjacent to residential areas, may require glare and spill light control. This lighting has not yet been designed and will be considered through a Construction Management Plan however it is anticipated that this lighting will be fully compliant with the requirements of POSDP rules for obtrusive light and the relevant clauses of the Australian Standard (AS 4282).

Mitigation of adverse effects relating to temporary construction lighting will be achieved with cut-off luminaires, sunshade cloth screening and through achieving appropriate setbacks from the residential properties at 13-19 to 23-31 Rolleston Drive North who are considered sensitive receivers. Construction

lighting is usually relatively transitional and will be reduced with careful location of any on-site offices and equipment in relation to the residential area.

8.11.2 Recommended measures to avoid, remedy or mitigate potential adverse effects

As any potential and actual effects are less than minor, and the proposed lighting complies with the relevant standards, no specific mitigation measures are required.

8.12 Network utilities

There are a number of network utilities from various providers (SDC, Orion NZ Ltd. Chorus, One NZ, Enable and KiwiRail) that will be temporarily or permanently affected as a result of the Project.

These are outlined below in Table 8-6:

Table 8-6: Network utilities

Network Provider/Type	Utility Effects
SDC – Water Supply	Tennyson St intersection water network will be impacted outside the BP station, to rider mains on SH1 boundary.
	300mm main from Tennyson to Jones Rd potentially affected by by SH1 median barrier foundations.
	Rolleston Drive Overpass north and south embankments may affect the critical 200mm PVC main from Jones Rd to Rolleston Drive.
	Irrigation pipes at Rolleston Drive entry (both sides), on CSM2 bund and feed pipes may be affected compromised by the Project.
SDC – Wastewater	Existing network alignment in Rolleston Drive from the SDC office to Kidman St is likely to be affectedby the realignment of Kidman Road.
Orion NZ Ltd – Power	The Orion services crossing SH1 at Tennyson St may be affected by the median barrier post installation.
	Services in the vicinity of the realigned Rolleston Drive and Kidman St may be affected.
	An 11kV cable on CSM2 southside berm from 47 Marlowe Place will be is likely to be affected by the widened SH1 and retaining wall.
	Existing underground power at the new Rolleston Drive overpass to Jones Rd intersection are proposed to be under the carriageway/
	Further underground services may be affected by the new road alignments.
Chorus	The existing Chorus service crossing SH1 at Tennyson St may be affected and will be considered for median barrier post installation.
	Jones Rd North – there may be existing services close to the new kerb line that may be affected.

	Jones Rd South – an existing service which will be in the new carriageway alignment is proposed by Chorus to be made redundant.
	Chorus connection from Jones Rd to KiwiRail station platform will be affected and require relocation away from the northern overpass embankment/
One NZ	The main trunk fibre in the SH1 / rail corridor relocated for the Project is to tie in at Hoskyns/Jones Rd and abandoned in SH1. Fibre at the overpass will likely need to be reallocated to a domestic connection (KiwiRail).
Enable	The Enable service crossing SH1 at Tennyson St may be affected by the median barrier post installation. The service will likely be potholed, and posts carefully located or alternatively use of ground beam and bolted posts.
	Enable services at Kidman St are likely to be affected.
KiwiRail	Numerous critical signal cables have been located (potholed) between the rail platform and the bridge pier in the rail station carpark, which are likely to be affected and require relocation.
	A Chorus fibre connection from Jones Rd to the rail station will be affected and require relocation away from the northern overpass embankment.
	A critical SDC 200mm watermain will be affected and require relocation away from the northern overpass embankment (propose to keep existing under rail crossing).
	The overhead power from George Holmes Road to the rail station will be affected and require undergrounding for the overpass (two cable spans) which will require KiwiRail design. The remaining overhead power to George Holmes Road is proposed to stay as is, subject to acceptable KiwiRail road design discussions.

To undertake any relocation or redundancy of services, ongoing engagement will be undertaken, and agreements reached, as required, with network utilities providers as the Project progresses. This will minimise potential adverse effects on services throughout the construction and operational phase of the Project.

