OCEANAGOLD

Coronation North Project

Transportation Assessment

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1. Introduction

1.1. OceanaGold (New Zealand) Limited ("*OceanaGold*") proposes to extend the already-consented Coronation Pit towards the south and to construct a new open cut pit ("*Coronation North Pit*") and waste rock stack ("*Coronation North Waste Rock Stack*") to the north of the consented pit. The mining extension is to be known as the Coronation North Project ("*the Project*"), and will require an extension to an existing haul road by approximately 2km to move the ore between the pit to the processing plant. Ancillary works to the mining are also proposed.

1.2. This Transportation Assessment sets out a detailed analysis of the transportation issues associated with the proposal, including changes in travel patterns that are likely to arise. Where potential adverse effects are identified, ways in which these can be addressed are set out.

1.3. This report is cognisant of the guidance specified in the New Zealand Transport Agency's 'Integrated Transport Assessment Guidelines' and although travel by private motor vehicle is addressed within this report, in accordance with best practice the importance of other transport modes is also recognised. That said, due to the location of the site and limited population in the area, levels of walking, cycling and public transport are very low and this is reflected in this report.

2. Site Overview

2.1. Location

2.1.1. The Macraes Gold Project is located approximately 60km to the north of Dunedin (crow-fly distance), and the Project is located approximately 7km northwest of the main mining area at Macraes-Dunback Road[1].

