
PART G: ASSESSMENT OF EFFECTS**9. SUMMARY OF ENVIRONMENTAL EFFECTS****Overview**

The Project will have a number of positive and adverse effects. These will vary in significance, scale (local, regional and national), intensity and duration. The Project will have significant positive transport effects at a local, regional and national scale, including:

- improved resilience for the road network;
- improved safety and reduced crash risk;
- significant travel time savings;
- improved connections to regional freight hubs, including the port and industrial areas;
- more efficient freight movement and associated economic benefits; and
- opportunities to improve passenger transport in the south-west of Christchurch.

Potential temporary effects during construction of the Project include:

- nuisance effects (e.g. dust, noise, traffic, lighting, amenity) from construction activities;
- disruption to network utilities;
- increased sediment and contaminants entering waterways;
- disruption and displacement of wildlife; and
- degradation and loss of terrestrial and freshwater habitats.

Potential long term effects from operation of the Project (in addition to transport effects) include:

- support for strategic growth and development, through providing accessibility to greenfield residential and business areas.
- noticeable changes to the rural outlook for some viewpoints adjacent to and on the motorway;
- landscaping and restoration planting that enhances connectivity and ecological values; and
- increased noise for some receivers.

9.1. Introduction

The purpose of this chapter is to provide a summary of the actual and potential effects of the construction and operation of the Project. This is a summary of the effects discussed in the rest of the chapters in Part G of this AEE. It is intended to provide an overview of the effects associated with the Project, including whether they are positive or adverse, and the scale at which they are likely to occur (i.e. local, regional or national). It does not cover proposed mitigation or offsetting, of adverse effects, which are addressed in Chapter 27.

Section 3 of the RMA defines 'effect' as including:

- (a) any positive or adverse effect; and
- (b) any temporary or permanent effect; and
- (c) any past, present, or future effect; and
- (d) any cumulative effect which arises over time or in combination with other effects - regardless of the scale, intensity, duration, or frequency of the effect, and also includes -
- (e) any potential effect of high probability; and
- (f) any potential effect of low probability which has a high potential impact.

Further details about effects are described in the following chapters in Part G and in the associated technical reports.

9.2. Summary of effects

The actual and potential effects of the construction and operation of the Project are summarised in Table 14 below. This table only provides a summary of the positive and adverse actual and potential effects of the Project. It does not cover the mitigation and / or remediation of adverse effects. Mitigation is summarised in Table 41, Chapter 27.

Table 14: Summary of actual and potential environmental effects

Construction effects
Operational effects

Actual or potential environmental effect identified	Positive	Adverse	Local, regional or national level effect(s)
Traffic and transport			
Increased construction traffic movements of both light vehicles and heavy vehicles are likely to have adverse amenity and safety effects on local roads.		✓	Local
Significant travel time reductions and journey time reliability for travel between the Port of Lyttelton, the City Centre and industrial areas in the south of Christchurch and Rolleston.	✓		Local and regional

Actual or potential environmental effect identified	Positive	Adverse	Local, regional or national level effect(s)
Improved travel time reliability resulting in: <ul style="list-style-type: none"> improved certainty around travel times in the corridor for all road users; more efficient freight movement and associated economic benefits; and better links to regional freight hubs, including the Port, industrial areas and distribution centres. 	✓		Local, regional and national
Significant improvements in safety and a reduction in the frequency of crashes.	✓		Local, regional and national
Improvement to road network resilience.	✓		Local, regional and national
Potential for improved passenger transport in the south-west of Christchurch through a reduction in traffic on existing routes.	✓		Local, regional
Removal of direct access to Main South Road for properties on the west and east of the road.		✓	Local
Property and land use			
Private land will be required to accommodate the Project alignment, rear access roads and ancillary local road improvements.	✓	✓	Local
Some partial land acquisition may result in land severance or a reduction of land area below a useable size. This may have implications for amenity.		✓	Local
Provision of alternative access may reduce the net area of existing properties including below the minimum allotment size in the District Plan.		✓	Local
The Project will take land comprising high fertility soil which might otherwise be used for farming purposes. This land use change will be irreversible.		✓	Local, regional and national
Services / network utilities			
The Project alignment falls within the clearance envelope of a Transpower transmission line.		✓	Local and regional