8.13 Effects on Cultural Sites, Landscapes and Values

8.13.1 Manawhenua Partnership

As outlined at Section 4.3 of this AEE, NZTA has engaged and worked collaboratively with mana whenua as Project partners throughout the business case process and into the preliminary design phase. This

engagement has taken place with the Cultural Advisory Group (**CAG**) forum over the past 3 years at a Project-specific level since the commencement of the DBC process in 2021.

The CAG is a forum for mana whenua to provide advice and guidance on cultural matters, relating to Māori values, heritage, and tikanga (customs and practices), in the context of transport projects and policies. The CAG advises on projects under NZTA's jurisdiction in order to respect and incorporate Māori worldviews, particularly in areas where transport infrastructure may intersect with culturally significant sites, landscapes, or communities.

NZTA acknowledge Ngai Tahu (iwi), Ngai Tūāhuriri and Te Taumutu (rūnanga) have a direct interest in the Project area and are a partner in the Project. During the DBC, the partnership with mana whenua included the following:

- Participation in workshops with project teams to inform the investment logic mapping process, and the constraints mapping process;
- Attendance on site visits with project teams and specialists;
- Participation in option development and assessment (MCA) workshops, subsequently reflected in the Assessment of Alternatives (as discussed in Section 4); and
- Feedback through the CAG forum noted above.

During the NoR process and the preparation of this AEE, the partnership with mana whenua includes the following (in addition to the above):

- Request to prepare the Cultural Advice Report (**CAR**).
- Attendance at the CAG form.

Mahaanui Kurataiao Limited (**MKT**) have prepared a CAR for the Project. MKT have acknowledged that the Project is within the catchment of Te Waihora, a tribal taonga representing a major mahinga kai and an important source of mana. MKT have advised that a review of the land tenure in the proximity of the Project has not identified Māori Reserve Land however recommended NZTA undertake investigation to accommodate for no further loss of Māori land will occur because of the proposed works.

8.13.2 Recommended measures to avoid, remedy or mitigate potential adverse effects

MKT have categorised the potential areas of concern into three main categories - earthworks and potentially contaminated land; discharges of stormwater to land and contaminants to air; and Cultural landscape, indigenous biodiversity, and ecology.

MKT recommended the following mitigation measures:

1. *An erosion and sediment control plan should be in place during all earthworks and until such time as all exposed soils have been stabilized.*
2. *Where indigenous plants need to be removed, they should be replaced like for like.*
3. *Indigenous planting is required to increase indigenous habitat in the takiwā and enhance the cultural landscape.*
4. *Stormwater should be treated prior to discharge to ground to ensure groundwater is not impacted by stormwater containing contaminants. Treatment for heavy metals should be included in the treatment train.*
5. *The use of flocculants is discouraged as residual chemicals can be toxic to indigenous species.*
6. *There should be a suitable minimum distance between the bottom of a soak pit or soakage pond and the maximum groundwater table.*
7. *Contaminated material should be removed from the site and disposed of at a licenced facility.*
8. *An ecologist should survey the site for taonga/indigenous species. If taonga/indigenous species are found works should be undertaken under the supervision of an ecologist.*
9. *Natural landform features such as river rifts and waipuna (springs) should be retained, protected and enhanced with indigenous planting where practical.*
10. *Mana whenua advocate for the retention, protection and enhancement of waterways including drains and water races.*

11. *An accidental discovery protocol should be in place during all earthworks, and it may be appropriate to have a cultural monitor onsite during earthworks to ensure that there is a procedure in place in the case of archaeological discovery.*
12. *There should be a dust management plan in place during the works phase and until such time as exposed soils have been stabilised and stockpiles have been removed.*

The proposed conditions of designation include the preparation of a CEMP, LMP and adherence to an Accidental Discovery Protocol (ADP). Additionally, where possible, locally sourced and indigenous vegetation will be incorporated.