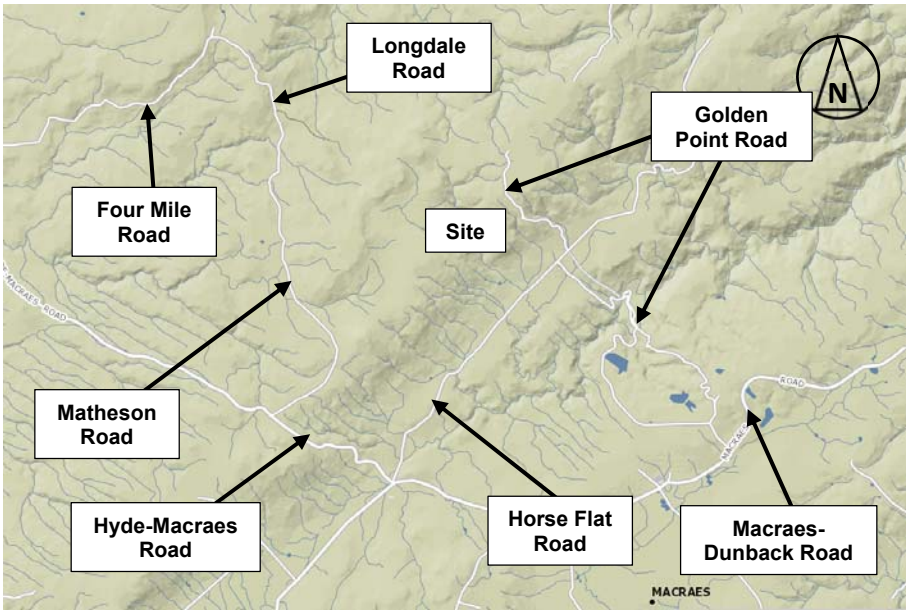

Figure 1: General Location of Project

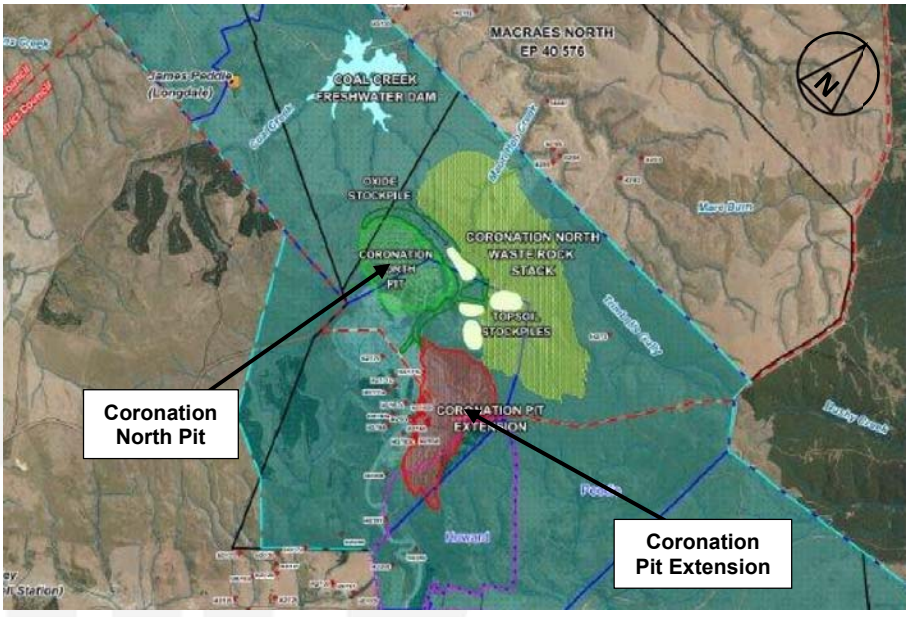

Figure 2: Extract from Oceana Gold Project Coronation Base Map

[1] The proposal straddles the district boundaries of both Waitaki and Dunedin City, but in respect of transportation issues, only Longdale Road is within Dunedin City and the remainder of the roading network is within Waitaki District.

2.2. Road Hierarchy

2.2.1. Macraes-Dunback Road is classified as a District Arterial road within the Waitaki District Plan ("*District Plan*") roading hierarchy. As such, it is described as being a strategic link of district importance, and a significant element in the local economy.

2.2.2. All other roads in the immediate area (including Longdale Road) are Local Roads, which under the roading hierarchy are expected to serve adjacent land use activities.

3. Current Transportation Networks

3.1. Road Network

3.1.1. Macraes-Dunback Road lies towards the south of the Project site. It has a broadly east-west orientation, but has an undulating vertical alignment and a series of horizontal curves over its length. It is subject to a speed limit of 100km/h although the alignment means that this speed is not attained over several sections along its length. As it passes the Macraes Gold Project, Macraes-Dunback Road has two traffic lanes (one in each direction) of 3.5m width, with a sealed shoulder of approximately 1m width.

3.1.2. Towards the east, the carriageway remains 7.0m wide, but the shoulder width reduces to between 0.3m to 0.5m.

Photograph 1: Macraes-Dunback Road to the east of Macraes Gold Project

3.1.3. At its eastern extremity, Macraes-Dunback Road meets State Highway 85 at a priority ('give-way') intersection. The intersection does not have any widening or auxiliary lanes. In turn, State Highway 85 provides links to the wider strategic highway network in the South Island, including a link to State Highway 1 at Palmerston some 15km to the southeast.

3.1.4. West of the Macraes Gold Project, Macraes-Dunback Road passes through the small settlement of Macraes Village. The carriageway width in this location is 6.0m to 6.2m, and there is a narrow (0.3m to 0.5m) gravelled shoulder on each side. There are drainage channels on either side of the road.

Photograph 2: Macraes-Dunback Road to the west of Macraes Gold Project

3.1.5. Further west, Macraes-Dunback Road changes name to become Hyde-Macraes Road, and meets State Highway 87 at a priority ('give-way') intersection. The intersection does not have any widening or auxiliary lanes, although because Hyde-Macraes Road joins at an acute angle, there is some localised widening on the southeast of the intersection to facilitate vehicles turning. State Highway 87 meets State Highway 85 some 18km to the north of this intersection, and towards the south, the highway loops around to join State Highway 1 at Mosgiel.

3.1.6. Golden Point Road joins Macraes-Dunback Road approximately 1.4km northeast of Macraes Village at a priority ('stop') controlled intersection. Localised widening is provided on Golden Point Road on the immediate approach to the intersection, together with a widened sealed shoulder on the southbound carriageway of Macraes-Dunback Road. Due to the gently curving alignment of Macraes-Dunback Road, sight distances for drivers turning at the intersection are excellent.

