



RNZAF Base Auckland

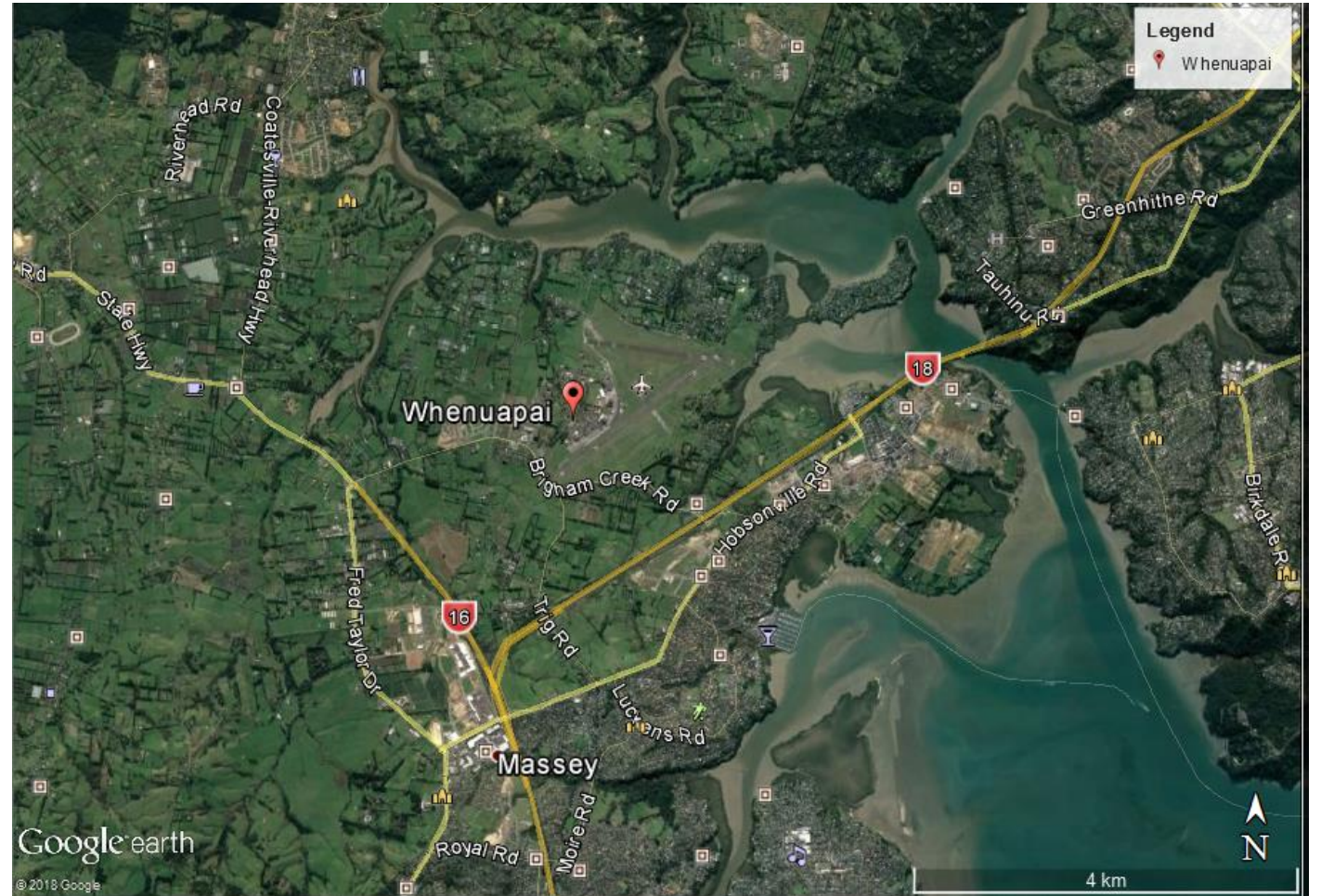
A Strategic Approach to Stormwater Management