8.14 Overall conclusion on effects

The Project will significantly improve safety and connectivity of the state highway through Rolleston. Key positive effects include the conversion of the high-risk SH1/Rolleston Drive North/Hoskyns Road and provision of an overpass which will address the areas crash history and provide safer connectivity for road users.

Upgrades to the level crossing on Hoskyns Road, developed through engagement with KiwiRail, will provide for additional queuing space for vehicles, improving safety by reducing the risk of near misses with trains. The Project provides for travel choices across the shared path on the overpass which enables safe movement of pedestrian and cyclists across the state highway which addresses existing severance issues between north and south Rolleston.

While there are impacts on SDC land and private properties, the Project results in numerous positive effects benefiting the community by providing for a safer and more reliable SH1 corridor, increased connectivity and enhanced walking and cycling facilities. Additionally, the Project does not inhibit future development by maintaining capacity for future infrastructure. As such, these improvements contribute to a safer and more connected transport network for Rolleston and the Selwyn District.

The assessment of the Project concludes that the majority of the actual and potential adverse effects on the surrounding environment will be less than minor and can be suitably mitigated.

A summary of measures incorporated in the design and proposed to manage adverse effects is provided in Table 8-7:

Table 8-7: Summary of measures to manage adverse effects of the proposed work

Effect	Key measures to manage adverse effects
Traffic and Transport	Ongoing engagement with the community; preparation and implementation of a CTMP; and considered sequencing of the stage of works as to minimise adverse effects associated with diversions.
Landscape and Visual	Preparation and implementation of a ULDF to achieve landscape design outcomes which will be incorporated into an LMP
Noise and Vibration	Implementation of a CNMVP for the duration of the construction period; engagement with nearby residents during construction; installation of temporary noise barriers and avoidance of night works where possible and minimise where practicable to do so.
Terrestrial Ecology	Undertake a Lizard survey, preparation and implementation of Lizard Management Plan and preparation of a Wildlife Act Permit, if required.
Stormwater	Preparation and implementation of a ESCP and first flush treatment, attenuation, and discharge to ground.
Land Contamination	Preparation and implementation of a ESCP and CSMP.

Air Quality	Preparation and implementation of a DMP which is compliant with Schedule 2 of the CARP and consistent with guidance provided by the MfE GPG Dust.
Archaeological and Heritage	Ongoing engagement with mana whenua and adherence to an Accidental Discovery Protocol.
Lighting	Minimised light spill, sky glow, and incorporated within lighting design.
Property and Access	Ongoing engagement with nearby property owners and residents throughout the construction phase of the Project.
Network utilities	Ongoing engagement with network utility providers throughout the detailed design, construction and operational phase of the Project.
Cultural values	Ongoing engagement with mana whenua; preparation and implementation of an ESCP; adherence to an ADP; preparation and implementation of a DMP; and where possible, the use of locally sourced and indigenous vegetation.
Construction effects	Erosion and Sediment Control Plan; Construction Noise and Vibration Management Plan; and Construction Traffic Management Plan.

9 NOTIFICATION

NZTA request that this s181(1) Notice of Requirement is publicly notified.

10 STATUTORY ASSESSMENT

10.1 Statutory Considerations

The following sections provide an assessment of the NoR against:

- Section 171(1)(a) of the RMA;
- Section 171(1)(c) of the RMA;
- Section 171(1)(d) of the RMA; and
- Part 2 of the RMA.

It is noted that the requirements of section 171(1)(b) RMA are addressed in Section 4 of this AEE and will therefore not be repeated here.

10.2 Section 171(1)(a) – Relevant statutory provisions

Section 171(1)(a) of the RMA requires territorial authorities, subject to Part 2 of the RMA, to consider the environmental effects of NoRs having particular regard to any relevant provisions of:

- *A national policy statement;*
- *A New Zealand coastal policy statement;*
- *A regional policy statement or proposed regional policy statement; and*
- *A plan or proposed plan.*

In accordance with section 171(1)(a) of the RMA, an assessment of the Project in the context of the relevant statutory documents has been undertaken.

