

# LIVEABLE COMMUNITIES PERSPECTIVE FOR PRIORITY STORMWATER CATCHMENTS

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## ABSTRACT

Auckland's 21 Local Boards are a key part of council's governance and have a significant and wide-ranging role in decision-making on local matters, providing local leadership and supporting strong local communities.

The Maungakiekie-Tāmaki Local Board covers the south-eastern part of the isthmus with the Manukau Harbour and Tāmaki Estuary defining its southern and eastern boundaries. Its 2011-2014 Local Board Plan Priority for Clean Waterways; *"We will work towards cleaning up the water flowing into the Manukau Harbour and Tāmaki Estuary, and aim to improve and maintain water quality within them and the foreshores around them"*.

To implement this priority, the Board initiated a study to understand stormwater catchments and receiving environment water quality issues to enable prioritisation of funding to improve receiving environment water quality. Whilst the Board's decision was to install an innovative filter device in road catchpits to retain heavy metals, sediments and gross pollutants, this paper focusses on local community aspirations and priorities for cleaner waterways.

The prioritisation process involved consultation with stakeholders and assessment of;

- The ecological importance of receiving environments in the Maungakiekie-Tāmaki Local Board area;
- The importance of receiving environments in relation to Auckland Council Park's assets;
- Any current associated receiving environment improvement works and activities;
- Any research and monitoring of the receiving environment; and
- Cultural and environmental importance of particular receiving environments.

The prioritisation process identified key "natural assets" that have significant current and future potential value for the community. Based on this, the Board allocated \$400,000 of funding and implemented an innovative filter device in catchpits in the Van Damms Lagoon and Panmure Basin catchment in 2014. This paper presents the methodology and outcomes of this study, linkages with Auckland's Most Liveable City goal and provides an insight into the Boards draft 2014-2017 programmes leading to the improved quality of waterways.

## KEYWORDS

**Maungakiekie-Tāmaki Local Board, Priority Stormwater Catchments, Receiving Environment Quality**

## **PRESENTER PROFILE**

Vijesh has over 20 years of civil engineering experience in NZ working in a wide range of disciplines. Vijesh works at a strategic level with local and regional government clients, exploring and developing integrated planning solutions to manage the effects of stormwater run-off on people, property and the receiving environment.

Simon Randall is the Chair of the Maungakiekie-Tāmaki Local Board. In 2012, the then 30 year old became the youngest chairman of a Local Board. He first ran in 2001, as a 19 year old but was unsuccessful. When he was 22, tried again and has been on the board since.

# 1 INTRODUCTION

Auckland's 21 Local Boards are a key part of council's governance and have a significant and wide-ranging role in decision-making on local matters, providing local leadership and supporting strong local communities. The Maungakiekie-Tāmaki Local Board covers the south-eastern part of the isthmus with the Manukau Harbour and Tāmaki Estuary defining its southern and eastern boundaries.

The Board's 2011-2014 Local Board Plan Priority for Clean Waterways; "We will work towards cleaning up the water flowing into the Manukau Harbour and Tāmaki Estuary, and aim to improve and maintain water quality within them and the foreshores around them".

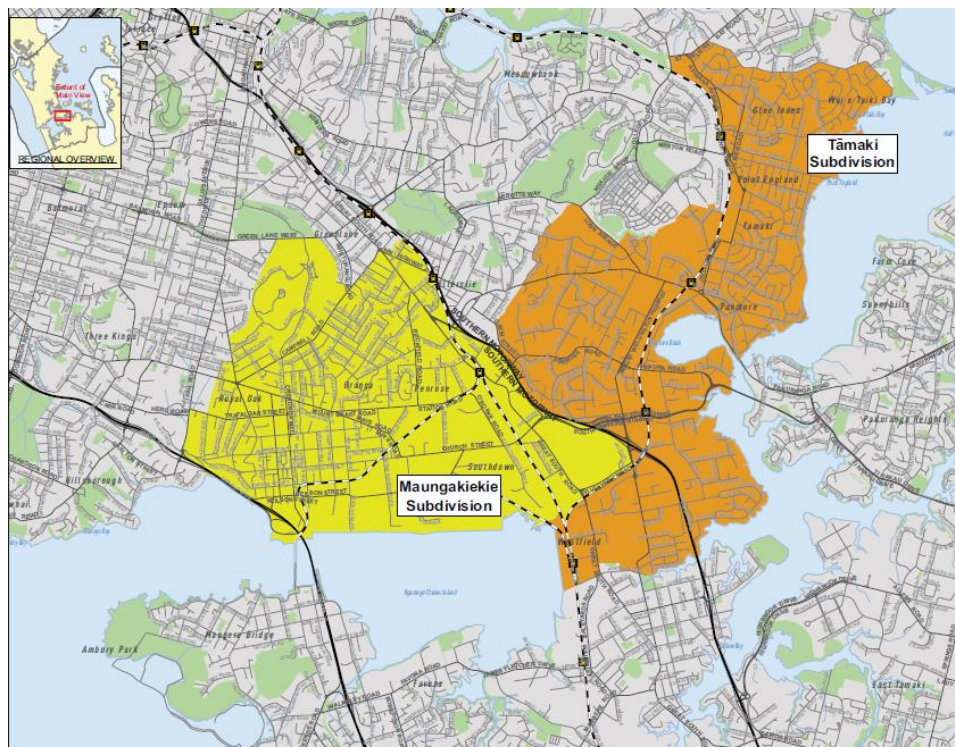
To implement this priority, the Board initiated a study to understand stormwater catchments and receiving environment water quality issues to enable prioritisation of funding to improve receiving environment water quality.

# 2 MAUNGAKIEKIE-TĀMAKI LOCAL BOARD

The Maungakiekie-Tāmaki Local Board, home to 70,000 people, covers the south-eastern part of the isthmus, including the suburbs of One Tree Hill, Royal Oak, Onehunga, Penrose, Mt Wellington, Panmure and Glen Innes. The Manukau Harbour and Tāmaki Estuary define its southern and eastern boundaries respectively.

The 2014-2017 Local Board Plan developed with robust consultation and extensive community engagement identifies it as a vibrant and important part of greater Auckland where the community will continue to be proud and committed to a fantastic area and work in partnership to protect and enhance parks, waterways and harbours. The Manukau Harbour and Tāmaki Estuary are identified as beautiful natural assets. There are over 130 Parks and Reserves in the Maungakiekie-Tāmaki Local Board area.

Figure 1: Maungakiekie-Tāmaki Local Board Area



### 3 THE PROBLEM AND DESIRED SOLUTION

#### 3.1 ROAD STORMWATER RUNOFF CONTAMINANTS

The Maungakiekie-Tāmaki Local Board identified road stormwater runoff contaminants as one of the key contributors to pollution of waterways and harbours relevant to the Local Board area. There is significant literature on road stormwater runoff pollutants. A paper at the Ingenium conference 2012, titled Future Cities Driving Changes in Stormwater Management, provides more details on road stormwater contaminants, <http://www.ghd.co.nz/pdf/Chandra-V-and-Tetteroo-J-Future-Cities-Driving-Changes-in-Stormwater-Management-small.pdf>

Photographs showing contaminants and gross pollutants collected in catchpits are given below to demonstrate the nature of road stormwater runoff pollution.

Photograph 1: Contaminants and gross pollutants in road Auckland road catchpits



#### 3.2 PRESCRIBED SOLUTION

To meet its environmental and sustainability goals, the Local Board allocated \$400,000 of funding towards improving water quality in the Local Board area. The Local Board, based on research and current initiatives in the Auckland region identified an innovative filter device to be retrofitted in catchpits in priority stormwater catchments. The decision by the Local Board was supported by the fact that the innovative device was an Auckland Transport initiative, the devices were being installed across Auckland and the device had won a number of national and international industry awards. The decision to target contaminants at source at road catchpits was also to complement a number of riparian planting initiatives along waterways. The board was aware that water quality improvement through riparian planting is only one element of the solution and that management of land-use contaminants was another significant element. A number of references are provided at the end of this paper on effects of riparian restoration on urban streams.

To enable prioritisation of stormwater catchments for installation of the innovative filter device, the Local Board commissioned a study to understand stormwater catchments and receiving environment water quality issues in the Local Board area.

As the Local Board had prescribed the installation of the filter device in catchpits, the study did not consider the effectiveness of this and/or other stormwater treatment options.

## **4 BACKGROUND INFORMATION FOR PRIORITISATION**

### **4.1 GENERAL**

Through consultation with stakeholders, background information from a number of Auckland Council units and sources was collated, integrated and mapped for use in the prioritisation process. Some of the information is described in the following sections.

### **4.2 LOCAL BOARD STRATEGIES, VISION AND ACTIVITIES**

The Maungakiekie-Tāmaki Local Board strategies, vision and activities are contained in the Local Board Plans. This study referenced the plan at the time of the project. Currently the 2014-2017 Maungakiekie-Tāmaki Local Board Plan is the guiding document for the Local Board and is their strategic three-year plan to outline their communities' priorities and preferences. The plan also guides;

- Decisions on local activities, projects and facilities;
- Input into the regional strategies and plans of Auckland Council;
- How they work with other agencies that play a key role in the area including community groups, central government agencies and council-controlled organisations; and
- Development of Auckland Council's Long-term Plan, the Council's 10 year budget.

