

## File Note

**By:** Neil Trotter  
**Subject:** Omaroro Reservoir - Construction Access  
 Assessment Dorking Road and Asquith  
 Terrace

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## 1 Introduction

Wellington Water are constructing and operating a new reservoir (Omaroro Reservoir) in Brooklyn which is to be constructed within the Prince of Wales reserve, Brooklyn. In order to service the Reservoir, in emergencies, and for long term maintenance, it will be necessary to carry out road widening and strengthening works to Dorking Road to provide an alternative access to the reserve than currently proposed.

This report is to describe and assess the transport effects of the anticipated truck movements associated with these minor construction works and the long term operational access on Dorking Road and Asquith Terrace. The following figure illustrates the location of the site and the surrounding road network:

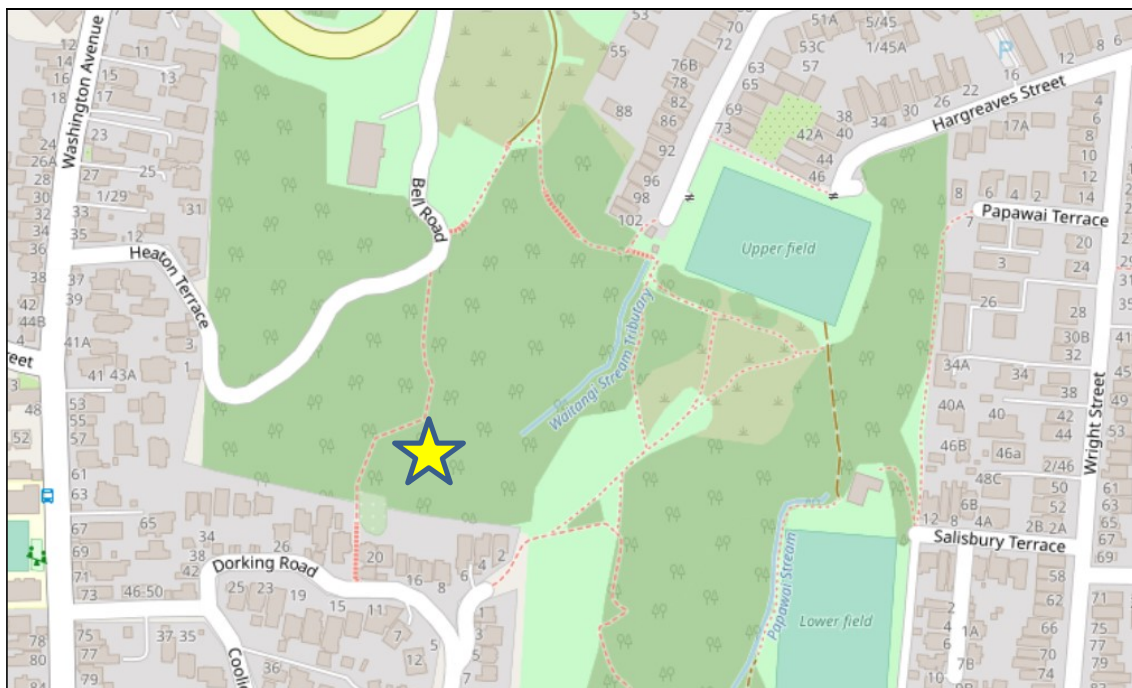


Figure 1 Site Location

## 2 Site location and Road Network

For the purposes of this transport assessment, the focus is on access for construction works only which are to be located at the end of Dorking Road.

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Asquith Terrace is accessed via Dorking Road which in turn is accessed off Washington Avenue. All roads within this area are predominantly residential roads with 50km/h speed limits.

