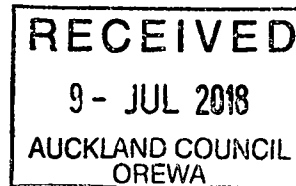




Our Ref: L20145b

3rd November 2017

Three Blokes Limited
PO Box 170
Matakana 0948



Attention: Dean and Kim Munro

Dear Dean and Kim,

RE: **ON-SITE WASTEWATER TREATMENT AND DISPOSAL REPORT
REPORT FOR THE PROPOSED DEVELOPMENT AT 362 MATAKANA VALLEY
ROAD, MATAKANA (PT ALLOT 51 PSH OF MATAKANA SO 1044)**

INTRODUCTION

This office has been engaged to prepare a wastewater design and report at the above address and provide a report to accompany a building consent/resource consent application with Auckland Council.

This office has visited and observed the above site on Tuesday the 12th September 2017 and a walkover survey was completed to locate suitable areas for on-site wastewater disposal and a sub-soil investigation was carried out to determine the underlying soil profile to facilitate design.

SITE DESCRIPTION

The site is located at No 362 Matakana Valley Road, Matakana. The site is located on the north eastern side of the road and is around 2km from the Matakana Township.

The site has a total land area of around 2.7 Ha and comprises an irregular shaped portion of land. The property encompasses a timber sales yard known as the Matakana Sawmill, comprising timber storage and processing sheds.

There is an overland flow path bisecting the site which flows in a west to east manner and this overland flow path flows into an upper tributary of the Matakana River. The river continues due south and discharges into the Mahurangi River. The stream embankments to the side of the overland flow path comprise steep slopes of around 30° to 40° and are within close proximity to the proposed planning shed location.

The existing vegetation near the eastern boundaries comprises both native bush and exotic trees.

PROPOSAL

This phase of the development includes the construction of a new Planing Shed to replace the existing fire damaged shed, and the replacement/re-purposing of two existing drying sheds located in the south-eastern corner of the site. All new buildings will be located in a similar location as the original buildings.

The architectural design of the replacement Planing Shed has been carried out by Campbell Registered Architects Ltd. Their drawings reference 14025 dated 28th August 2017 show that the replacement Planing Shed will include a lunchroom/office/showroom, and two workshops. The architectural plans also depict one toilet with one hand-wash basin. The wastewater from this building will be treated via the existing wastewater treatment facility for the original Planing Shed.

The concept design of the new market buildings includes one shed with overall dimensions of 29.1m x 12.8m and the other with overall dimensions of 15.5m x 7.0m. For the purposes of this report, these are referred to as Building One and Building Two respectively.

The following assumptions have been used in the wastewater design;

Building One - approx. 29.1m x 12.8m:

- Nine Units
- One toilet & one hand wash basin

Building Two - approx. 15.5m x 7.0m:

- three Units

It is also assumed, that on average, that there will be 1.5 people working at each market shed (some have two people while others have one).

Discharge volumes for the proposed market sheds are based on likely occupancy levels and relevant likely typical daily wastewater flow allowances. TP58 design flow loads refer to the United States Environmental Protection Agency (USEPA) onsite waste water treatment system manual. The USEPA manual identifies the following typical wastewater flows for an 'office' type building applies - refer appendicies. While the term office may not be directly akin to a market shed, the use of the buildings facilities (toilets, wash basins) are.

If on average, there are 1.5 people per market shed, then the following applies:

Wastewater generated for office type occupancy = 49 litres/employee/day

9 Units x 1.5 people = 14 people

3 Units x 1.5 people = 5 people

Total = 19 people, or, 'employees'

19 employees x 49 l/day = 931 l/day

It is proposed to locate the wastewater disposal field in the southern area of the lot to treat the wastewater runoff from two new market facilities. Refer to the attached plan for the wastewater disposal field location.

FLOOD PRONE AREAS & FLOOD PLAINS

The Auckland Council Geo mapping tool identifies that there are both **flood prone areas** and **flood plains** at the site.

The **flood plains** mapping is less clearly defined insofar as the mapping tool suggests the water rises to RL 21 or RL 24m depending on where one looks. The variance is due to the course scale of the hatch employed in the geo mapping tool.

The Auckland Council Geo mapping tool also identifies that the **flood prone area** to the north of the replacement shed extends to RL 22.11m. This level is discussed in the

Geotechnical Investigation Report prepared by this office reference L20145 dated 4th October 2017.

In the absence of clearly defined **flood plains** mapping, we anticipate that the **flood plain water** level to extend to a similar level as the **flood prone area** of RL 22.11m.

The proposed wastewater field is proposed to be installed at around RL 22.15m, this means that the field is above the 0.01AEP level.