### **4.3 ALIGNMENT WITH OTHER INITIATIVES**

At the time of the study, there were a number of other initiatives that were relevant to the study. Some of the most notable ones included;

- Riparian planting and restoration projects in the Local Board area;
- AMETI improvement works at Van Damms lagoon; and
- Onehunga Bay foreshore improvement works.

Other initiatives that were relevant and had a bearing on the prioritisation and for which plans are available on the Local Board website include;

- Onehunga Bay Reserve Concept Plan;
- Maungakiekie-Tāmaki Greenways Network Plan; and
- Tāmaki Waterway Concept Plans.

### **4.4 FRESHWATER AND MARINE REPORT CARDS**

Freshwater and Marine report cards for Local Boards are managed and maintained by Auckland Council. The report cards provide an indication of the health of freshwater and marine environments in each Local Board. This information was used in the prioritisation of the stormwater catchments. Generally, the overall report cards present a poor picture of water quality, biodiversity and ecology and therefore strongly support priority for water quality improvement and restoration works.

The Maungakiekie-Tāmaki area state of Auckland freshwater report card overall grade is F (2014). This overall grade is made up of from an average of grades from;

- Water Quality grade E;
- Flow Patterns grade D;
- Nutrient Cycling grade F;
- Habitat Quality grade F; and
- Biodiversity grade F.

The Manukau Harbour state of Auckland marine report card overall grade is D (2014). This overall grade is made up of from an average of grades from;

- Water Quality grade E;
- Contaminants in Sediments grade B; and
- Ecology grade D.

The Tāmaki Estuary state of Auckland marine report card overall grade is E (2014). This overall grade is made up of from an average of grades from;

- Water Quality grade E;
- Contaminants in Sediments grade E; and
- Ecology grade E.

#### 4.5 ALIGNMENT WITH AUCKLAND PLAN GOALS

4 of the 7 liveability elements and indicators in The Auckland Plan (Table 15.2 of the Auckland Plan) are relevant to receiving environment water quality. The table below provides the four relevant elements, aspirations and the key indicators that will be used to measure progress of Auckland’s most liveable city in the world goal. All liveability elements and indicators are applicable to the prioritisation of the stormwater catchments.

Table 1: Auckland Plan Liveability Elements and Indicators

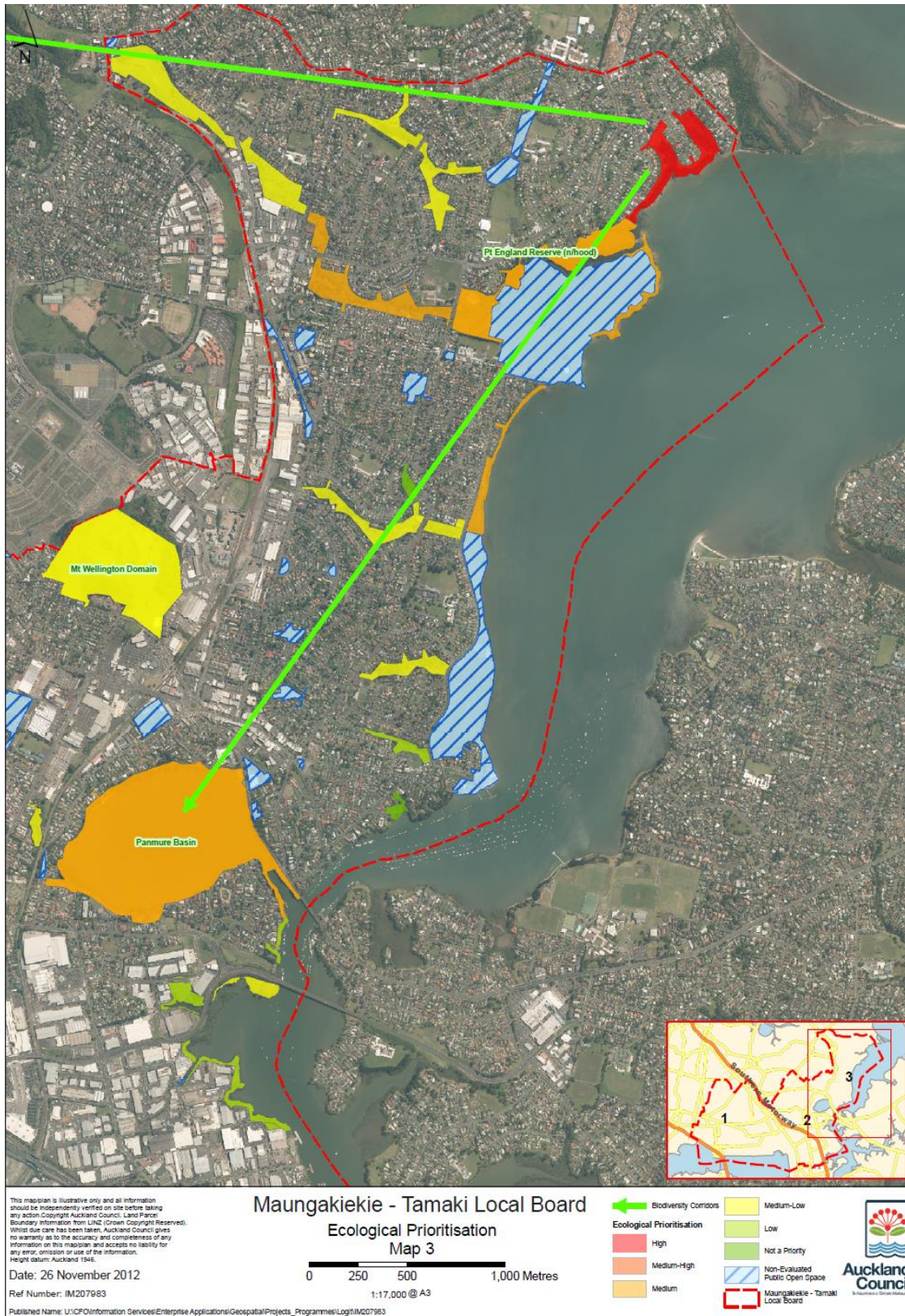
Element	What do we aspire to?	Key Indicators
Lifestyle opportunities	People from all over the world love Auckland for the fantastic and affordable lifestyle that it offers. It’s easy to get to a range of recreational and leisure activities, whether in the urban or rural area. Auckland’s relatively mild climate is a major element to its liveability and allows Aucklanders to get out and enjoy life.	<ul style="list-style-type: none"> <li>• Residents perception that there is a wide range of recreational outdoor environments</li> </ul> <p><i>(Improved water quality in our waterways will lead to increased range of recreational activities, especially where there is physical contact with water and improve Residents perceptions.)</i></p>

Physical Appeal	Auckland has well-designed places and spaces that people can easily access and utilise to enrich their lives. Natural environments such as the Hauraki Gulf, the surf beaches of the West coast, and the Waitakere ranges are appealing and enjoyable.	<ul style="list-style-type: none"> <li>• Residents rating about best things about living in Auckland</li> <li>• Residents rating of the look and feel of their neighbourhood and of wider Auckland</li> <li>• Visitor ratings of Auckland</li> </ul> <p><i>(Improved water quality in our waterways will lead to increased range of recreational activities, especially where there is physical contact with water and influence the development of the waterfront and foreshore areas creating better places and spaces for people to interact with water. It will improve the natural environment. Visitors will rate Auckland highly due to their experience of the waterways.)</i></p>
Environmental Sustainability	The natural environment is able to sustain the effects of population growth, now and into the future. Aucklanders actively look after their wider environment.	<ul style="list-style-type: none"> <li>• Water Quality</li> <li>• Ecosystem health</li> </ul> <p><i>(The Maungakiekie-Tāmaki Local Board catchpit filter programme is unique and supports environmental sustainability)</i></p>
Economic Prosperity	Auckland is a vibrant centre of employment and enterprise, offering a range of opportunities. Innovative ideas are brought to reality.	<ul style="list-style-type: none"> <li>• GDP per capita, compared to other cities</li> <li>• Employment levels</li> <li>• Business confidence</li> </ul> <p><i>(Water quality is linked to tourism and economic prosperity. It is expected that improved water quality in our waterways, associated development of the waterfront areas and opportunities for water related events and activities will lead to Auckland becoming a hub for tourists and world events such as the recent triathlon event.)</i></p>

## 4.6 ECOLOGICAL PRIORITY

A report identifying ecological priority across parks and reserves in the Maungakiekie-Tāmaki Local Board was available for use in the prioritisation process. The figure below provides an example of a map showing ecological priority across part of the Local Board area.