Actual or potential environmental effect identified	Positive	Adverse	Local, regional or national level effect(s)
Potential for construction activities and dust to cause damage to rail, telecommunications, electricity transmission and distribution, water, stormwater and sewer infrastructure.		✓	Local and regional
During construction, sediment has the potential to enter stockwater races.		✓	Local and regional
Urban form and function			
The Project will provide accessibility to greenfield residential and business areas.	✓		Local and regional
Improved local road cross-corridor connections, pedestrian connectivity in Templeton and general access to the surrounding area.	✓		Local
Landscape and visual			
Temporary visual effects resulting from construction activities, such as construction yards, laydown areas and equipment.		✓	Local
Adverse amenity effects from large-scale of motorway structures, proposed swales and stormwater basins, removal of planting and loss of pastoral land.		✓	Local
The lights of vehicle movements may impact on existing residents and businesses in the vicinity of the Project alignment.		✓	Local
Lighting			
Construction yard and activity lighting, while temporary, has the potential to cause light spill effects on nearby residents and glare on drivers of vehicles.		✓	Local
Lighting installed at intersections and interchanges will contribute to pedestrian and road user safety.	✓		Local
There is the potential for intermittent lighting effects from vehicle movements to impact upon existing residents in the vicinity of the motorway.		✓	Local

Actual or potential environmental effect identified	Positive	Adverse	Local, regional or national level effect(s)
Lighting installed at intersections and interchanges have the potential to adversely affect residents and vehicle drivers primarily through spill light and glare.		✓	Local
Noise and vibration			
Temporary construction noise and vibration has the potential to cause disturbance to residents and occupiers of commercial properties in close proximity to the Project alignment.		✓	Local
Reduced traffic volumes on some local roads will result in reduced traffic noise levels, improving local amenity.	✓		Local
Operational traffic noise has the potential to cause disturbance to residents and occupiers of commercial properties in close proximity to the Project alignment.		✓	Local
Air quality			
Dust and fumes generated by earthworks and other construction activities has the potential to adversely affect air quality for residences within close proximity to the construction works (within 200m).		✓	Local
Terrestrial ecology			
Disturbances from construction activities (in conjunction with habitat loss) may lead to lizard mortality or injury.		✓	Local
Construction activities and particularly heavy machinery presents an opportunity for problem weed species not currently present in the area to become established.		✓	Local
Bird, lizard and invertebrate habitat will be lost to accommodate on-off ramps and local road connections. The road may also obstruct movement of wildlife and pose a hazard to mobility of some species. This may result in a minor loss of ecological functionality at a local level.		✓	Local
Proposed landscaping will enhance ecological value and connectivity and may also provide suitable habitats for wildlife in time.	✓		Local

Actual or potential environmental effect identified	Positive	Adverse	Local, regional or national level effect(s)
Freshwater ecology			
Potential sedimentation and contamination of surface waterways, including stockwater races, from stormwater discharge during construction may adversely affect ecosystems.		✓	Local and regional
Potential habitat degradation and blockage of fish passage through physical disturbance and temporary closure of water races during construction.		✓	Local and regional
Stormwater run-off during operation may contain other contaminants that can result in nuisance growths in waterways.		✓	Local and regional
Potential habitat modification as a result of water race piping, realignment and permanent closure.		✓	Local and regional
Stormwater and groundwater			
The proposed stormwater treatment process will improve the receiving environment water quality.	✓		Local and regional
Disposal to land has the potential to reduce downstream flooding. This is because the area draining to the existing system will be reduced, which currently overflows to the stockwater races in heavy rain.	✓		Local
Adverse flooding and water quality effects from highway stormwater.		✓	Local and regional
Failure of soak pits leading to progressive failure of individual elements in the Project and negative off corridor effects such as additional surface flooding in the Halswell catchment.		✓	Local and regional
Concentration of contaminants and sediments in stormwater first flush basins.		✓	Local and regional
Failure of stockwater race infrastructure to carry design flows across or adjacent to the Project due to modifications undertaken as part of the Project.		✓	Local
Overland flow paths impeded by the Project leading to additional flooding due to modifications made as part of the Project.		✓	Local

