

19 123 Rev.B

CADZ Plan Site Plan dated
29 May 2024 added to report

Jenny Morgan
36 Old Hospital Road
Whangaroa

30 May 2024

Stormwater Amendment Report for Lot 1 DP 184536 at 36 Old Hospital Road, Whangaroa – BC-2022-988

Haigh Workman Ltd has been contracted by Jenny Morgan (the Client) to provide an amended stormwater design for a newly developed site at 36 Old Hospital Road, Whangaroa. A Building Consent (BC) has been granted for the development however a Code Compliance Certificate has not yet been sought.

The design has been amended as the two 20,000 L detention tanks specified beneath the studio in the original design are too large to install around the subfloor structure. Smaller tanks have been installed in their place, hence requiring the overall detention configuration to be amended. The original intent for detention design was to limit post-development runoff for the 10-year ARI event to the same level as the pre-development runoff. The proposed amendment will provide this same outcome.

Additionally, an amendment to the management of stormwater from the turning area has been requested. The amended design can provide management without nuisance on downstream properties.

An amended design is described in the body of this report and within the enclosed site plan. It is envisaged that this report will be used endorse a minor variation to the BC.

Investigations/Findings

The site was visited by a Civil/Environmental Engineer on 2 February 2024, during which time the Client showed the Engineer around the site.

The site is located on a 1,864 m² triangular parcel of land with road reserve encompassing the eastern and western boundaries. The eastern half of the site slopes gently to the north and contains the buildings and paving. From north to south across this area there exists: a studio/cabin to the north; vehicle parking/manoeuvring centrally; and a house to the south. The western half of the site slopes moderately to the west. It contains the on-site wastewater management system which comprises a package treatment plant and dripper field. A retaining wall has been installed between the two identified areas.

Runoff from the house is conveyed to a 20,000L tank roughly in the same location as shown in the BC. Overflow from the tank currently flows to an overflow/irrigation tank which discharges to the ground. No erosion was observed around the outfall location.

Runoff from the studio discharges to two 10,000L tanks installed beneath the building. Each tank is fed separately by half of the roof area split evenly along the central ridge line, as shown in Figure 1. The overflow from the tanks is to a pipe that discharges directly to the berm as shown in the enclosed site plan. This is not in accordance with the BC (as enclosed), however the Client has advised that it has been seen and accepted by the building inspector.

Runoff from the manoeuvring area slopes generally to the north. At the time of inspection, it had not been sealed as shown in as shown in Figure 1. Runoff appears to spill to the northeast corner of the area.



Figure 1: Manoeuvring area and studio (looking to north)

Based on the site walkover, it appears that the dripper field has a greater setback from the southern boundary than shown in the BC. This has been confirmed by the enclosed as-built plan provided by the installing drainlayer. The as-built wastewater layout has been adopted for this design.

Proposed stormwater arrangement

Stormwater calculations are shown below:

Table 1: Pre-development run-off

	Area m ²	C	I ₁₀ mm/hr	Q L/s
Medium soakage pasture with slope	1864.1	0.4	109.2	22.62
Total	1864.1			22.62

Table 2: Post-development runoff

	Area m ²	C	I ₁₀ mm/hr	Q L/s
Dwelling Roof and Deck Area	244.0	0.9	109.2	6.66
Cabin Roof Area	73.4	0.9	109.2	2.00
Concrete drive/patio	332.6	0.85	109.2	8.58
Landscaped grounds	1214.1	0.35	109.2	12.89
Total	1864.1			30.13
Additional runoff				7.5

It is proposed that the excess runoff be attenuated by detaining runoff from both the studio and house roofs.

Rather than sacrificing water storage from the existing house tank it is proposed that a new dedicated detention tank be installed at the southwest corner of the site. The tank will be fed by an outfall from the existing overflow/irrigation tank. Roof and deck runoff shall ultimately be piped along the southern boundary to this new tank. The tank shall have a volume of 15,000L and be fitted with a 15 mm orifice at the base of the tank. This would reduce peak flow by 6.0 L/s as shown in the enclosed chart. A filter shall be installed at the inlet to prevent debris collecting in the tank as shown in the enclosed schematic. The outfall from the tank shall discharge to the existing catchpit on the road as shown in the attached drawing.

