

Western Water Supply Strategy and replacement of the Huia Water Treatment Plant

December 2016

History of Auckland's Water Supply



1866 Auckland Domain



1877 Western Springs



1910 - 1971 Western Dams



1927 Waitakere Filter Station
1928 Huia Filter Station



1955- 1977 Southern Dams



1956 Ardmore Filter Station



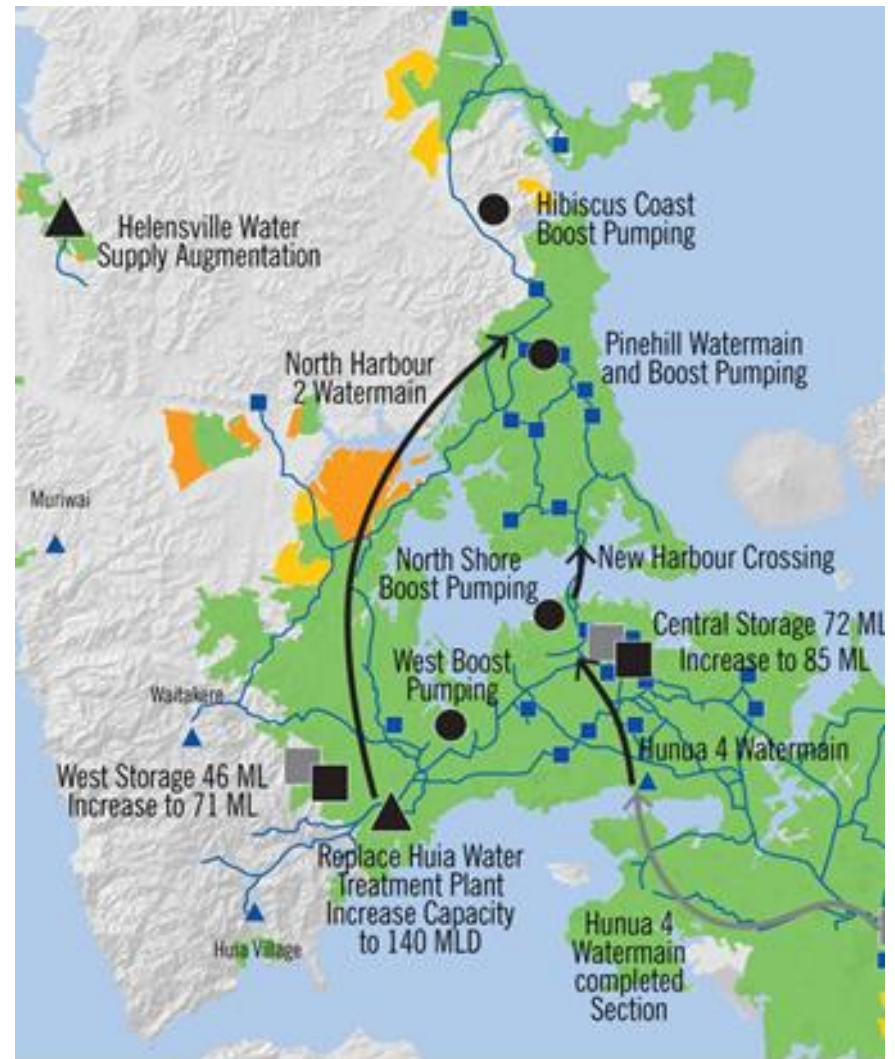
2002 Waikato Water Treatment Plant

Why a Western Water Supply Strategy?

- The western dams (Waitakere, Upper and Lower Nihotupu and the Upper and Lower Huia) provide up to 22% of Auckland's peak water production needs and are an important source of water for Auckland both now and in the future.
- As Auckland continues to grow the resilience and reliability of the western water treatment and supply network will become increasingly important.
- Securing future supply from the south is contingent on the efficient use of western water sources.
- The treatment infrastructure at Huia and Waitakere Water Treatment Plants is approaching 100 years old.
- Trunk distribution mains are aging and will need replacement and/or duplication to service new growth, maintain service standards and allow for maintenance.