Table 10-1: Relevant Statutory documents

Type of statutory provision under s171(1)(a)	Relevant Plans and Provisions
National Policy Statements (**NPS**)	The following NPS's are relevant to the Project: • National Policy Statement on Urban Development (**NPS-UD**)
Regional Policy Statement (**RPS**)	The Canterbury Regional Policy Statement is relevant to this application. In particular, the following sections are of relevance: • Chapter 5 – Land-Use and Infrastructure • Chapter 11 – Natural Hazards • Chapter 13 – Historic Heritage • Chapter 14 – Air Quality • Chapter 15 – Soils
Plans or Proposed Plans	The Canterbury Land and Water Regional Plan (**LWRP**), Operative Selwyn District Plan (**OSDP**) and Partially Operative District Plan (**POSDP**) are relevant to this Project. The following sections of the LWRP are relevant: • Section 3 – Objectives • Section 4 – Policies • Section 11 – Selwyn – Te Waihora The following sections of the OSDP are of relevance:

	• Culture and Historic Heritage • Outstanding Natural Features and Landscapes • Land and Soil The following sections of the POSDP are of relevance: • Transport • Natural features and Landscapes • Urban Growth • Natural Hazards • Sites and Areas of Significance to Māori

10.3 National Policy Statement on Urban Development 2020

The NPS-UD has eight objectives, aiming to support well-functioning urban environments and provide for sufficient development capacity within these environments across New Zealand.

An assessment of the relevant objectives is contained within Appendix E.

10.4 Canterbury Regional Policy Statement

The Canterbury Regional Policy Statement (**CRPS**) was made operative on 15 January 2013; however, it is currently under review as they draft the replacement CRPS. The Minister for the Environment has approved Change 1 to Chapter 6 of the CRPS under the streamlined planning process.

Change 1 was made operative on 28 July 2021.The CRPS provides an overview of the resource management issues in the Canterbury region, and the objectives, policies, and methods to achieve integrated management of natural and physical resources. The Project is consistent with the outcomes sought in the CRPS.

A full assessment against the relevant objectives and policies of the CRPS is contained within Appendix E.

10.5 Canterbury Land and Water Regional Plan

The LWRP was made operative on 1 September 2015. The most recent addition to the operative plan was approved by Canterbury regional council on 13 December 2018. The LWRP identifies the objectives and policies required for managing land and water resources in the region to achieve the RMA. The Project is consistent with the outcomes sought in the LWRP.

A full assessment against the relevant objectives and policies of the LWRP is contained within Appendix E.

10.6 Partially Operative Selwyn District Plan

The POSDP is mostly operative, with minimal sections subject to appeal. The latest version was updated on the 5 March 2024.

The Project is consistent with outcomes sought in the POSDP, particularly those set out in the Strategic Directions and Transport Chapters. The relevant Objectives and Policies are identified and discussed below.

By improving traffic safety and connectivity along and across SH1, the Project aligns with SD-DI-Objective 1 and EI-Objective 1 which promotes well-connected, safe, and accessible development. The Project contributes to the key transport corridors remaining accessible and functional, contributing to local and regional economic growth.

The Project design and methodology is consistent with the outcomes sought in SD-MWV-Objective 1 and ECO-Objective 1 2, demonstrated by ongoing consultation with Ngai Tahu through the CAG, having regard to cultural values and heritage. By balancing infrastructure development with environmental

protection and cultural values, the Project is consistent the district's direction for sustainable, inclusive growth.

In regard to the Transport chapter, TRAN-Objective 1 and TRAN-Policy 1 seek to enhance transport efficiency and safety by improving intersections and reducing traffic conflict points. The Project will contribute to improved connectivity, improved traffic safety and more reliable travel times thereby promoting a safer, more efficient transport network. By improving road safety and accessibility, the Project also supports the well-being of the community, consistent with TRAN-Objective 2 and the district's broader goal of sustainable, inclusive growth.