Photograph 3: Golden Point Road Approach to Macraes-Dunback Road

3.1.7. Golden Point Road has a broadly northwest-southeast orientation, and provides the primary access route to the mine offices and the processing plant. It is sealed for a distance of approximately 3km from Macraes-Dunback Road, and has a centreline and edge markings and a carriageway in the order of 6m wide. The seal terminates at the access road to the processing plant, and futher towards the north, Golden Point Road has a metalled surface and an approximate 5m wide carriageway.

3.1.8. Around 0.65km to the northeast of the processing plant (crow-fly distance), Golden Point Road meets the Deepdell haul road whereupon both roads follow the same winding alignment northwestwards for approximately 1.3km (crow-fly distance). The haul road varies in width between 20m and 30m and there are sections (notably where it crosses Deepdell Creek) where the gradients are steep.

3.1.9. The haul road alignment then turns northwards while Golden Point Road continues in a northwesterly direction. Over this final 0.5km section, Golden Point Road has a straight horizontal alignment before meeting Horse Flat Road at a priority (uncontrolled) intersection. The intersection is located within a sag curve on Horse Flat Road and this has the effect of reducing sight distances in both directions for drivers emerging from Golden Point Road to around 100m. However the alignment and width of Horse Flat Road (described below) mean that the speeds of vehicles passing through the intersection will be low.

3.1.10. Horse Flat Road has a metalled carriageway that varies in width between 4m and 5m, and serves a small number of rural properties. It runs with a broadly northeast-southwest orientation and meets Hyde-Macraes Road at a priority ('give-way') intersection approximately 4.9m west of Macraes Village (and 6.1km west of the Macraes-Dunback Road / Golden Point Road intersection). The intersection is located on the inside of a horizontal curve, which limits sight distances in both directions for vehicles emerging from Horse Flat Road.

Photograph 4: Hyde-Macraes Road / Horse Flat Road Intersection (Horse Flat Road on Right)

3.1.11. Some 2.5km northwest of the Hyde-Macraes Road / Horse Flat Road intersection, Matheson Road meets Hyde-Macraes Road. Although Matheson Road is a legal road, the intersection is formed as a private gateway.

Photograph 5: Hyde-Macraes Road / Matheson Road Intersection

3.1.12. Matheson Road is an unsealed road with a carriageway in the order of 4m wide. Around 1.7km northeast of Hyde-Macraes Road, it meets Longdale Road, another unsealed road with a 4m carriageway. This runs northwards for around 4.7km whereupon it meets Four Mile Road, another minor district road.

3.2. Non-car Modes of Transport

3.2.1. None of the roads in the immediate area have specific infrastructure for walking, cycling or public transport. This is commensurate with the highly rural nature of the Project environs.

3.3. Future Changes in Infrastructure

3.3.1. None of the relevant strategic documents (such as the Waitaki Roading Activity Management Plan (2015-25), and Otago Regional Land Transport Strategy) indicate any forthcoming changes to the transportation infrastructure in the area, although Macraes-Dunback Road has recently been realigned as part of a resource consent to extend the mine.

4. Current and Future Transportation Patterns

4.1. Existing Traffic Flows

4.1.1. The New Zealand Transport Agency ("*NZTA*"), Waitaki District Council and Dunedin City Council carry out regular traffic counts on key vehicle routes. The traffic flows on the roading network and estimations based on local knowledge are included in the Council's RAMM database, which in turn are included into the NZTA Crash Analysis System ("*CAS*") database. The most recent information included in the CAS database is set out below.

Location	Average Daily Traffic (Two-way)
Macraes-Dunback Road (east of Horse Flat Road)	465
Macraes-Dunback Road (west of State Highway 85)	430
Longdale Road (east of Four Mile Road)	25
Longdale Road (north of Hyde-Macraes Road)	10
Horse Flat Road	20
Golden Point Road (near Horse Flat Road)	10
Golden Point Road (north of Macraes-Dunback Road)	130

Table 1: Daily Traffic Volumes

4.1.2. In practice when traffic flows are very low (such as the case on Horse Flat Road and Longdale Road), small changes in the surrounding land use activities can have disproportionate effects on the volumes. As such, it is common for such traffic flows to be interpreted cautiously. However, the volumes of traffic recorded are commensurate with the rural nature of the roads and pastoral nature of the frontage land uses.