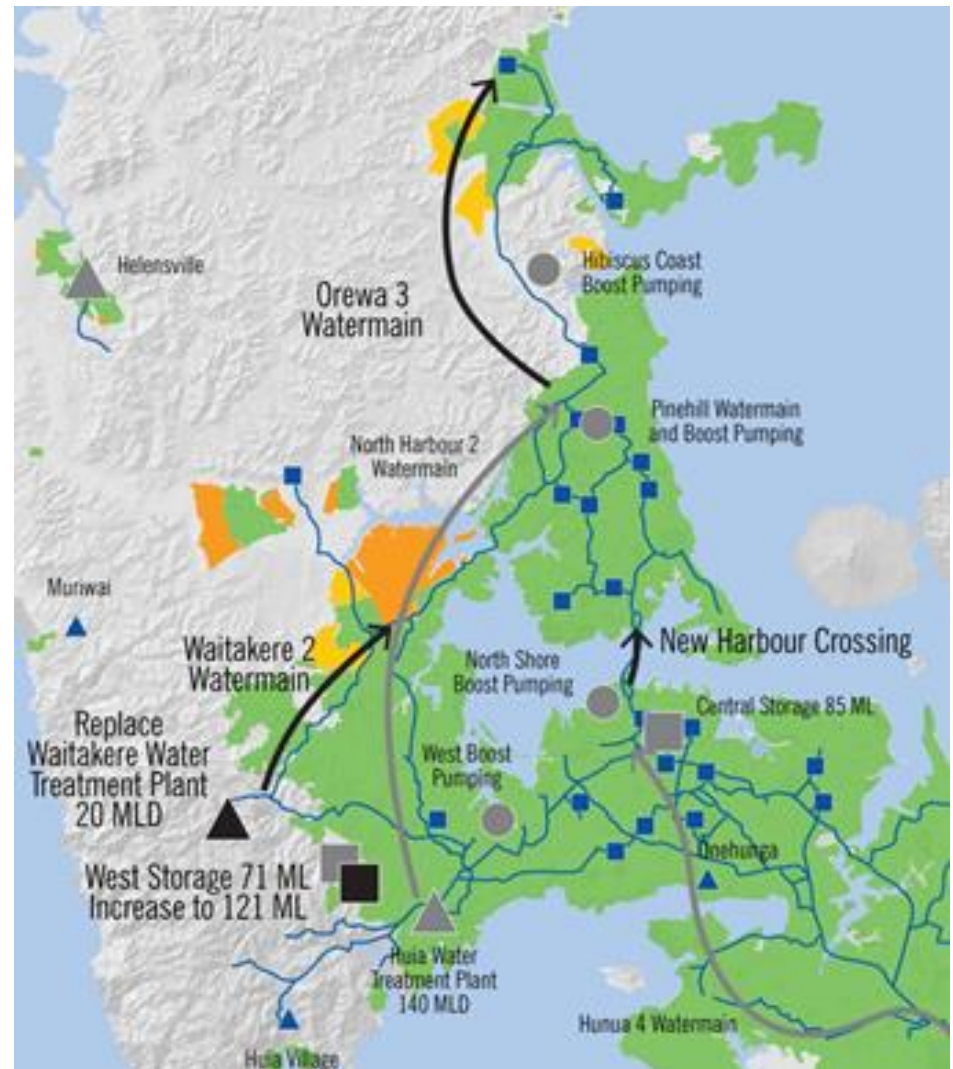
Western Water Supply Strategic Programmes 2017 to 2026

- Huia Water Treatment Plant Replacement
- North Harbour 2 Watermain
- Strategic reservoir storage
 - Located at New Huia WTP
- Strategic boost pumping
 - “West” Boost Pumping
- Opportunities with NZTA and AT Strategic Roding Programmes
 - Add infrastructure if another Upper Harbour Crossing is constructed
- Key Condition Based Renewals
 - Huia 1 Watermain
 - Nihotupu Watermain
 - Orewa 1 Watermain



Western Water Supply Strategic Programmes 2027 to 2036

- Waitakere Water Treatment Plant replacement – strategic review
- Orewa 3 Watermain
- Waitakere 2 Watermain
- Strategic Reservoir Storage (+50ML)
 - Additional North West storage
- Opportunities with NZTA and AT Strategic Roding Programmes
 - Add infrastructure if another Upper Harbour Crossing is constructed
- Key Condition Based Renewals
 - Upper Nihotupu Raw Watermain