To provide sufficient attenuation for the site, the studio tanks also need to be modified. Each tank shall be fitted with a 15 mm orifice, 300 mm below the invert of the overflow pipe. This would reduce peak flow from the studio by 1.6 L/s as shown in the enclosed chart. A potential arrangement is shown in Figure 2. A baffle shall be installed at the attenuation orifice as shown in the enclosed schematic.



Figure 2: Potential orifice arrangement

The BC shows runoff from the manoeuvring area discharging to a central manhole and then piped to the western boundary. It is proposed that, instead, stormwater is discharged to the berm on the eastern side of the site. Minor shaping of the basecourse and formation of a shallow -channel will be required to direct runoff to the identified outfall.

Disclaimer

This report has been prepared for the sole use of our client, Jenny Morgan, for the particular brief and within the terms and conditions agreed with our client. It may not be used or relied on (in whole or part) by anyone else, or for any other purpose or context, without our written agreement.

Prepared by



Rory Howell

Civil/Environmental Engineer
BE (Natural Resources),
MGES (Environmental Management),
MEngNZ

Reviewed by



Tom Adcock

Senior Civil Engineer
BE (Civil Eng),
MEngNZ

Approved by



John Papesch

Senior Civil Engineer
BE (Civil Eng),
CMEngNZ, CPEng

Enclosures:

