

Appendix A

Hospital Prince of Wales
Reservoir, Landscape Report
- 2013



Report

Hospital Prince of Wales Reservoir - Landscape Report

Prepared for Wellington City Council (Client)

By CH2M Beca Ltd (Beca)

19 April 2013

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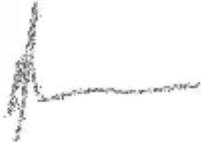
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Appendix A – Drawings (6517439)

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■ Reservoir Option - R1.0 Extent of Excavation, Rev B	CE-K31
■ Plan of Reservoir Option – R1.0 Completed Works, Rev B	CE-K32
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■ Construction Phase Pedestrian Routes, Rev A	CE-K34
■ Preliminary Landscape Concept, Rev B	LS-001

1 Introduction

Wellington City Council (WCC) are seeking to construct a completely buried 35,000m³ concrete reservoir within the Upper Prince of Wales Park in Mount Cook to service the Wellington Hospital and Central Business District. The facility will have a special post disaster function to supply water for the Wellington Region.

CH2M Beca Limited (Beca) has been commissioned by WCC under the Capacity Infrastructure Services Request for Tender for the Consultancy Services for the Hospital Prince of Wales Reservoir (WCC, 1 February 2012) (the Brief).

A number of alternative concepts for both the reservoir and the associated services tunnel were considered in the Conceptual Design Options report and a preferred single combined reservoir and tunnel arrangement has been identified for advancing to Preliminary Design.

The form and location of the selected reservoir needs to recognise the sensitivity of undertaking the required construction works within the Town Belt including environmental considerations. A key WCC objective was to consider and address the location of the reservoir in the Town Belt and accordingly to construct a completely buried reservoir and establish appropriate landscaping across the works site on completion.

In undertaking the preliminary design we have recognised the conditions within section 5.2 of the WCC Approval to locate the proposed reservoir in the Town Belt (Prince of Wales Park) (included as Reference 23 of the Brief) that:

- *“The impacts of the proposed reservoir on Town Belt shall be minimised.*
- *The proposed reservoir shall be placed underground, fully buried with existing landform matched as closely as practicable.*
- *It shall be sited to minimise interference with existing features, facilities and plants.*
- *On completion, the proposed reservoir will not affect or change the recreational use of the area.*
- *Any disturbance of the existing site during installation of the proposed reservoir shall be made good immediately after completion.”*

Also, it is implicit in the Brief that the future paths through the Town Belt on completion of the reservoir should be where practical at least equivalent to the existing arrangements.

In addition to these ‘end use’ connections, the final paragraph of Section 3.4.5 of the Brief also requires proposals for pedestrian access around the construction site connecting Dorking Road, Rolleston Street, Hargreaves Street, the Lower Park and the Bell Road reservoir site.

This report presents the background to the development of the landscape plan incorporated in the preliminary design.

2 Site Location and current form

2.1 Location

The general location and features of the reservoir site are shown in Figures 2.1 and 2.2.

Figure 2.1: Site Location - Proposed Reservoir



Figure 2-2 Aerial View of Prince of Wales Park



2.2 Existing Topography and Vegetation

The existing topography includes a rounded spur landform aligned generally south west to north east, sloping down from the residential dwellings on Dorking Road to an open rounded knoll at the site of the reservoir.

From this knoll, the site slopes away to the west into a small gully containing an ephemeral waterway. An area of recent community revegetation planting is located on the eastern side of the gully containing a wide range of native tree and shrub species. The western side of the gully is covered with established regenerating native bush containing a range of native tree and shrubs species including tree ferns, cabbage trees, Mahoe, Pittosporum and Coprosma.

The site slopes down to the south and west of the knoll towards the lower playing field. This area contains a range of vegetation but is dominated by exotic planting including large pine trees. Open areas include gorse and bracken fern.