Figure 2: Ecological Priority Map

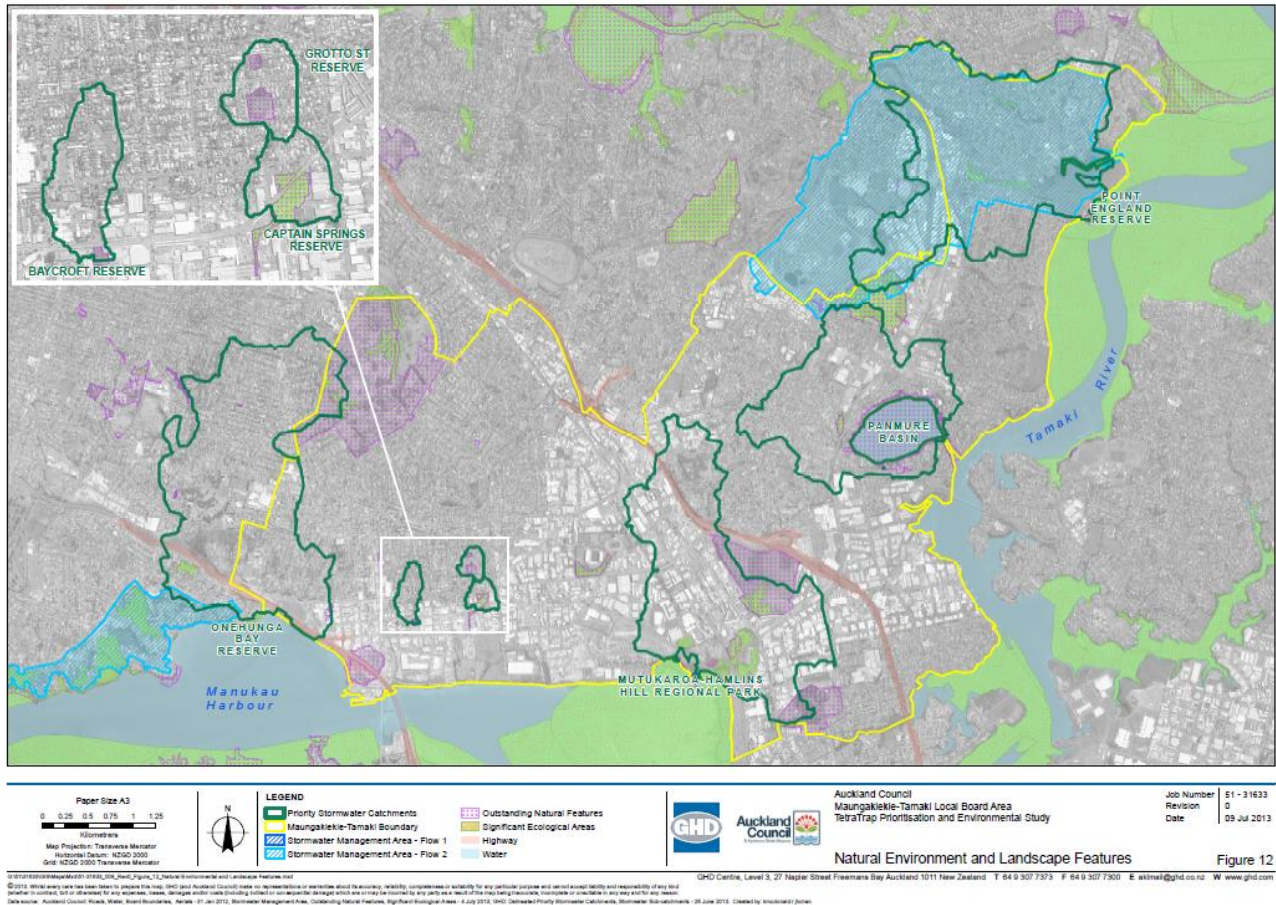


#### 4.7 NATURAL ENVIRONMENT AND LANDSCAPE FEATURES

The Auckland Plan has identified significant natural environment and landscape features. It has also identified stormwater management areas where flows are to be limited to particular streams as development occurs in Auckland. This information was overlaid on the Local Board area to assist in the prioritisation process.



Figure 3: Natural Environment and Landscape Features



## 5 PRIORITISING STORMWATER CATCHMENTS

### 5.1 PRIORITISATION PROCESS

The prioritisation process was developed with input from the Local Board. The prioritisation process involved consultation with stakeholders, assessment of relevant background information including that described in section 4 above and integrating/linking this information to key receiving environments in the Maungakiekie-Tāmaki Local Board area and hence to the associated stormwater catchments. Receiving environments and their associated catchments that had considerable alignment and linkages to the integrated information were considered to be of high priority. The information used included;

- The ecological importance of receiving environments in the Maungakiekie-Tāmaki Local Board area;
- Any significant natural and environmental features;
- The importance of receiving environments in relation to Auckland Council Park's assets;
- Relevance of Local Board strategies and vision;
- Alignment to Auckland Plan Liveability Elements and Indicators;

- Any current associated receiving environment improvement works and activities;
- Any research and monitoring of the receiving environment; and
- Cultural and environmental importance of particular receiving environments.

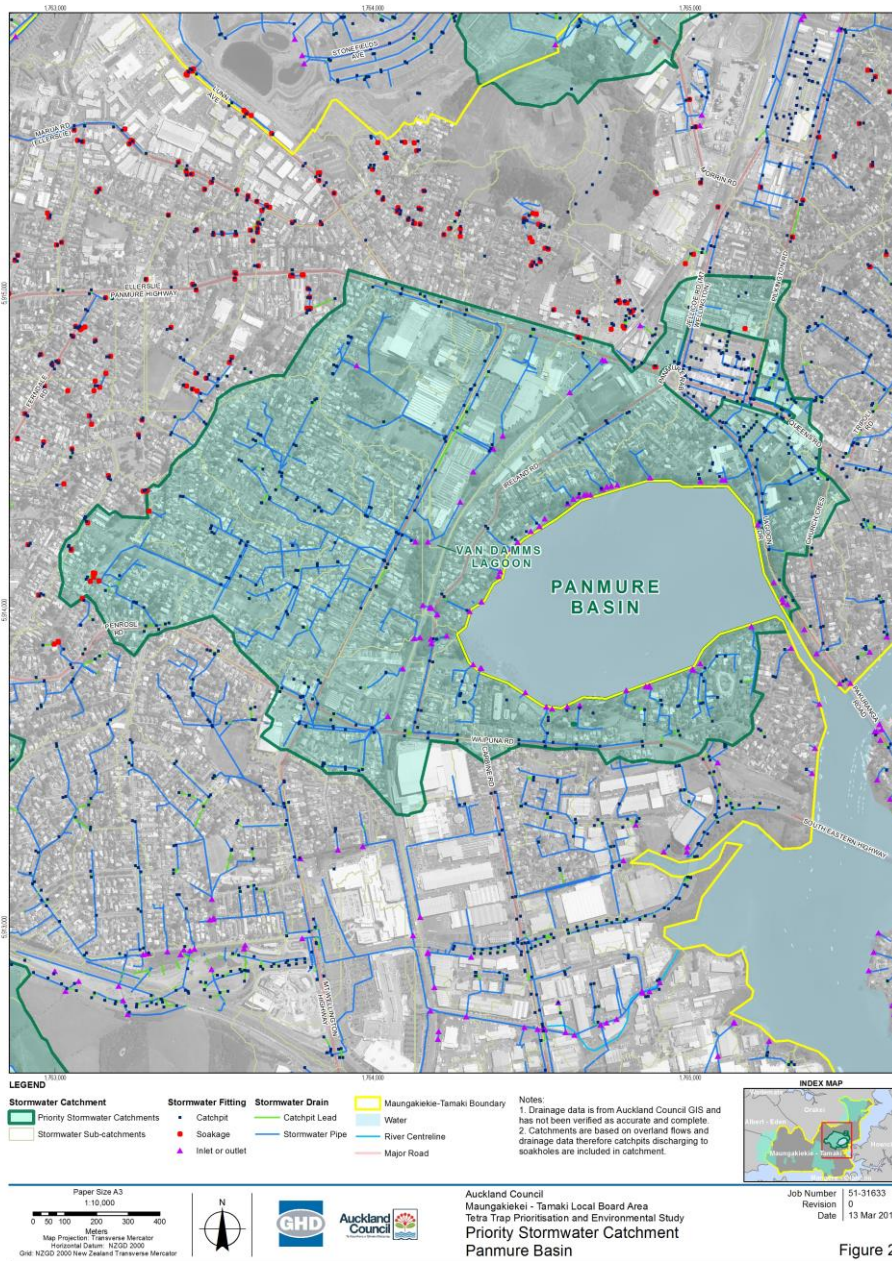
The key receiving environments and associated catchments with key attributes showing the linkages supporting higher priority are provided in the following sections below.

## 5.2 PANMURE BASIN AND VAN DAMMS LAGOON

### 5.2.1 GENERAL DESCRIPTION

The Van Damms lagoon receives significant flows from the upper catchment (West of Mt Wellington Highway) and discharges to the Panmure Basin (ref Fig 4 below). The Panmure Basin receives intertidal flows from the Tāmaki River.