The classification and other key details of the roads in the vicinity of the site is detailed in

Table 1 as follows:

**Table 1: Road Classifications**

Road Name	WCC Road Classification	ONRC Classification	Approximate AADT (from Mobile Road)	Approximate Carriageway Width (from Mobile Road)	Footpaths
Washington Avenue	Collector Road	Primary Collector	4,600	10m	Yes – Both sides
Dorking Road	Local Road	Access	600	6m	In part both sides/one side– lower end of road has no footpaths
Asquith Terrace	Local Road	Low Volume Access Road	100	6m	No

## 3 Construction Works and Operational Needs

In order to serve the long term operational needs of the new reservoir, access improvements are required to Asquith Road adjacent to the Reserve. For the long term operational needs of the new reservoir, for maintenance and emergency incidents (such as water contamination), access is needed for a wheeled mobile crane.

In order to provide a suitable access for the mobile crane the lower end of Dorking Road needs to be strengthened and widened. This involves constructing a retaining wall on land to the south of Dorking Road which is currently constructed on a steep bank that falls away from the road.

It is anticipated that access for the mobile crane will be infrequent and will only be required in the following instances:

- Emergency chemical dosing to disinfect stored water on an as needed basis.
- Emptying and cleaning the reservoir. This is envisaged to occur very occasionally (anticipated to be once every 10 years or less) as and when required.

The proposed works consist of installing a timber pole retaining wall with compacted hardfill material and topsoil and grass to form the widening and strengthening of the existing access suitable for vehicle access.

Construction access for the retaining work is also to be from Dorking Road and Asquith Terrace.

The expected plant for this work would include an excavator, a small drilling rig for installation of the timber poles, trucks for deliveries of materials and removal of rubbish and site clearance materials, lifting equipment such as a HIAB or a small crane and concrete trucks for delivery of concrete.

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- The work would be expected to commence with clearing existing planting and removal of any existing topsoil over the footprint of the widening, including a working space on the outer side of the retaining wall. This would be cleared and stripped using an excavator and removed from site by truck.
- Holes would be bored to the founding depth for the timber pole retaining wall using a small drilling rig. A small amount of concrete will then be placed at the base of the excavated holes as a foundation for the timber poles.
- The cleared ground surface behind the new wall will be benched by excavator to provide level surfaces for placing the compacted backfill material. Backfill will be placed in layers including a subsoil drain in filter material near the base of the fill. The layers of backfill will be compacted as required and finished with a layer of topsoil. Reinstatement will include sowing with grass and planting. The amount of fill and topsoil to be imported to site is approximately 22 cubic metres.

## 4 Construction and Maintenance Traffic

The volume and type of construction traffic needed to carry out the retaining wall and widening works will consist of the following:

- 8m Rigid Tipper Truck – Fill Material
- 8m Rigid Flatbed Truck – Piles
- Concrete Truck (8m Rigid)

The expected number of vehicles and time period of operation are set out in the Table 2 as follows.

**Table 2 Estimated Truck Movements**

Activity	Vehicle Type	Truck Movements (per day)			Duration (days)
		Inbound	Outbound	Total Tuck Movements (two-way)	
Site preparation	8m Rigid Tipper Truck	3	3	6	1
Delivery of Materials – Poles and Timber planks	8m Rigid Flatbed Truck	2	2	4	1
Placing concrete for retaining Wall Poles	Concrete Truck (8m Rigid)	1	1	2	1
Importing Fill Material	8m Rigid Tipper Truck	5	5	10	2
	Total	11	11	22	5

In addition to the above, special construction and turning space is necessary to accommodate the crane in the reserve. Site operatives will also generate a small amount of traffic and this is detailed in the following sections of the report.

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### 5 Construction Traffic Effects

As can be seen in the previous section of this report, the amount of construction traffic associated with the road widening and strengthening works at Dorking Road is limited in number. Large vehicles (8m rigid trucks) need to access the site via Dorking Road and Asquith Terrace. Dorking Road has a carriageway width of approximately eight metres. Asquith Terrace has a carriageway width of approximately six metres.