North of the knoll patches of mixed exotic and native vegetation fill the slope down to the upper playing field. The vegetation patches are divided by the existing track network. Species include mature Pohutukawa trees on the cut slope above the upper playing field and Eucalyptus trees which have been observed to provide fodder for native birds.

Drawing 6517439-CE-K30 within Appendix A shows the existing topography and existing vegetation on the reservoir site and its assessed ecological value as determined in discussions with WCC Parks and Gardens staff.

Photos 2.3 to 2.6 below illustrate typical examples of the classes of vegetation shown on Drawing 6517439-CE-K30 and described above.

Photo 2.3 - View from knoll looking west towards high value regenerating native bush



Photo 2.4 - View from existing track network looking west through moderate value mixed exotic and native planting



Photo 2.5 – View from above knoll looking north east towards reservoir site. Low value exotics including pine trees are visible on the right hand side.



Photo 2.6 – View from knoll looking south west showing areas of ‘rough’ long grass and recent revegetation planting adjacent to existing high value regenerating native bush



2.3 Existing Pathways

Existing paths through the site are shown on Drawing 6517439-CE-K30 and the wider distribution of paths is shown in Figure 2.7 below.

The existing paths range from ‘tracks through grass’ through to gravelled or paved pathways. In some areas the paths are steeply graded including portions with slopes of approximately 3H:1V and 4H:1V. In other areas the paths are more gently graded.

Figure 2.7 Existing walking paths in vicinity of reservoir



3 Selected Reservoir Arrangement

3.1 Introduction

This report considers only the preferred option R1.0 identified in the Conceptual Design Options Report.

3.2 Site Layout

Drawing 6517439-CE-K31 shows the extent and shape of the excavation required to construct the reservoir and tunnel and the extent of natural vegetation (other than grass) which will be removed in the construction process.

Drawing 6517439-CE-K32 shows the final contours and extent of backfilling on completion of the reservoir with typical sections shown in 6517439-CE-K33

4 Landscaping Arrangements

4.1 Preliminary Landscape Concept

Drawing 6517439-LS-001 shows the proposed landscape treatment of the site following construction of the reservoir. The key factors that were taken into consideration in preparing the preliminary landscape concept include:

- The nature and extent of established vegetation removal as a result of the overall construction footprint;
- The overall construction footprint and degree of landform modification that will occur;
- The final form and visual characteristics of the reservoir; and
- The overall visibility of the site, in the site, local and broader landscape contexts.

Given that all of the considered reservoir options included significant excavation of the existing spur, the primary 'landscape-related' goal during the options phase was the retention of key vegetation and site features and limiting the extent of the overall construction footprint, and fill material in particular.

With this in mind, the Conceptual Design Options and Park and Surplus Materials Option Assessment report considered various backfill options (i.e. both over and around the reservoir) including both un-reinforced fill at a slope of 2H:1V and also steeper slopes with reinforced fill. The selected backfill options had to limit the overall construction footprint on the one hand and establish safe and accessible slopes for pedestrians to access and traverse the park in the future on the other.

The selected arrangement for backfill surrounding the reservoir is generally an unreinforced slope (varies 2 to 1.7H:1V) though steeper reinforced slopes are proposed on the south eastern part of the reservoir to limit the depth and extent of the sidling fill that would be required down the gully compared with the unreinforced slope.

The reservoir roof proposed in the preliminary design has a truncated cone shape with a 10m diameter generally circular flat central area which falls radially 3m at a gradient of 10H:1V to the reservoir edge. The preliminary design assumes a fill depth of between 0.5m (the minimum for turf establishment) to a maximum of 1m. The new landform created by the buried reservoir will be more

regular and geometric than the existing natural form. The proposed planting will help to disguise the regular geometric form as it matures, creating its own natural undulation and variable form.

4.2 Planting Arrangements

The planting arrangements shown in Preliminary Landscape Concept plan take into account the existing and future characteristics of the site and suggestions on species selection made by Wellington Parks and Gardens.