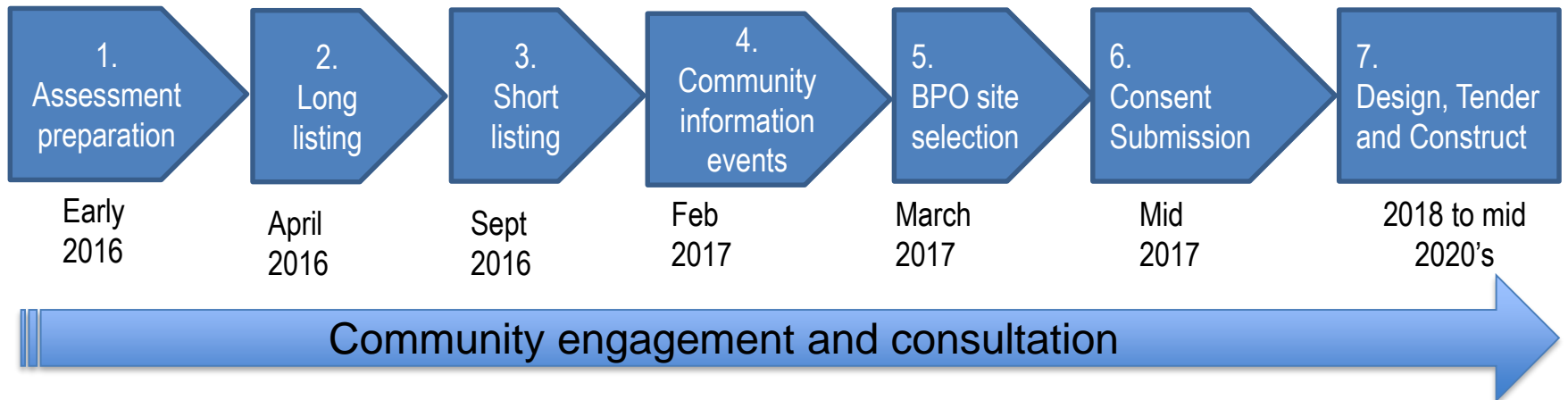
The Huia Water Treatment Plant – Why is a replacement needed?

- One of the most significant infrastructure upgrades in the west will be the replacement of the aging Huia Water Treatment Plant
- The existing facility has a number of constraints:
 - Hydraulic bottlenecks and restrictions – a number of restrictions limit production to 126 million litres per day and prevent operation at full production for extended periods. *
 - Aging infrastructure in need of replacement.
 - Changing raw water source characteristics – opportunity to update and improve water treatment technologies

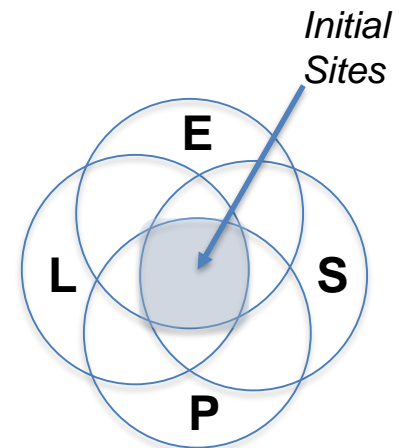
** The new treatment plant will be able to supply up to 140 million litres per day*

Identifying the best practicable option (BPO)