4.1.3. These traffic flows are extremely low. By way of example, a single traffic lane can carry more than 900 vehicles each hour, whereas the busiest road (Macraes-Dunback Road) carries less than this per day. 'Level of Service' is a term used to describe the operational conditions within a traffic stream, particularly with regard to speed and travel time, and freedom to manoeuvre. Given the low traffic flows on the roads, the Level of Service on the road network in the area of the Project is excellent.

4.1.4. In practice, although they are public roads, Longdale Road and Horse Flat Road will operate as though they are private accessways. They connect only private residences or agricultural activities, and so will typically be used only by those that are living or working in the immediate area rather than the general public.

4.2. Non-Car Modes of Transport

4.2.1. Although no formal surveys have been carried out, it can be expected that the volumes of pedestrians and cyclists in the area are commensurate with the rural environs of the site, and they will be negligible.

4.2.2. There are no public transport services that operate in the area.

4.3. Road Safety

4.3.1. The NZTA Crash Analysis System has been used to identify the location and nature of the recorded traffic accidents in the vicinity of the Project. All reported accidents between 2006

and 2015 were identified on Macraes-Dunback Road (between and including its intersections with Golden Point Road and Matheson Road / Longdale Road) as well as on Golden Point Road, Horse Flat Road, and Matheson Road / Longdale Road themselves. The timeframe of ten years was selected in accordance with the NZTA Economic Evaluation Manual, since traffic volumes on the roads are less than 1,000 vehicles per day.

4.3.2. A total of six accidents were recorded within the ten years selected, all of which occurred on Macraes-Dunback Road with no accidents recorded on Longdale Road, Horse Flat Road or Golden Point Road.

