

LA4

## **Northern Interceptor Phase 1**

Assessment of Landscape and Visual Effects

**Hobsonville Pump Station to Rosedale**

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### **Hobsonville Pump Station to Rosedale**

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## 1. Introduction

Watercare Services Limited ('**Watercare**') is proposing to build new wastewater pipelines and associated infrastructure to convey wastewater from northwestern parts of Auckland to the Rosedale Wastewater Treatment Plant ('**WWTP**') in Albany. This project is known as the '**Northern Interceptor**'. Construction of the Northern Interceptor is intended to be staged, with the timing of various stages depending on the rate of population growth.

LA4 Landscape Architects has been commissioned by Watercare to assess the potential landscape and visual amenity effects related to the construction, operation and maintenance of the proposed Northern Interceptor Phase 1 ('the Project').

The proposed work requires various resource consents under the Resource Management Act 1991 ("RMA"). This technical report provides specialist input for the *Northern Interceptor Phase 1 – Assessment of Effects on the Environment* report ("the main AEE") prepared by MWH New Zealand Limited, which supports the resource consent application.

This report provides the following:

- A brief overview of the proposed works;
- A description of the environmental baseline for the particular receiving environment(s) potentially affected by the project;
- Description of specific aspects of the project in relation to the subject area being investigated;
- Description of the investigations undertaken to assess the landscape and visual effects of the project;
- An assessment of the actual or potential effects on the environment (construction, operation and maintenance), having reference to the statutory framework and any other environmental factors considered relevant. This includes the identification of activities that could result in adverse effects and, in turn, identifying design refinements or construction methodologies that could avoid, remedy or mitigate such effects; and
- Recommended mitigation and management measures.

## 2. The Proposed Works

The proposed Northern Interceptor Phase 1 will transfer existing flows from the Hobsonville Pump Station to the Rosedale WWTP. The proposed route is from the existing Hobsonville Pump Station, under the State Highway 18 motorway, along the northern side of the motorway causeway, and then under the Upper Waitemata Harbour, through Greenhithe and then the commercial area of Rosedale.

Key elements of the project include:

- Upgrading of the existing Hobsonville Pump Station
- Installation of a pipe under State Highway 18
- Installation of pipelines in a widened section of the existing motorway causeway
- Installation of dual pipelines across the Upper Waitemata Harbour to Greenhithe via marine trenching or horizontal directional drilling ('**HDD**')
- Installation of dual pipelines under Te Wharau Creek via HDD
- Construction of a pipe bridge between Witton Place and North Shore Golf Course
- Installation of dual pipelines under Alexandra Stream via HDD

- Trenched construction for pipeline installation in roads, open space and other land; and installation of associated infrastructure, including minor aboveground structures

With the exception noted below, the proposed works are described in detail in the main AEE. Key drawings showing the proposed works and construction methodology are copied in Appendix A of this report. The works described in the main AEE and shown on the appended drawings are assessed in this report.

Watercare is proposing some widening along the existing State Highway 18 motorway causeway near Hobsonville to provide for proposed water and wastewater infrastructure, including a section of the Northern Interceptor Phase 1 pipeline. That work forms part of Watercare's proposed Greenhithe Bridge Watermain Duplication and Causeway project. That project is part of a separate resource consent package, and is described in a report titled *Greenhithe Bridge Watermain Duplication and Causeway – Assessment of Effects on the Environment*, prepared by Aecom New Zealand.

### **3. Landscape and Visual Effects Assessment Methodology**

The purpose of this assessment is to assess the potential adverse visual and landscape effects of the Project arising from the works. The assessment also outlines appropriate mitigation measures to limit the effects on the landscape and visual amenity of the area. These measures are aimed at integrating the Project into the surrounding landscape.

The methodology adopted for this assessment has involved:

- Preliminary route investigations;
- Review of background documentation and plans;
- Detailed route and site investigations;
- Photographic recording of the sites;
- Identification of the visual catchment or the physical area that would be exposed to the visual changes associated with the Project;
- Identification of the different viewing audiences that would be affected by the Project;
- Evaluation of the landscape and visual effects (both temporary and permanent) as a whole taking into account all the preceding analysis; and
- Recommendations for proposed mitigation measures.

The key to assessing the visual and landscape effects of the Project on the urban and coastal landscape setting is first to establish the existing characteristics and values of the landscape and then to assess the effects of the proposal on them. In accordance with the Resource Management Act (1991) this includes an assessment of the cumulative effects of the proposal combined with existing developments.

#### **Landscape Effects**

Landscape effects take into consideration physical effects to the landscape. Assessments of landscape effects therefore investigate the likely nature and scale of change to landscape elements and characteristics. Landscape effects are primarily dependent on the landscape sensitivity of a site and its surrounds. Landscape sensitivity is influenced by landscape quality and vulnerability, or the extent to which landscape character and values are at risk to change. Sensitivity can be determined by the degree of naturalness, land use homogeneity, landform and screening elements.

The assessment examines the landscape effects arising from the construction and ongoing operation of the Project, which are related to the degree of change to landform, land cover and land use.

The nature and extent of landscape effects are determined by an analysis of the specific implications of the Project in relation to the landscape values and the sensitivity of the landscape to change.

### **Visual Effects**

The assessment of visual effects analyses the perceptual (visual) response that any of the identified changes to the landscape may evoke. Visual sensitivity is influenced by a number of factors including the proposal's visibility, the nature and extent of the viewing audience, the visual qualities of the proposal, and the ability to integrate any change within the landscape setting where applicable.

The nature and extent of visual effects is determined by a systematic analysis of the visual intrusion and qualitative change that a proposal may bring, specifically in relation to aesthetic considerations and visual character and amenity.

### **Landscape Mitigation Measures**

Following the assessment of effects for the individual works areas, recommended mitigation measures have been proposed to address the specific effects in each area and integrate the permanent works into the surrounding landscape.

### **Effects Rating**

The following five-point scale has been utilised to rate the landscape and visual effects, based on the scale provided in the New Zealand Institute of Landscape Architects Best Practice Note – Landscape Assessment and Sustainable Management (2010). The total ratings given in the descriptions denote the overall landscape and visual effects rating, which has the following range of potential ratings and effects.

#### *Negligible Effect*

The Project has discernible effects but too small to have adverse landscape or visual effects.

#### *Low Effect*

The Project constitutes only a minor component of the wider view. Awareness of the Project would not have a marked effect on the overall quality of the scene or create any significant adverse effects.

#### *Moderate Effect*

The Project may form a visible and recognisable new element within the overall scene and may be readily noticed by the viewer. The Project may cause an adverse impact but these effects could potentially be mitigated or remedied.

#### *High Effect*

The Project forms a significant and immediately apparent part of the scene that affects and changes its overall character. The Project may cause a high adverse impact on the environment but could potentially be mitigated or remedied.

#### *Very High Effect*

The Project becomes the dominant feature of the scene to which other elements become subordinate and it significantly affects and changes its character. The Project causes extensive adverse effects that cannot be avoided, remedied or mitigated.

## 4. Site Assessments

The following section assesses the potential adverse visual and landscape effects arising from the works under the following headings:

- The site and landscape context;
- Proposed construction site and works;
- The visual catchment and viewing audience;
- Landscape and visual effects – construction works and permanent works; and
- Mitigation measures.

### 4.1 Road Corridor Works

Trenching works within the road corridor and trenching works in road reserve grassed areas have been assessed in general terms rather than site specific, as the effects are temporary and the sites are to be reinstated to their pre-construction state.

The works within the road corridor include:

- Squadron Drive
- Rahui Road to Greenhithe Road
- Greenhithe Road to Wainoni Park (South)
- Albany Highway to William Pickering Drive
- Piermark Drive to Bush Road

The works are largely restricted to within the road corridor which provides the context to within which they will be seen. Road works and excavations are a common sight within the Auckland Isthmus. The transient nature of the largest viewing audience and level of partial screening afforded by vegetation and structures within individual properties would result in a **negligible** visual effects rating.

As the works are primarily within the existing road carriageway there will be **negligible** landscape effects.

### 4.2 Hobsonville Pump Station and State Highway 18 Crossing

#### The Site and Landscape Context

##### ***Hobsonville Pump Station***

*Reference Figures 1 – 3*

The existing Hobsonville Pump Station is located on the northern side of Buckley Avenue, Hobsonville. The site extends between Buckley Avenue and State Highway 18. The existing facility comprises the switch room and pump station building, an ancillary building, in-ground tanks, access ways and hard standing areas.

The access road site is located immediately to the west of the Pump Station site and is currently well vegetated with mixed native tree, shrub and exotic tree plantings including pines and wattles. The area is also extensively covered in a number of weed species including gorse and pampas.

The land drops down to the east of the site into a small watercourse and detention pond. This area is also well vegetated in mixed native, exotic and weed species. Residential development as part of the Hobsonville Point development is located further to the east and south of the site.



The Hobsonville Point primary and secondary schools and playing fields are located opposite the site on the southern side of Buckley Avenue. The surrounding area is undergoing rapid urbanisation with the extensive Hobsonville Point residential development.

### **State Highway 18 Crossing**

*Reference Figure 3*

The site extends from the Hobsonville Pump Station, crosses State Highway 18 ('SH18') and extends along the berm of the SH18 and the Squadron Drive on-ramp. The roading network and the continuous stream of traffic using the highway largely dominate the character of the site. To the west of the site is the Wallace Inlet – a small tidal inlet densely vegetated with mangroves. Mature tree plantings of mixed exotic species including pine are located at the head of the inlet. A stormwater detention pond is located adjacent to the highway.

To the north of the site the Summerset at Monterey Park Retirement Village is currently under construction. The first stage of development has been completed with a number of standalone villas. A cycleway and walkway extends from the Squadron Drive roundabout along the causeway.