The Project accommodates existing traffic volumes from residential and industrial developments, enhancing connectivity and supporting the local economy. By upgrading the SH1 intersection, the project contributes to efficient access for both residents and businesses, in line with TRAN-Policy 3, which supports the maintenance of key transport corridors.

A full assessment against the relevant objectives and policies of the POSDP is contained within Appendix E.

10.7 Section 171(1)(c) - Whether the work and designation are reasonably necessary for achieving the objectives

Section 171(1)(c) of the RMA requires a territorial authority to have particular regard to whether the work and designation are reasonably necessary for achieving the objectives of the requiring authority for which the designation is sought. NZTA consider that it is reasonable for:

- Necessary to fall somewhere between desirable and essential; and
- Reasonably allows for some tolerance in terms of where necessary falls.

Accordingly, we consider that the threshold of "reasonable necessity" allows for a threshold assessment, proportionate to the circumstances to determine whether the Project is justified in the context of Section 171(1)(c) of the RMA.

As noted in Section 2.2.2, the objectives for the Project are as follows:

1. Improve the safety and efficiency of travel on the state highway and intersections with the state highway through Rolleston.
2. Provide safer connections and access for goods and people travelling between the residential and industrial areas of Rolleston enabling transport choices.
3. Improve the safety and travel time reliability of the regional journey on the state highway between Rolleston and Christchurch.

The Project is reasonably necessary to achieve these Project objectives because:

- The existing environment experiences congestion and safety issues as a result of the current intersections between SH1, Rolleston Drive North, Hoskyns Road and Jones Road. These existing deficiencies have been addressed by the Project, with the proposed interventions supporting the function of the state highway network. The current transport network within the Project area cannot achieve the Project objectives.
- The proposed work responds to and addresses these issues. The roundabout and associated works alleviates the traffic safety issues at the SH1, Rolleston Drive North, Hoskyns Road and Jones Road intersections. The network benefits are further discussed in the Traffic and Transport section of this AEE (refer to Section 8.3) and in Appendix H. The designation is reasonably necessary to achieve these objectives because:
- Alternative sites, alignments, and methods for undertaking the work have been adequately considered. A designation is the most appropriate method under s171(1)(b) for the Project (see section 4 of the AEE above). Therefore, the use of the designation mechanism is reasonably necessary to achieve the Project objective.
- The proposed extent of designation provides for the ongoing operation and maintenance of the proposed infrastructure as well as its construction. As such, the extent of designation includes

areas required for the construction-process such as laydown areas and construction yards. It also provides areas that may be utilised to implement recommended mitigation.

- The designation extent is reflective of the needs of the Project and has taken into account inputs from mana whenua, public engagement and landowners / stakeholders, and technical specialists and feedback from various NZTA departments.

10.8 Section 171(1)(d) - Other Matters

When considering the Project, the territorial authority must have particular regard to any other matter the territorial authority considers reasonably necessary to make a recommendation on the requirement.

No other matters are considered directly relevant to the consideration of the Project by the territorial authority.

10.9 Part 2 of the RMA Assessment

Section 171(1) of the RMA states that when considering a NoR, a territorial authority must consider the effects on the environment having particular regard to a number of matters (assessed above) and this is subject to Part 2 of the RMA.

Part 2 comprises ss5-8 of the RMA. Section 5(1) of the RMA states that the purpose of the RMA is to promote the sustainable management of natural and physical resources.

Section 5(2) of the RMA then provides a definition of sustainable management. In our view, in determining whether the Project promotes sustainable management, consideration of Sections 6, 7 and 8 of the RMA is required before drawing any conclusions regarding consistency with Section 5 of the RMA. The following section provides an assessment of the effects of the Project subject to Part 2 of the RMA Purpose of the Act

Section 5 of the RMA sets out the purpose of the RMA which is to promote the sustainable management of natural and physical resources.