It is also important to note that TP58 only requires the field to be above the 0.2 AEP level (20 year) further demonstrating compliance.

SITE INVESTIGATION AND APPRAISAL

The fieldwork carried out on the site involved the drilling of seven 50-mm diameter hand auger borehole to a maximum depth of 5.0 metres. The soils encountered during the sub-soil investigation are of category 5, moderate to slow drainage in terms of TP58, Table 5.1.

ON-SITE WASTEWATER DISPOSAL DESIGN

We recommend the installation of an On-site Wastewater Treatment and Disposal System providing secondary treatment with an Aerated Wastewater Treatment System (AWTS), utilising surface or near surface wastewater disposal via Pressure Compensating Dripper Irrigation (PCDI).

We have adopted an application rate (from TP58; Table 9.2 and Table TS5-2) of:

- 3mm/day (a maximum loading rate of 3litres/m²/day).

The design requirements for the on-site wastewater treatment and disposal system are as follows:

Occupancy Allowances:		
refer Table 3.4 USEPA	Occupancy 'Office'	= 19 employees
Flow Allowances:	Occupancy 'Office'	= 49ℓ/person/day
refer Table 3.4 USEPA		
Max Daily Wastewater Flow:	19 x 49	= 931 ℓ/day

Areal Application Area Calculation		
Design Land Disposal Area:	$\frac{931 \text{ ℓ/day}}{3 \text{ ℓ/m}^2/\text{day}}$	= 310 provide: 310m ²
Linear Length of Lines:	310m ² / 1.0m spacing	= 310m

$$\text{Area:Volume Ratio} = \frac{26,672\text{m}^2 \text{ (Gross Lot Area)}}{931\text{ℓ/day (Max Daily Flow)}} = 28.7$$

This area:volume ratio exceeds the 3.0 threshold and the maximum daily flows do not exceed 2000-litres/day therefore the activity is an Auckland Unitary Plan Permitted Activity (P).

It is proposed to install a CleanStream Aerated Wastewater Treatment System Aerated Wastewater Treatment System using 310 linear metres of PCDI in a 310m²-disposal field located in the eastern area of the lot.

Auckland Council requires the type of Wastewater Treatment System to be specified at building consent stage. Outlined below are five systems commonly used in the Rodney area:

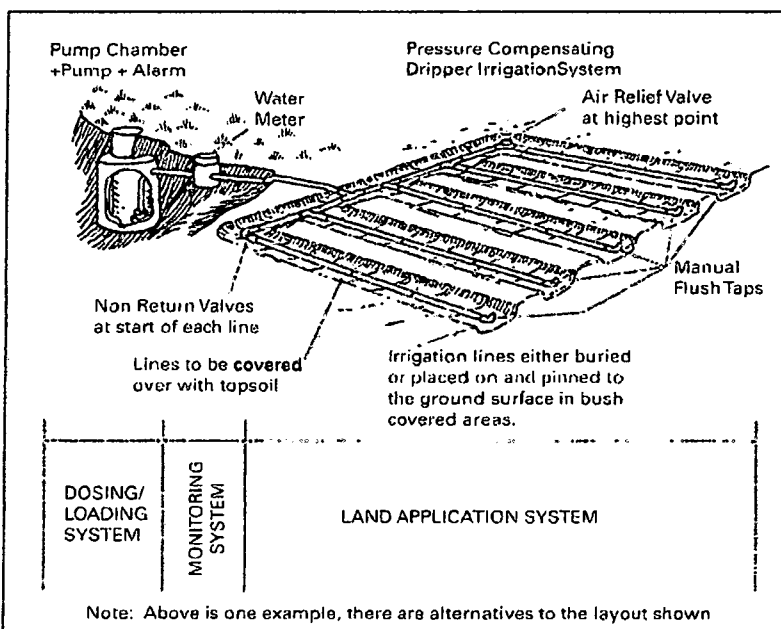
- Hynds Lifestyle Advanced Aerated Wastewater Treatment System
- Advantex AX15 Reticulating Textile Filter Wastewater Treatment System
- Oasis Clearwater Series-2000 Aerated Wastewater Treatment System
- Ecowaste Aerated Wastewater Treatment System
- CleanStream Aerated Wastewater Treatment System

For this report we have specified a CleanStream Aerated Wastewater Treatment System. If the client installs a different type (brand) of AWTS during the building consent process, this office should review the specifications and provide a letter with the Producer Statement (PS4) Construction Review.

The PCDI should be laid to the contour of the site at 1.0m centres in either shallow trenches or on the surface and covered with mulch or bark. The disposal field should be protected (fenced) to prevent livestock entering.