Figure 4: Van Damms Lagoon and Panmure Basin catchment



## 5.2.2 Key attributes

The key attributes supporting the priority for this catchment;

- Van Damms Lagoon has a medium-low ecological priority and the Panmure Basin has a medium ecological priority (Fig 2). The Tāmaki Estuary is also a significant ecological area (Fig 3);
- The Van Damms Lagoon and the Panmure Basin are identified as outstanding natural features (Fig 3);
- As part of the current Auckland Transport AMETI project construction, the Van Damms lagoon will be dredged and cleared of contaminated sediments that have accumulated over many years (Fig 5 below). The Van Damms Lagoon will also be increased in size with improvement works for public access. However, stormwater contaminants will continue to be discharged into the Lagoon from the upper catchment through the stormwater pipe system;
- One of the initiatives/projects of the Maungakiekie-Tāmaki Local Board is to work with the Tāmaki Estuary Protection Society and the Panmure Basin Advisory Committee to improve water quality;
- The Auckland Council Parks team are planning works to improve the walkway facilities around the Panmure Basin. The walkway is extensively used for recreation; and
- The Van Damms Lagoon, Panmure Basin and Tāmaki Estuary provide an opportunity as exceptional recreational amenities aligned to the Auckland Plan goal.

Figure 5: Van Damms Lagoon Wetland Improvements



Photograph 2: Panmure Basin



## 5.3 PT ENGLAND RESERVE CATCHMENT (OMARU STREAM)

### 5.3.1 GENERAL DESCRIPTION

The receiving environment for this catchment (Fig 6 below) is the Omaru Stream which receives flows from the catchment prior to discharging to the Tāmaki River. The Omaru Creek is one of the longest streams (3.2km) in central Auckland running from College Road through Glen Innes and then discharging to the Tāmaki Estuary. It is one of the most polluted streams in Auckland. The Maungakiekie-Tāmaki Local Board is working with community groups, local schools and businesses to improve the health of the stream.

Figure 6: Pt England Reserve Catchment

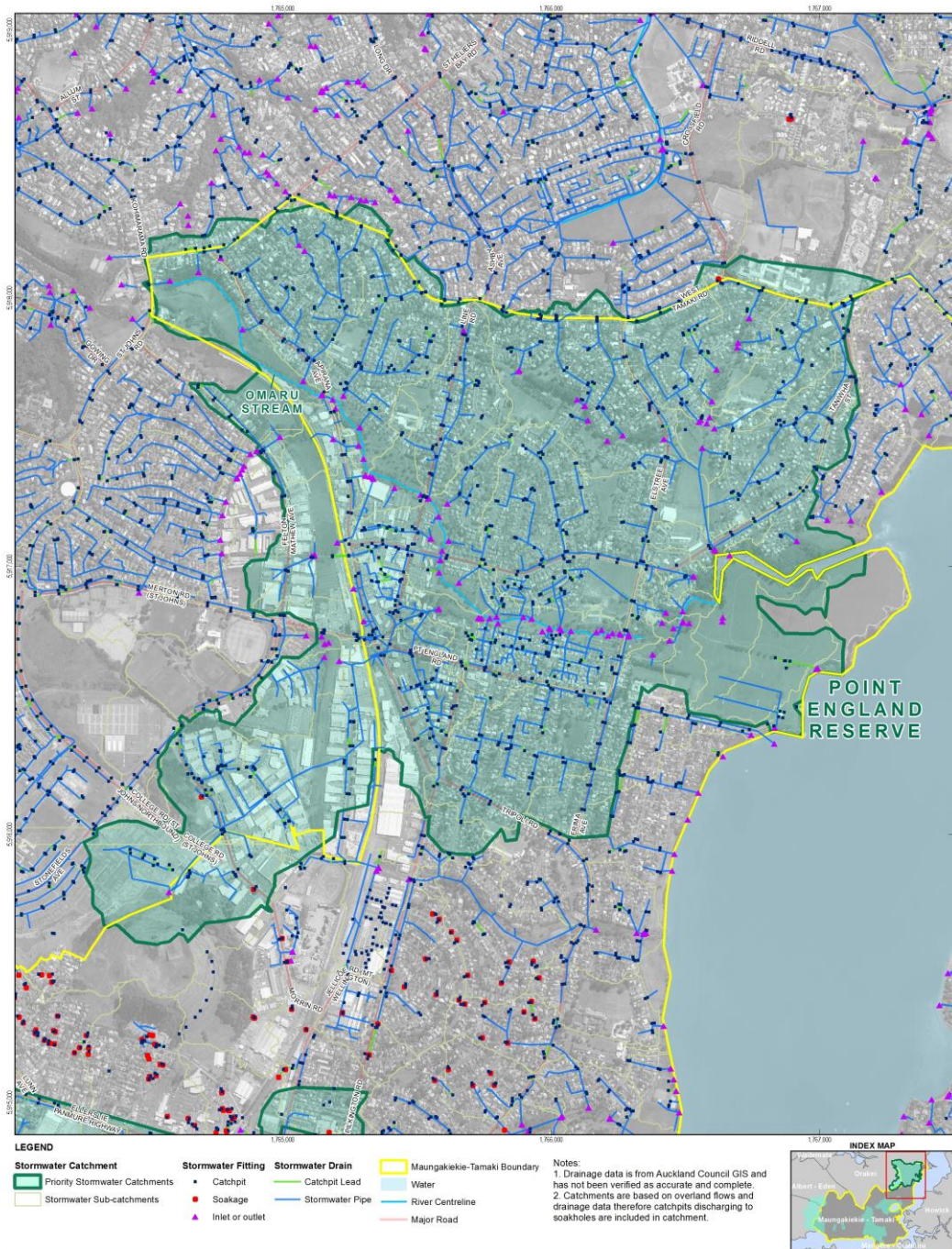


Figure 3

Photograph 3: Omaru Stream which discharges to the Tāmaki Estuary



### 5.3.2 KEY ATTRIBUTES

The key attributes supporting the priority for this catchment;

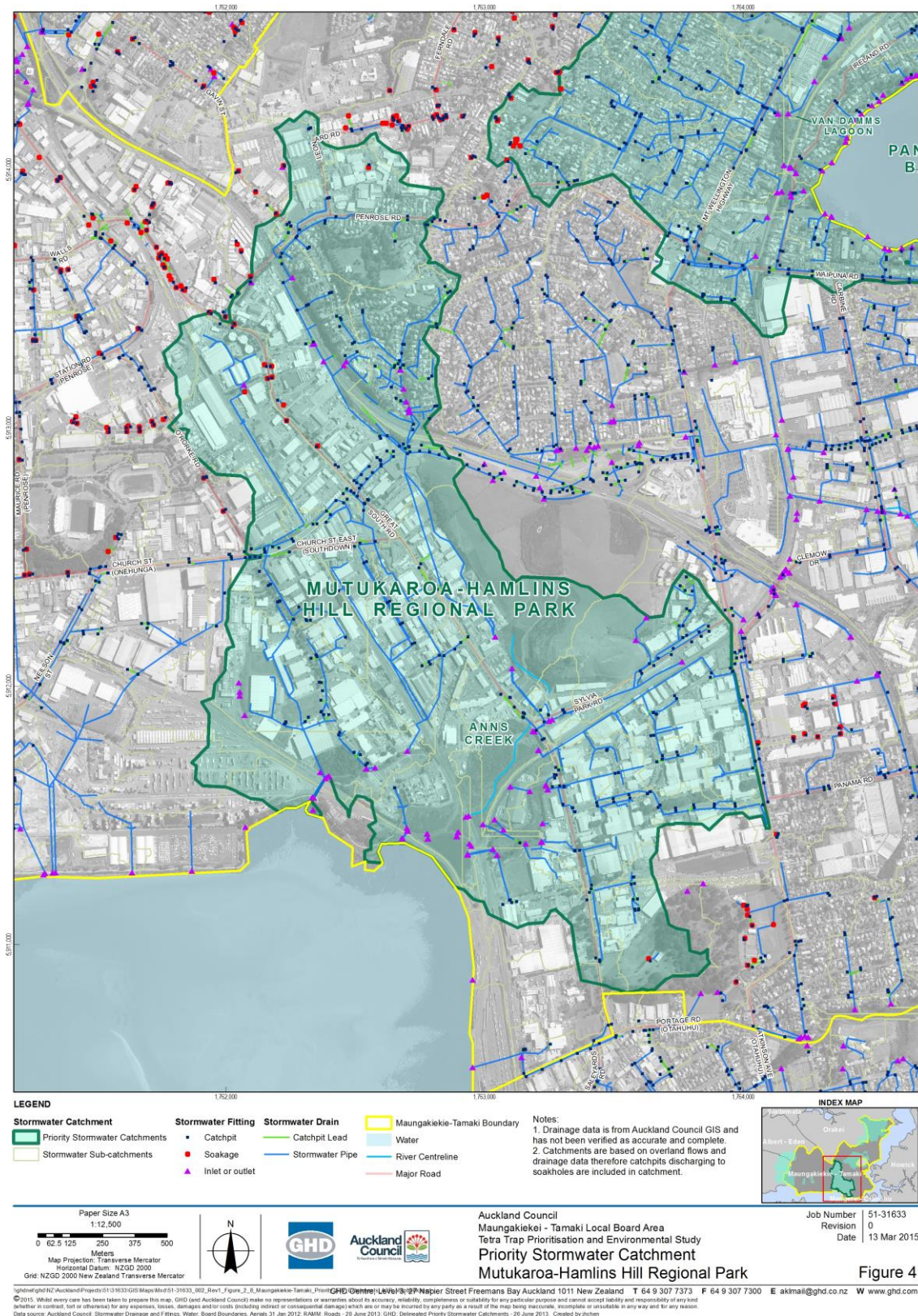
- The green belt along Omaru Stream has a medium-low to medium ecological priority (Fig 2) and is a significant amenity stretching from St Johns Road to Pt England Reserve;
- In the proposed Auckland Unitary plan, a significant part of the catchment that contributes to flows to the Omaru Stream has been proposed as a Stormwater Management Flow 2 area (Fig 3) requiring runoff flows and volumes from new developments to be equivalent to impervious area coverage of 20 % signifying the priority of the Omaru Stream;
- The Omaru stream is one of two waterways that have been assessed as part of the Maungakiekie-Tāmaki fresh water report card reporting which resulted in an overall grade of F;
- The Omaru stream discharges into the Tāmaki Estuary which has an overall marine report card grade of D. The Tāmaki Estuary is also a significant ecological area (Fig 3);
- One of the initiatives/projects of the Maungakiekie-Tāmaki Local Board is to work with the Tāmaki Estuary Protection Society and the Panmure Basin Advisory Committee to improve water quality;
- A number of initiatives by Auckland Council and the Maungakiekie-Tāmaki Local Board to improve the water quality and ecology along Omaru stream are underway including riparian planting along Omaru Stream;
- The green belt along Omaru stream provides an opportunity for an exceptional recreational amenity aligned to the Auckland Plan goal.

