

## Glenorchy Reservoirs – Community Information Sheet

Queenstown Lake District Council (QLDC) is starting a project to upgrade the water reservoirs in Glenorchy. This upgrade will ensure we meet current and future water supply and firefighting demands and improve the resilience of water infrastructure for the Glenorchy community.

To allow for the upgrade, QLDC is applying to alter the existing ‘Designation No. 44 Water Storage Tanks’ in Glenorchy. The proposal is to extend the designation along the existing terrace, adjacent to the existing tanks.

The application to alter this designation will be publicly notified in due course. In the meantime, we invite you to read the information supplied here so you can get up to speed on the upcoming project.

If you have any questions, please contact Customer Services on 03 441 0499 or email [services@qldc.govt.nz](mailto:services@qldc.govt.nz).

Updates on this project will also be posted on the QLDC website: [www.qldc.govt.nz/your-council/major-projects](http://www.qldc.govt.nz/your-council/major-projects)

### Project Information

#### Why do the reservoirs need to be upgraded?

The four existing concrete water tanks are in poor condition and showing signs of distress and visible cracking causing leaks. Due to the age and condition of the tanks, there is a risk the tanks could collapse in a moderate seismic event.

The existing tanks currently don’t have enough capacity for QLDC Level of Service requirements which is explained in greater detail below.



**Figure 1:** Existing tanks with visible cracking and water leakage

### How many new reservoir tanks are required?

Four new reservoir tanks are proposed, two to meet current demand and two to be installed in the future.

In June 2018, a business case was completed for the Glenorchy township water supply. This business case highlighted that the existing storage does not meet the current level of service requirements for the township in terms of the average and peak daily demand, and storage capacity for firefighting requirements.

The business case indicated 500m<sup>3</sup> storage is required now, and an additional 500m<sup>3</sup> will be required in future, based on predicted growth in Glenorchy.

As part of these works, two 250m<sup>3</sup> reservoirs will be installed with provision for an additional two 250m<sup>3</sup> reservoirs to be installed in the future when required.

Council is proposing to designate the entire area required for both the two new tanks and the two future tanks.

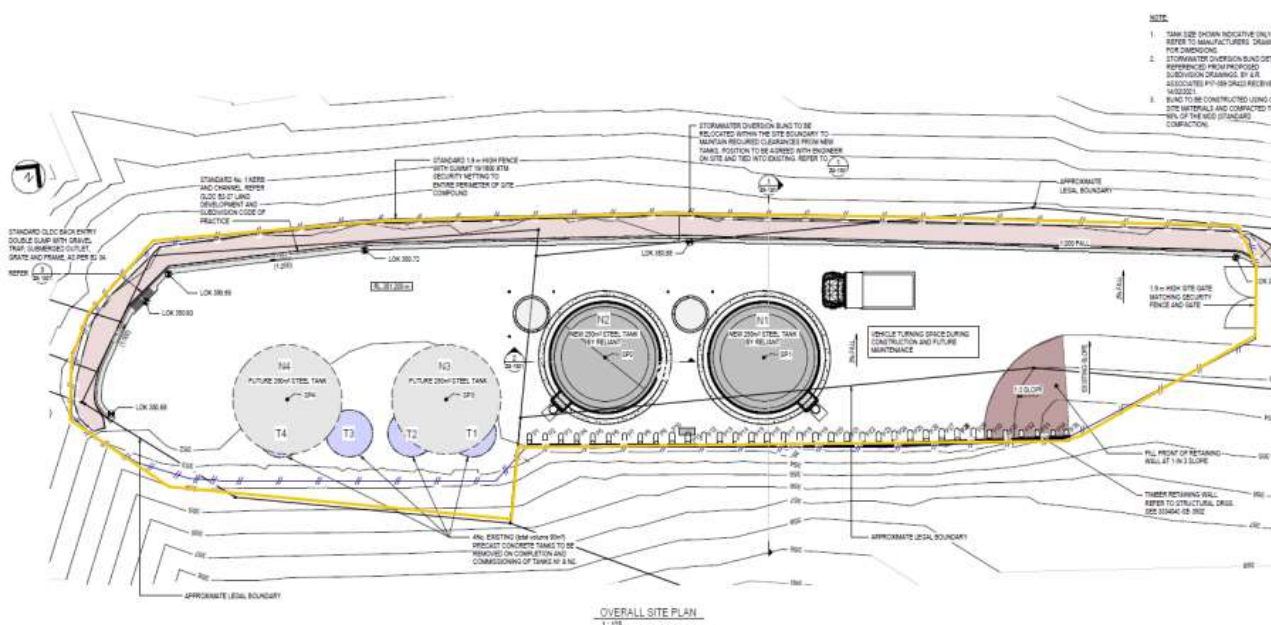
### Where are you proposing to put the new tanks?

The new tanks will be located next to the existing tanks on the Bible Terrace.