### **Proposed Construction Site Works – Hobsonville Pump Station**

The main visual and landscape construction works include:

- Temporary and permanent site fencing
- Establishment of temporary hardstand, storage, office and parking areas
- Clearance of vegetation and removal of trees
- Formation of an access road and associated earthwork activities
- Open trenching and installation of a pipeline
- Installation of a new chemical storage and dosing facility
- Trenching and installation of stormwater drainage sumps and pipework discharging into the existing drainage system.
- Installation of new pumps, pipes, valves and associated equipment within the pump station
- Landscaping and planting

### **Proposed Construction Site Works – SH18 Crossing**

The construction of the pipeline will comprise the following:

- Vegetation removal
- Trench excavation, backfilling to pipes and access shafts and reinstatement of trenches.

### **The Visual Catchment and Viewing Audience**

The Pump Station site has a relatively restricted visual catchment due to the landform characteristics, vegetation patterns (currently existing) and level of surrounding residential development.

The largest visual catchment is that of the Buckley Avenue and those travelling along the road in the immediate vicinity of the site. The mature vegetation to the east of the site screens views from the newly developed residential area to the east. Travelling east and west along Buckley Avenue, the existing vegetation on either side of the site forms a dense screen until closer to the site.

Views will be gained from the Hobsonville Point primary and secondary school grounds on the southern side of Buckley Avenue. Views will also be gained from the developing residential area on the southeastern side of Buckley Avenue accessed off Teal Way.

The viewing audience that will be exposed to views (to varying degrees) will therefore comprise motorists, cyclists and pedestrians travelling along Buckley Avenue and SH18 in the immediate vicinity of the site; residents within the new residential area to the east and south of the site; and pupils, visitors and staff within the Hobsonville Point schools.

### **Landscape and Visual Effects**

The landscape and visual effects from the Hobsonville Pump Station works will result from:

#### **Construction Works**

*Reference Figure 4*

- Temporary site fencing
- Access established into the construction site
- Vegetation removal
- Contractor's site establishment, working areas, hard standing area, offices and storage containers
- Pipework, connections and manholes within the site
- Construction activity and vehicle movements.

The existing Hobsonville Pump Station creates the visual context within which the works will take place. The site's limited visibility from the surrounding area and transient nature of the largest viewing audience would result in a **low-moderate** visual effects rating. The most noticeable visual effect will result from the removal of some of the existing vegetation to construct the access road and perimeter fence.

The landscape effects rating from the construction of the works will result in a **low-moderate** effects rating due to the extent of earthworks and vegetation removal required to construct the access track.

#### **Permanent Works**

*Reference Figure 5*

- New chemical storage and dosing facility
- Landscaping, planting, site roads and fencing
- Asphalt site roads, turning areas and permanent hard standing areas
- Permanent wire mesh site fencing

### **Mitigation Measures**

The following mitigation measures are recommended to reduce any adverse effects following construction:

- Mitigation planting within the site along the Buckley Avenue road frontage to the west of the existing Pump Station and in the western corner of the site.

Following construction of the works, the new chemical storage and dosing facility will be read as an integral component of the existing pump station. The permanent hard standing areas will not look out of place as the surrounding Hobsonville Point residential area is in a state of rapid urbanisation and construction.

Following planting establishment the visual and landscape effects of the permanent works will be **low**.

### **Landscape and Visual Effects**

The landscape and visual effects from the SH18 crossing works will result from:

#### **Construction Works**

- Vegetation removal
- Trench excavation, backfilling to pipes and access shafts and reinstatement of

trenches.

SH18 creates the visual context within which the works will take place. The site's limited visibility from the surrounding area and transient nature of the largest viewing audience would result in a **low** visual effects rating. The most noticeable visual effect will result from the removal of some of the existing vegetation.

The landscape effects rating from the construction of the works will result in a **low** effects rating due to minor vegetation removal.

#### **Permanent Works**

- No visible permanent works

#### **Mitigation Measures**

The following mitigation measures are recommended to reduce any adverse effects following construction:

- Replacement planting in areas where vegetation has been removed.

Following vegetation establishment the visual and landscape effects of the permanent works will be **negligible**.

### **4.3 State Highway 18 to Causeway Widening**

#### **The Site and Landscape Context**

*Reference Figures 6-7*

The site extends from the Hobsonville Pump Station, crosses SH18 and extends along the berm of the SH18 and the Squadron Drive on-ramp. The roading network and the continuous stream of traffic using the highway largely dominate the character of the site. To the west of the site is the Wallace Inlet – a small tidal inlet densely vegetated with mangroves. Mature tree plantings of mixed exotic species including pine are located at the head of the inlet. A stormwater detention pond is located adjacent to the highway.

To the north of the site the Summerset at Monterey Park Retirement Village is currently under construction. The first stage of development has been completed with a number of standalone villas. A cycleway and walkway extends from the Squadron Drive roundabout along the causeway.

#### **Proposed Construction Site Works**

The proposed works involve construction of a 750mm pipe by means of open-cut trench from the micro-tunnel pit and along the northern side of the Squadron Drive on-ramp.

#### **The Visual Catchment and Viewing Audience**

The site has a relatively large visual catchment due to its proximity to SH18 and the Squadron Drive motorway overpass and on-off ramps. The Retirement Village access road is also in close proximity.

The primary and largest visual catchment is that of the surrounding roads and the immediately adjoining Retirement Village. The views however will be largely transient and experienced for short periods of time.

The viewing audience that will be exposed to views towards the Project (to varying degrees) will therefore comprise residents, visitors and staff within the Retirement Village; motorists, cyclists and pedestrians travelling along SH18 and Squadron Drive in the immediate vicinity of the site; and pedestrians and cyclists using the shared cycleway / pedestrian path.

#### **Landscape and Visual Effects**

The landscape and visual effects from the works will result from:

### **Construction Works**

- Topsoil stripping and construction of temporary access to the east of Squadron Drive
- Construction of the aggregate haul road
- Trench excavation and stockpiling of soil for backfill use
- Backfilling of pipes and access shafts and reinstatement of trenches.

The surrounding roading network and associated infrastructure with signage, structures, on/off ramps, Armco barriers and lighting creates the visual context within which the works will take place. The site's visibility from the surrounding area and transient nature of the largest viewing audience would result in a **low** visual effects rating.

The landscape effects rating from the construction of the works will result in a **low** effects rating due to the already modified character of the landform from the construction of the Squadron Drive highway overpass and on-off ramps. Visual and landscape effects will result from the removal of vegetation however this will be of short duration.

### **Permanent Works**

- No above ground structures

### **Mitigation Measures**

The following mitigation measures are recommended to reduce any adverse effects following construction:

- Replacement planting with suitable indigenous shrub species within the planted berm.

Following construction the visual and landscape effects of the permanent works will be **negligible** as the surrounding land will be restored to a similar nature as currently exists.

## **4.4 Upper Waitemata Harbour Crossing**

### **The Site and Landscape Context**

*Reference Figures 8-10*

The SH18 landing site is located within an area of proposed causeway widening adjacent to SH18 – the Greenhithe Bridge Watermain Duplication ('**GBWD**'). The five-laned motorway extends along the causeway with its associated infrastructure of signage, median barriers, fencing, lighting and emergency services. The shared pedestrian path and cycleway runs along the northern side of the highway, separated by the Armco barriers and high wire mesh safety fence.

Tree plantings of pohutukawa and mixed indigenous shrub and flax plantings extend along the coastal edge of the causeway at present, however these will be removed as part of the proposed causeway widening. Te Okoriki Inlet is located in the vicinity of the site. The foreshore is not readily accessible as the tidal mud flats and oyster shell clad rocks prevent access.

The Rahui Road landing site is located on the small beach at the southern end of Rahui Road opposite Traffic Road (paper road). The small bay is tidal with a sandy beach. A boat-launching ramp provides access down to the beach. A low retaining wall and grassed area extends back from the beach. A toilet block, Tauhinu Sea Scout Den and car parking area are located adjacent to Rahui Road. The existing Rahui pump station and rising main are located within the grassed area.

Steep, vegetated coastal cliffs and slopes rise up from the foreshore and residential dwellings are set within these. The dwellings are not highly visible due to the extent and nature of the mature vegetation.

The coastal edge is not identified in the Proposed Auckland Unitary Plan as a Scheduled Area of Outstanding or High Natural Character, Coastal.

The two options that are assessed as part of this assessment are:

- Option 1: Horizontal Directional Drilling
- Option 2: Marine Trenching.

### ***Option 1: Horizontal Directional Drilling***

#### **Proposed Construction Site Works**

It is proposed to horizontally drill two 550 DN pipes from newly reclaimed land (pursuant to the resource consent package for GBWD) adjacent to the existing motorway causeway. The twin drill shots pass under the Upper Waitemata Harbour and exit at Rahui Road, Greenhithe.

Site compounds established at each end of the HDD operations will be constructed and used to house the required machinery.

#### **The Visual Catchment and Viewing Audience**

The causeway widening site has a relatively restricted land-based visual catchment due to the existing pohutukawa tree and shrub plantings on the causeway and the Armco and median barriers along the motorway. Removal of the pohutukawas as part of the causeway widening will open up more exposed views to the works. The primary viewing audience will be transient – in vehicles, on foot or bicycle. The existing vegetation in the line of sight will largely screen views from the Hobsonville Point residential area. Views from the residential area of Herald Island will be very distant, in excess of 800m away. The site has a more extensive water-based visual catchment.

The Rahui Road landing site has a relatively restricted visual catchment due to the coastal landform characteristics, vegetation patterns, orientation of the road and intervening structures. Several houses overlook the site, however vegetation within the properties will largely screen views.