In order to assess truck access to the site for construction purposes, swept path analysis for an 8m rigid truck has been carried out. The swept path analysis has been used to determine the most suitable access route and turning areas for trucks delivering or removing material to/from the site. The following Figure 2 shows the swept path analysis undertaken for an 8m rigid truck.



**Figure 2 Swept Path 8m Rigid Truck**

As can be seen in Figure 2, trucks can enter and travel along Dorking Road in a forward gear. Trucks will undertake a three point turn at the intersection of Dorking Road and Asquith Terrace to reverse down Dorking Road to access the site of the retaining wall/road strengthening works. The turning and reversing movement of trucks will be controlled through the implementation of a traffic management plan, developed by the contractor, but most likely by using a stop/go operation. Trucks exiting the site will leave Dorking Road in a forward gear, then turn at the intersection of Asquith Terrace and Dorking Road to travel up Dorking Road in a forward gear.

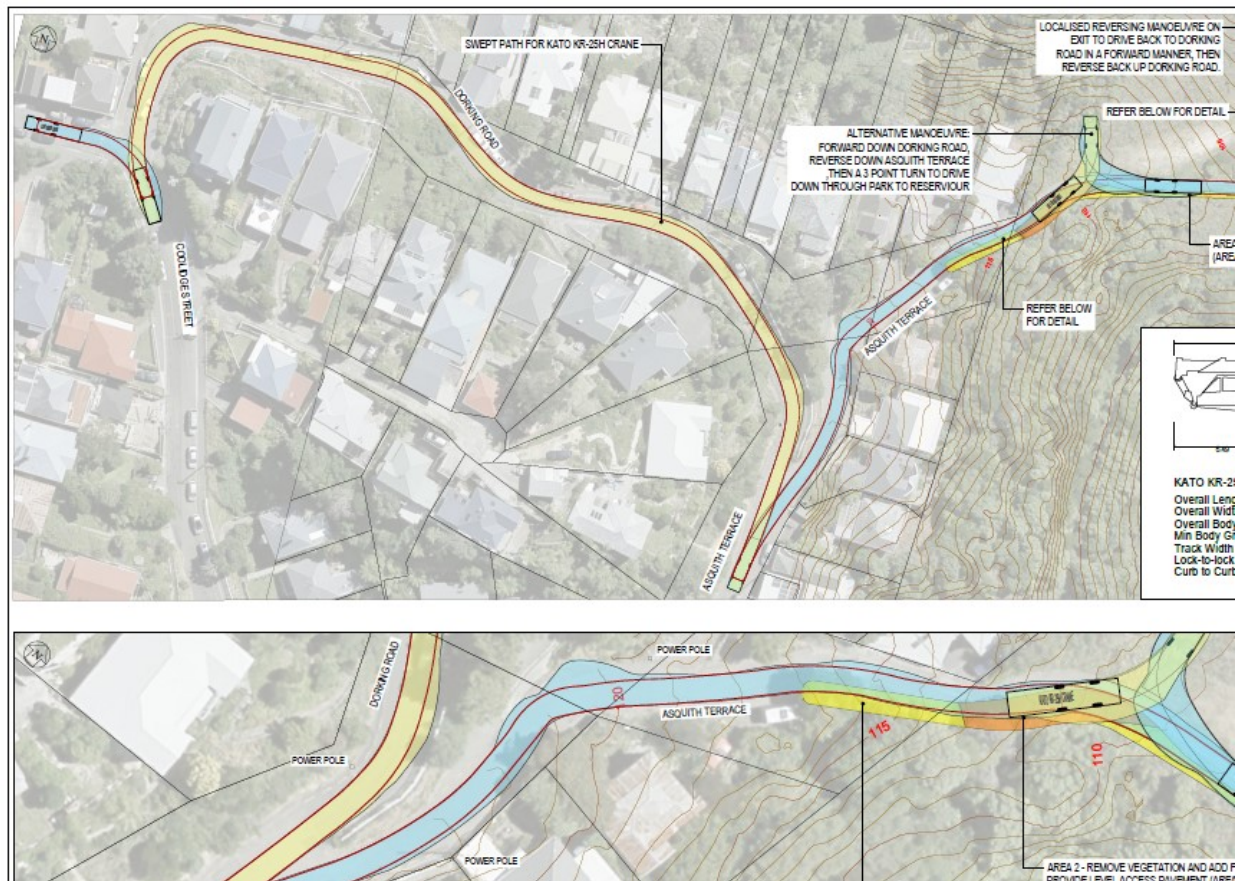
As explained earlier, there is a need to access the reservoir by a mobile crane for major repairs or in times of emergency. This movement has also been analysed for access and, in addition to the