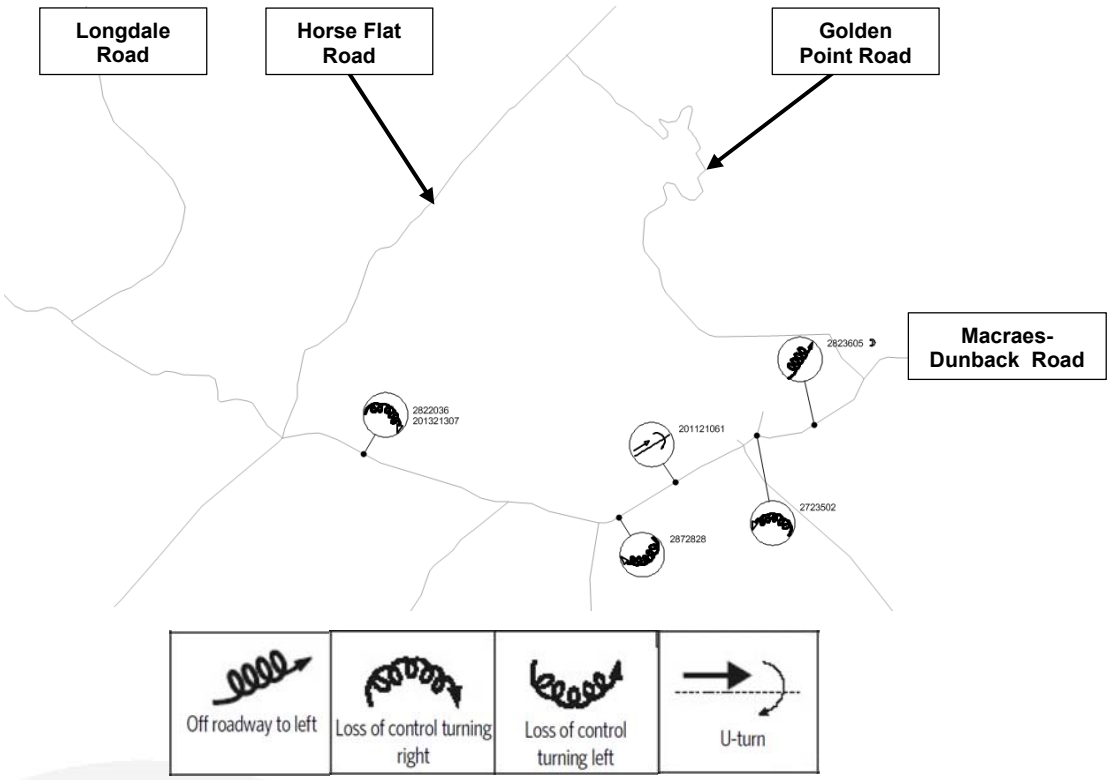

Figure 3: Locations and Types of Reported Accidents

4.3.3. Two loss of control accidents occurred to the east of Horse Flat Road. One involved a motorcyclist that left the road and resulted in minor injuries, and the other involved a truck that left the road and resulted in serious injuries. Both were noted as having rider/driver inattention as a contributing factor.

4.3.4. The accident to the east of Fraser Road was due to a driver showing off, who lost control and left the road. No injuries resulted, and alcohol was noted as being a contributing factor.

4.3.5. Further east, an accident occurred when a driver carried out a u-turn movement without checking for approaching vehicles. This resulted in minor injuries.

4.3.6. The accident which occurred towards the east of Macraes Village occurred when a fatigued driver fell asleep and left the road. It resulted in minor injuries.

4.3.7. To the west of Golden Point Road, an accident occurred when an inattentive and intoxicated driver left the road. This resulted in serious injuries.

4.3.8. In view of the nature and dispersed location of the reported accidents, it is not considered that there are any underlying road safety issues on the roading network in this area.

5. Proposal

5.1. As with the existing Coronation project, the Project is located on the ridgeline located to the north of Horse Flat Road along the Shag River and Taieri River catchment divide and between the features known as Sister Peaks and Highlay Hill. Development will continue to be within the upper reaches of Maori Hen Creek, Mare Burn Creek and Trimbells Gully Creek (Taieri Catchment).

5.2. The Project involves the extension of the existing Coronation project, with the existing Coronation Pit being extended primarily to the south, from the currently consented pit edge. The extension will be located in both the Waitaki and Dunedin City districts, but is largely in the former (for completeness, the Coronation North waste rock stack and Coronation North Pit will be entirely within the Dunedin City District).

5.3. The estimated duration of the operation and rehabilitation phases of the Project will be approximately five years (compared to the consented three years for the Coronation pit), and the project will add approximately three years to the overall Macraes mine life (compared to a one-year extension under the consented pit). Mining operations will occur 24 hours a day, seven days a week.

5.4. Ore will be hauled from the pits to the Macraes processing plant via the existing haul road, across Horse Flat Road and along the Golden Point Road alignment (described previously in this report) to the processing plant. This will require an extension to the existing haul road by about 2km towards the north, and it is understood that this extension will be solely on land owned by OceanaGold.

5.5. In most other respects, the roading arrangements will remain the same as for the consented Coronation project. This includes the restriction of public access on the southern extent of Golden Point Road[2] between Horse Flat Road and the processing plant for the duration of mining activities at Coronation Pits (and in this regard, the Project will add a further two years to this restriction). Part of Golden Point Road will continue to be managed under a Traffic Management Plan, to enable trucks carrying ore to use the haul road crossing on Horse Flat Road, Golden Point Road between Horse Flat Road and the Macraes Gold Project processing plant, and the haul road crossing on Golden Point Road. Within six months of pit excavations at Coronation and Coronation North pits ceasing, Golden Point Road will be reinstated for public use.

5.6. The consented Coronation Project consent conditions provide for Mathesons Road to be realigned and unformed public access provided around the consented Coronation pit and waste rock stack. The footprints of the Coronation North pit and waste rock stack will overlap the consented realignment and therefore OceanaGold will identify an alternative route for the realigned Matheson Road. This will require a variation of the Coronation land use consent.

[2] It is understood that OceanaGold owns the land upon which the formed Golden Point Road is located. Although it is known as 'Golden Point Road', the road is not public between Horse Flat Road and the turnoff to Golden Point Historic Reserve, and it does not follow the legal road corridor.

6. Traffic Generation and Distribution

6.1. Traffic Generation

6.1.1. The traffic generation of a facility of this nature is derived from two sources, the movement of materials and the movement of personnel.