The viewing audience that will be exposed to views towards the works (to varying degrees) will therefore comprise motorists, cyclists and pedestrians travelling along SH18 and the shared path; recreational users of the foreshore, coastal edge and water; localised residents in Hobsonville Point and the residential area to the west of Tauhinu Road; Sea Scouts; and local residents and motorists and pedestrians travelling along Rahui Road in the vicinity of the site.

#### **Landscape and Visual Effects**

The landscape and visual effects from the harbour crossing will result from:

#### ***Construction Works***

*Reference Figure 11*

- Vegetation clearance and tree removal within the unformed portion of Traffic Road
- Site establishment at each landing site including working areas, welfare, offices and storage containers
- Construction of hard standing and parking areas
- Potential demolition of the toilet block located at the Rahui Road and the construction of a new toilet block on completion of pipework construction
- Set up for directional drilling activities including drill rod racks and associated plant at the Rahui Road site
- Set up for directional drilling activities, which will include installation of mud separators, drill rod racks, mud storage containers and associated plant at the causeway site
- Pipe installation including pilot holes, back reaming, laying out and welding pipe strings, pipe pulling and testing

The reclamation is being constructed and assessed as part of the Greenhithe Bridge Watermain Duplication and Causeway project.

The main visual effects during construction of the harbour crossing will result from the drilling rig and associated infrastructure. Due to the restricted and largely transient visual catchment and viewing audience the works will result in **moderate** visual effects.

There will be **moderate** landscape effects due to the directional drilling process.

### ***Permanent Works***

*Reference Figure 12*

- Potential replacement toilet block at the Rahui Road landing site if the existing one is removed for construction purposes

### ***Mitigation Measures***

The following mitigation measures are recommended to reduce any adverse effects following construction:

- Reinstatement and regrassing of the Rahui Road landing site

Following construction, the visual and landscape effects of the permanent works would reduce to **low** and the works will integrate well into the surrounding coastal environment.

### ***Option 2: Marine Trenching***

*Reference Figure 11A*

### **Landscape and Visual Effects**

The landscape and visual effects from the marine trenching will result from:

#### ***Construction Works***

- Vegetation clearance and tree removal at the Rahui Road construction site
- Site establishment at each landing site including working areas, welfare, offices and storage containers
- Construction of hard standing and parking area at both construction sites
- Placement of a barge in the Upper Waitemata Harbour
- Placement of a low ground weight/floating excavator in intertidal zones
- Intertidal trenching
- Stringing and welding of pipe sections
- Pulling of pipe into position, sinking and laying in trench and connection of flanged and bolted pipe sections
- Backfilling of trenches

The main visual effects during construction of the harbour crossing will result from the temporary construction road in the intertidal zone and barge activities within the harbour. Due to the size of the barge and floating excavator and the nature and scale of the works, the marine trenching activities will result in **moderate-high** visual effects albeit temporary in duration (approximately 3-5 months).

There will be **moderate-high** landscape effects due to the marine trenching and excavation process however these will be temporary in nature and within the seabed and intertidal zone.

### ***Permanent Works***

- No permanent above ground structures.

### **Mitigation Measures**

- Reinstatement and regrassing of the Rahui Road landing site

Following construction, the visual and landscape effects of the permanent works would reduce to **low** and the works will integrate well into the surrounding coastal environment.

## **4.5 Rahui Road to Greenhithe Road**

### **The Site and Landscape Context**

*Reference Figure 13*

Rahui Road extends down from Rame Road and Marae Road towards the coastal edge and small bay. The bay is tidal with a sandy beach and boat-launching ramp. A toilet block, Tauhinu Sea Scout Den and car parking area are located adjacent to Rahui Road. The existing Rahui pump station and rising main are located within the grassed area.

Steep, vegetated coastal cliffs and slopes rise up from the foreshore and residential dwellings are set within these. The dwellings are not highly visible due to the extent and nature of the mature vegetation. An unformed and vegetated portion of Traffic Road extends back from Rahui Road through to the elevated formed part.

Traffic Road itself is characterised by the narrow formed carriageway with an open drainage channel on the west side and kerb and channel on the east side. Wide grassed berms extend from the road to the property boundaries with a mix of open and fenced frontages. The properties are generally well vegetated with dwellings set back from the road. A variety of architectural styles, materials and ages are characteristic within the housing stock.

### **Proposed Construction Site Works**

The pipeline will be installed by open trenching across Rahui Road, and along the unformed section of road between Rahui Road and Traffic Road, on to Traffic Road to the intersection with the southern end of Rame Road and onto Greenhithe Road at the Tauhinu Road roundabout.

### **The Visual Catchment and Viewing Audience**

Rahui Road and the landing site have a relatively restricted visual catchment due to the coastal landform characteristics, vegetation patterns, orientation of the road and intervening structures. Several houses overlook Rahui Road in the vicinity of the landing site, however vegetation within the properties will largely screen views.

More exposed views will be gained from the properties adjacent to the unformed portion of Traffic Road adjacent to the works. Views will be gained from the formed part of Traffic Road and the dwellings accessed off the road. The viewing audience will largely comprise recreational users of the foreshore and coastal edge, Sea Scouts, local residents within Traffic Road and Rahui Road and motorists and pedestrians travelling along Rahui Road in the vicinity of the site.

### **Landscape and Visual Effects**

The landscape and visual effects from the Project will result from:

#### **Construction Works**

- Vegetation clearance and tree removal within the unformed portion of Traffic Road
- Construction of temporary access along the unformed section of road between Rahui Road and Traffic Road
- Trench excavation and removal of spoil
- Delivery and installation of pipes, imported fill and concrete

The roading network and coastal edge creates the visual context within which the works will take place. While the coastal edge is high in natural character, the surrounding slopes have been highly modified with residential and roading development.

The site's visibility from the surrounding area is largely restricted to adjoining residents in both the unformed and formed portion of Traffic Road. This viewing audience is in close proximity to the works which would result in a **moderate-high** visual effects rating resultant from the vegetation removal.

The landscape effects rating from the construction works will result in a **moderate-high** effects rating due to the extent of vegetation removal within the unformed portion of Traffic Road.

#### ***Permanent Works***

- No permanent works

#### ***Mitigation Measures***

The following mitigation measures are recommended to reduce any adverse effects following construction:

- Mitigation planting to the unformed portion of Traffic Road to replace the removed vegetation
- Reinstatement of the private driveway
- A landscape enhancement planting plan should be prepared to show the planting that is required to mitigate the effects of the tree removal once the full extent of the tree removal within Traffic Road has been confirmed.

Following construction both the visual and landscape effects of the permanent works will be **moderate** initially until the replacement tree planting has become reasonably established (5-8 years) when the effects would reduce to **low**.

## **4.6 Wainoni Park (South and North)**

### **The Site and Landscape Context**

*Reference Figures 14-15*

Wainoni Park is characterised by the extensive areas of open space and diverse range of landscape character areas. The Greenhithe Pony Club and Greenhithe Riding for the Disabled occupy portions of the park. The Club facilities within the park including a cross-country course, all weather floodlit arena, a large selection of equipment, implement sheds, covered grooming area and Clubhouse. A number of paddocks are fenced and grazed with restricted public access.

The western part of the park is more structured for formal recreation and contains several playing fields, changing and toilet facilities, car park, play area and amenities. A well-utilised paved walkway with bridge crossings extends from Greenhithe Road to the playing fields and traverses between Churchouse Road and Te Wharau Drive.

The park contains a diverse range of vegetation types. A gully traverses the southern part of the park vegetated with indigenous tree and shrub plantings. Similarly a small gully cuts through the northern part of the park with revegetation plantings of indigenous tree, shrub and groundcover species. A grove of remnant fruit trees is within the central part of the park. Mature remnant pine and macrocarpa trees are scattered within the northernmost part of the parks and formal specimen trees are established around the playing fields. A number of coastal tree species have established along the coastal edge including pohutukawas.

Residential properties surround the park to the west, east and south. The coastal edge of the Lucas Creek abuts the park to the north.



### **Proposed Construction Site Works**

The pipeline will be constructed via an open-cut trench from Greenhithe Road opposite number 77, along the eastern side of the park, before crossing a small unnamed permanent stream at the north. A scour valve and associated connection to the existing wastewater network will be constructed at the rear of properties at Monkton Close, Wainoni.

### **The Visual Catchment and Viewing Audience**

Wainoni Park has a large visual catchment due to its open nature and surrounding residential area. The park is well used for formal and informal recreation as well as for equestrian activities and therefore has a large viewing audience comprising recreational users of the park and Pony Club; residents within the surrounding properties to the west, south and east; motorists, cyclists and pedestrians travelling along Greenhithe and Churchouse Roads in the vicinity of the park.

### **Landscape and Visual Effects**

The landscape and visual effects from the pipeline will result from:

#### ***Construction Works***

- Vegetation clearance
- Construction of temporary access ways
- Stripping and stockpiling of topsoil
- Trench excavation and removal of spoil
- Delivery and installation of pipes, imported fill and concrete
- Scour valve construction and connections to the network in Wainoni Park North
- Park surface reinstatement and planting

The construction of the pipeline through Wainoni Park will have a number of temporary adverse visual and landscape effects due to the natural state of the park at present and its recreational use. These will however be temporary in nature during and immediately following the construction period. The main visual effects will result from the trenching and stockpiling of backfill, construction activity and vegetation removal.

Due to the large visual catchment and viewing audience and the contrasting characteristics of the works to the surrounding landscape, the project will result in **moderate** visual effects. There will be **low-moderate** landscape effects due to the restricted modification to landform and land cover.

#### ***Permanent Works***

- No permanent above ground structures.