# 5.4 MUTUKAROA-HAMLINS HILL REGIONAL PARK (ANNS CREEK)

## 5.4.1 GENERAL DESCRIPTION

The receiving environment for this catchment is Anns Creek and the Manukau Harbour (Fig 7). The catchment is predominantly industrial and extends up to Penrose Road.

Figure 7: Mutukaroa-Hamllins Hill Regional Park catchment



Photograph 4: Anns Creek



#### **5.4.2 KEY ATTRIBUTES**

The key attributes supporting the priority for this catchment;

- Anns Creek is one of two waterways that have been assessed as part of the Maungakiekie-Tāmaki fresh water report card reporting which resulted in an overall grade of F;
- Anns Creek traverses through an area that has a medium to medium-high ecological priority (Fig 2) and identified as an outstanding natural feature (Fig 3); and
- The receiving environment for the catchment at the Manukau Harbour is a significant ecological area (Fig 3).

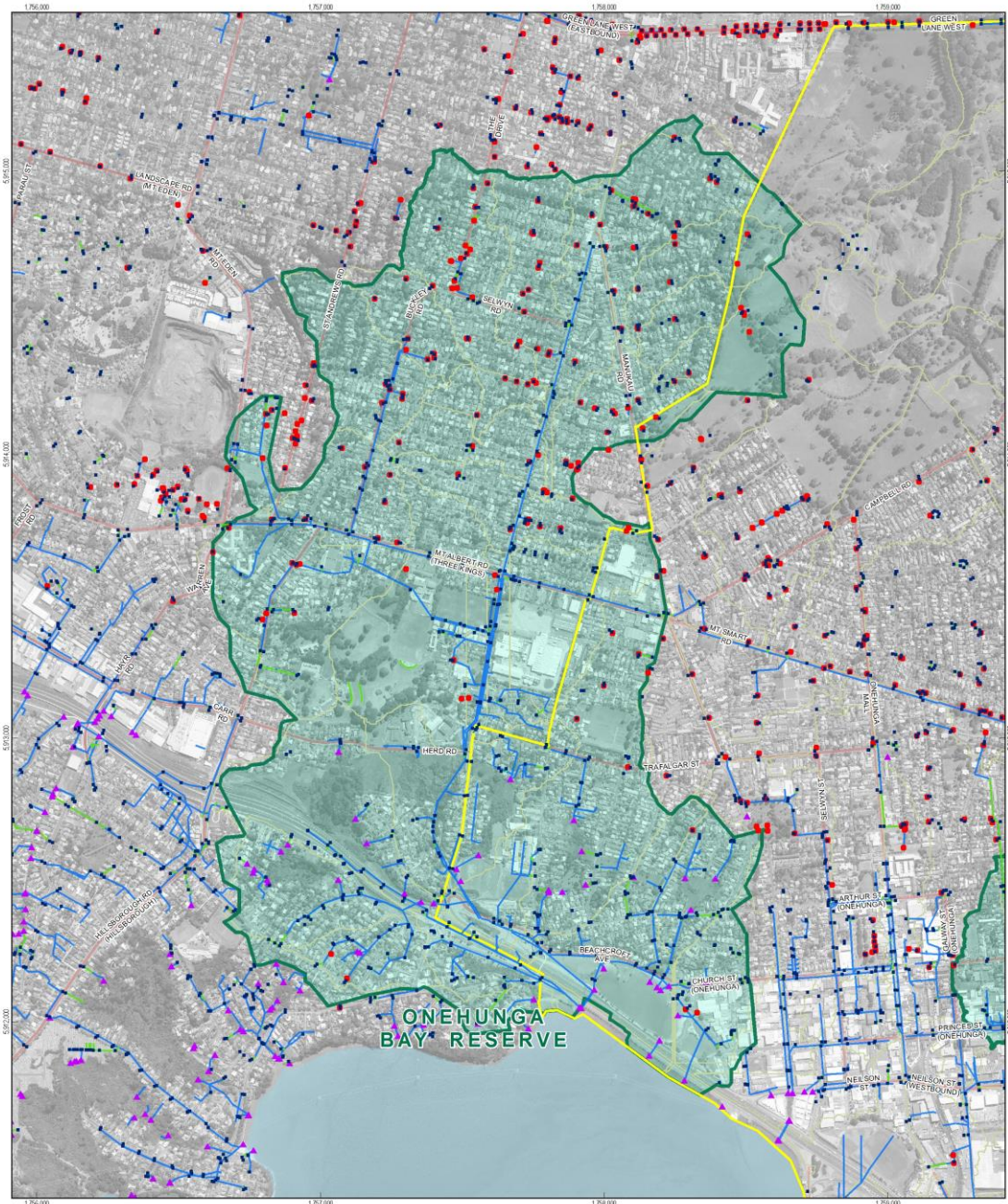


## 5.5 ONEHUNGA BAY RESERVE

### 5.5.1 GENERAL DESCRIPTION

The receiving environment for this catchment is the Onehunga Bay Reserve (Fig 8). More than two thirds of the catchment is outside of the Maungakiekie-Tāmaki Local Board Area. The adjacent Albert-Eden and Puketapapa Local Board areas contribute to flows at Onehunga Bay Reserve.

Figure 8: Onehunga Bay Reserve Catchment



<b>LEGEND</b>					
<b>Stormwater Catchment</b>	<b>Stormwater Fitting</b>	<b>Stormwater Drain</b>	<b>Maungakiekie-Tamaki Boundary</b>	<b>Notes:</b>	
Priority Stormwater Catchments	Catchpit	Catchpit Lead	Water	1. Drainage data is from Auckland Council GIS and has not been verified as accurate and complete.	
Stormwater Sub-catchments	Soakage	Stormwater Pipe	River Centreline	2. Catchments are based on overlaid flows and drainage data therefore catchpits discharging to soakholes are included in catchment.	
	Inlet or outlet		Major Road		

<p>Paper Size A3 1:12,500</p> <p>0 62.5 125 250 375 500</p> <p>Meters</p> <p>Map Projection: Transverse Mercator Horizontal Datum: NZGD 2000 Grid: NZGD 2000 New Zealand Transverse Meridian</p>			<p>Auckland Council Maungakiekie - Tamaki Local Board Area Tetra Trap Prioritisation and Environmental Study Priority Stormwater Catchment Onehunga Bay Reserve</p>	<p>Job Number 51-31633 Revision 0 Date 13 Mar 2015</p>	
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Figure 5

Figure 9: An artist's impression of the Onehunga Foreshore project



### 5.5.2 KEY ATTRIBUTES

The key attributes supporting the priority for this catchment;

