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# Macraes Goldmine MP4 Proposal Golden Bar Road Realignment Transportation Assessment

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# 1 Background & Scope

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## 1.1 Background

The OceanaGold Corporation has been operating the Macraes Gold Project (**MGP**) in Otago since 1990.

The operation involves the progressive relocation of mining activity to new areas, extension of existing pits, backfilling of exhausted pit areas and placement of waste rock external to pits in waste rock stacks. These activities can impact upon established public vehicular and pedestrian access routes and may affect levels of traffic activity on the adjoining road network.

OceanaGold is now seeking consents for the Macraes Phase 4 (**MP4**) project. This project has a number of components and is expected to extend the life of the mine to around 2030.

## 1.2 Scope

The MP4 project includes a realignment of a short section of Golden Bar Road. The purpose of this document is to identify and assess any potential effects upon the operation of the transportation network associated with this realignment. Compliance with the relevant provisions of the Waitaki District Plan (**WDP**) is also addressed.

This document forms part of an Assessment of Environmental Effects (**AEE**), which in turn supports the application for resource consent to be lodged with the Waitaki District Council (**WDC**).

## 2 Existing Situation

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### 2.1 Location

The MGP is located 35 kms from Palmerston via State Highway 85 (**SH85**) and the Macraes – Dunback Road.

The location of the project area to which the consent application relates is shown by **Figure 2.1**.

### 2.2 Road Environment

Many of the roads in this area have been modified and realigned as a result of the changing locations of mining activity.

#### Macraes – Dunback Road

This road connects SH85 at Dunback with State Highway 87 (**SH87**) at Hyde. The road is rural in nature, with a 100km/hr speed limit, two traffic lanes and variable shoulder widths.

#### Golden Bar Road

Golden Bar Road connects Macraes Road and SH85 via a network of mainly unsealed roads serving a remote rural area to the south-east of the mine complex. This intersects with Macraes Road approximately 1.8 kms to the north-east of the Golden Point Road intersection. The northern section of this road is sealed and provides two traffic lanes with a marked centre-line. The approach to the Macraes Road intersection is subject to give-way controls and the open nature of this area provides good sightlines for vehicle turning movements.

#### Golden Point Road

Golden Point Road provides access from Macraes Road to the Open Pits in the north of the MGP, the processing plant and the administrative office complexes.

The intersection of Golden Point Road with Macraes Road is priority controlled, with movements from Golden Point Road subject to 'Stop' controls.

From this intersection, Golden Point Road runs over a distance of 410m in a north-westerly direction to an uncontrolled intersection with the Macraes Back Road. This section is sealed, with two-lanes, narrow shoulders and is subject to a 70 km/hr speed limit for most of its length.

The Macraes Back Road runs north-east from the intersection (for around 600m) and provides access to a number of mine support services, most notably the mine administration centre and the mobile plant maintenance facility (this was originally Golden Point Road prior to its diversion to accommodate the mine activity).

Golden Point Road continues towards the west – after 620m a priority intersection provides access to the Macraes administrative complex. Beyond this point, Golden Point Road continues, swinging to the north and descending to a priority intersection after a further

2.2kms.

From this location, the sealed road continues to the processing plant. Golden Point Road then continues as an unsealed single carriageway. After a further 1.06kms the mine haul road is reached where an attended crossing provides access to the remainder of the route to the Golden Point Historic Area, a further 1.06kms.

Golden Point Road then continues to Horse Flat Road on an alignment which is mostly occupied by the mine haul road.

Golden Point Road is a public road between Macraes Road and Horse Flat Road, though is maintained by OceanaGold. Any public access through the haul road section is managed by OceanaGold, as described below. There is little reason for any members of the public to use Golden Point Road for through access purposes.

#### Horse Flat Road

Horse Flat Road is a no-exit road which runs for 6.8kms in a north-east direction from an intersection with Macraes Road. The intersection with Golden Point Road is reached after 5.1kms and the haul road crossing after 5.3kms (this is an attended crossing point with stop controls on Horse Flat Road). Horse Flat Road is unsealed with a single carriageway and provides access to a small number of rural properties / farms and the Highlay quarry operated by OceanaGold. While the speed limit on Horse Flat Road is 100km/hr, the standard of road means that achievable speeds are considerably lower.