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Stormwater 2018

NZDF Project Objective

- To identify and implement a new long term strategic way to manage stormwater at the Base
- To facilitate and streamline new development over next 15 years



Introduction

- Introduction to New Zealand Defence Force and RNZAF Base Auckland
- Historical approach to stormwater management
- Regeneration of the defence estate
- Risks associated with the existing approach
- Fresh approach and development of the strategy
- Challenges experienced with the new approach
- Questions

The New Zealand Defence Force



- 11 bases and camps throughout New Zealand
- 3 air bases
- ~12,000 active personnel and 3,000 reserve
- Consists of:
 - Royal New Zealand Navy
 - New Zealand Army and
 - Royal New Zealand Air Force.

RNZAF Base Auckland

- Established in 1937
- Majority of site developed 1945 to 1965
- Home to:
 - No. 40 Squadron - C-130 Hercules;
 - No. 6 Squadron – Seasprites
 - No. 5 Squadron – P-3 Orions
- ~1500 staff on-site
- 2 runways



Historical approach to stormwater management

- Has been considered at a project level:
 - Stormwater requirements re-considered for each project
 - Solutions driven by consultant team and not by the base requirements
 - Each project obtains separate consents

Regeneration at RNZAF Auckland

- Regeneration plan sets out the framework for regeneration, management and use of Defence Estate out to 2030
- Master plan for RNZAF Auckland includes 43 potential projects
- Master plan focused on the existing developed areas but excludes the runways

OUR STORY

ESTATE REGENERATION

The New Zealand Defence Force (NZDF) is a military force that operates at sea, on land, and in the air.

Our Defence estate provides the property, infrastructure and facilities to generate and maintain our military skills and capabilities.

81,000 HECTARES	MARITIME LANE	2,676	TOTAL 14,277
5,000 BUILDINGS	AIR DEFENCE	6,649	
		2,886	
		2,066	

Source: Defence Estate Regeneration PDF, page 5 & 11. Total number includes Reserve Forces.

From the early days of canvas camps set up to mobilise troops during World War I, our estate now comprises 81,000 hectares and 5000 buildings at nine main camps and bases, two large training areas, several regional facilities and our NZDF headquarters in Wellington.

Over the years, the level of investment in our estate has fallen short of that required, and a major upgrade is underway so our buildings, facilities and infrastructure are fit for a modern Defence Force.

The improvements we're making mean we'll deliver military outputs more effectively, have more efficient buildings, use energy in a more sustainable way, and improve compliance. Other government agencies will be able to make greater use our resources and we'll enhance the wellbeing of our personnel by improving our camps and bases so they have the best possible working and training environments.

Risks of continuing with current approach

- Large number of consents required, with the requirements uncertain;
- Continued use of infrastructure without understanding the bigger site constraints;
- Significant compliance burden;
- Limited opportunity to look for cost savings.

Looking at a fresh approach

We looked at the management of stormwater by taking a staged approach:

1. Firstly it was key to understand the requirements and constraints at the Base
2. This led to the preparation of a Base wide strategy – ensure buy in of all parties
3. Base specific stormwater management plans were then developed and consent applications made.
4. Development of a long term management process to review and track projects as they are developed.

Step 1: Requirements and constraints

Regulatory

what does the strategy need to achieve?