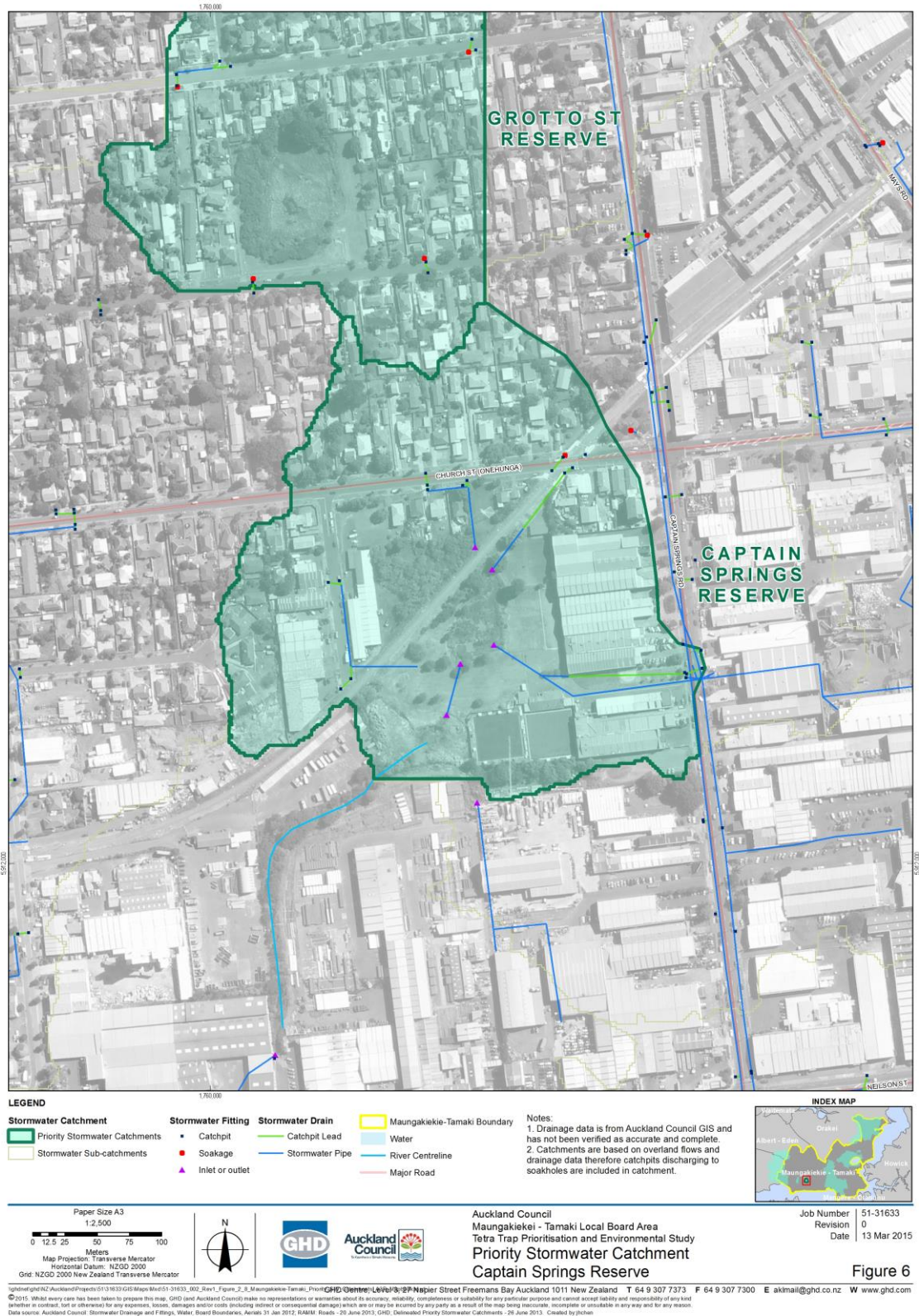
- A significant \$28 million project funded by the Maungakiekie-Tāmaki Local Board and the New Zealand Transport Agency (NZTA) along the Onehunga Foreshore is under construction (Fig 9). The foreshore next to Orpheus Drive is being restored to bring back a natural coastal edge and create recreational opportunities for the community. The project will provide high-quality open space, beaches, a boat ramp and picnic areas. A new bridge will connect the new land to the Onehunga lagoon. Two stretches of beaches are planned directly across the Onehunga Lagoon. The Onehunga Bay Reserve catchment discharges directly in the area planned for beaches; and
- The re-developed Onehunga Bay Foreshore together with improved water quality provides an opportunity as an exceptional recreational amenity aligned to the Auckland Plan goal.

## 5.6 CAPTAIN SPRINGS RESERVE

### 5.6.1 GENERAL DESCRIPTION

The receiving environment for this catchment is the natural springs at Captain Springs Reserve (Fig 10). Flows from the springs flow along a waterway amongst industrial building sites to a pipe network at Neilson St.

Figure 10: Captain Springs Reserve catchment



Photograph 5: Captain Springs Reserve Aerial Photograph



Photograph 6: Captain Springs Reserve natural springs



### 5.6.2 KEY ATTRIBUTES

The key attributes supporting the priority for this catchment;

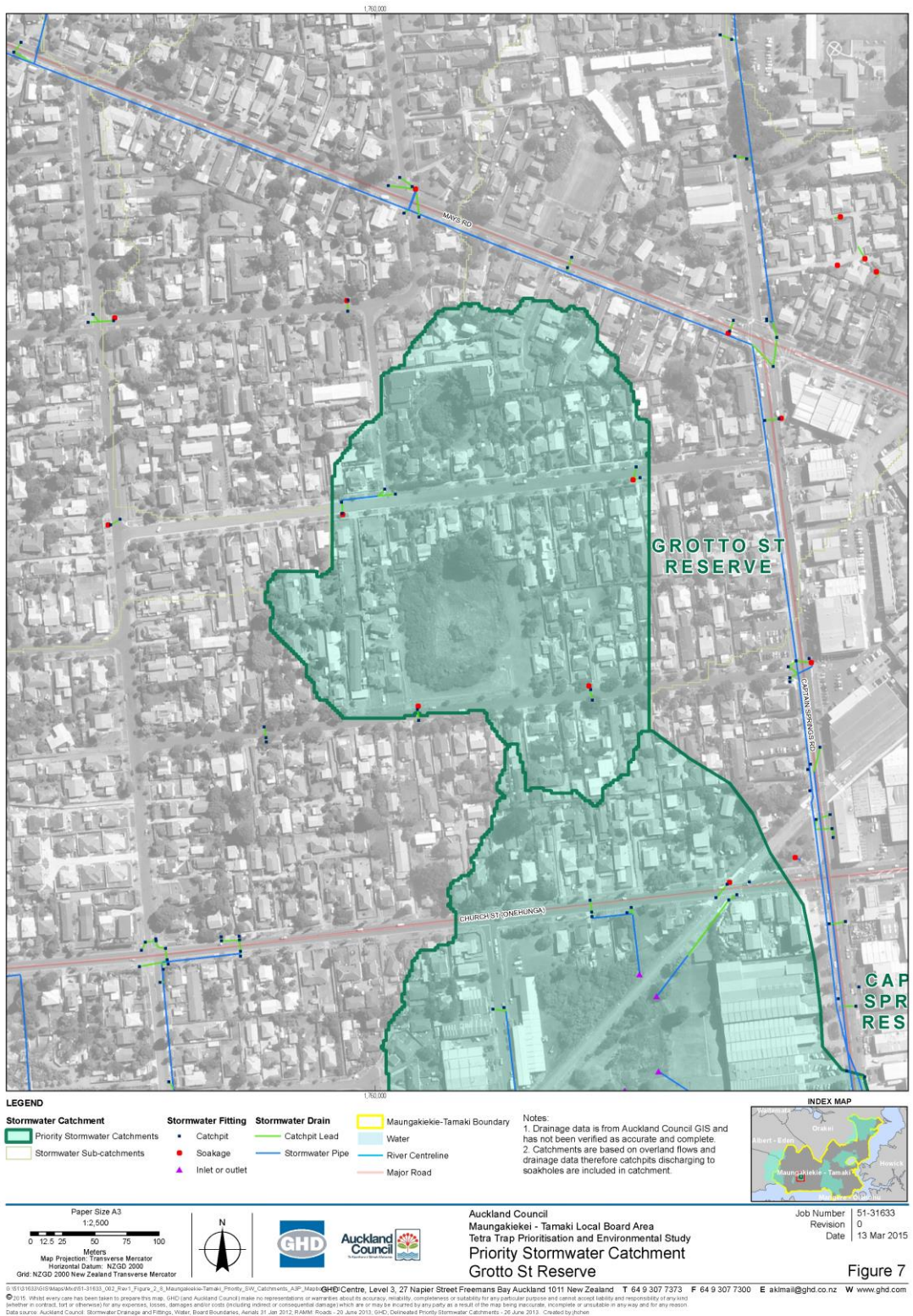
- Captain Springs Reserve has a medium-low ecological priority (Fig 2) and is identified as an outstanding natural feature due to the natural springs (Fig 3); and
- The Captain Springs reserve and the natural springs provide an opportunity as an exceptional recreational amenity aligned to the Auckland Plan goal.

## 5.7 GROTTO RESERVE

### 5.7.1 GENERAL DESCRIPTION

The receiving environment for this catchment is the natural springs at the Grotto St Reserve (Fig 11). There are no known direct stormwater discharges to the natural springs however there are four soakholes in close proximity to the natural springs that receive road stormwater contaminants.