#### Paper Roads

There are a number of 'paper roads' in this area. These are legal roads which have not been formed, defined by survey in the past as being required to provide access within this area but prior to the mining operation. Their relevance to this assessment is that the public has a legal right to use such public roads on foot, cycle, horses or vehicles (although in many cases the topography and/or lack of formation may practically preclude such use).

If such use would place the public and/or mining operations at risk, a legal road 'stopping' process is the preferred option to effectively close the paper road. Where this is necessary, an alternative route may need to be provided to maintain public accessibility.

#### Traffic Volumes

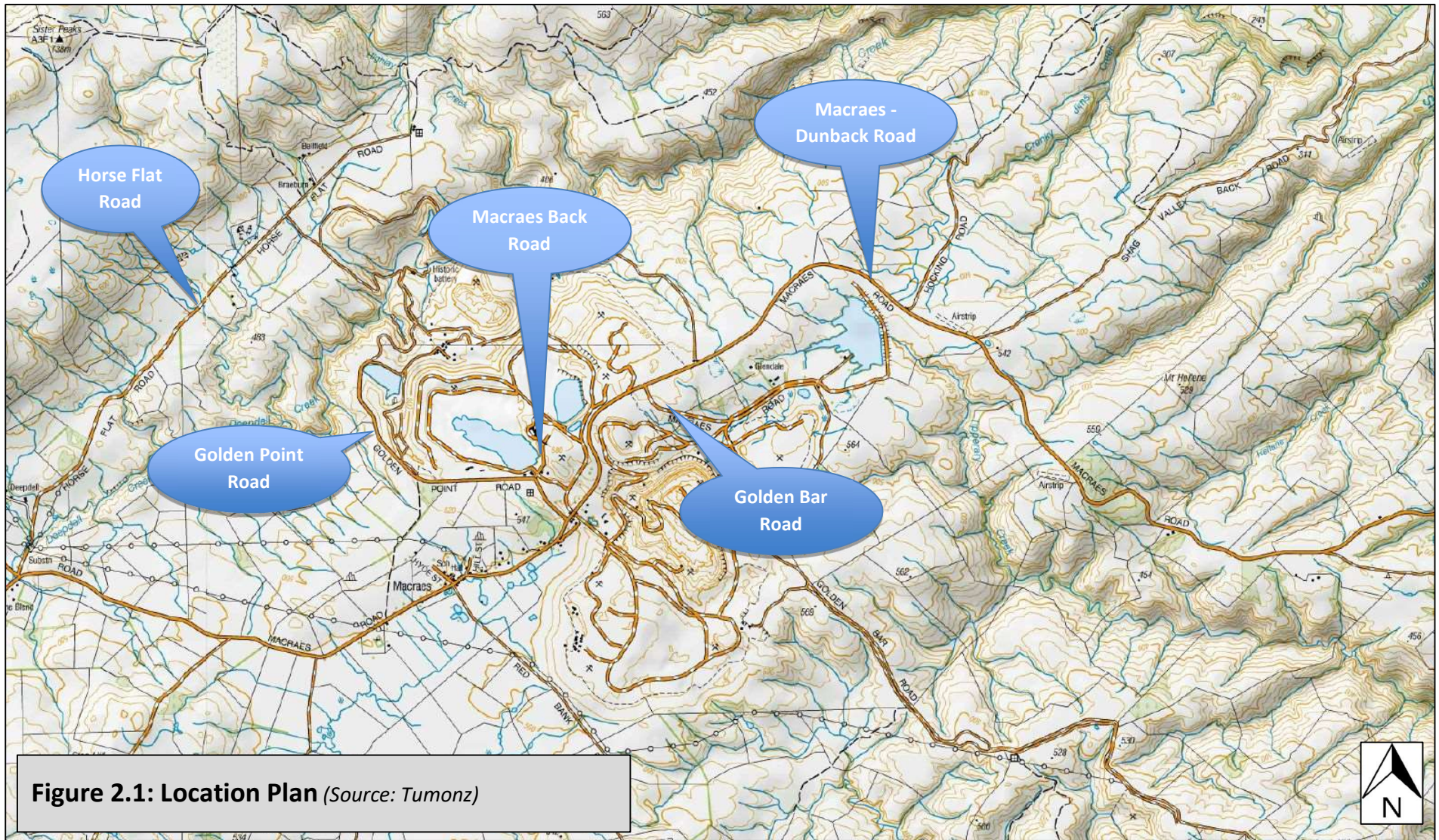
The Macraes – Dunback Road typically carries around 270 vehicles/day, of which 24% are heavy vehicles<sup>1</sup>. To the north of the Macraes-Dunback Road intersection, Golden Point Road carries around 130 – 150 vehicles/day (principally staff associated with mine operations).