**Figure 2:** Location of existing designation (grey) and proposed extension (purple)

The plan above shows the location of existing Designation #44 (grey shaded area) and the plan below shows the location of new tanks (dark grey), existing tanks (purple), and future tanks (light grey)



**Figure 3:** Location of existing (purple), new tanks (dark grey) and future tanks (light grey)

### Can the new tanks be located where the existing tanks are?

The existing tanks will need to be operating during construction to be able to provide water supply to Glenorchy until the two future steel tanks are commissioned.

Once the new tanks are commissioned, the existing tanks will be demolished. This will allow for future growth, with the third and fourth new tanks to be located where the four existing tanks are located.

### What are the proposed reservoir tanks made of?

Steel tanks have been selected as the most appropriate solution for the following reasons:

- They can be designed to meet the required Importance Level 4 (IL4), 50 year design life. Importance Level 4 relates to buildings/structures that are essential to post-disaster recovery, in this case this is specifically required to maintain water pressure for fire suppression after an earthquake.
- They allow for more flexible construction approach.
- They can be painted to a colour to blend in as best possible with the surrounding environment. The colour selected is grey/olive (RAL 6006) and has a Light Reflectance Value (LRV) of 7.43%.

Timber and plastic tanks were also considered but deemed to be unsuitable for the following reasons:

- Both require more maintenance and have shorter lifespans.

Plastic tanks would be limited to a size of approx. 30,000 L each and would require 16 tanks to meet the current demand. This would need to be increased as the township grows which would be challenging due to the space available.

### What will the tanks look like?

The tanks are steel cylindrical tanks, 8.25m in diameter, with an overall height of 7.1m.

Each tank will have a safety rail (approximately 1m in height) around the top of the tank and a ladder at the rear for maintenance access. The existing ground will be excavated between 0.2 to 0.7m to create a level platform for the tanks to sit on. The tanks will sit behind a 1m high grassed bund at the edge of the terrace, therefore depending on where the tanks are viewed from the Glenorchy township, the tanks will look less than 7.1m tall.

The tanks will be a grey/olive colour (RAL 6006, <https://www.ralcolorchart.com/ral-classic/ral-6006-grey-olive>) as shown in Figures 1 and 2.

The colour chosen has a very low Light Reflectance Value (7.43%) to help them blend into the existing environment.

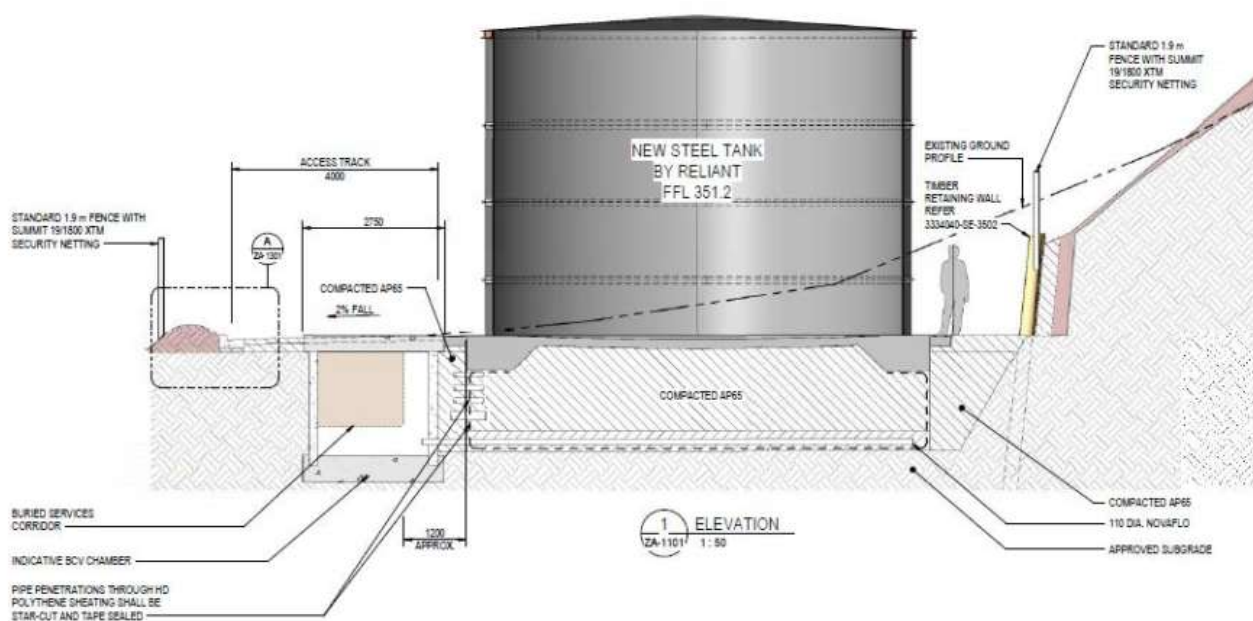
This colour has been selected to reduce the level of contrast between the tanks and the upper escarpment behind.