10.9.1 Matters of national importance

Section 6 of the RMA states that in achieving the purpose of this Act, all persons exercising functions and powers under it, in relation to managing the use, development, and protection of natural and physical resources, shall recognise and provide for specified matters of national importance. The following matters of national importance are relevant to the Project and assessed below.

Table 10-2: Matters of national importance

Matters of national importance		Assessment
(a)	*the preservation of the natural character of the coastal environment (including the coastal marine area), wetlands, and lakes and rivers and their margins, and the protection of them from inappropriate subdivision, use, and development*	The Project is not located within a coastal environment. Adverse effects on natural character values have largely been avoided or minimised through the alternatives assessment process, noting there are no streams or wetlands of significance located in the Project area.
(b)	*the protection of outstanding natural features and landscapes from inappropriate subdivision, use, and development*	The Project will not impact any outstanding natural features and landscapes, as discussed through the Ecology assessment including in Appendix K.
(c)	*the protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna*	The Project will not impact any areas of significant indigenous vegetation or any significant habitats of indigenous fauna, as discussed throughout the Ecology assessment included in Appendix K.

(d)	*the maintenance and enhancement of public access to and along the coastal marine area, lakes, and rivers*	The Project will not impact public access to and along the Coastal Marine Area (**CMA**), lakes and rivers.
(e)	*the relationship of Maori and their culture and traditions with their ancestral lands, water, sites, waahi tapu, and other taonga*	The Project has had regard to, and taken into account, the principles of Te Tiriti through the development of the design. Furthermore, ongoing engagement with mana whenua is occurring. Based on discussions with mana whenua, it is understood there are no areas of cultural significance within the proximity of the Project.
(f)	*the protection of historic heritage from inappropriate subdivision, use, and development*	There are no areas or items of historic heritage identified in the Project area, as discussed throughout the Archaeological Assessment included in Appendix N.
(g)	*the protection of protected customary rights*	There are no affected protected customary rights groups or affected customary marine title groups.
(h)	*the management of significant risks from natural hazards*	A number of design measures to provide resilience to flooding, inundation and climate change have been adopted across the Project area. The stormwater has made recommendations which are to be implemented at detailed design so that there is sufficient space within the proposed designations for stormwater and flood mitigation, noting the Project falls within overland flood paths.

10.9.2 Others matters

Section 7 of the RMA states that, in achieving the purpose of the RMA, particular regard shall be had to specified other matters. NZTA consider the following other matters to be relevant and are assessed in Table 10-3 below:

Table 10-3: Other matters relevant to the Project

Other matter	Assessment
Kaitiakitanga	Mana whenua have been actively involved through the DBC and this phase of the Project and will continue to exercise kaitiakitanga through the construction and operational phases of the Project.
The ethic of stewardship	This has been recognised through engagement with key stakeholders, residents and the wider community who exercise stewardship over particular resources.
The efficient use and development of natural and physical resources	Through the assessment of alternatives process, the Project was determined to be the most efficient use of natural and physical resources, particularly as it utilises the existing corridor.
The efficiency of the end use of energy	Not considered relevant to the Project.

The maintenance and enhancement of amenity values	The Project will maintain and enhance the quality of the environment through the preparation and subsequent implementation of a ULDF.
Intrinsic values of ecosystems.	The design of the Project has sought to avoid adverse effects on ecosystems as far as practicable while providing sufficient width within the proposed designation boundaries.
Maintenance and enhancement of the quality of the environment.	The Project will maintain and enhance the quality of the environment through the preparation and subsequent implementation of a ULDF.
Any finite characteristics of natural and physical resources.	Not considered relevant to the Project.
The protection of the habitat of trout and salmon.	Not considered relevant to the Project.
The effects of climate change.	The Project responds to the effects of climate change and the reduction of greenhouse gas emissions by improving high-quality walking and cycling facilities to and across SH1.
The benefits to be derived from the use and development of renewable energy.	Not considered relevant to the Project.