Figure 11: Grotto Reserve catchment



Photograph 7: Grotto Reserve Aerial Photograph



Photograph 8: Grotto Reserve



### 5.7.2 KEY ATTRIBUTES

The key attributes supporting the priority for this catchment;

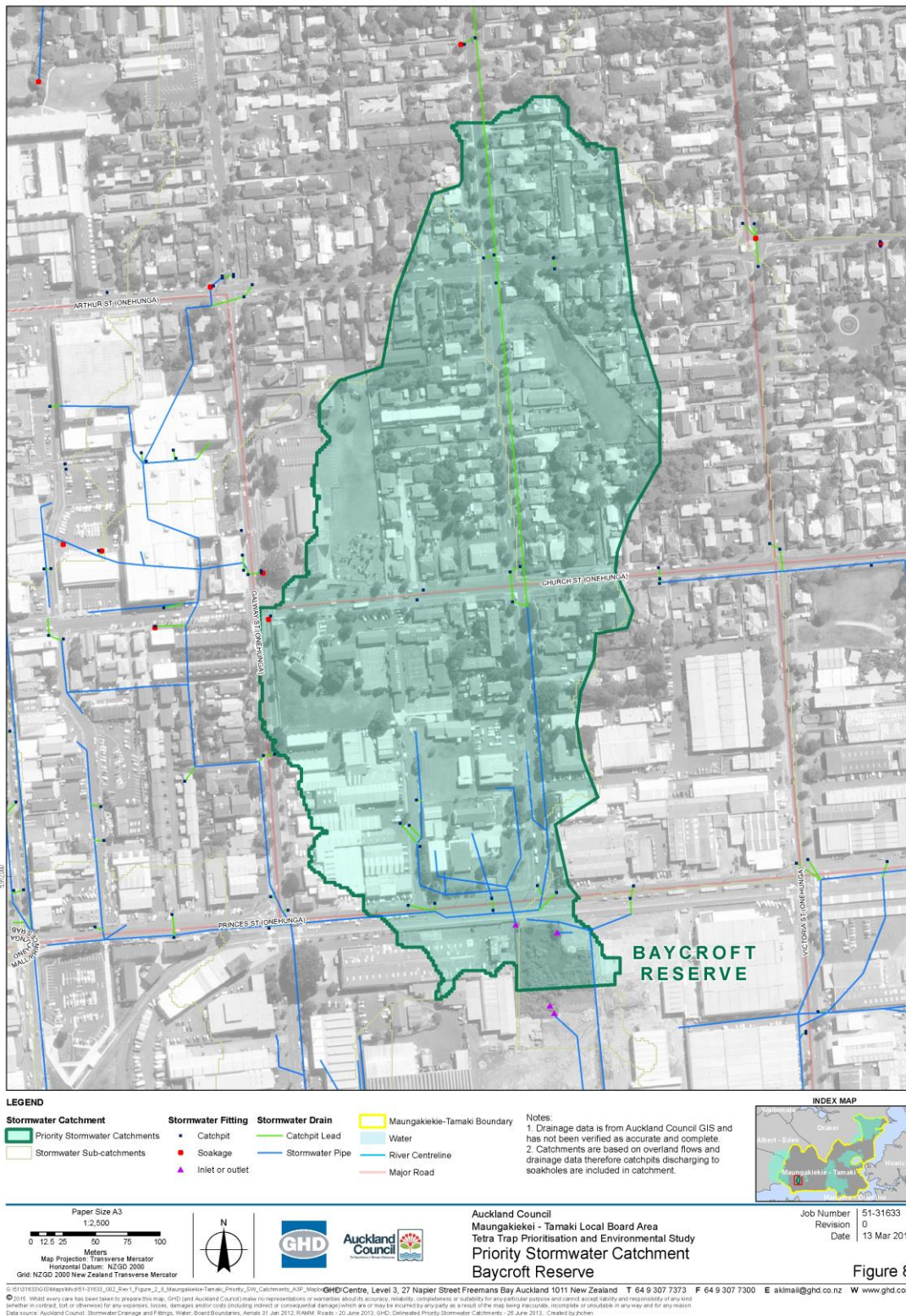
- The Grotto St Reserve has a medium ecological priority (Fig 2) and is identified as an outstanding natural feature due to the natural springs (Fig 3); and
- The Grotto St Reserve and the natural springs provide an opportunity as an exceptional recreational amenity aligned to the Auckland Plan goal.

## 5.8 BAYCROFT RESERVE

### 5.8.1 GENERAL DESCRIPTION

The receiving environment for this catchment is natural springs at Baycroft Reserve (Fig 12). The Onehunga water treatment plant which takes water from the Onehunga Springs is upstream across Baycroft Reserve on Princess St. The springs at Baycroft Reserve flow into the downstream pipe system before discharging into the Manukau Harbour.

Figure 12: Baycroft Reserve catchment



Photograph 9: Baycroft Reserve catchment



### 5.8.2 KEY ATTRIBUTES

The key attributes supporting the priority for this catchment;

- The Baycroft Reserve has a medium-low ecological priority (Fig 2) and is identified as an outstanding natural feature due to the natural springs (Fig 3); and
- The Baycroft Reserve and the natural springs provide an opportunity as an exceptional recreational amenity aligned to the Auckland Plan goal.

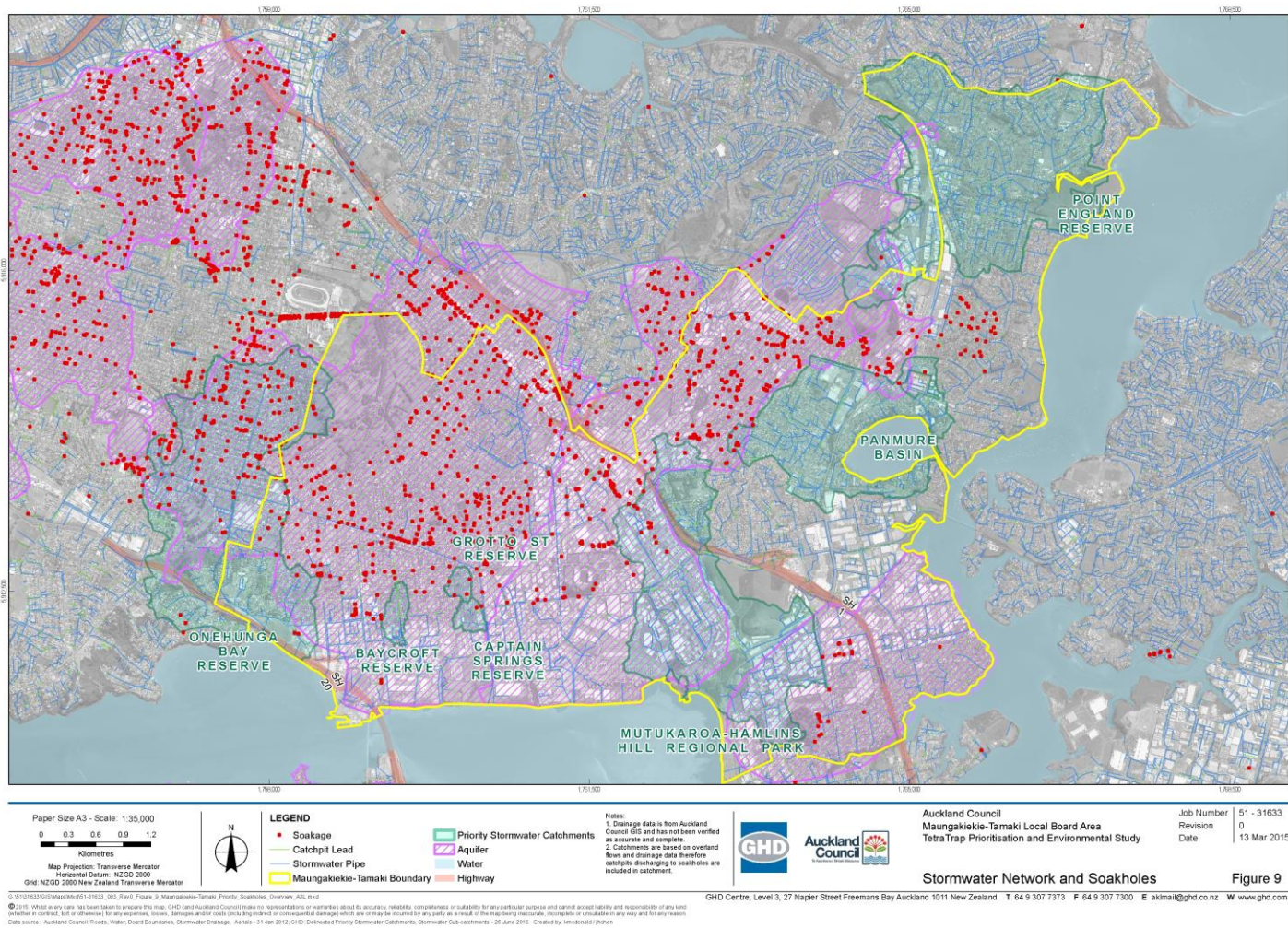


## 5.9 ONEHUNGA WATER SUPPLY CATCHMENT

### 5.9.1 GENERAL DESCRIPTION

The Onehunga Springs sited at Princess St, Onehunga, across Baycroft Reserve (Fig 13) is a unique water source in Auckland developed by the former Onehunga Borough Council. Water is pumped from the springs, treated and pumped to the level required for supply to the Onehunga area. The water treatment plant can supply up to 21 million litres a day (ref Watercare website).

Figure 13: Onehunga Water Supply catchment



### 5.9.2 KEY ATTRIBUTES

The key attributes supporting the priority for this catchment;

- The aquifer boundary and public soakholes that discharge to the aquifer are shown in the Stormwater Network and Soakholes Map (Fig 13). The majority of the soakholes receive road stormwater discharges. There are no known studies in Auckland that have considered the effect of stormwater discharge contaminants on the aquifer system and/or to the drinking water from Onehunga Springs. However, in a number of areas in Auckland, sediments and gross pollutants from catchpits has reduced the soakage capacity of soakholes requiring cleaning of soakholes and/or redrilling of the soakage bores.