Site specific

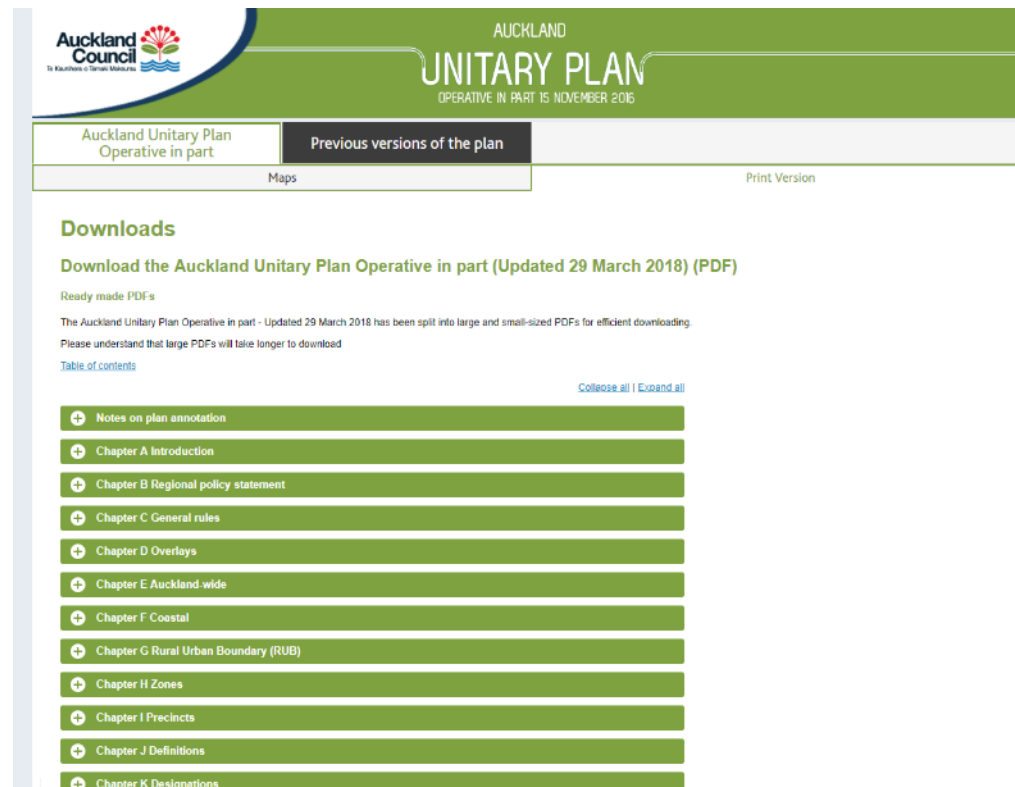
what constraints exist at the site?

Maintenance

What contracts are in place and what is NZDF experience?

Regulatory

- Zoning changes and requirements as part of the Auckland Unitary Plan:
 - Site special purpose
 - Surrounding land zoned Future Urban
 - Intensification already underway
- New requirements for Stormwater:
 - stormwater retention
 - and stormwater detention
 - stormwater treatment for high contaminant generating parking areas



The screenshot displays the Auckland Council website for the Unitary Plan. The header includes the Auckland Council logo and the text 'AUCKLAND UNITARY PLAN OPERATIVE IN PART 15 NOVEMBER 2016'. Below the header, there are two tabs: 'Auckland Unitary Plan Operative in part' (selected) and 'Previous versions of the plan'. Under the 'Operative in part' tab, there are links for 'Maps' and 'Print Version'. The main content area is titled 'Downloads' and features a link to 'Download the Auckland Unitary Plan Operative in part (Updated 29 March 2018) (PDF)'. Below this, there is a section for 'Ready made PDFs' with a note that the plan has been split into large and small-sized PDFs for efficient downloading. A 'Table of contents' link is provided, leading to a list of chapters and notes, each with a plus icon to expand it:

- Notes on plan annotation
- Chapter A Introduction
- Chapter B Regional policy statement
- Chapter C General rules
- Chapter D Overlays
- Chapter E Auckland-wide
- Chapter F Coastal
- Chapter G Rural Urban Boundary (RUB)
- Chapter H Zones
- Chapter I Precincts
- Chapter J Definitions
- Chapter K Designations

Site specific requirements – operational airbase

- permanent ponding water
- intermittent ponded water
- dense ground habitat suitable for nesting
- plant species that are known to attract specific bird species including pukeko, ducks and geese
- mixed flowering plant species that flower at different times through the year



Flocks of birds flying near flight runways are shown at Detroit Metropolitan Wayne County Airport in Romulus, Mich., Thursday, Jan. 21, 2010.