**Figure 4:** Colour of the tank panels



**Figure 5:** Example of the overall shape of the reservoir tanks



**Figure 6:** Cross section through the new reservoir illustrating the reservoir's height, changes in topography, retaining wall, existing stormwater bund, security fence and the proposals' overall relationship with the escarpment face.

### Can the tanks be located on the next terrace up so that they're out of sight?

QLDC do not own the land above the terrace. The existing tanks and the associated infrastructure (piping) are located on the terrace. This provides efficiencies to the design and construction of the proposed tanks.

### Have you considered burying or reducing the height of the tanks to be less visible?

Reducing the tank height is not practicable, as tank geometry is constrained by the width of the middle terrace, and increases in the diameter of the tanks would require further excavation into the upper slope and higher retaining walls.

Lowering the tanks several metres would also reduce the operating pressure of water supply to the township to below the minimum level of service for the Shiel Street subdivision.

### How does this proposal affect the outstanding natural feature, the Bible Terrace?

It was assessed that the proposal will not compromise the heritage value and physical integrity of the Bible Face due to the minimal level of physical change to the landform and because water storage infrastructure is already part of the fabric of Bible Face.

### What planting is proposed to screen the tanks?

The Bible Terrace is recognised as an outstanding natural feature and therefore any proposed vegetation to screen the tanks or even to naturalise the Bible Face, needs to be managed to protect its 'open book' look and formation.

The project's landscape and visual assessment determined that the current proposal has a low-moderate effect on the landscape character. The introduction of screen planting on Bible Face has the potential to reduce the appearance of the Bible Face and as such the designation application has not proposed planting as a mitigation measure.

### What mitigation measures have been included?

The design of the reservoirs has incorporated the following mitigations:

- Locating the reservoir tanks back into the escarpment to reduce their visual prominence.
- Locating the ladder access structures to the rear of the escarpment.
- Selecting visually recessive colours for the security fence and reservoir tanks.
- The relocation of the existing 1m high grassed stormwater bund, which extends along the western edge of the accessway, providing screening to the lower portions of the tanks.

### What were the findings of the landscaping visual assessment?

A landscape and visual assessment was completed as part of the designation application. Overall, the visual effects of the proposal are deemed to be of a low-moderate degree on the basis of:

- While the new tanks are larger in scale, they remain consistent with the existing development typology (i.e., water storage).
- For this reason, the proposal will maintain the existing visual amenity values and specific views from the Glenorchy township and surrounding public spaces.
- The recent subdivision development in the foreground of the site reduces the visual prominence of the water tanks when viewed from southern and western parts of the township.
- The overall height of the water tanks will not break the skyline or the form of the terrace edge.
- The distances of some viewpoints and the dominance of other natural features (e.g., Tooth Peaks mountain range) were taken into account.
- Recessive colours of the water tanks will blend the infrastructure with the vegetated backdrop.
- Screening of the bottom 1m of the water tanks by the grassed stormwater bund.

### Is the slope at risk of collapse with the new water tanks?

No, our geotechnical assessment shows the proposed construction will not affect the stability of the existing slope.

### What else does this project involve?

In addition to the installation of two 250m<sup>3</sup> steel tanks and preparation for the eventual replacement of the existing tanks with two additional 250m<sup>3</sup> tanks (giving total future site capacity of 1000m<sup>3</sup>), the project includes the following:

- Installation of water pipes and communications on the site (the connection of these services to the wider network will be installed underground on the western slope of Bible Face running west towards Oban Street).
- To manage overflow water in the event the tanks require draining, an overflow pipeline will be buried down the western slope of Bible Face, discharging water to a soakage area west of Oban Street. This has been designed to prevent uncontrolled discharge of water to the subdivision below.
- Earthworks to build a level platform for the tanks.
- Installation of a timber post retaining wall (maximum 2.3m high) behind the new tanks.
- Installation of a 1.9m high security wire mesh fence located around the perimeter of the site. The fence will be painted black to reduce its visibility.
- Upgrade of the existing access track and planting to the base of the access track.
- Installation of a single-phase power supply.
- Removal of the existing four pre-cast concrete tanks after completion of the new tanks.
- Trenching along Oban Street road reserve/shoulder to provide power and fibre communication connections to the Glenorchy water treatment plant/Bores site.

### Will there be disruption to the public during the construction?

The construction timeframe is expected to be approximately six months. There will be increased vehicle movements in the township throughout the construction period however, the majority of the works are confined to the Bible Terrace. There are services that run from the site on Bible Terrace under Oban Street to the Water Treatment Plant and a stormwater discharge location. This portion of works will require traffic management to be set up on Oban Street and will cause minor disruption to the traffic in this area however, we do not expect this to be for long. Any noise during construction is required to meet the requirements for construction under the District Plan.