Site plan

House tank schematic

Studio tank schematic

Attenuation charts

Approved Building Consent Document site plan

Site plan by CADZ Plan dated 29 May 2024

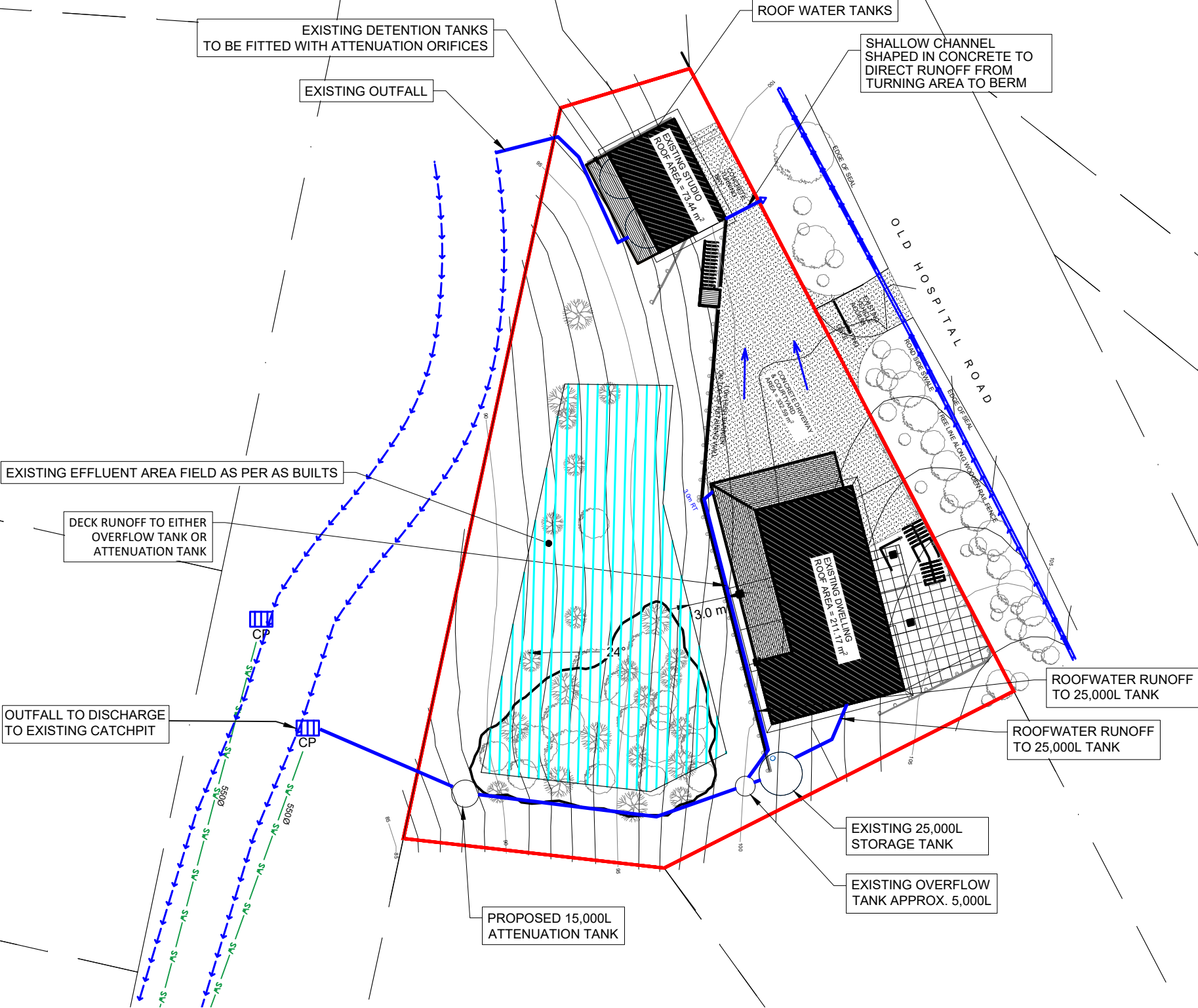
Wastewater as-built plan

FNDC - Approved Building Consent Amendment Document - EBC-2022-988-0-A - Pg 5 of 12 - 08/10/2024 - NZBTC

NOTES:

— SITE BOUNDARY

SCHEME PLAN REPRODUCED FROM DAWSON
DESIGN PLANS FOR LIVING, 'PROPOSED NEW
DWELLING FOR JENNY ANN EMMANUEL,
36 HOSPITAL ROAD, WHANGAROA, 0478',
DRAWING CODE: 102, RC-01 - ISSUED 27/09/2019



IMPERMEABLE SURFACES:	
DWELLING ROOF:	211.17m ²
CABIN ROOF:	73.44m ²
CONC DRIVE/ COURTYARD:	332.59m ²
TOTAL:	617.2m ²

Issue	Date	Revision
A	24/07/2019	FIRST ISSUE
B	18/10/2019	REVISED SITE PLANS
C	26/02/2024	REVISED STORMWATER LAYOUT WITH WASTEWATER AS-BUILT

DWG Proposed Stormwater Management Plan	
Scale 1:400 @A3	Date 24/07/2019
Drawn LP	Checked TA
Approved JP	
File T:\CLIENTS\JENNY MORGAN\JOBS\19 123 PETER MORGAN\ENGINEERING\DRAWINGS\19 123_20240226_WW & SW_REV C.DWG	