Shown below is a typical PCDI system layout:

Figure 9.1: Schematic Diagram of a Pressure Compensating Drip Irrigation System



ASSESSMENT OF ENVIRONMENTAL EFFECTS

1). Groundwater

Winter groundwater level was encountered at approximately 1.0m below existing ground level. The wastewater disposal field is located on an elevated portion of the site. The proposed system produces secondary treated wastewater; we do not believe there will be any adverse effect on the groundwater in the area or nearby.

2). Odour/Noise

Due to the high treatment level provided by the aerated wastewater treatment system, we expect there to be little, if any, odour from the disposal field. We do not believe noise to be an issue with this site as the system is buried. The site is remote from any adjacent dwellings, affording protection from any unforeseen noise nuisance.

3). Protection from Failure

A maintenance agreement should be implemented with the contractor (at installation of the wastewater treatment system and on going) to ensure that the existing system operates without failure. High water alarms and emergency storage capacity is standard on this model of treatment system.

4). Alternative Methods

Due to the potential elevated groundwater level in winter months. We do not consider the site suitable for conventional trenches in the disposal field. An aerated wastewater treatment system will provide secondary treatment and utilises a surface or near surface disposal field.

5). System Management Plan

A system management plan will be implemented between the system installer (contractor) and the owner.

6). System Maintenance Contract

A system maintenance contract will be implemented between the system installer (contractor) and the owner.

At construction stage please check the conditions of the building consent. This office should be required to inspect the installation of the on-site wastewater treatment system and issue a Producer Statement (PS4) Construction Review. If required this office should inspect the on-site wastewater treatment system during installation and we will require a minimum of 24 hours notice prior to the inspection.

Should you wish to discuss any aspects of the above information, please contact the above office.

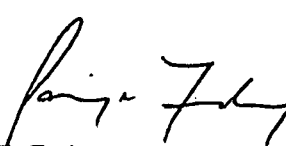
We trust this meets with your approval.

Yours faithfully
IAN HUTCHINSON CONSULTANTS LTD

Prepared by


N. Broad
ENGINEER

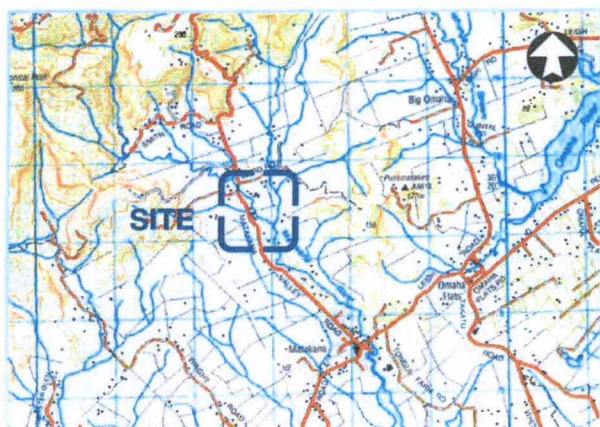
Reviewed by


P. Farley
CIVIL MANAGER

Approved by


I. Hutchinson
MANAGING DIRECTOR

**ON-SITE WASTEWATER TREATMENT MANAGEMENT
FOR THREE BLOKES LTD
AT 362 MATAKANA ROAD
AUCKLAND,
(LEGAL DESCRIPTION: Sec 1 SO 400726, Pt Allot 51 Psh
Of MATAKANA SO 1044)**