Actual or potential environmental effect identified	Positive	Adverse	Local, regional or national level effect(s)
Robinsons Road overpass may be inundated by groundwater has been identified with the predicted CPWES in place.		✓	Local
Dewatering to lower groundwater levels may have adverse effects on other groundwater users.		✓	Local
Dewatering to lower groundwater levels may have adverse effects on the flow within surface waterbodies		✓	Local and regional
Stormwater discharges may affect nearby water quality of nearby groundwater wells/takes.		✓	Local
Groundwater mounding beneath the stormwater treatment ponds at Halswell Junction Road may affect the performance of the ponds		✓	Local and regional
Progressive failure of individual stormwater elements in the Project design due to sediment and erosion effects.		✓	Local
Effects on groundwater quality from bore installation.		✓	Local and regional
The installation of the pipe outfall in Upper Knights Stream may have effects on ecological and other values within the stream.		✓	Local and regional
Use and storage of hazardous substances may affect soil and water quality.		✓	Local and regional
Excavation and deposition over an unconfined/ semi-confined aquifer may affect groundwater quality		✓	Local and regional
Excavation of material may affect aquifer pressure		✓	Local and regional
Natural hazards			
Seismicity in the region means the Project and users may be subject to ground shaking, rupture, liquefaction and related damage at ground level.		✓	Local
Flooding from impeded overland flow or failure of the stormwater system.	✓	✓	Local

Actual or potential environmental effect identified	Positive	Adverse	Local, regional or national level effect(s)
Contamination			
Contaminant risk to human health and/or ecological values during land disturbance activities, and potential for hazardous materials to be discovered during construction resulting in human health risk (largely for workers).		✓	Local
Cultural impacts			
The Project has the potential to adversely affect unrecorded sites of cultural significance or koiwi remains.		✓	Local and regional
The Project has the potential to adversely affect water quality and ecological values, which are important to local iwi.		✓	Local and regional
The planting regime for the Project will enhance native bird, fish and aquatic species habitat and also enhance bio-diversity in the Project area. These values are important to tangata whenua.	✓		Local and regional
The proposed stormwater treatment process will improve the receiving environment water quality, which is important to tangata whenua.	✓		Local and regional
The Project could further erode cultural landmarks.		✓	Local and regional
Archaeology and built heritage			
There are no identified sites of archaeological significance affected by the Project. However there is the possibility that such sites have not yet been discovered, or identified.		✓	Local and regional
Economic			
Construction activity and traffic will cause temporary negative economic effects on some businesses in localised areas.		✓	Local and regional
Disruption of current dynamics for passing traffic to be aware of business offerings.	✓	✓	Local and regional
Social impacts			

Actual or potential environmental effect identified	Positive	Adverse	Local, regional or national level effect(s)
Construction noise and vibration will cause disturbance to those living, working and gathering in proximity to the works.		✓	Local
Disturbance to human health and nuisance caused by dust produced by construction.		✓	Local
The use of local roads for construction traffic may cause delays for people accessing community facilities (such as daycare or schools) and increase road safety concerns.		✓	Local
Improved access to work and a range of services including education, health and emergency services, and retail and commercial services.	✓		Local and regional
Active transport (as a component of social wellbeing) will be enhanced through proposed links between CSM2 and the Little River Rail trail. There will likely be an increase in commuter cycling to Lincoln.	✓		Local and regional
Visual and amenity effects caused by the motorway and associated interchanges.		✓	Local
Operational noise may have an effect on the health and wellbeing of people living near the alignment.		✓	Local