No count information is available for Golden Bar Road, but levels of traffic activity on this road are understood to be very low. Horse Flat Road carries less than 30 vehicles/day (these being associated with the Highlay quarry and the residential dwellings / farms).

These traffic volumes are very low and congestion is not an issue in this area.

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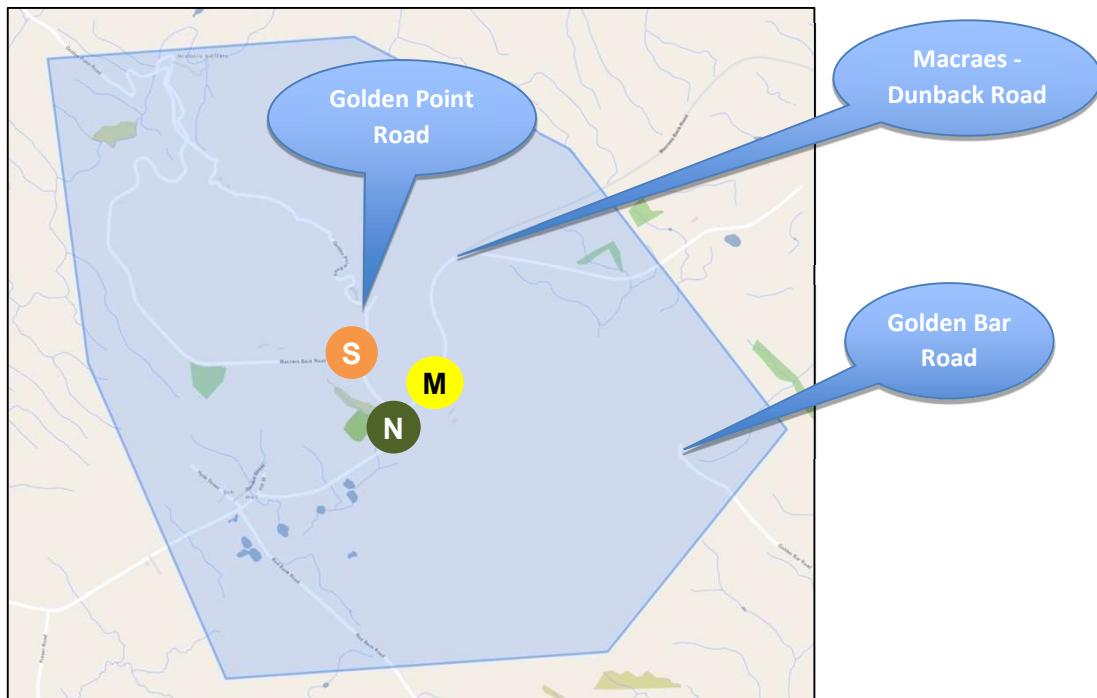
<sup>1</sup> Email from Raj Parikh of WDC, 12 July 2022.



### Crash History

The crash history for the existing roads in this area for the ten-year period since January 2013 has been obtained from the database maintained by Waka Kotahi - New Zealand Transport Agency (**WK-NZTA**).

The crash history is summarised by **Figure 2.2**.



**Figure 2.2: Crash History** (Source: WK-NZTA)

(S, M, N refers to Serious, Minor and Non-Injury crashes respectively)

Over this period, three incidents have been recorded:

- September 2016 (Friday, 8pm): an eastbound vehicle north-east of the Golden Point Road intersection lost control on gravel in thick fog (one minor injury);
- June 2020 (Wednesday, 5.45pm): a distracted driver entered a corner at excessive speed at the intersection of the Macraes Back Road and Golden Point Road, collided with a bank and pole (serious injuries); and
- March 2022 (Saturday, 9.30pm): an eastbound vehicle on the Macraes-Dunback Road south-west of the Golden Point Road intersection collided with sheep (no injuries).

