13. NETWORK UTILITIES

Overview

The Project directly affects a number of existing network utilities, including electricity transmission and distribution lines, telecommunications, water supply, wastewater and stormwater disposal utilities, stockwater races and also the rail network. The NZTA has consulted with network utility operators to identify those network utilities that will be directly affected, how they can be protected and /or how relocation can be appropriately undertaken. The outcomes of these initial discussions concluded that all adverse effects on network utilities directly affected by the Project will be able to be appropriately avoided, remedied or mitigated.

13.1. Introduction

This chapter identifies network utilities that are potentially adversely affected by the Project, and how they will be protected or relocated. Initial consultation with network utility providers has included phone conversations, letters, and meetings to discuss the Project and its potential effects on their utilities.

Further, the NZTA has worked closely with network utility providers to seek to ensure that their existing infrastructure is maintained both during construction, and once the Project is operational. Work is also underway to liaise with utility operators to address implications on their planned upgrades in the immediate future.

13.2. Existing environment

Existing network utilities within the Project area include infrastructure for:

- electricity transmission;
- electricity distribution;
- water, wastewater and stormwater;
- stockwater;
- telecommunications facilities; and
- railways.

Network utility service providers within the Project area have been identified as follows:

Table 23: Main South Road existing utility services

Location	Orion (overhead)	TelstraClear	Water Races
Main South Road	Eastern side crossing the road periodically	Western side	Eastern side (from Weedons Road)

Location	Orion (overhead)	TelstraClear	Water Races
Jones Road	Western side	Eastern side (south of Weedons Ross Rd)	-
Weedons Ross Road	Both sides	Southern side (south of Jones Rd)	Northern side
Weedons Road	Southern side	Southern side (doesn't extend to Levi Rd)	Northern side
Levi Road	Shown on the plans but not observed on site	-	-

In addition to the services presented in Table 1, there is a Chorus cable running parallel to Main South Road to the east of the railway reserve from around 500 m south of Robinsons Road to around 300 m north of Robinsons Road. The South Island Main Trunk Line (SIMT) runs adjacent to Main South Road, located within a corridor between the western side of the highway and Jones Road. There are two level crossings close to the MSRFL Project corridor located at Curraghs Road and Weedons Ross Road. The level crossings are in close proximity to intersections on Jones Road, which runs parallel to the railway between Templeton and Rolleston.

Table 24: CSM2 existing utility services

Location	Orion (overhead)	Chorus	Water Supply	Water Races
Robinsons/ Curraghs Road	Western side and an additional line crossing CSM2 east of Robinsons Rd	North of Robinsons Rd	-	Western side and north of Robinsons Rd
Waterholes/ Hamptons Road	Both sides	-	-	Eastern side
Trents Road	Western side	West of Trents Rd and crosses Trents Rd to the north of CSM2	-	Eastern side and west of Trents Rd
Blakes Road	Eastern side	-	-	Western side
Shands Road	Western side	-	-	-

Location	Orion (overhead)	Chorus	Water Supply	Water Races
Marshs Road	Northern side	South of Marshs Rd through the CSM2/ Shands interchange. Crosses Marshs Rd and CSM2 east of their intersection.	Runs around the NW corner of Marshs/ Shands intersection	Northern side
Railway Corridor	Eastern side	-	-	-
Springs Road	Western side	-	Both sides	Western side
John Paterson Drive (existing alignment)	Northern side	-	Northern side	-
Halswell Junction Rd	Eastern side	-	Western side	Western side

In addition to the services presented in the table above, there are:

- overhead Orion lines and TelstraClear services run along Main South Road, on the eastern and western sides respectively; and
- sewer pipes on the eastern side of Shands Road and the western side of Springs Road.

Two lines of Transpower pylons intersect just north of the proposed Shands Road / Marshs Road interchange. The alignment of CSM2 crosses under the Islington to Springston (ISL-SPN A) 50/66kV transmission line to the southwest of the Shands Road and Marshs Road intersection. The alignment crosses under the Bromley to Islington (BRY-ISL A) 220kV transmission line just south of the proposed Marshs Road underpass.

The Hornby Industrial Line branches off the main line railway at the Carmen Road intersection heading in a southerly direction across Halswell Junction Road to just north of Marshs Road. The line includes several private sidings to industrial land uses in this area. The formed rail line terminates north of Springs Road.

13.3. Assessment of effects on network utilities

The Project philosophy towards planning for existing network utilities is to avoid disruption to services, where practicable.