6.1.2. It is understood that under the existing consents for the Coronation pit, around 5,000 tonnes of ore can be transported from the pit to the processing plant each day and this will not change under the Project. Allowing for each haul truck to carry 100 tonnes of material, this represents 50 loads each day and hence 100 two-way vehicle movements (50 laden and 50 unladen). Existing consents also allow the ore to be transported over a 24-hour period, meaning that on average, four vehicles will cross Horse Flat Road per hour. Although these movements are already consented, they will take place for two years more than under the existing consent.

6.1.3. It is understood that the Project will not require any additional staff. There will therefore be no additional traffic movements on the public road network in the immediate area arising from employee travel. Again however, the Project means that these existing movements will take place over an additional two years compared to the current consent.

6.2. Use of Non-Car Modes of Transport

6.2.1. The nature of the Project and the site location mean that the use of non-car modes of transport associated with the proposed activity will be negligible.

6.3. Traffic Distribution

6.3.1. Since the Project does not involve new vehicles per se, it is not expected that there will be any change to the existing distribution of vehicles using the adjacent roading networks and travelling to/from the Macraes Gold Project.

7. Effects on the Transportation Networks

7.1. Road Network Efficiency

7.1.1. As set out above, there will not be any increase in traffic on Macraes-Dunback Road, and therefore the levels of service on the road (in terms of speed, travel time, and freedom to manoeuvre) will continue to be excellent. There is no reason to anticipate that this situation will change if those levels of traffic are maintained for an additional two years.

7.1.2. Under consented operations, there are slight increases in traffic flows on Horse Flat Road which are associated with the movement of staff to and from the pit when shifts change. The consented arrangement operates satisfactorily and the low levels of background traffic mean that levels of service are unaffected. In view of the low traffic volumes, no specific traffic management measures are put in place at these times, and it is considered that this will remain appropriate under the Project.

7.1.3. Again under the consented operations, OceanaGold staff actively manage the haul road crossing at Horse Flat Road (as they do at other haul road crossings on Macraes-Dunback Road and Golden Bar Road). It is understood that personnel operating the haul road crossing give priority to any vehicles on Horse Flat Road to ensure that the efficiency of the road is not affected. Both the volume of traffic on Horse Flat Road and the number of haul trucks are low, meaning that the potential for traffic on the public road to be delayed is minimal.

7.1.4. As set out previously, Golden Point Road between Horse Flat Road and the processing plant access may be closed to the public, and this arrangement will be extended for a further two years. The traffic volumes on this part of the roading network prior to this restriction were extremely low and Horse Flat Road provides a suitable alternative route for any drivers (noting that these will likely be limited to people living or working in the immediate area).

7.2. Non-Car Modes of Transport

7.2.1. Since the Project does not increase traffic volumes on the roading network, it is not considered that any adverse effects would arise for non-car modes of transport.

7.3. Road Safety

7.3.1. The accident history in the vicinity of the site does not indicate that there are any particular features or factors that would affect, or be affected by, the Project.

7.3.2. As noted previously, OceanaGold staff actively manage the haul road crossing at Horse Flat Road. This involves the implementation of a Traffic Management Plan ("*TMP*") incorporating suitable advance warning signs and a reduced speed limit to ensure that any drivers using Horse Flat Road are aware of the situation (although as noted previously, the general public is unlikely to be present on the road). Gates are placed across the vehicle crossings associated with the haul road when it is not in use. The use of a TMP ensures that any potential conflict between haul road vehicles and users of Horse Flat Road is appropriately mitigated.

7.3.3. It is possible that elements of the pits and/or waste rock stacks will be visible to drivers using the roading network. However, such views will not be unexpected to those travelling in the area due to the already-modified environment, and due to the relative locations of the roads and the Project, any elements will be seen at some distance which makes it unlikely that they

will be a source of distraction for drivers. In this regard, none of the reported accidents in the area have distraction due to the existing mining operations as a contributing factor.

7.3.4. It is understood that the site will be lit at night. Given the distances between the roads in the area and the Project it is highly unlikely that there will be any light spill onto the public roading network. Proposed conditions of consent mean that all flood lighting that could potentially cause a traffic hazard are to be fitted with shields and, as far as practicable, directed away from traffic.