The landscape planting has been developed with the aim of:

- Establishing a mix of grassed and vegetated areas in keeping with the informal and unstructured nature of the Town Belt in this area;
- Planting the backfilled side flanks of the reservoir to help to integrate the new reservoir into the broader vegetated landscape;
- Providing an open grassy corridor down the centre of the site similar to the existing situation. It is envisaged that grassed areas would be maintained in accordance with existing methods. There will be steep areas that are not conventionally mowable and it is envisaged that these areas would be left as 'rough grass' or occasionally strimmed with a weedeater;
- Improving the biodiversity in the area by providing suitable plants for birds and insects. This may include providing exotic species such as Eucalyptus to provide fast growing bird fodder;
- Long term ecological succession within the planting by including pioneer, secondary colonisers and emergent species within the plant species mix;
- Avoiding interference with underground services and pipework;
- Establishing low shrubs and groundcovers in the vicinity of pathways and seating areas to keep these areas open and visible, reducing the risk of people being able to hide in close proximity to these areas;
- Establishing medium to high native revegetation planting in the western gully area to support the existing regenerating bush on the adjacent slope and improve the quality of planting within the ephemeral waterway at the base of the gully. This planting will replace the area of recent community planting that will be removed during construction;
- Establishing medium to high native revegetation planting on the northern and eastern slopes of the site to replace planting removed during construction, and provide screening to reduce long distance views of the site and help to 'blend' the new reservoir form into the surrounding landscape; and
- Incorporating specimen trees within the design to add character and vegetation height to areas that are otherwise left grassed or in low planting.

Planting arrangements will be finalised in the detailed design phase in liaison with WCC Parks and Gardens. The preliminary list of plant species to be included within the proposed planting is outlined in Table 4.1 below and shown on the Preliminary Landscape Concept plan.

Table 4.1 Preliminary Planting List

Low Planting (0.4m to 1.5m high)	
<i>Anemanthele lessoniana</i>	Wind Grass
<i>Cortaderia fulvida</i>	Toetoe
<i>Dianella nigra</i>	Inkberry
<i>Meuhlenbeckia complexa</i>	Pohuehue
<i>Phormium cookianum</i>	Mountain Flax
<i>Poa cita</i>	Silver Tussock
Mid height Planting (1.5m to 6m high)	
<i>Coprosma propinqua</i>	Mingimingi
<i>Coprosma robusta</i>	Karamu
<i>Cortaderia fulvida</i>	Toetoe
<i>Fuchsia excorticata</i>	Tree Fuchsia
<i>Griselinia littoralis</i>	Broadleaf
<i>Hebe stricta</i>	Koromiko
<i>Kunzea ericoides</i>	Kanuka
<i>Phormium cookianum</i>	Mountain Flax
<i>Phormium tenax</i>	Flax
<i>Pittosporum eudenoides</i>	Lemonwood
<i>Pittosporum tenuifolium</i>	Kohuhu
<i>Pseduopanax arboreus</i>	Five Finger
<i>Sophora microphylla</i>	Kowhai
High Planting (1.5m to 20m high)	
<i>Aristotelia serrata</i>	Wineberry
<i>Beilchmedia tawa</i>	Tawa
<i>Carpodetus serrata</i>	Putaputaweta
<i>Coprosma propinqua</i>	Mingimingi
<i>Coprosma robusta</i>	Karamu
<i>Cortaderia fulvida</i>	Toetoe
<i>Griselinia littoralis</i>	Broadleaf
<i>Hebe stricta</i>	Koromiko
<i>Kunzea ericoides</i>	Kanuka
<i>Metrosideros robusta</i>	Northern Rata

<i>Myoporum laetum</i>	Ngaio
<i>Pennantia corymbosa</i>	Kaikomako
<i>Phormium tenax</i>	Flax
<i>Pittosporum eudenioides</i>	Lemonwood
<i>Pittosporum tenuifolium</i>	Kohuhu
<i>Podocarpus totara</i>	Totara
<i>Prumnopytus taxifolia</i>	Matai
<i>Sophora microphylla</i>	Kowhai
Specimen Trees (minimum of 1.8m high at time of planting)	
<i>Metrosideros excelsa</i>	Pohutakawa

It is envisaged that exotic tree species such as Eucalyptus may also be incorporated to provide fast growing bird fodder, with a long term intent that these are removed when native tree species have established sufficiently to provide an adequate food source for birds.