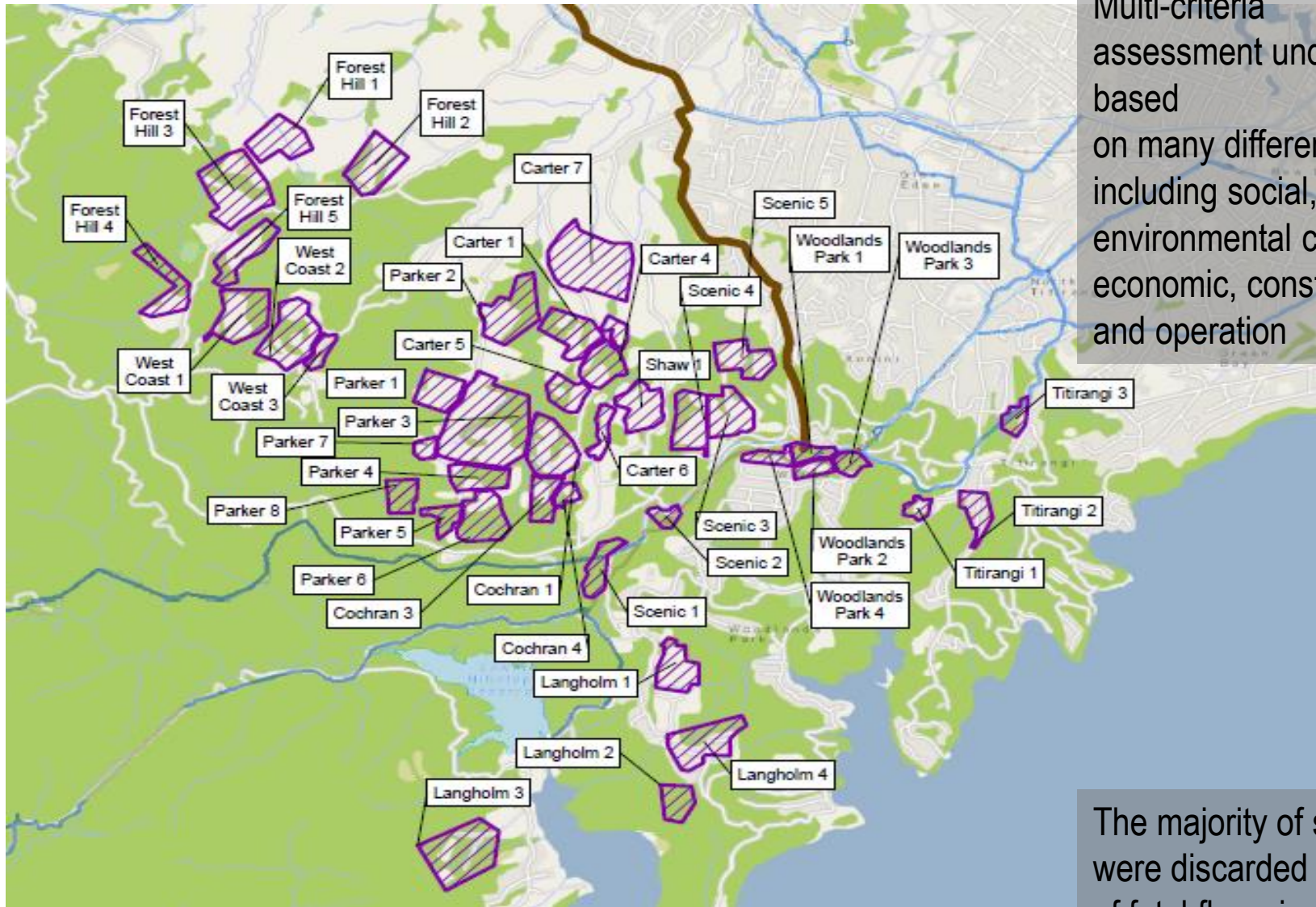
- We have the opportunity to select the best practicable option to treat water from the Western dams for Auckland's future
- The assessment is staged as follows:



- First principals approach to the selection process that follows guidance provided by the Resource Management Act
- List of sites identified using selection principals based on:
 - **(E) Elevation** - to ensure a gravity feed in the network
 - **(S) Size** - to ensure that we select a site with sufficient land area
 - **(L) Location** - to ensure the plant is located on a site that is suitable for construction and is accessible
 - **(P) Proximity** - to ensure the raw water and treated water networks operate as intended



Long List of Alternative Sites



Multi-criteria assessment undertaken based on many different factors including social, environmental cultural, economic, construction and operation

The majority of sites were discarded because of fatal flaws in one or more key factors

The Three Preferred Sites



Woodlands Park Road - *Replacement of the existing Huia Water Treatment Plant*

- Construction of:
 - New water treatment plant constructed on the existing site
 - New reservoir on Woodlands Park Road
 - Utilises the existing North Harbour 2 watermain alignment
- Scheme disposals:
 - The existing plant requires demolition to construct the new facility
 - Future of heritage aspects would need to be considered