LOCALITY PLAN

DRAWINGS

WW00	COVER
WW01	SITE LOCATION PLAN
WW02	PROPOSED ONSITE WASTEWATER TREATMENT PLAN

RECEIVED
9 - JUL 2018
AUCKLAND COUNCIL
OREWA

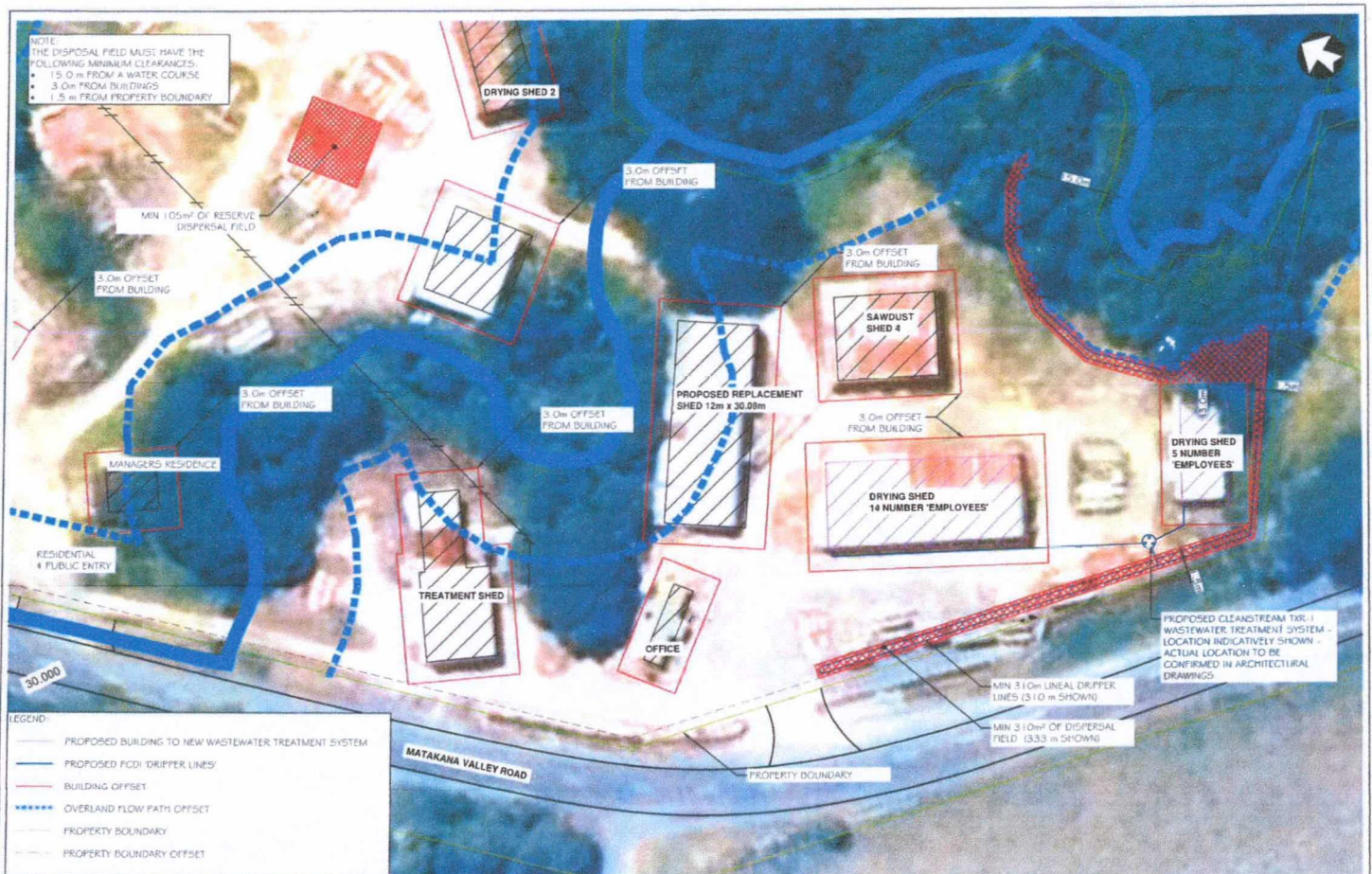


						 Hutchinson Engineering & Construction	Design	N. BROAD	OCT 2017	Project THREE BLOKES LTD 362 MATAKANA ROAD AUCKLAND, (LEGAL DESCRIPTION: Sec 1 SO 400726, Pt Allot 51 Psh Of MATAKANA SO 1044)	Title SITE LOCATION PLAN	Sheet No. WW-01
							Drawn	N. BROAD	OCT 2017			
							Checked	P. FARLEY	OCT 2017			
							Approved	L. HUTCHINSON	OCT 2017			
							Scale	1:1000 @ A3				
ISSUED FOR APPROVAL							Scale: vert. horiz.					
No.	Revision	Drawn	Chk.	Appd.	Date	PO Box 150, Orewa 0640 154 Cambridge Road, Orewa 0640 Ph: (09 438 5702) www.hut.co.nz						
								Job No. A3-20145				

RECEIVED

9 - JUL 2018

AUCKLAND COUNCIL
OREWA



				 Hutchinson Engineering & Construction		Design: N. BROAD OCT 2017	Project: THREE BLOKES LTD 362 MATAKANA ROAD AUCKLAND, (LEGAL DESCRIPTION: Sec 1 SO 400726, Pt Allot 51 Psh Of MATAKANA SO 1044)	Title: PROPOSED ONSITE WASTEWATER TREATMENT PLAN	Sheet No: WW-02			
						Drawn: N. BROAD OCT 2017						
						Checked: P. FAIRLEY OCT 2017						
						Approved: I. HUTCHINSON OCT 2017						
ISSUED FOR APPROVAL				N.B.	P.J.	I.H.	OCT 2017					
By: 	Drawn: 	Check: 	Appr: 	Scale: 								
				PO Box 100, Orewa 0805 104 Cambridge Road, Orewa 0805 Ph: 09 426 5702 www.hut.co.nz		1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						
						Scale: 1:500 @ A3						