#### ***Mitigation Measures***

The following mitigation measures are recommended to reduce any adverse effects following construction:

- Consultation with AC Parks and the Local Community Board to ensure the design and reinstatement works are integrated with existing park features and any future plans proposed for the park
- Reinstatement of grassed areas surrounding ground level structures
- Replacement vegetation planting in areas subject to vegetation removal.

Following construction, provided that the above mitigation measures are implemented the visual and landscape effects of the permanent works would reduce to **low** and the works would integrate well into the surrounding parkland.

## 4.7 Te Wharau Creek Crossing

### The Site and Landscape Context

*Reference Figures 16-17*

The site is located at the northernmost extent of Wainoni Park. The grassed terrace drops down into Te Wharau Creek. Te Wharau Creek is extensively vegetated with dense mangroves extending northwards towards the main channel. Beyond here the mangroves prevail to the vegetated coastal edge characterised by dense plantings of exotic and indigenous tree and shrub species.

The coastal edge is not identified in the Proposed Auckland Unitary Plan as a Scheduled Area of Outstanding or High Natural Character, Coastal.

### Proposed Construction Site Works

The pipeline crosses Te Wharau Creek between Wainoni Park and North Shore Memorial Park ('NSMP').

An HDD pit and compound area will be constructed at the northern edge of Wainoni Park within the grassed area between the hedgerows and the coastal margin vegetation.

An HDD pit and compound area will also be constructed at the southern edge of North Shore Memorial Park within a grassed area between the coastal margin and a small vegetated gully. The works include clean water diversions into the gully and coastal margin.

### The Visual Catchment and Viewing Audience

The site has a restricted visual catchment due to the landform characteristics, coastal vegetation patterns and level of surrounding development. The landing site in Wainoni Park is difficult to access by the public, being within the Pony Club grounds behind locked gates. Vegetation surrounds the site and access to the foreshore is prevented by the dense mangrove plantings. There is no physical access along the foreshore although kayakers may experience views.

The landing site in North Shore Memorial Park is similarly well screened by the densely vegetated characteristics. The residential area to the east of the landing site may experience partial views towards the site, however vegetation and structures in the line of sight is likely to screen or filter views.

The viewing audience that will be exposed to views towards the Project (to varying degrees) will therefore comprise some residents within the surrounding properties to the east, kayakers in Te Wharau Creek and park users exploring the coastal edge where accessible.

### Landscape and Visual Effects

The landscape and visual effects from the Te Wharau Creek crossing will result from:

#### **Construction Works – Wainoni Park**

- Temporary site fencing
- Contractor's working areas, hard standing area, offices and storage containers
- Vegetation removal.

#### **Construction Works – North Shore Memorial Park**

- Temporary site fencing
- Contractor's working areas, hard standing area, offices and storage containers
- Drilling rig, mud separators, drill rod racks and mud storage containers
- Vegetation removal.

The main visual effects will result from the drilling rig and associated infrastructure. Due to the very restricted visual catchment and viewing audience the Te Wharau Creek crossing works will result in **low-moderate** visual effects.

There will be **low** landscape effects due to the minimal vegetation removal required for the works (through directional drilling).

#### **Permanent Works**

- No permanent above ground structures.

#### **Mitigation Measures**

The following mitigation measures are recommended to reduce any adverse effects following construction:

- Consultation with AC Parks and the Local Community Board to ensure the design and reinstatement works are integrated with existing park features and any future plans proposed for the park
- Replacement vegetation planting in areas subject to vegetation removal.

Following construction, provided that the above mitigation measures are implemented the visual and landscape effects of the permanent works would reduce to **low** and the works will integrate well into the surrounding coastal environment and parkland.

## **4.8 North Shore Memorial Park**

### **The Site and Landscape Context**

*Reference Figures 18-21*

North Shore Memorial Park ('**NSMP**') is characterised by the formal layout of the lawn cemetery and gardens juxtaposed with the extensive areas of remnant exotic and indigenous bush. The southern part of the park is currently undeveloped, comprising grassed slopes extending down to the coastal edge. Isolated stands of remnant pine and macrocarpa are located towards the tidal inlet.

The main access drive traverses the site with orderly rows of burial, ash and memorial plots. The crematorium, chapel and reception lounge are centrally located with extensive car parking areas on either side surrounded by formal garden areas. The grounds are maintained to a very high standard with specimen tree plantings, mown grassed areas and formal garden beds befitting of its use. The formal entrance is located on Schnapper Rock Road.

### **Proposed Construction Site Works – NSMP South**

The pipeline will be installed by open trench through NSMP. The route will follow proposed road alignments in the southern undeveloped section until aligning under the existing site loop road on the eastern side through to the NSMP entrance on Schnapper Rock Road.

### **The Visual Catchment and Viewing Audience**

NSMP North has a restricted visual catchment due to its landform and vegetated characteristics screening views from the surrounding area. The park is however a well used facility and therefore has a large viewing audience comprising visitors and staff. NSMP South is currently underutilised due to its undeveloped nature. The land is however within the NSMP Masterplan for future development.

### **Landscape and Visual Effects**

The landscape and visual effects from the pipeline will result from:

### **Construction Works – NSMP South**

- Formation of temporary access ways
- Vegetation clearance and tree removal
- Stripping and stockpiling topsoil
- Trench excavation and removal of spoil
- Delivery and installation of pipes, imported fill and concrete
- Park surface reinstatement

### **Construction Works – NSMP North**

- Saw cutting and breaking out road pavement
- Trench excavation and removal of spoil
- Delivery and installation of pipes, imported fill and concrete
- Road surface reinstatement

The construction of the pipeline through NSMP will have a number of adverse visual and landscape effects due to the natural state of the park at present and its role as a place of mourning and remembrance. These will however be temporary in nature during and immediately following the construction period. The main visual effects will result from the trenching and stockpiling of backfill and construction activity.

Due to the restricted visibility and undeveloped nature of the land in the southern part of NSMP, the project will result in **low** landscape and visual effects.

Similarly due to the works within the northern part of the NSMP being largely restricted to the road corridor there will be **low** landscape and **low** visual effects.

### **Permanent Works**

- No permanent above ground structures.

### **Mitigation Measures**

The following mitigation measures are recommended to reduce any adverse effects following construction:

- Consultation with AC Parks to ensure the design and reinstatement works are integrated with existing park features and any future plans proposed for the NSMP
- Reinstatement of grassed areas surrounding ground level structures.

Following construction both the visual and landscape effects of the permanent works will be **low** as the surrounding land within the northern and southern parts of NSMP will be restored to a similar nature as currently exists.

## **4.9 North Shore Memorial Park to North Shore Golf Club**

### **The Site and Landscape Context**

*Reference Figures 22-23*

Witton Place is characterised by the residential development extending throughout the area comprising single lot properties with characteristically large dwellings. Vegetation within the properties is largely restricted to shrub, hedge and small tree plantings due to restricted site areas. The carriageway is narrow with grassed berms and parking bays on both sides.

The pipe bridge site crosses a small tributary of Lucas Creek and is covered in dense vegetation largely dominated by mixed indigenous and exotic forest with a regenerating indigenous understorey. Pine forest is abundant on the upper slope and regenerating indigenous canopy species have established beneath the pines including ponga, mamaku, hangehange, and mahoe.

A large stand of bamboo is located on the slope and there are also a number of weed species present including privet, pampas, wild ginger and woolly nightshade.

The North Shore Golf Club is located to the north of the site. Vegetation extends along the boundary within the golf club land including kanuka, pine, bamboo and exotic ornamental tree species beside the fairway and green.

### **Proposed Construction Site Works**

The works include the construction of a 750mm pipe by open-cut trench within the road reserve areas of Schnapper Rock Road, Newbury Place, Witton Place and Aberley Road. Between Schnapper Rock Road and Newbury Place the pipeline route runs through a narrow walkway.

A pipe-bridge is to be constructed across the stream that flows between Witton Place and Laurel Oak Drive at the southern edge of NSGC. In order to construct the site compound around the pipe-bridge and install the pipeline by open trenching, a level works platform will be constructed from the southern boundary of NSGC to the northern side of the stream. This will require vegetation clearance and cut and fill earthworks and a retaining batter to form a stable platform.

The proposed pipe will then be constructed in an open cut trench through to the NSGC grounds.

### **The Visual Catchment and Viewing Audience**

Witton Place has a relatively restricted visual catchment due to the built environment screening views from beyond the street environs. Similarly the pipe bridge site is surrounded by dense vegetation which restricts views from the wider surrounding residential area.

The viewing audience that will be exposed to views towards the works will therefore comprise residents within the surrounding properties on the slopes and motorists, cyclists and pedestrians travelling along Witton Place in the immediate vicinity of the site.

### **Landscape and Visual Effects**

The landscape and visual effects from the pipe bridge will result from:

#### **Construction Works**

*Reference Figure 24*

- Vegetation clearance and tree removal
- Construction of temporary access ways and formation of work platforms
- Saw cutting and breaking out of road pavement and driveways
- Trench excavation and removal of spoil
- Pipe bridge construction
- Road, driveway and grass surface reinstatement
- Scour valve chamber construction.

The main visual effects will result from the vegetation removal, trenching and stockpiling of backfill, the pipe bridge construction and construction activity. The construction of the pipe bridge will be visually well contained being located within the vegetated gully, however the vegetation clearance will be highly noticeable.

The construction works at the Witton Place pipe bridge site will result in a **high** visual effects rating due to the removal of the existing vegetation required for the construction of temporary access ways, formation of the work platforms and construction of the pipe bridge. The construction activity will be highly visible for localised residents in the vicinity of the works.

There will similarly be **high** landscape effects due to the vegetation removal required to construct the pipe bridge, work platforms and open cut trenches.