IMAGE: PAUL SANCYA/ASSOCIATED PRESS

Maintenance and NZDF experience

- The costs associated with maintaining and servicing proprietary devices can be high
- Maintenance of proprietary devices can often be limited to only a small number of suppliers;
- Conflicts with existing and future site wide maintenance contracts at the Base
- large variety of devices makes effective training of maintenance staff difficult
- large number of mature deciduous trees which can result in clogging of drains and stormwater devices



Other drivers

- A desire for new projects to identify and consider opportunities for capturing and re-using water
- Consider retrofit of existing buildings with rain tanks, to use these gains to off-set a proportion of new developments where such opportunities may not exist
- Individual projects to look at providing the required hydrological mitigation requirements within the project footprint where possible
- Provide stormwater treatment for all areas by using permeable paving for small parking areas (less than 30 parks) and low volume trafficked areas where possible

Development of strategy

- Ensure Buy-in and agreement from key parties including NZDF and Auckland Council.
- NZDF seeking to identify and investigate possible retrofit/ offset opportunities on existing facilities where these are practicable and achieve longer term benefits
- Require each individual project to consider the best stormwater management outcomes for the project subject to meeting the requirements of the site stormwater management strategy as well as looking for opportunities to provide additional benefits beyond the project
- NZDF to maintain an overall register of all changes to the stormwater infrastructure including retrofit/ offsets and new projects to track the overall change in imperviousness and flows from the site and to provide flexibility for the projects

Stormwater management plan

- Includes:
 - Requirements for each project
 - Site specific guidance where the Councils standard design guidance needs modification
 - Development of checklists and worksheet for each project to ensure consistency

Base Auckland: Stormwater screening calculation for new projects

Stormwater management requirements at Base Auckland have changed with the adoption of the Auckland Unitary Plan. This introduced a number of new requirements for the Base. These include:

- The requirement to provide for the first 5mm to go to soakage (soak into the ground and not runoff) of rainfall from all **new and redevelopment** of existing areas;
- The requirement to provide for stormwater detention for any **new impervious areas**; and
- Stormwater treatment from **new and redeveloped** carparks and associated accessways.

While there are a range of rules which apply over different parts of the site, a single sitewide consent has been sought which looks to apply consistent controls and requirements over the whole Base. These override any requirements within the plan rules.

Project Name: _____

Date: _____

Stage 1: Identify changes to stormwater

Step 1 Calculate existing area

Total building roof area -	EAr	_____	m ²
Total parking/ driveway area -	EAp	_____	m ²
Total non-vehicular paved area -	EAnv	_____	m ²
Total area = Ear + EAp + EAnv			<input type="text"/> m ² = Aexist

Step 2: Calculate proposed area

Total building roof area -	NAr	_____	m ²
Total parking/ driveway area -	NAp	_____	m ²
Total non-vehicular paved area -	NAnv	_____	m ²
Total area = Nar + NAp + NAnv			<input type="text"/> m ² = Anew

Step 3: Calculate change in area

Anew – Aexist = m² = Adiff

If Adiff is greater than zero, then you need to contact DPG Environment Services and consult a stormwater engineer

Stage 2: Calculate minimum requirements

Step 4: Calculate retention requirement

Retention = 5mm x Anew = m³ = retention volume

Step 5: Calculate detention requirement

Detention = 26mm x Adiff = Vdetmin _____ m³

Long term management and challenges

- Tracking spreadsheet of all projects
- Opportunity to look at additional capacity now to offset future projects
- Review of all projects to ensure the requirements of the plan are met

Challenges:

- Keeping on top of large number of projects
- Ensuring everyone understands the approach and purpose
- Tracking changes in projects as they are developed
- Changes in consultant teams and staff within project teams

Questions?