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widening and retaining wall improvements on Dorking Road, will involve the temporary banning of cars parking on Dorking Road in order to provide space for the mobile crane.

It is anticipated that in this situation Wellington Water would follow the statutory processes for emergency or planned works within the road corridor and employ temporary traffic management on Dorking Road. This would be under approval from Wellington City Council as the road controlling authority. The swept path analysis for the crane has been carried out on the basis that all cars are removed from Dorking Road.



**Figure 3 Swept path for Mobile Crane**

As can be seen in Figure 3 the crane will enter Dorking Road in a forward gear and then turn within Dorking Road to reverse down to Asquith Terrace. The crane will then turn again to enter the lower part of Dorking Road in a forward gear.

Once within the reserve, the crane will access the reservoir over a specially constructed section of "hidden Road". This type of construction will form a road structure below ground level with reinforced grass above, thereby providing the structural strength to accommodate a crane whilst giving the appearance of grass at ground level. This will be constructed at the same time as the reservoir. The turning head is being provided (also using hidden road construction) near the reservoir and will allow the crane to turn and exit in a forward gear. The route from the reservoir will then involve the crane travelling along Dorking Road in a forward gear. The crane will pull forward

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into Asquith Terrace and reverse up Dorking Road. As the truck nears the intersection with Washington Avenue the truck will turn to travel the last section of Dorking Road in a forward gear.

It is also expected that there will be a number of smaller vehicle movements associated with site operatives during the construction phase. In view of the small scale of the construction works it is expected that these will be a small number and will typically be vans and utility vehicles.

In my opinion the effects of this traffic will be minimal and is not likely to be distinguishable from other traffic using Dorking Road on a daily basis. Parking for site operatives will be managed on Asquith Terrace or Dorking Road in order to minimise disruption for residents along the road, nearest to the construction site. For the construction works a Construction Traffic Management Plan is secured by Condition CD.11.

## 6 Conclusion

The traffic generated by the proposed retaining wall and road strengthening works will generate construction traffic movements related to the delivery and removal of materials to the site and the transportation of site personnel. All vehicles will access the site via Washington Avenue, Dorking Road and Asquith Terrace. It has been estimated that eleven trucks (22 two-way movements) will use this access route during the construction period. The trucks accessing the site will be 8m (axle length) rigid trucks and will be a combination of concrete, tipper and flatbed trucks. Most truck movements will involve a single visit to the site on a single day. The most intensive period of truck activity will be during the importing of fill material, which will take two days and involve five trucks (10 two-way movements). Other vehicular movements will be minimal, involving site operatives travel to and from the site.

Swept path analysis has been undertaken for 8m rigid trucks accessing the site which shows that the trucks can be accommodated on Dorking Road and Asquith Terrace. In my opinion the small number of truck movements, short duration of required truck access, along with the demonstration of a managed suitable access route will result in less than minor transportation effects on the transportation network.

In addition to the construction activity, the infrequent access to the reservoir by a mobile crane has also been demonstrated in this report by using a swept path analysis and by outlining the need to manage car parking for a temporary period.

In my opinion the rare need for crane access in an emergency or long term maintenance, will limit the transportation effects such that they are no more than minor.

Neil Trotter