### **Permanent Works**

Reference Figure 25

- Pipe bridge
- Replacement tree planting

### **Mitigation Measures**

The following mitigation measures are recommended to reduce any adverse effects following construction:

- Removal of construction access tracks and work platforms
- Replacement planting of indigenous tree species within the gully where vegetation clearance has occurred

Replacement planting with indigenous tree species within the gully is recommended to mitigate the tree removal required for the works. The following species are recommended for massed planting at PB3 grade at 1 metre spacings.

*Coprosma robusta* – Karamu  
*Cordyline australis* – Ti Kouka  
*Cyathea dealbata* – Silver fern  
*Cyathea medullaris* – Mamaku  
*Cyathea smithii* – Katote  
*Dicksonia squarrosa* – Wheki  
*Geniostoma ligustrifolium* – Hangehange  
*Kunzea ericoides* – Kanuka  
*Melicytus ramiflorus* – Mahoe  
*Myrsine australis* – Mapou  
*Pittosporum crassifolium* – Karo

As outlined in the Arboricultural Report, the extent to which planting is required will be determined following the clearance of trees that are required to be removed, as deemed by an arborist at the time of construction.

A detailed landscape planting plan commensurate with the scale of vegetation clearance required to establish the site compound should be provided prior to reinstatement of the site.

Following construction, provided that the above mitigation measures are implemented and following replacement planting establishment the visual and landscape effects of the permanent works would reduce to **moderate** and the works will integrate into the surrounding streetscape and gully system.

## **4.10 North Shore Golf Club (to Albany Highway)**

### **The Site and Landscape Context**

Reference Figures 26 – 27

The North Shore Golf Club ('NSGC') is characterised by its wide open spaces, grassed fairways and greens, extensive tree plantings and Clubroom and function facilities. A large sealed car park is located to the south of the Clubrooms beyond which is the golf driving range enclosed by safety netting. Residential properties adjoin the eastern boundary of the course with a large stand of pines providing a visual barrier to the southern area. Residential properties also abut the southeastern boundary of the course.

Albany Junior High School occupies a large site on the southern side of Appleby Road. Residential properties are located on the northern side of the road.

### **Proposed Construction Site Works**

The pipeline through the NSGC will be installed by open cut, extending across the driving range, through the car park and then along the golf club access road to connect to the existing pipeline at the end of Appleby Road.

### **The Visual Catchment and Viewing Audience**

The NSGC has a restricted visual catchment due to its landform and vegetated characteristics. The club is however a well used recreational facility and therefore has a large viewing audience comprising visitors and staff. Views will also be gained from the residential area to the east and south. The Appleby Road and St Andrews Way residential area and Albany Junior High School will be exposed to views of the works located within the road corridor.

The viewing audience will therefore comprise recreational users and visitors to the golf club, residents within the surrounding properties to the south and east of the NSGC, residents within the properties accessed off Appleby Road and St Andrews Road, and staff, students and visitors to Albany Junior High School.

### **Landscape and Visual Effects**

The landscape and visual effects from the pipeline through the NSGC to Albany Highway will result from:

#### ***Construction Works***

- Minor vegetation removal
- Trench excavation and stockpiling of backfill
- Construction activity and vehicle movements.
- Backfilling to pipes and reinstatement of trenches
- Scour valve chamber construction
- Grassing and reseeding through NSGC
- Resurfacing of roadways.

The construction of the pipeline through the NSGC will have a number of adverse visual and landscape effects due to the natural characteristics of the golf course at present. These will however be temporary in nature during and immediately following the construction period. The main visual effects will result from the minor vegetation removal, the trenching and stockpiling of backfill and construction activity.

The construction of the pipeline within the roadways will have reduced effects due to the existing character of the road corridor. The viewing audience however is large comprising local residents and those within Albany Junior High School.

Due to the minor extent of works the project will result in **low** visual effects. There will be **low** landscape effects due to the minor vegetation removal.

#### ***Permanent Works***

- No permanent above ground structures.

#### ***Mitigation Measures***

The following mitigation measures are recommended to reduce any adverse effects following construction:

- Grassing and reseeding
- Replacement planting if required (in consultation with the NSGC)

Following construction, the visual and landscape effects of the permanent works would reduce to **low-negligible** and the works will integrate well into the surrounding golf course environs.

## **4.11 Rosedale Park to Rosedale WWTP**

### **The Site and Landscape Context**

*Reference Figures 28-31*

The site is located between Bush Road and Rosedale Park. The site traverses the access drive of Bush Road Enterprises dominated by the large format buildings and industrial characteristics. Commercial and industrial activities prevail in the surrounding area. The land then drops down into the Rosedale Park gully characterised by extensive plantings of remnant mature pine and macrocarpa trees with underplantings of emerging indigenous tree and shrub plantings.

The gully then rises steeply up towards Rosedale Park and the open grassed and treed lawn areas.

Rosedale Park in the vicinity of the works is characterised by the extensive plantings of mature pine and macrocarpa trees with underplantings of emerging indigenous tree and shrub plantings. Sweeping lawn areas with specimen tree plantings of exotic deciduous species flank the access road from Paul Matthews Road. A large ornamental pond with water lily plantings forms a focal point in this part of the park.

A mature stand of pines and macrocarpa trees is located between the pond and the WWTP site. Mixed native shrub and small tree plantings extend along the boundary between the WWTP and Rosedale Park. Mixed native shrub and small tree plantings extend along the boundary of the WWTP and Paul Matthews Road providing a good level of screening.

### **Proposed Construction Site Works**

The pipeline is to be constructed through the gully between Rosedale Park and Rosedale WWTP. The crossing of the Alexander Stream will be carried out by HDD methods with a pit at the rear of No.169 Bush Road and a pit within the grassed area of Rosedale Park.

From the HDD pit in Rosedale Park the pipeline will be constructed by open-cut trenching methodology.

### **The Visual Catchment and Viewing Audience**

The Bush Road Enterprises site has a very restricted visual catchment due to the vegetated characteristics of the gully and existing commercial and industrial developments surrounding the site.

Rosedale Park similarly has a relatively restricted visual catchment due to the vegetation patterns within the park and the Rosedale WWTP largely screening views from the surrounding area. The park is however highly utilised for active and passive recreation and the park access road is used as a short cut for vehicular traffic to Rosedale Road. The site therefore has a large visual catchment in the immediate vicinity of the works.

The viewing audience will comprise motorists, pedestrians and cyclists travelling along Bush Road in the immediate vicinity of the site; workers and visitors to the Bush Road Enterprises, recreational users of Rosedale Park and motorists, cyclists and pedestrians travelling along Jack Hinton Drive.

### **Landscape and Visual Effects**

The landscape and visual effects from the pipeline will result from:



### ***Construction Works – Bush Road Enterprises Site***

- Temporary site fencing
- Contractor's working areas, hard standing area, offices and storage containers
- Construction of hard standing and parking areas

### ***Construction Works – Rosedale Park***

*Reference Figure 32*

- Tree and vegetation removal
- Temporary site fencing
- Contractor's working areas, hard standing area, offices and storage containers
- Drilling rig, mud separators, drill rod racks and mud storage containers
- Trench excavation and stockpiling of backfill
- Backfilling to pipes and reinstatement of trenches

The landscape and visual effects of the construction works in the Bush Road Enterprises site will be **low** due to the existing commercial characteristics prevailing and limited modifications to the landform. Site fencing, contracting materials, construction activities and buildings are a familiar sight in the surrounding area.

The visual effects of the construction works in Rosedale Park will be **moderate** due to the contrasting characteristics of the construction works with the natural character of the park. Vegetation removal will result in a noticeable visual change. The site is visually well contained from the surrounding area by existing vegetation which will help moderate the effects.

The landscape effects in Rosedale Park will be **moderate** due to the extent of landform modification and vegetation removal.

### ***Permanent Works – Bush Road Enterprises Site***

- No permanent above ground structures.

### ***Permanent Works – Rosedale Park***

- No permanent above ground structures.
- Tree and vegetation removal.

### ***Mitigation Measures***

The following mitigation measures are recommended to reduce any adverse effects following construction:

- Consultation with AC Parks to ensure the design and reinstatement works are integrated with existing park features and any future plans proposed for Rosedale Park
- Removal of hard standing areas and reinstatement to pre-construction condition
- Replacement tree planting within the park.

Following construction, the visual and landscape effects of the permanent works would reduce to **negligible** for the Bush Road Enterprises site.

Following construction, the visual and landscape effects of the permanent works within the park would reduce to **low** and the works would integrate well into the surrounding park environs.

## Summary of Effects – Construction Works

Site	Landscape Effects	Visual Amenity Effects
Road Corridor Works	Negligible	Negligible
Hobsonville Pump Station and SH18 Crossing	Low-moderate (Pump Station) Low (SH18)	Low-moderate (Pump Station) Low (SH18)
State Highway 18 to Causeway Widening	Low	Low
Upper Waitemata Harbour Crossing	Moderate (HDD) Moderate-high (Trench)	Moderate (HDD) Moderate-high (Trench)
Rahui Road to Greenhithe Road	Moderate-high	Moderate-high
Wainoni Park North and South	Low-moderate	Moderate
Te Wharau Creek Crossing	Low	Low-moderate
North Shore Memorial Park	Low (South) Low (North)	Low (South) Low-moderate (North)
North Shore Memorial Park to North Shore Golf Club	High	High
North Shore Golf Club to Albany Highway	Low	Low
Rosedale Park to Rosedale WWTP	Low (BRE site) Moderate (Rosedale Park)	Low (BRE site) Moderate (Rosedale Park)

## Summary of Effects – Permanent Works

*(Following recommended mitigation measures)*

Site	Landscape Effects	Visual Amenity Effects
Road Corridor Works	Negligible	Negligible
Hobsonville Pump Station and SH18 Crossing	Low (Pump Station) Negligible (SH18)	Low (Pump Station) Negligible (SH18)
State Highway 18 to Causeway Widening	Negligible	Negligible
Upper Waitemata Harbour Crossing	Low (HDD) Low (Trench)	Low (HDD) Low (Trench)
Rahui Road to Greenhithe Road	Moderate	Moderate
Wainoni Park South and North	Low	Low
Te Wharau Creek Crossing	Low	Low
North Shore Memorial Park	Low (South) Low (North)	Low (South) Low (North)
North Shore Memorial Park to North Shore Golf Club	Moderate	Moderate
North Shore Golf Club to Albany Highway	Low-negligible	Low-negligible
Rosedale Park to Rosedale WWTP	Negligible (BRE site) Low (Rosedale Park)	Negligible (BRE site) Low (Rosedale Park)

## 5. Conclusions

Watercare's route selection process for the Project has meant that the Northern Interceptor largely avoids the most sensitive landscapes in this part of the region. In several areas there will be moderate landscape and visual effects primarily during the construction stage of the Project.