HAIGH WORKMAN
Civil & Structural Engineers

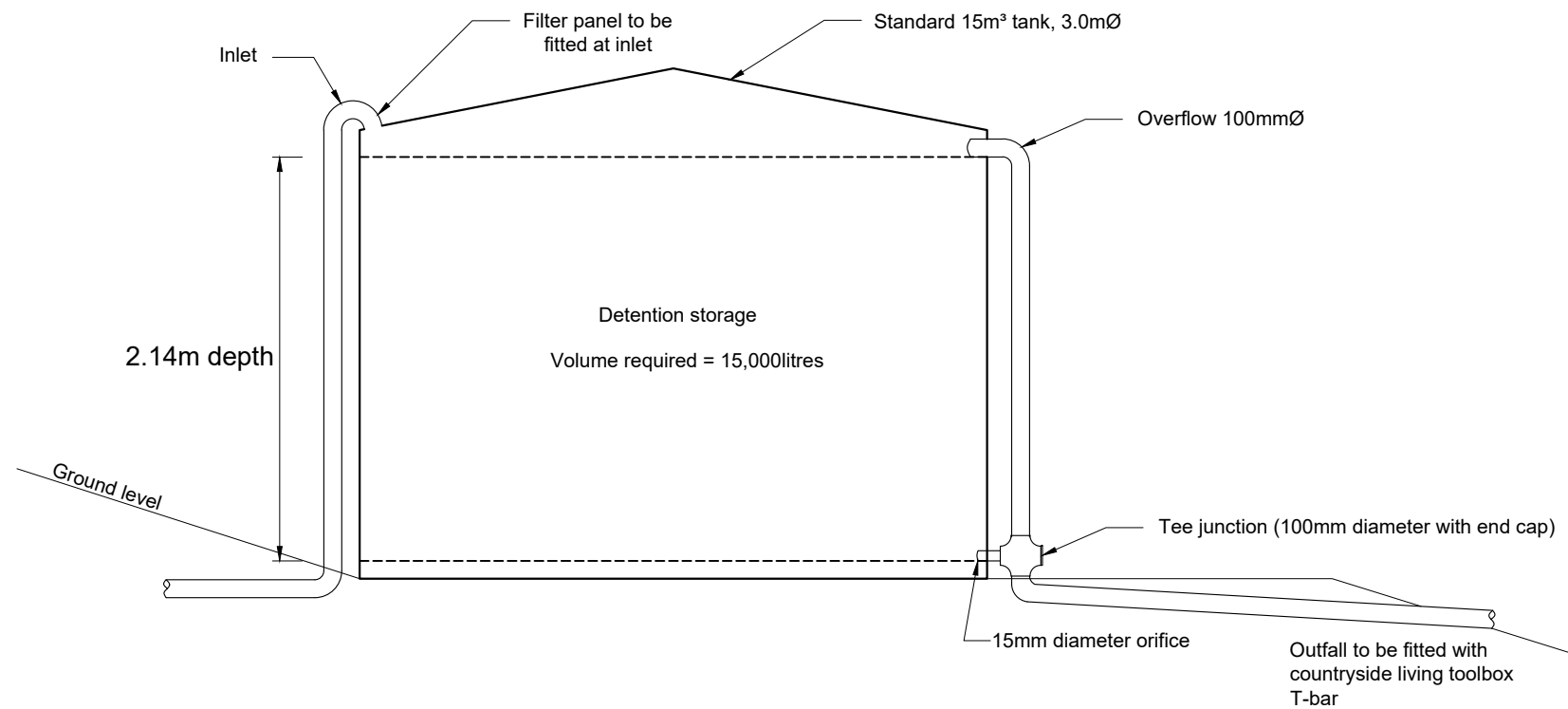
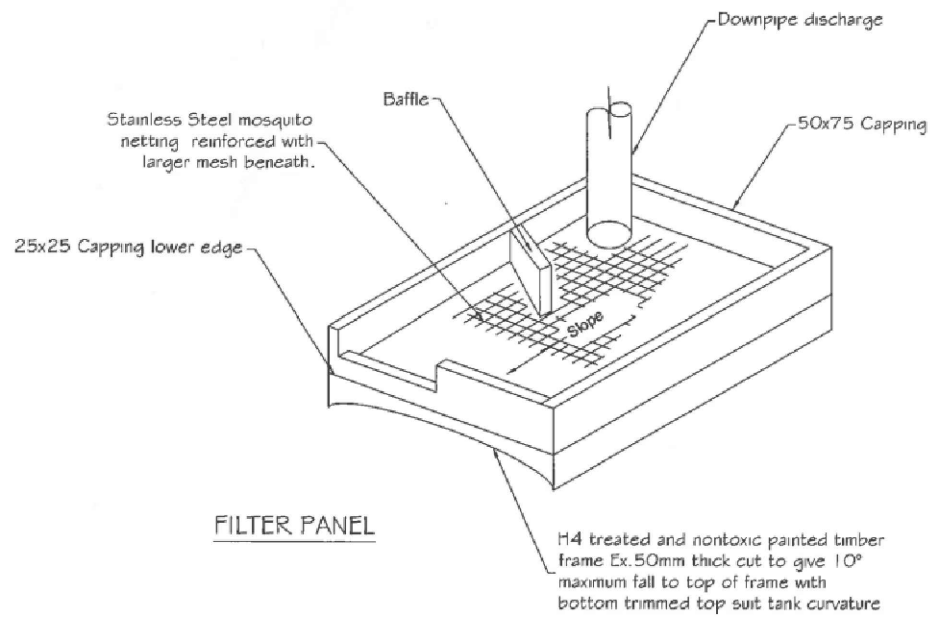
6 Fairway Drive
Kerikeri, BOI.
T: 09 407 8327
F: 09 407 8378
E: info@haighworkman.co.nz

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Project	36 Old Hospital Road, Whangaroa Lot 1 DP 184536
Client	Jenny Morgan
Project No.	19 123
RC no.	