The Project is consistent with Section 7 of the RMA.

10.9.3 Te Tiriti o Waitangi | Treaty of Waitangi

In achieving the purpose of this Act, all persons exercising functions and powers under it, in relation to managing the use, development, and protection of natural and physical resources, shall take into account the principles of the Treaty of Waitangi (Te Tiriti o Waitangi).

NZTA are working alongside mana whenua throughout the development of the Project to identify areas and matters of cultural significance and incorporate this as part of the alternatives assessment process. This has included avoiding or minimising impact on waterbodies within the wider area and providing for the implementation of construction management plans to be in place to protect water quality and any previously unrecorded items of cultural heritage encountered. Further engagement will be undertaken in the detailed design and construction phases to achieve consistency with the principles of Te Tiriti o Waitangi.

Given the above, the development of the Project is consistent with the principles of the Te Tiriti o Waitangi, and section 8 of the RMA.

10.9.4 Purpose of the Act

Section 5 of the RMA sets out the purpose of the RMA which is to promote the sustainable management of natural and physical resources, in a way, which enables people and communities to provide for their social, economic, and cultural well-being.

The Project is consistent with the principles of the RMA, by utilising an existing transport corridor, the Project optimises efficiency, while simultaneously promoting improved accessibility to the broader transportation network.

This enhanced access supports a more connected community, and increases access to employment opportunities and recreation, which will support the economic and social well-being of Rolleston.

The Project will result in some adverse effects although these are largely associated with construction. Appropriate measures are proposed to avoid, remedy, and mitigate these noting that construction is also a temporary effect. Consequently, noting the significant regional and local benefits of the Project, the Project is consistent with the purpose and principles of the RMA.

11 CONCLUSION

The Project relates to transport improvements along and across SH1 through Rolleston that will:

- Improve the safety and travel time reliability across the SH1 network in Rolleston.
- Improve connectivity between the residential-commercial part of the township and the Rolleston industrial area.
- Improve transport choices.
- Support national and regional economic growth and productivity.

Gradual plan changes in the POSDP have enabled growth in Rolleston and accelerated the transition of the surrounding area from rural to urban. The upgrades to SH1 will provide essential and safe transport infrastructure to support and integrate with the local transport network and nearby urban development.

While it is acknowledged that adverse effects during the construction and operation of the Project may arise, these are mitigated through the proposed management plans and mitigation measures proposed in the NoR. These are further discussed throughout this AEE. Furthermore, the Project is expected to produce significant positive effects, contributing to a safer road network, connectivity, and well-being of both local and regional community.

Overall, the Project is a crucial step towards achieving a sustainable and integrated transport system that supports the future growth and development of the Rolleston township, Selwyn District, and the Canterbury region.

APPENDIX A – Designation Plan (as attached to the NOR)

APPENDIX B – Land Designation Plan Schedule

APPENDIX C – General Arrangement Plans

APPENDIX D – Resident Access Plan

APPENDIX E – Statutory Assessment

APPENDIX F – Consultation and Engagement Report

APPENDIX G – Detailed Site Investigation (DSI)

APPENDIX H – Integrated Transport Assessment (ITA)

APPENDIX I – Landscape and Visual Assessment (LVA)

APPENDIX J – Noise and Vibration Assessment

APPENDIX K – Ecological Impact Assessment (EcIA)

APPENDIX L – Stormwater Assessment

APPENDIX M – Air Quality Assessment

APPENDIX N – Archaeological and Heritage Assessment

APPENDIX O – Lighting Assessment

APPENDIX P – Cultural Advice Report (CAR)

APPENDIX Q – DBC Flyover Alternatives and Multi-Criteria Analysis

APPENDIX R – DBC Community and Stakeholder Engagement Plan

APPENDIX S – The path to a flyover - SH1 Rolleston Transport Improvements

APPENDIX T – Geotechnical Memorandum