The majority of the route traverses urban landscapes that are already highly modified by roading, residential, commercial, industrial and recreational development. Large sections of the works are constructed within the road corridor which provides the context within which they will be seen – road works and excavations are common sights within the Auckland Isthmus.

The Project's adverse effects on natural character are very limited, given the modified nature of the route. Adverse effects on natural character have been reduced through the use of directional drilling across the Upper Harbour, Te Wharau Creek tidal inlet and Rosedale Park. The most significant changes and resultant effects on visual amenity will arise from vegetation removal, earthworks, trenching and construction activity.

The construction of the pipeline through Wainoni Park, North Shore Memorial Park and North Shore Golf Club will have a number of adverse visual and landscape effects due to the natural state of the parks at present and their recreational and memorial use. These will however be temporary in nature during and immediately following the construction period. The main visual effects will result from the vegetation removal, trenching and stockpiling of backfill and construction activity.

The main visual effects of the Project will be during and soon after its construction. These effects will diminish over a short time (approximately 1-5 years) once grassing has re-established and replacement planting in the disturbed areas has become established.

In summary, while a project of this nature and scale will inevitably have some adverse landscape and visual effects, Watercare has taken a best practice approach to avoid such effects as far as practicable. Where avoidance of effects has not been practicable, a number of mitigation measures have been identified to ensure these effects are reduced to an acceptable level.

The recommended mitigation measures will provide scope to reduce many of the temporary construction effects and permanent effects of the Interceptor within a short time period.

In conclusion, I consider that the temporary and permanent adverse landscape and visual effects of the Project can be remedied and mitigated to result in no more than minor effects overall.


Rob Pryor  
Registered NZILA Landscape Architect



FIGURE 1: THE HOBSONVILLE PUMP STATION



FIGURE 2: THE HOBSONVILLE PUMP STATION

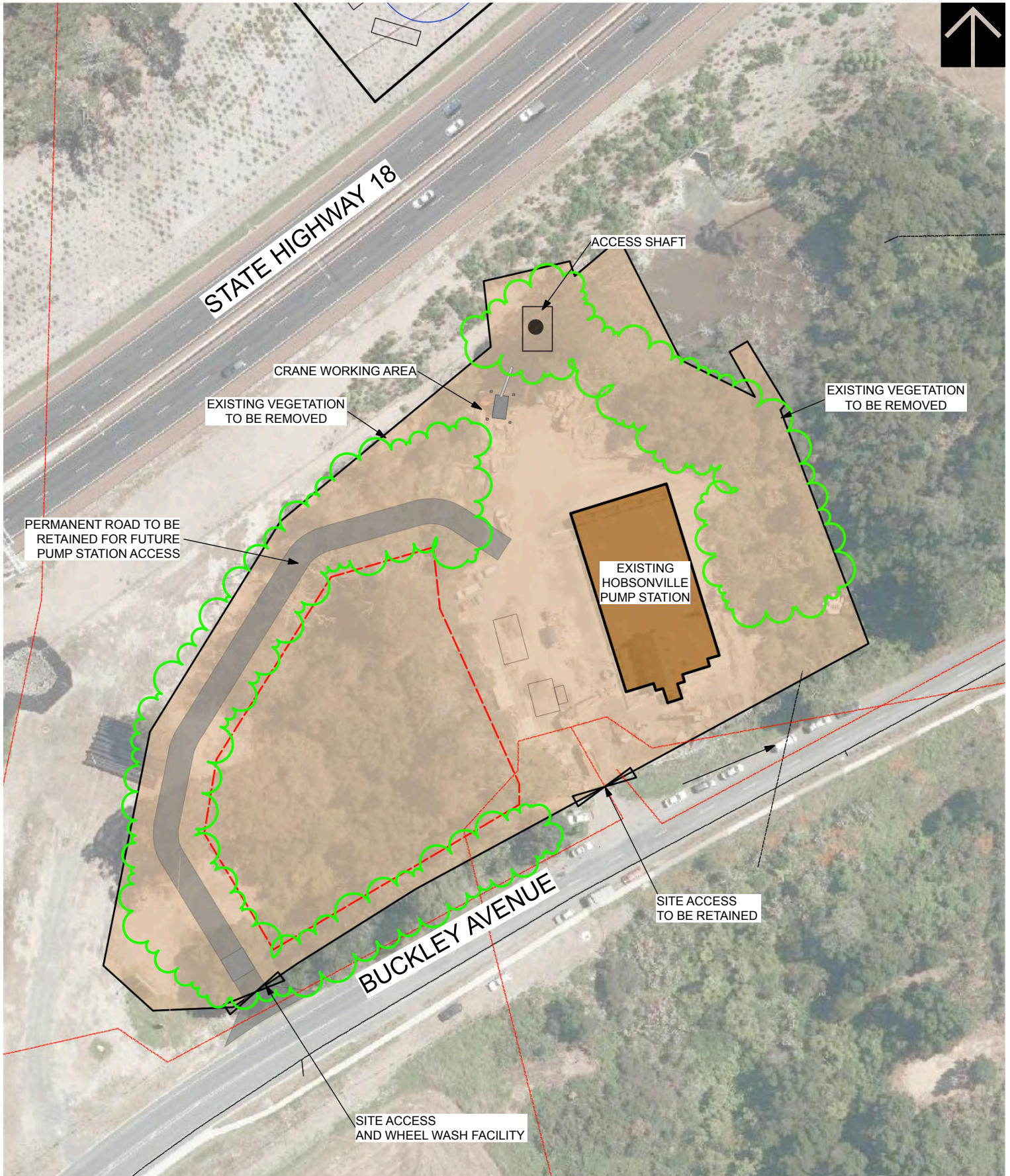
<div>Client:</div> <div><div><div>Watercare</div><div>An Auckland Council Organisation</div></div></div>	<div>Project:</div> <div>NORTHERN INTERCEPTOR PRELIMINARY DESIGN PHASE 1</div>	<div>Title:</div> <div>FIGURE 1: THE HOBSONVILLE PUMP STATION  FIGURE 2: THE HOBSONVILLE PUMP STATION</div>	<div>Project No.</div> <div>14278</div>	
			<div>Drawing No.</div> <div>14278 - 001</div>	<div>Rev.</div> <div>-</div>






Client: <b>Watercare</b> An Auckland Council Organisation	Project: NORTHERN INTERCEPTOR PRELIMINARY DESIGN PHASE 1	Title: FIGURE 3: EXISTING HOBSONVILLE PUMP STATION TO ROSEDALE SITE LOCATION AND CONTEXT PLAN : STATE HIGHWAY 18 CROSSING	Project No. 14278	
			Drawing No. 14278 - 002	Rev. -





<p>Client:</p>  <p><b>Watercare</b> An Auckland Council Organisation</p>	<p>Project:</p> <p>NORTHERN INTERCEPTOR PRELIMINARY DESIGN PHASE 1</p>	<p>Title:</p> <p>FIGURE 4: EXISTING HOBSONVILLE PUMP STATION TO ROSEDALE CONSTRUCTION SITE AND WORKS PLAN : HOBSONVILLE PUMPING STATION</p>	<p>Project No.</p> <p>14278</p>	
			<p>Drawing No.</p> <p>14278 - 003</p>	<p>Rev.</p> <p>-</p>






<div>Client:</div> <div><b>Watercare</b> An Auckland Council Organisation</div>	<div>Project:</div> <div>NORTHERN INTERCEPTOR PRELIMINARY DESIGN PHASE 1</div>	<div>Title:</div> <div>FIGURE 5: EXISTING HOBSONVILLE PUMP STATION TO ROSEDALE PERMANENT WORKS PLAN : HOBSONVILLE PUMP STATION</div>	<div>Project No.</div> <div>14278</div>	<div>Rev.</div> <div>A</div>
			<div>Drawing No.</div> <div>14278 - 004</div>	





FIGURE 6: SH18 CAUSEWAY



FIGURE 7: SH18 CAUSEWAY FORESHORE


Client: 	Project: NORTHERN INTERCEPTOR PRELIMINARY DESIGN PHASE 1	Title: FIGURE 6: SH18 CAUSEWAY FIGURE 7: SH18 CAUSEWAY FORESHORE	Project No. 14278	
			Drawing No. 14278 - 005	Rev. -






FIGURE 8: HARBOUR CROSSING LANDING - RAHUI ROAD



FIGURE 9: HARBOUR CROSSING LANDING - RAHUI ROAD

Client:  An Auckland Council Organisation	Project: NORTHERN INTERCEPTOR PRELIMINARY DESIGN PHASE 1	Title: FIGURE 8: HARBOUR CROSSING LANDING - RAHUI ROAD FIGURE 9: HARBOUR CROSSING LANDING - RAHUI ROAD	Project No. 14278	
			Drawing No. 14278 - 006	Rev. -





Client:



Project:

NORTHERN INTERCEPTOR  
PRELIMINARY DESIGN  
PHASE 1

Title:

FIGURE 10:  
EXISTING HOBSONVILLE  
PUMP STATION TO ROSEDALE  
SITE LOCATION AND CONTEXT PLAN :  
UPPER HABOUR CROSSING LANDING

Project No.