These incidents are random in nature with no indication of any systemic safety issues in this area. Aside from the June 2020 incident (which involved mine staff), these incidents have not been associated with the mining operation.

No incidents have been recorded on Golden Bar Road.

By law, only those crashes involving personal injuries are required to be reported. Accordingly, it is possible that a number of other non-injury crashes may have occurred which have not been included in these records.

## 2.3 Site Operation

### General Description

After blasting, excavation and load out ore would be transported to the existing processing plant by means of ore haulage trucks using a haul roads having a typical width of approximately 25m. The haul road from the Coronation mining area crosses Horse Flat Road 240m NE of the Golden Point Road intersection, then continues south to meet with a haul road from the Deepdell area before generally following the alignment of Golden Point Road.

Between 1,000 to 5,000 tonnes of ore would be transported each day from the pit to the processing plant. Each ore haul truck carries approximately 100 tonnes of ore, typically resulting in around 10-50 return movements (20-100 one-way movements) daily.

### Public Access Management - Vehicular

The current haul road alignment to the south of Horse Flat Road is located on private land owned by OceanaGold. As this does not follow the road reserve, public access to this road can be and is lawfully restricted for safety reasons. Public road connections between Horse Flat Road, the Golden Point Historic Reserve and the Golden Point Road (south) exist as paper roads only and have not been formed.

Any crossing or use of the haul road by public vehicles is subject to procedures which are detailed in Traffic Management Plans (TMPs). These procedures include:

- any public vehicles along Horse Flat Road are required to wait at an attended gate at the haul road crossing until clearance is confirmed by mine personnel at the haul road crossing;
- any public vehicles wishing to access the Golden Point Historic Reserve from Golden Point Road (south) are required to cross the haul road. This crossing is permanently (24/7) staffed with access gates and upon arrival of a public vehicle, radio communications are used to stop any ore transport trucks in the area before the public vehicle proceeds through the crossing; and
- the use of radio communications ensures that all mine personnel are made aware of any public vehicles or individuals which are within the operating mine area.

TMPs are subject to annual renewal and require approval from the Council.

### Public Access Management - Pedestrian

A pedestrian access route was developed between Horse Flat Road and the Golden Point Historic Reserve as part of the previous Deepdell proposal. This leaves Horse Flat Road from a point a short distance to the south-west of the haul road crossing (avoiding the requirement for public vehicles to cross the haul road).

This involves a single crossing of the haul road by the pedestrian access route. Safety associated with this crossing is managed, by:

- normal stock fences on the approaches leading into deer fences as the haul road is approached;



- fences have signage identifying that entry into the mining area outside of the fences is prohibited;
- each side of the haul road crossing has a locked gate with a call box and instructions (e.g. a 'push to talk' arrangement);
- pedestrian push the button, linking to the Minestar control room and advise their request to cross the haul road;
- the Minestar controller then notifies the pit supervisor who drives to the crossing location;
- mine traffic in the area is halted enabling pedestrians to be escorted across the road; and
- once the crossing is completed the gates are locked and normal haulage resumes (this procedure is repeated upon the return).

These measures, which are encapsulated into a TMP, ensure the safety of pedestrians and are considered to be appropriate in the context of very low levels of pedestrian activity in this area (there has been little or no utilisation of the existing pedestrian access route in recent years).

### 3 Proposed Activity

#### 3.1 General Description

The MP4 project involves mining of three open pit extensions, in-pit (backfilling) and ex-pit (waste rock stacking) waste rock disposal, construction and use of a tailings disposal facility in the mined out Frasers Pit and realignment of a section of Golden Bar Road.

The only significant project component of relevance to transportation matters is a proposal to realign a section of Golden Bar Road. This requirement is detailed below.

#### 3.2 Hours of Operation

The proposal will not significantly affect the operating hours of mining operations, staff numbers or associated vehicle movements.