4.3 Urban Design Issues

The key urban design issues associated with the site relate to safe accessibility and connectivity to the wider pedestrian/ street network. The Preliminary Landscape Plan takes these issues into account through the provision of:

- Reinstatement of existing paths. Similar to the existing paths, the reinstated paths will be steep in certain areas due to the existing site topography. In addition the introduction of the new reservoir will increase the vertical change in level in some areas and the constrained area available to install pathways will also present challenges to establishing walk ways. The potential to create a gentler graded pathway through the site through 'zig-zag' pathways up the slope will be explored further during the next design phases. Paths are proposed to be a minimum of 1.8m in width.
- Introduction of additional paths to increase accessibility across the site;
- Suggested formation of paved or gravel pathways to promote all-weather access and thoroughfare;
- Provision of bench seats, rest areas, signage and information boards as an opportunity for enhancement of amenity and way-finding; and
- Introduction of additional vegetation to reinstate and enhance the existing characteristics of the site. Consideration of safety, keeping open views and clear lines of sight along pathways. When planting close to paths keep the vegetation immediately adjacent the pathway low and below eye height.

4.4 Construction Phase Walkways

The Brief requires that the Landscape Report present proposals for pedestrian access around the construction site connecting Dorking Road, Rolleston Street, Hargreaves Street the Lower Park and the track to Bell Road reservoir site. The Preliminary Design proposal for the construction phase access is shown on Drawings 6517439-CE-K34 and CE-K31.

Walkway options considered not acceptable

Consideration was given to arrangements for connecting Dorking Road directly to the end of Rolleston Street but none were considered acceptable.

The options for the direct connection past the reservoir site between Dorking Road and Rolleston Street were considered based on a 2m wide footpath with 1H:1V cut slopes and 1.5H:1V fill slopes. Two options were identified, both of which had a uniform steep (1 in 4) grade and involve major fills which would enter into the area of regenerating native bush in the western gully. One option would have discharged near the construction site access which is undesirable from a safety perspective and the other option connected to the top of the steps leading to the Bell Road Reservoir, avoiding the construction site access but requiring a major track through regenerating natural bush of the gully.

A uniform 1 in 4 gradient was considered unlikely to be acceptable, in which case consideration would need to be given to constructing the footpath as an elevated wooden walkway with a combination of stairs and ramps to provide lengths with flatter grades. A wooden walkway would also reduce the impact on existing vegetation but would be an expensive temporary construction.

Proposed walkway option

Having considered the above options, the proposed construction phase walkway is that people wishing to walk between Dorking Road and Rolleston Street should do so via the Lower Playing Field using the existing tracks illustrated in Figure 2.7. The route from Rolleston Street to the Lower Playing field will be around the northern and eastern margins of the Upper Playing Field outside the contractor's working area as indicated on Drawing 6517439-CE-K34.

5 Detailed Design of Landscaping and Access Arrangements

5.1 Landscape Plan

The preliminary landscape plans will be developed further in the next phases of the project, during the consultation process held in Stage 2 and in detailed design. Particular items that will be developed further and finalised are:

- Final locations and grades of paths through site and construction method;
- Access for tractor operated mower if possible. This may involve widening of access paths.
- Selection and positioning of park furniture such as signage, park benches, and potentially interpretive information boards to explain the presence and function of the reservoir. It is envisaged that these items will be selected from the existing WCC palette of park furniture used within the Town Belt. Indicative locations for seating have been identified on the landscape concept plan, however these will be considered further as part of the detailed design;
- Detail and species selection for planting over reinforced fill slope areas; and
- Planting arrangements including numbers of each plant species, locations and groupings.