14278

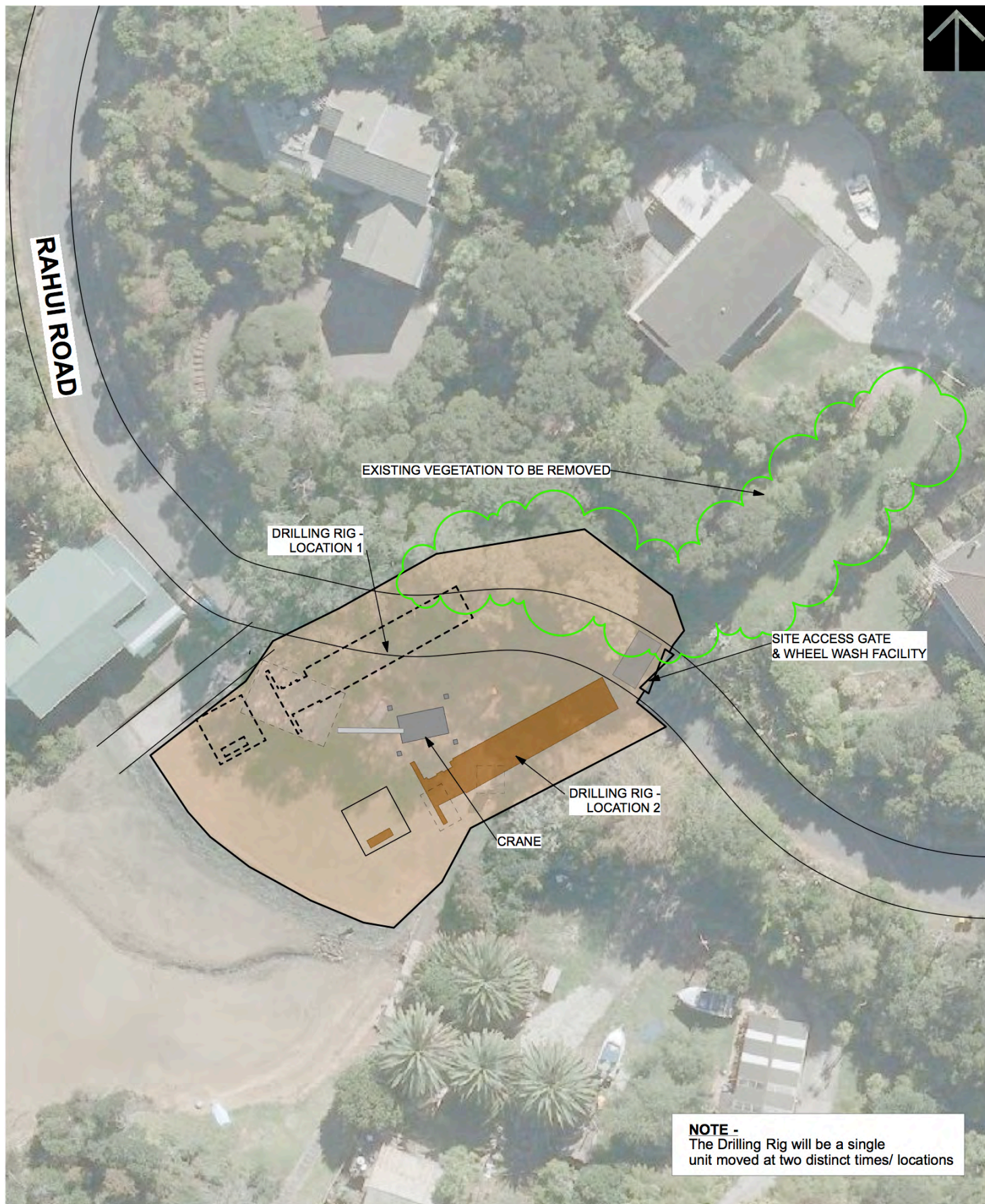
Drawing No.

14278 - 007

Rev.

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Client: <b>Watercare</b> An Auckland Council Organisation	Project: NORTHERN INTERCEPTOR PRELIMINARY DESIGN PHASE 1	Title: FIGURE 11: HDD OPTION EXISTING HOBSONVILLE PUMP STATION TO ROSEDALE CONSTRUCTION SITE & WORKS PLAN : UPPER HARBOUR CROSSING LANDING	Project No. 14278	
			Drawing No. 14278 - 008	Rev. A





<div>Client:</div> <div><b>Watercare</b> <small>An Auckland Council Organisation</small></div>	<div>Project:</div> <div>NORTHERN INTERCEPTOR PRELIMINARY DESIGN PHASE 1</div>	<div>Title:</div> <div>FIGURE 11A: MARINE TRENCHING OPTION EXISTING HOBSONVILLE PUMP STATION TO ROSEDALE CONSTRUCTION SITE &amp; WORKS PLAN : UPPER HARBOUR CROSSING LANDING</div>	<div>Project No.</div> <div>14278</div> <div>Drawing No.</div> <div>14278 - 008A</div> <div>Rev.</div> <div>-</div>
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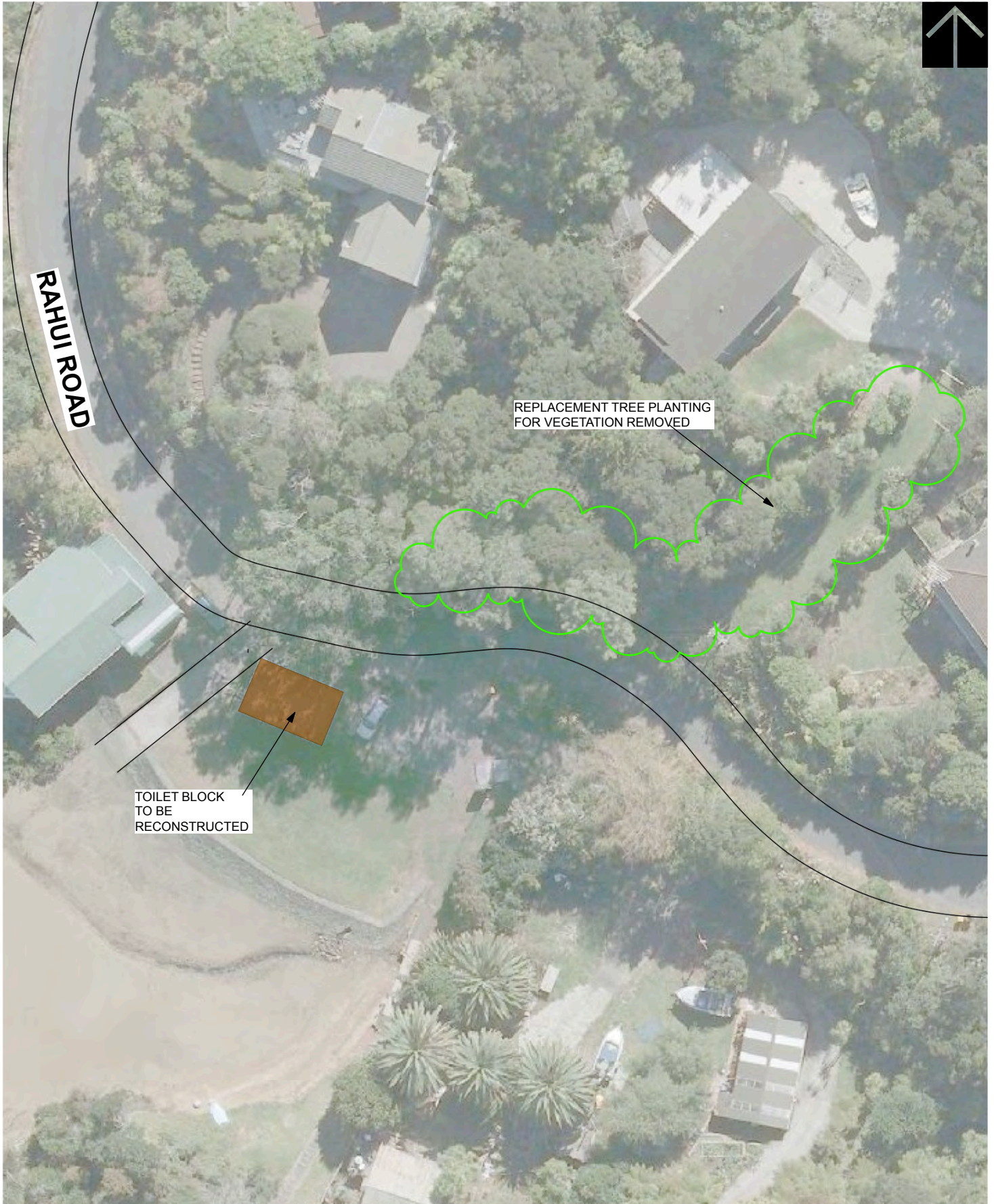






FIGURE 13: TRAFFIC ROAD



FIGURE 14: WAINONI PARK, GREENHITHE ROAD


Client:  An Auckland Council Organisation	Project: NORTHERN INTERCEPTOR PRELIMINARY DESIGN PHASE 1	Title: FIGURE 13: TRAFFIC ROAD FIGURE 14: WAINONI PARK, GREENHITHE ROAD		Project No. 14278
		Drawing No. 14278 - 010		Rev. -