13.3.1. Electricity transmission infrastructure

The proposed CSM2 alignment passes under Transpower's ISL-SPN A 50/66kV transmission lines to the southwest of the Shands Road and Marshs Road intersection. Consultation has taken place with Transpower and it was determined that the alignment falls within the transmission line clearance envelope. Transpower is currently undertaking a study for the modification of these lines to achieve the required clearance standards. The preferred option has yet to be determined, with potential solutions including providing an additional tower, tensioning of the lines, raising existing towers or undergrounding the lines.

The preferred solution will be identified when the Project advances to detailed design and it is recommended that the modifications to these 66 kV lines are undertaken prior to the construction of CSM2. This will allow the contractor a clearer and safer working space during the construction of the CSM2 / Shands Road interchange.

The proposed CSM2 alignment also passes under the BRY-ISL A 220kV transmission line. Transpower has not indicated any clearance issues with respect to the road being at grade beneath this line. This is subject to confirmation at the time of writing.

Other potential adverse effects include:

- dust generated during construction could potentially settle on transmission lines and affect their integrity (the management of dust is discussed Chapter 18);
- the presence of existing transmission lines near the proposed alignment presents a potential safety hazard for contractors during the construction period; and
- one transmission tower on the BRY-ISL A line is located in close proximity to the proposed motorway and may be impacted. This may require barrier protection due to the proximity of the proposed motorway.

The remainder of the alignment is clear from substations and transmission lines.

13.3.2. Electricity distribution infrastructure

Consultation has taken place with Orion to identify where the Project will impact on its services and how these services will be maintained during construction and operation of the proposed highway.

Orion has several overhead lines that will be affected by the Project. It is proposed to modify this infrastructure prior to the main works starting to enable a more efficient and safer construction environment. Some of the key Orion infrastructure to be modified includes:

- relocation of the 66 kV overhead lines and 11 kV underground lines in the vicinity of the substation located on Weedons Ross Road adjacent to the railway corridor;
- undergrounding the 11 kV overhead lines that currently run along the eastern side of the SH1 road reserve from Park Lane through to Waterholes Road; and
- relocating overhead lines located along several local roads crossed by CSM2 and MSRFL:

- 11 kV overheads at Jones Road, Trents Road, Blakes Road, Marshs Road, Springs Road and Halswell Junction Road; and
- 33 kV overheads along Shands Road.

During construction, there is potential for dust to settle on insulators which may interfere with the lines. This will be managed through use of dust suppressant measures, as outlined in the CEMP. With the above measures in place, the potential adverse effects on Orion's utilities will be avoided or mitigated to an acceptable level.

13.3.3. Telecommunication infrastructure

Both Chorus and Telstra Clear have services located in the vicinity of the Project. Chorus has underground copper and fibre lines primarily along the CSM2 section and Telstra Clear has numerous underground fibre optic cables located along the MSRFL section. The NZTA has consulted with these organisations to identify the number of cables affected and options for maintaining these utilities during construction and operation of the Project.

The options available are protection of cables and / or relocating the cables so they are not affected. In addition, allowing for access for future maintenance of this infrastructure also needs to be considered. These solutions will be incorporated into the Project's detailed design and will be undertaken in conjunction with Project construction works.

As a result, any adverse effects on telecommunications infrastructure will be appropriately avoided or mitigated.

13.3.4. Water supply, stormwater and sewer infrastructure

There is very minimal existing water supply and sewer infrastructure located in the Project area. This infrastructure is located alongside local roads which the CSM2 alignment will be crossing. The location of this infrastructure has been identified and consultation has occurred with SDC and CCC regarding how these services will be maintained during construction and operation of the State highway. During the construction of CSM2, the sewer pipes will require protection, and in some cases may require relocation to improve longer term maintenance accessibility. The potential adverse effects on this existing infrastructure and any proposed infrastructure will be avoided or mitigated to an acceptable level.

There is little existing formal stormwater drainage infrastructure along the length of proposed works. Swale and soakage systems exist along parts of the Main South Road and formal soak pits can be found on the rural roads in the area and along the existing Main South Road. There is no existing stormwater drainage infrastructure along the proposed CSM2 alignment. On the north west side of the CSM1 alignment and Halswell Junction Road, there are the existing Mushroom Ponds that are being constructed as part of the CSM1 works. In addition, the Owaka Basin stormwater treatment pond (proposed as part of CSM1) has been designed to capture overflows from the Halswell Junction Road Pond (via Montgomery's Drain) and provide additional stormwater treatment. The Project will cross Montgomery's Drain which runs parallel to Halswell

Junction Road and eventually discharges into Upper Knight's Stream (via a pipe and open channel system). Siphoning of this drain beneath the Project alignment will be required, as well as diverting the drain to the CCC proposed Owaka Basin (in order to meet with the CCC design set out in the SWAP). With proposed measures in place, it is considered that there are unlikely to be any effects on existing stormwater infrastructure. The effects on stormwater have been assessed in detail in Chapter 19.