7.3.5. Although the haul road crossing will potentially be lit, the need for (and level of) lighting is a matter that can be addressed within the TMP, to ensure that no adverse effects arise for any members of the public using Horse Flat Road.

7.3.6. Overall, it is not considered that the Project will give rise to any adverse road safety effects.

8. District Plan Matters

8.1. Introduction

8.1.1. Both the Waitaki and Dunedin City District Plans set out a number of transportation-related policies and rules with which any new development is expected to comply. An assessment has been carried out of the proposed site layout against these rules.

8.2. Waitaki District Plan Rule 12.2.1: Parking and Loading

8.2.1. The Project does not increase the current traffic generation associated with the Macraes Gold Project, and so it is not expected that there will be any change in demand for parking or loading. Consequently, no changes are proposed to the existing arrangements (although the parking and loading arrangements will remain in place for a longer period of time as the life of the Project will be extended).

8.3. Waitaki District Plan Rule 12.2.2: Vehicle Access

8.3.1. The Project does not change the currently-consented vehicular access arrangements, and thus no new issues of compliance will arise.

8.3.2. The non-compliance with Part (d) of this Rule remains, in that vehicle crossings are anticipated to be no more than 9m wide whereas the haul road crossing of Horse Flat Road is some 25m wide to enable its use by trucks carrying the ore. There is also a non-compliance with Part (h) and the sight distances required to be provided at vehicle crossings serving 'vehicle orientated commercial activities'. However these vehicle crossings will only be used under a TMP which alerts approaching drivers to the presence of crossing vehicles and requires them to reduce their speed, which in turn means that drivers are able to stop within a reduced distance. These measures effectively mitigate any potential adverse effects arising from the non-compliances.

8.4. Waitaki District Plan: Summary

8.4.1. The Project does not introduce any new non-compliances with the transportation-related District Plan rules. The use of a TMP is considered to be an effective way of addressing any potential adverse effects associated with the width of the vehicle crossings and any limitation on sight distances.

8.5. Dunedin City District Plan

8.5.1. Although Longdale Road lies within Dunedin City, the transportation-related rules of the operative (and proposed) District Plan all relate to the provision and nature of parking spaces and new points of access to the public roading network. However in this case, neither is proposed. Consequently, there are no non-compliances with the rules.

9. Conclusions

9.1. This report has identified, evaluated and assessed the various transport and access elements of an extension to the existing Coronation project, part of the Macraes Gold Project. In practice, in respect of transportation matters the proposal simply extends (over time) an already-consented mining project and so there is no additional traffic generation or changes to the roading network. Rather, any potential effects arise from the consented traffic generation occurring for two years more than is currently permitted.

9.2. The analysis shows that the traffic associated with the Project can be accommodated on the adjacent roading network without capacity or efficiency issues arising and that levels of service (in terms of speed, travel time, and freedom to manoeuvre) including on Macraes-Dunback Road, will remain excellent.

9.3. The accident history in the vicinity of the site does not indicate that there would be any adverse safety effects from the proposal. A TMP will manage the movement of haul trucks across the public roading network at the Horse Flat Road haul route, and the low volumes of vehicles involved further mitigate any adverse safety effects. It is not anticipated that drivers will be distracted due to being able to see elements of the mining operations, and glare from any lighting will be negligible (and managed further through a condition of consent and via the TMP).

9.4. There are non-compliances with the transportation-related rules of the Waitaki District Plan with regard to the width of the vehicle crossings at the haul road and the sight distances that are available at these crossings (these are existing non-compliances under the current consent). However as noted above, the vehicle crossings will only operate under a TMP, which will reduce the speeds of approaching vehicles and mean that the vehicle crossings are actively managed. It is considered that this continues to provide appropriate mitigation for the non-compliances. The transportation-related rules of the Dunedin City District Plan are not of relevance, since the Project does not include new points of access onto Longdale Road.

9.5. Overall, and subject to the preceding comments, the Project can be supported from a traffic and transportation perspective and it is considered that there are no traffic and transportation reasons why it could not be approved.

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May 2016

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