### **5.9.3 SCOPE EXCLUSION**

The scope of this study was limited to prioritisation of stormwater catchments for the installation of a prescribed innovative filter device in catchpits that discharged to a receiving environment and hence the water supply catchment was excluded from the prioritisation study. However, it was recommended that the effects of stormwater contaminants on the aquifer and Onehunga water supply should be assessed in future.

## **6 IMPLEMENTATION PROGRAMME**

### **6.1 Priority Catchments**

Based on the level of the key attributes supporting the priority of the catchments as described in the section above, the following stormwater catchments were assessed to be of high priority and were programmed for installation of filter devices in catchpits;

- Panmure Basin and Van Damms Lagoon
- Pt England Reserve (Omaru Stream)
- Mutukaroa-Hamllins Hill Regional Park (Anns Creek)
- Onehunga Bay Reserve
- Captain Springs Reserve
- Grotto Reserve
- Baycroft Reserve

### **6.2 Panmure Basin and Van Damms Lagoon catchment**

Based on the outcomes of this study, the Maungakiekie-Tāmaki Local Board approved \$400,000 towards the installation of the innovative filter devices in catchpits in the Panmure Basin and Van Damms lagoon. The installation was completed in September 2014. The installation complements the works at the Van Damms lagoon undertaken for the AMETI road project. Upper catchment road runoff to Van Damms lagoon will be filtered at road catchpits. Sediments, heavy metals and gross pollutants will be collected and disposed from catchpits as the first initiative to improved water quality and ecology at Van Damms lagoon, the Panmure Basin, the Tāmaki River and eventually the Hauraki Gulf. It should be noted that the installation of the filter devices in catchpits is the first step in meeting the objectives of the Local Board for cleaner waterways and harbours. Refer to Section 7 below on limitations and assumptions of the study for more information.

### **6.3 Auckland Region-wide implementation**

The Maungakiekie-Tāmaki Local Board initiative is also being implemented across the Auckland region.

By the end of June 2015, over 3,000 catchpits will be retrofitted with the innovative filter devices across the Auckland region.

An additional 12,000 individual catchpits across the Auckland region have been prioritised to be fitted with the innovative device. There are over 91,000 catchpits in the Auckland region.

## 7 LIMITATIONS AND ASSUMPTIONS OF STUDY

This study was undertaken for the purposes of prioritising stormwater catchments in the Maungakiekie-Tāmaki Local Board area for implementation of water quality improvement initiatives. The installation of an innovative filter device in catchpits is the first step in meeting the objectives of the Local Board for cleaner waterways and harbours. The following are some of the limitations and assumptions of the study applicable to this paper;

- Opportunities for other forms of treatment within the catchments such as stormwater treatment ponds and road side swales were not considered as part of the study. It was assumed that these would be developed through detailed catchment management plans. In any case, the innovative filter device can be used as part of a treatment train with any other type of stormwater treatment devices in the catchment in future. The innovative filter device are also portable therefore it will be possible to move any to other catchpits if required;
- Opportunities to daylight pipe networks have not been considered as part of this project. New Priority Stormwater Catchments may be identified should there be opportunities in the catchment for daylighting of stormwater pipe networks;
- Private property stormwater discharges within the Priority Stormwater Catchments, especially on large commercial and industrial sites were not assessed as part of this study. These discharges should be assessed in future to manage any contaminant runoff from individual sites to fully meet the objectives of this project;
- The assessment of the Stormwater Priority Catchments is based on receiving environments that are easily identified as important and to protect in the first instance. The assessment should not imply that other stormwater discharges to both the Tāmaki River and Manukau Harbour are of low priority. Both the Tāmaki River and Manukau Harbour are significant receiving environments and stormwater discharge quality overall needs to be improved;
- The assessment of the Stormwater Priority Catchments did not consider any other forms of improvement works to the receiving environments; and
- It was assumed that the deliverables of this project will be discussed with other Local Boards where the stormwater discharges are in close proximity to the Priority Stormwater Catchments to coordinate joint water quality improvement activities in future.

## 8 MAUNGAKIEKIE LOCAL BOARD PLAN 2014-2017

The 2014-2017 Maungakiekie-Tāmaki Local Board is explicit in its community's aspiration and direction setting for the natural environment. Sections of the Plan are provided below to demonstrate this aspiration and direction.

The vision of the 2014-2017 Plan;

**Our Vision: Creating The World's Most Liveable City at the Local Level**

One of the six outcomes of the plan;

**Outcome: "A Heathy Natural Environment Enjoyed By Our Communities"**

The direction of the Local Board relevant to water quality and the receiving environment;

***Our natural environment is ecologically healthy, and valued and protected by our communities and businesses.***

Bordered by two bodies of water, the Manukau Harbour to the south and the Tāmaki Estuary to the east, Maungakiekie-Tāmaki is home to many outstanding natural features including Kaiahiku (Panmure Basin) and Waipuna (Van Damms Lagoon). Additionally, there are five significant maunga (volcanic cones) in the Board area, including Maungakiekie (One Tree Hill) and Maungarei (Mt Wellington). The community told us that they want these natural features to continue to be enjoyed by future generations. Our natural environment has degraded due to factors including our industrial past, development, pollution, pests and neglect and the Local Board will continue to do all it can to restore these treasures to their past splendour.

To achieve this, it will require all of us to work together. It is a priority to regenerate and restore, as well as celebrate and enhance our natural environment.

The Board will continue to work with our communities and groups to identify and deliver improvements that create habitats for native plants and animals and that provide ecosystem resources, such as water purification and erosion control. The Board will also support community-led initiatives to reduce mangrove encroachment into our waterways. We will work with industry to partner for industrial solutions that enhance our environment. We also work as partners with mana whenua as kaitiaki (guardians) so that the mauri te taiao (the life force of the environment) is enhanced for all people. We will work closely with the newly formed Maunga Authority to help deliver improved environmental outcomes for the maunga in our area and across Auckland.

### ***Clean harbours and waterways***

Our community want to be able to swim in our harbours, eat shellfish from the rocks (as they once did) and enjoy our beaches. It is important that the water quality of the Manukau Harbour and Tāmaki Estuary is improved so this can happen.

To regenerate our waterways and harbours, we will continue with a programme of activity that focuses on ecological restoration, pollution prevention, sustainable water use and household stormwater management. Projects such as riparian planting, daylighting of streams and installing innovative filters, as those in the Van Damms and Panmure basin lagoon in catchpits (filters work by filtering out rubbish and other contaminants that run off roads into drains) will contribute to realising this aspiration. We will continue to work with businesses to ensure that run-off that flows from their sites to stormwater drains is kept free of pollutants. We will strongly advocate for housing development to support healthy environments and ecosystems.

The Board will seek and advocate for improved access to Manukau Harbour, including the Port of Onehunga. As a member of the Manukau Harbour Forum we support the development of a Manukau Harbour Marine Spatial Plan, reflecting the environmental and ecological significance of the harbour. We will advocate for the harbour to be recognised alongside the Waitemata, Kaipara and the Hauraki Gulf and accorded the same level of priority in terms of vision and resource.

## 9 CONCLUSIONS

This project has demonstrated the aspirations and perspectives that liveable communities have with respect to the quality of their local area, townships, recreational facilities and waterways. These aspirations and perspectives are also aligned to Auckland's most liveable city goal and must be considered when prioritising stormwater catchments and funding for restoration and improvement works.

It is important to note that no major scientific assessments, complex modelling exercises, long term studies, extensive collaboration was undertaken to determine priority for an expenditure of \$400,000 which was allocated for improving water quality in the Maungakiekie-Tāmaki Local Board area. Prioritising the key stormwater catchments for retrofitting the innovative device in catchpits was made simple when consideration was given to the community's perspective of a liveable community and a liveable city. It is also important to note that whilst community perspectives had higher weighting, the community also acknowledged all other relevant factors in the prioritisation process demonstrating the credibility of the Local Boards in decision-making on behalf of the community.

The key learnings demonstrated from this project when prioritising stormwater catchments for implementation of water quality improvement initiatives;

- Auckland's 21 Local Boards are a key part of council's governance representing local communities. Their plans, vision, strategies and aspirations are important to understand, assess and consider as these are what liveable communities strive for.
- Local communities need complex information presented in transparent, visual and simple terms to allow collaboration, decision-making and prioritisation. This project used catchment maps and photographs to show how the stormwater system worked and provided linkages to the Local Board plans and aspirations, Auckland Plan information and goals and other related initiatives such as the ecological priorities maps to show the level of support to enable prioritisation of stormwater catchments.
- Local communities have aspirations to see real outcomes in their communities. The decision on this project was to target entire sub-catchments to retrofit catchpits to prevent contaminants being discharged at a particular priority receiving environment. This is contrary to investing in water quality improvement initiatives in catchments on an adhoc basis and only realising benefits in the long term.
- 4 of the 7 liveability elements and indicators in The Auckland Plan (Table 15.2 of the Auckland Plan) are relevant to receiving environment water quality. Considering this fact and the Maungakiekie-Tāmaki Local Board Plan 2014-2017 vision to "Creating The World's Most Liveable City at the Local Level", it appears that priority for water quality improvement initiatives has increased significantly.

## ACKNOWLEDGEMENTS

We would like to acknowledge the instigators of the Auckland Plan goal for Auckland to be the most liveable city in the world without which water quality, ecology and natural environment improvements and initiatives may not have received a high priority for funding.

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