13.3.5. Stockwater race infrastructure

The proposed alignment crosses nine existing stockwater races (seven along CSM2 and two along MSRFL). In addition, a stockwater race runs parallel to Main South Road on the eastern side within the road designation for approximately 2 km.

Discussions in relation to stockwater races were held with SDC and directly affected landowners. SDC provided guidance on required stockwater race dimensions and potential for closure of races. Overall, the function of the race network needs to be maintained, thus wider closures were not considered. Closing sections of some individual races and/ or rerouting of races have been considered where it can minimise the number of stockwater siphons. Some short lengths of water race may be decommissioned where alternatives are available and the landowner and SDC are in agreement.

For the remainder, the stockwater races will be piped beneath the Project alignment, to maintain the function for downstream users. Stockwater races will be passed under the motorway via a siphon system, typically measuring between 300mm and 450mm. At locations where stockwater races are protected against overland flow, e.g. inside the Marshs Road intersection, a second siphon will be required at a similar diameter to the dry weather flow siphon for maintenance. In other cases, stockwater races will be diverted to allow for the construction of embankments and reduce the number of siphons. These diversions will be fully lined to prevent water loss.

As well as impacting the alignment of existing stormwater races, the Project has the potential to affect water quality within the water races. The areas that are most likely to cause issues will be the modification to the stockwater races, where an approach has been adopted to minimise the amount of silt and sediment stirred up into solution and transported along the race. This will be similar to the regular maintenance of the stockwater race network which is currently undertaken using heavy machinery.

The construction of the proposed motorway in this area may result in exposed sediment and associated contaminants being mobilised during construction and entering the water races. Contamination of the water races may lead to nuisance growths of algae and toxicity of biota affecting the utility function of the races.

13.3.6. Rail infrastructure

The Project does not cross the SIMT at any point. Therefore, once the Project is operational there will be no adverse effects on the operation of the Rail corridor.

However, the operation of the SIMT could be adversely affected during the construction period. Potential effects include dust becoming airborne during excavation works. Dust could settle on railway infrastructure and interfere with its operation. Dust control will be managed appropriately in accordance with the CEMP and any adverse effects on the operation of the SIMT will be avoided or mitigated to an acceptable level.

With respect to the proposed rear-access road within the rail corridor between Curraghs and Weedons Ross Road, KiwiRail has advised that in principle it could accommodate the NZTA's preferred option for the placement of such a road partly within the existing rail corridor. The NZTA Project team are currently undertaking a survey to locate the rail tracks to enable KiwiRail to determine a suitable corridor width for future double tracking.

The proposed CSM2 alignment passes across the southern end of the Hornby Industrial Line, which is currently used for shunting trains into the Watties factory. To enable CSM2 to remain at-grade whilst continuing to cater for the shunting of carriages into Watties, it is proposed to turn out the rail tracks to the east. KiwiRail has agreed to allow the Project to pass across the decommissioned railway corridor at-grade on this basis, and as a result the line will need to be reconfigured to allow shunting and access into the existing industrial area. The risks associated with any future rail upgrade of this rail line for commuter rail or similar have been considered. The NZTA confirms it is willing to accept the risk and costs of changes if the rail network were to be extended in the future.

13.4. Measures to avoid, remedy or mitigate actual or potential adverse effects on network utilities

There are a number of existing network utilities within the Project area. Protection and/or relocation of existing utilities will be an important aspect of the Project's construction.

Enabling works will be required prior to construction, in particular to rectify the non-compliance with the clearance standard for the existing electricity transmission lines, and the relocation of electricity distribution lines.

Construction activities may impact on existing network utilities as a result of dust affecting electricity and rail infrastructure operations and sediment entering stockwater races. Potential dust effects will be mitigated through the CEMP.

Protection and/or relocation of existing utilities will generally occur in conjunction with the Project's construction. The NZTA's contractors will work closely with the contractors of the relevant network utilities providers to undertake the necessary protection and/or relocation works to ensure that effects on these networks are avoided or mitigated.

13.5. Conclusion

The Project directly affects a number of existing network utilities. Protection and/ or relocation of these utilities will generally occur in conjunction with the Project's construction. In addition, the CEMP will contain measures to manage effects on existing utilities during construction.