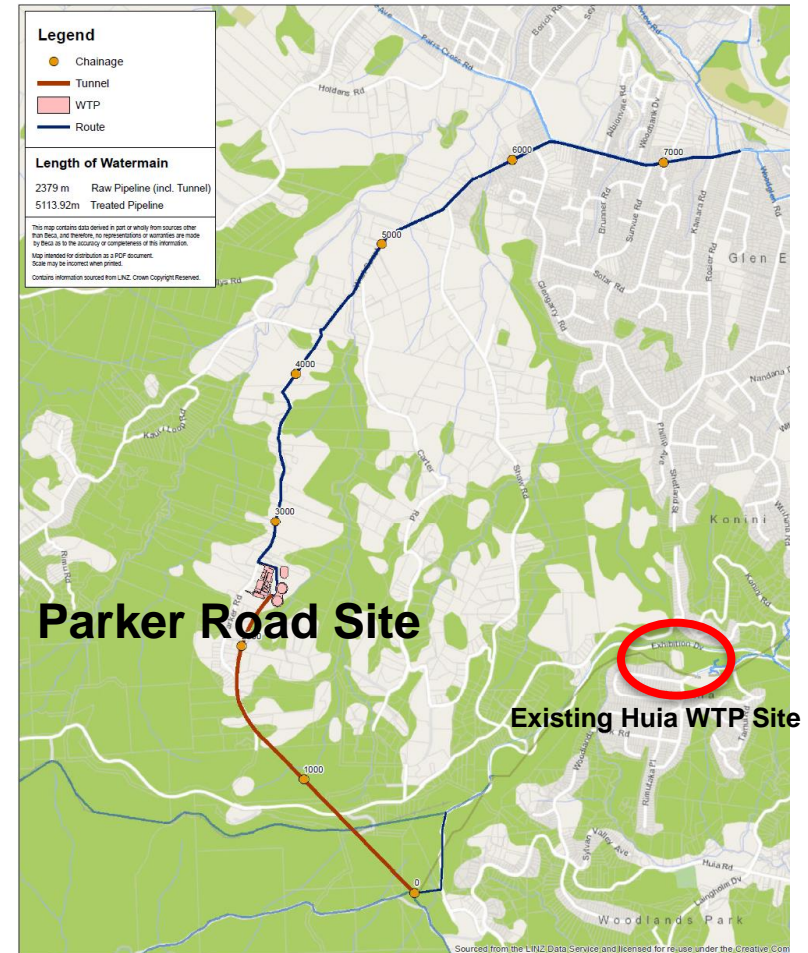
Woodlands Park Road - *Replacement of the existing plant*



PROS	CONS
1. The site is owned by Watercare and designated for water supply	1. Scheme would require new Waikato water treatment plant and expansion to 275MLD to be constructed first in order to retain security of water supply
2. The site is currently used for the purpose of water treatment	2. Existing heritage structures on the site could restrict development
3. The site provides good connectivity to the existing treated water network	3. Increased overflow and discharge options are limited
4. Only requires construction related consents	4. Plant associated with very old assets (raw water and treated water aqueducts).

Parker Road Site – Vicinity of 130 Parker Road, Oratia

- Construction of:
 - New raw water tunnel from Mackies Rest through to Parker Road site
 - New water treatment plant and reservoir
 - New treated watermain connecting to the current alignment of the North Harbour 2 Watermain at Parrs Cross Road (optimal route to be determined)
- Scheme disposals:
 - Raw water aqueduct from Mackies Rest to the existing Huia Water Treatment Plant
 - Treated water aqueduct between the existing Huia Water Treatment Plant and Titirangi Reservoirs
 - Approximately half of the existing Upper Nihotupu raw watermain (scheduled for replacement in 2033)
 - Existing Huia Water Treatment Plant (subject to heritage status)



Parker Road Site – *Vicinity of 130 Parker Road, Oratia*

Watercare purchased 130 Parker Road in October 2016 when we became aware the site was about to be developed - in doing so we have maintained access to one of three preferred options



PROS	CONS
1. Site has good elevation and provides good gravity flow options	1. Additional properties will need to be purchased
2. The site is large, relatively flat and clear of vegetation. Significant ecological areas appear easy to avoid	2. Additional works will be required to achieve optimal integration with the treated water network between the south and north west
3. A number of aged assets will be replaced thereby improving overall system resilience	3. Notice of requirement process required as well as construction consents