FIGURE 15: WAINONI PARK



FIGURE 16: COASTAL EDGE WAINONI PARK


<div>Client:</div> <div> An Auckland Council Organisation</div>	<div>Project:</div> <div>NORTHERN INTERCEPTOR PRELIMINARY DESIGN PHASE 1</div>	<div>Title:</div> <div>FIGURE 15: WAINONI PARK</div> <div>FIGURE 16: COASTAL EDGE WAINONI PARK</div>		<div>Project No.</div> <div>14278</div>	
				<div>Drawing No.</div> <div>14278 - 011</div>	<div>Rev.</div> <div>-</div>





FIGURE 17: TE WHARAU CREEK CROSSING



FIGURE 18: NORTH SHORE MEMORIAL PARK


Client: 	Project: NORTHERN INTERCEPTOR PRELIMINARY DESIGN PHASE 1	Title: FIGURE 17: TE WHARAU CREEK CROSSING FIGURE 18: NORTH SHORE MEMORIAL PARK	Project No. 14278	
			Drawing No. 14278 - 012	Rev. -





FIGURE 19: NORTH SHORE MEMORIAL PARK



FIGURE 20: NORTH SHORE MEMORIAL PARK


<div>Client:</div> <div><div>Watercare</div><div>An Auckland Council Organisation</div></div>	<div>Project:</div> <div>NORTHERN INTERCEPTOR PRELIMINARY DESIGN PHASE 1</div>	<div>Title:</div> <div>FIGURE 19: NORTH SHORE MEMORIAL PARK  FIGURE 20: NORTH SHORE MEMORIAL PARK</div>	<div>Project No.</div> <div>14278</div>	
			<div>Drawing No.</div> <div>14278 - 013</div>	<div>Rev.</div> <div>-</div>






FIGURE 21: NORTH SHORE MEMORIAL PARK- SCHNAPPER ROCK ROAD




FIGURE 22: WITTON PLACE- PIPE BRIDGE

<div>Client:</div> <div><div><div>Watercare</div><div>An Auckland Council Organisation</div></div></div>	<div>Project:</div> <div>NORTHERN INTERCEPTOR PRELIMINARY DESIGN PHASE 1</div>	<div>Title:</div> <div>FIGURE 21: NORTH SHORE MEMORIAL PARK - SCHNAPPER ROCK ROAD</div> <div>FIGURE 22: WITTON PLACE- PIPE BRIDGE</div>	<div>Project No.</div> <div>14278</div>	
			<div>Drawing No.</div> <div>14278 - 014</div>	<div>Rev.</div> <div>-</div>



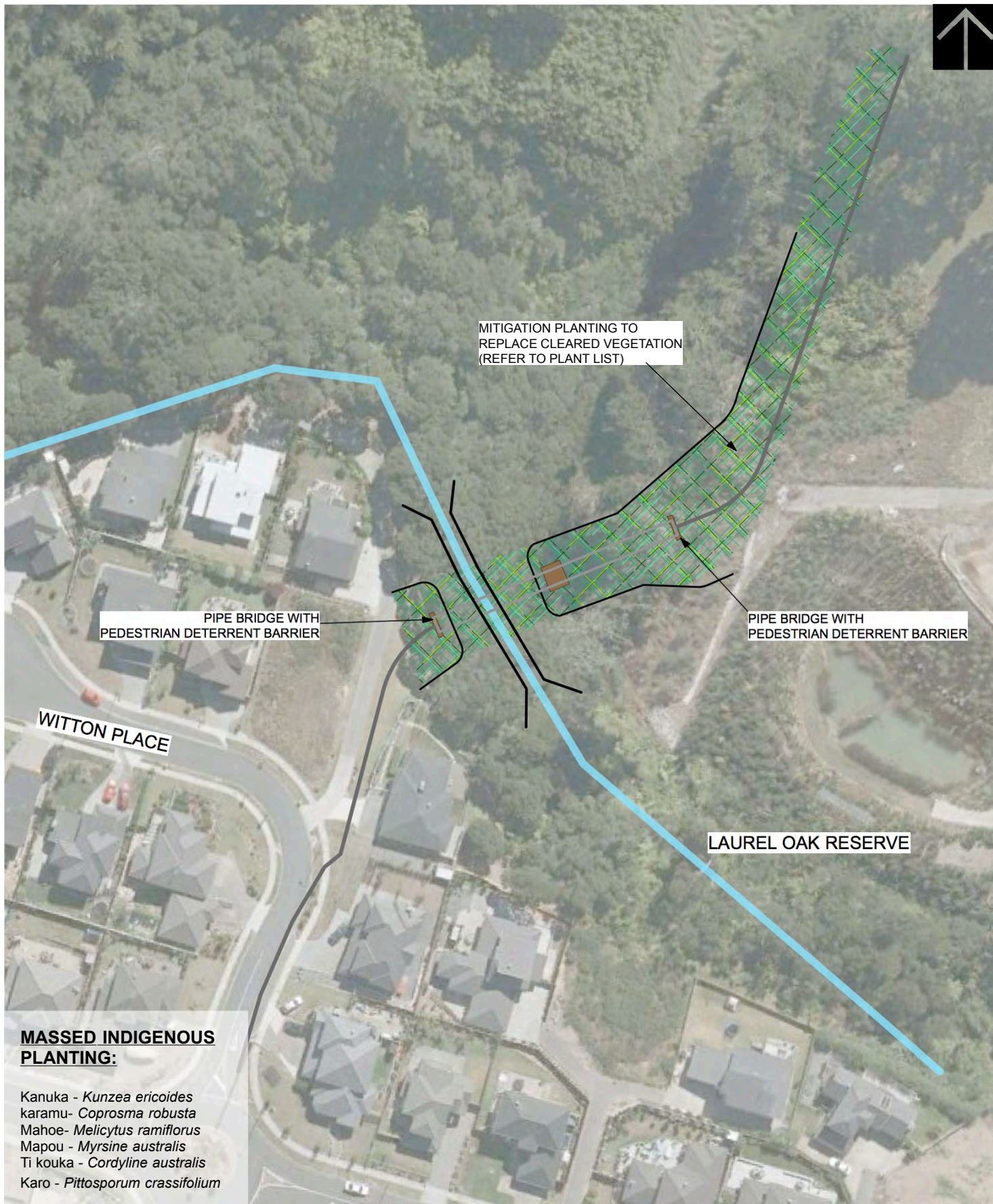


Client:  	Project:  NORTHERN INTERCEPTOR PRELIMINARY DESIGN PHASE 1	Title:  FIGURE 23: EXISTING HOBSONVILLE PUMP STATION TO ROSEDALE SITE LOCATION AND CONTEXT PLAN : WITTON PLACE PIPE BRIDGE	Project No.  14278	
			Drawing No.  14278 - 015	Rev.  -










Client:  	Project:  NORTHERN INTERCEPTOR PRELIMINARY DESIGN PHASE 1	Title:  FIGURE 25: EXISTING HOBSONVILLE PUMP STATION TO ROSEDALE PERMANENT WORKS PLAN : WITTON PLACE PIPE BRIDGE	Project No.  14278	
			Drawing No.  14278 - 017	Rev.  -





FIGURE 26: NORTH SHORE GOLF COURSE



FIGURE 27: NORTH SHORE GOLF COURSE


<div>Client:</div> <div> An Auckland Council Organisation</div>	<div>Project:</div> <div>NORTHERN INTERCEPTOR PRELIMINARY DESIGN PHASE 1</div>	<div>Title:</div> <div>FIGURE 26: NORTH SHORE GOLF COURSE  FIGURE 27: NORTH SHORE GOLF COURSE</div>	<div>Project No.</div> <div>14278</div>	
			<div>Drawing No.</div> <div>14278 - 018</div>	<div>Rev.</div> <div>-</div>





FIGURE 28: GULLY CROSSING ROSEDALE PARK



FIGURE 29: ROSEDALE PARK



<div>Client:</div> <div> An Auckland Council Organisation</div>	<div>Project:</div> <div>NORTHERN INTERCEPTOR PRELIMINARY DESIGN PHASE 1</div>	<div>Title:</div> <div>FIGURE 28: GULLY CROSSING ROSEDALE PARK  FIGURE 29: ROSEDALE PARK</div>	<div>Project No.</div> <div>14278</div>	
			<div>Drawing No.</div> <div>14278 - 019</div>	<div>Rev.</div> <div>-</div>





FIGURE 30: ROSEDALE PARK- WTP

<div>Client:</div> <div><div><div>Watercare</div><div>An Auckland Council Organisation</div></div><div></div></div>	<div>Project:</div> <div>NORTHERN INTERCEPTOR PRELIMINARY DESIGN PHASE 1</div>	<div>Title:</div> <div>Figure 30: Rosedale Park- WTP</div>	<div>Project No.</div> <div>14278</div>	
			<div>Drawing No.</div> <div>14278 - 020</div>	<div>Rev.</div> <div>-</div>









<p>Client:</p> <p><b>Watercare</b> An Auckland Council Organisation</p>	<p>Project:</p> <p><b>NORTHERN INTERCEPTOR PRELIMINARY DESIGN PHASE 1</b></p>	<p>Title:</p> <p><b>FIGURE 32: EXISTING HOBSONVILLE PUMP STATION TO ROSEDALE CONSTRUCTION SITE &amp; WORKS PLAN : GULLY CROSSING INTO ROSEDALE PARK</b></p>	<p>Project No.</p> <p><b>14278</b></p> <p>Drawing No.</p> <p><b>14278 - 022</b></p> <p>Rev.</p> <p>-</p>
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