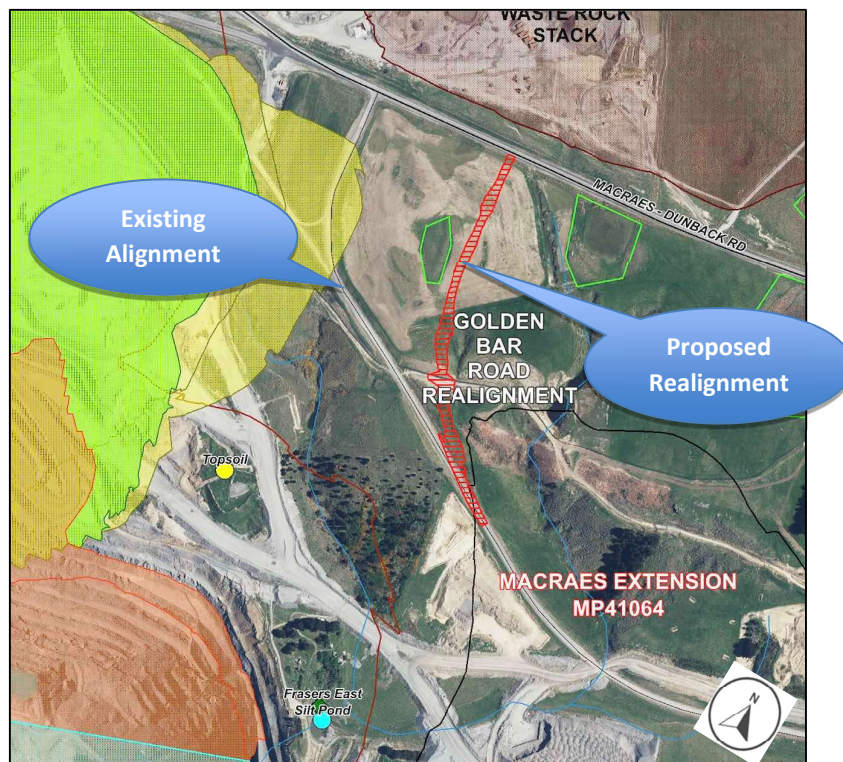
#### 3.3 External Vehicular Activity

As the proposed activities will replace that currently taking place within the site, there will be no material change to staffing numbers or vehicular activity on the external road network.

#### 3.4 Golden Bar Road Realignment

A realignment of the northern section of Golden Bar Road is required to facilitate the Innes Mills pit extension during the MP4 project.

An indicative realignment of the road is shown by **Figure 3.1**.



**Figure 3.1: Extent of Golden Bar Road Realignment**  
(Source: OceanaGold)

The realignment would remove a section of Golden Bar Road approximately 730m in length and replace this with a road section approximately 160m shorter, with an intersection at Macraes Road approximately 250m north-east of the existing intersection.

The geometry of the new road alignment will comply with current Austroads standards.

It is currently anticipated that the realignment works will take place in 2026.

At this stage, the design of the realignment is indicative only and details will change as refinements occur closer to the time of construction. For this reason, the indicative realignment has been identified within a 300m wide corridor which provides for any adjustments in response to engineering and/or environmental requirements. For example, the vertical profile is likely to change when the road platform is built up.

A period of post-construction monitoring will take place to ensure that the new road surface is performing satisfactorily prior to its hand-over to WDC. This is particularly important as settlement of the underlying fill may occur for a period of 2-3 years. Similar processes have been followed for previous road realignments with no significant issues being identified.

### **3.5 Public Access Control – Vehicular & Pedestrian**

The proposed realignment of this section of Golden Bar Road will not in any way restrict public access between Macraes Road and Golden Bar Road to the south.

## 4 Assessment of Effects

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With no change to the number of external vehicle movements associated with the operation of the site, the only potential 'effects' arising from the proposal relate to the realignment of Golden Bar Road.

### 4.1 Golden Bar Road Realignment: Potential Effects

The proposed realignment will have a small effect upon travel distances:

- for travel between Golden Bar Road (south) and Macraes Road (west) – approximately an additional 90m;
- for travel between Golden Bar Road (south) and Macraes Road (east) – approximately a reduction of 410m.

These changes would have an overall negligible impact upon overall travel times in this area.

The replacement road section will be constructed and available for use prior to decommissioning of the existing road section, avoiding any disruption to vehicle movements.

The Macraes Road / Golden Bar Road intersection will be constructed to the same standard as that which currently exists, providing for good sight-lines and the safety of all vehicle movements.

At this early conceptual stage, finalised information relating to the horizontal and vertical alignment information is not available. Nonetheless, the possibility of adverse effects relating to the safe and efficient operation of the road realignment will be precluded by:

- designs compliant with the current Austroads standards and requirements;
- WDC approvals;
- low levels of traffic activity in this area; and
- a requirement for a safety audit of the final design and a post-construction safety audit.

## 5 District Plan Provisions & Compliance

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### 5.1 Operative District Plan

#### *Relevant Plan & Status*

The relevant plan is the Waitaki District Plan (**WDP**), which became operative in May 2010.

While a process of reviewing the WDP is currently underway, this a draft plan has yet to be notified and as such has no legal 'weight' for the purposes of this assessment.

The application site lies within the 'Macraes Mining' zone.

Golden Bar Road is classified as a 'local' road by the road hierarchy defined by the WDP. The Macraes-Dunback Road is classified as a 'District Arterial' road.

### 5.2 Compliance with Macraes Mining Zone Rules (WDP Part III, Section 6)

Section 6.2 of the WDP draws attention to a need to comply with the district-wide rules in relation to Transport / Car Parking.

There are no other specific transportation rules which apply to this zone.

### 5.3 Compliance with District Wide Transport Objectives (WDP Part II, Section 6)

**Objective 1** is '*to promote the efficient use of the District's existing and future transportation resource and of fossil fuel usage associated with transportation, and the maintenance and improvement of access, ease and safety of all vehicular, cycle and pedestrian movements*'.

**Objective 2** is to '*avoid or mitigate adverse effects on the surrounding environment as a result of transport*'.

The only relevant issue associated with the application relates to ensuring the continued safe and efficient operation of Golden Bar Road and its intersection with Macraes Road – this will be ensured by the requirement for the road design to comply with the relevant Austroads standards, reinforced by the safety audit process. Existing traffic management practices (as described in **Section 2.3**) will continue to apply around all mining operations to ensure the safety of vehicular and pedestrian movements.

### 5.4 Compliance with District Wide Transport / Car Parking Rules (WDP Part III, Section 12)

The section includes a number of requirements for compliance with standards for vehicle crossings, their spacing and sight-lines. Again, compliance with the relevant Austroads design criteria will ensure that these standards will be achieved.

### 5.5 Compliance with WDC Engineering Standards

WDC has no specific engineering code of practice which defines the required standard to which a new road should be constructed.

Instead, it relies on compliance with the relevant Austroads and WK-NZTA standards relating to geometric and pavement design.

## 6 Conclusions

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OceanaGold is seeking consents for the Macraes Phase 4 (**MP4**) project. This project has a number of components and is expected to extend the life of the mine to around 2030.

The MP4 proposal will not itself change the operating hours or staff numbers associated with the operation of the mine. Accordingly, external traffic activity will remain broadly unchanged. Procedures applicable to the safe operation of the internal site haul routes will also be unchanged. This is within the wider context of a forecast downward trend in mine staff towards the end of the mine life.

The only component of the MP4 project with a potential to generate effects upon the operation of the transportation network is a realignment of a small section of Golden Bar Road from the intersection of the Macraes – Dunback road.

This assessment concludes that:

- at this stage, only an indicative design is available for a proposed realignment of Golden Bar Road – detailed design will follow well in advance of the scheduled removal of the existing alignment and the proposed alignment;
- the detailed design will be undertaken to be compliant with the relevant Austroads and WK-NZTA standards, and will be subject to a safety audit process;
- these requirements will ensure that the change to and use of the realigned road, together with accesses and intersections, will operate without adverse effects in terms of the safe and efficient operation of the road network; and
- the realignment proposal does not trigger any non-compliances with the relevant requirements of the Waitaki District Plan.

On the basis of the transportation issues addressed by this assessment, it is recommended that consent be granted for the MP4 proposal.