DWG No.	
Sheet No.	1 of 1

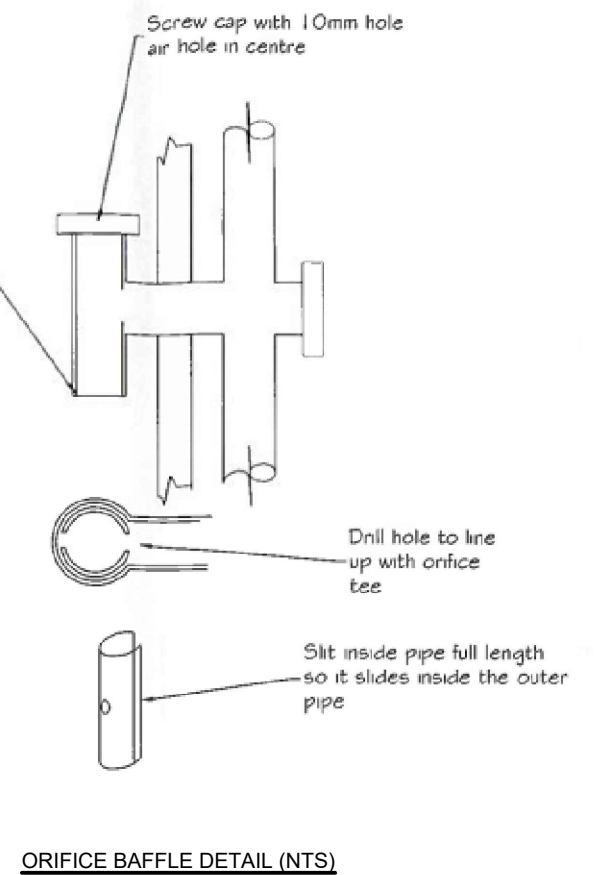
FNDIC - Approved Building Consent Amendment Document - EBC-2022-988-0-A - Pg 6 of 12 - 08/10/2024 - NZBTC



NOTE

- Maximum orifice pipe length is 150mm. Allow 75mm clearance from end of pipe to outside tank wall
- Fix orifice pipe to tee junction using reducer fittings

	Issue	Date	Revision	DWG Schematic Arrangement of House Detention Storage			HAIGH WORKMAN Civil & Structural Engineers		Project 36 Old Hospital Road, Whangaroa			DWG No.
	A	26/02/2024	FIRST ISSUE				6 Fairway Drive Kerikeri, BOI. T: 09 407 8327 F: 09 407 8378 E: info@haighworkman.co.nz		Lot 1 DP 184536			
									Client Jenny Morgan			
				Scale	NTS	@A3						Sheet No.
				Drawn	LP	Checked	TA	Approved	JP			1 of 1
				File	T:\CLIENTS\JENNY MORGAN\JOBS\19 123 PETER MORGAN\ENGINEERING\DRAWINGS\19 123_20240226_WW & SW_REV C.DWG							
							DIMENSIONS MUST NOT BE SCALE MEASURED FROM THESE DRAWINGS. THE CONTRACTOR SHALL CHECK & VERIFY ALL DIMENSIONS INCLUDING, SITE LEVELS, HEIGHTS AND ANGLES ON SITE PRIOR TO COMMENCING ANY WORK. THE COPYRIGHT TO THESE DRAWINGS AND ALL PARTS THERE OF REMAIN THE PROPERTY OF HAIGH WORKMAN. ©2006		Project No. 19 123		RC no.	



- | NOTE |
|--|
| <ul style="list-style-type: none">• Maximun orifice pipe length is 150mm. Allow 75mm clearance from end of pipe to outside tank wall• Fix orifice pipe to tee junction using reducer fittings |

Issue	Date	Revision	DWG	Schematic Arrangement of Studio Detention Storage				Project		36 Old Hospital Road, Whangaroa		DWG No.
A	26/02/2024	FIRST ISSUE				6 Fairway Drive Kerikeri, B.O.I. T: 09 407 8327 F: 09 407 8378 E: info@haighworkman.co.nz		Client		Lot 1 DP 184536		
			Scale	NTS	@A3			Jenny Morgan				Sheet No.
			Drawn	LP	Checked	TA	Approved	JP	Project No.		19 123	RC no.
			File	T:\CLIENTS\JENNY MORGAN\JOBS\119 123 PETER MORGAN\ENGINEERING\DRAWINGS\119 123_20240226_WW & SW_REV C.DWG			DIMENSIONS MUST NOT BE SCALE MEASURED FROM THESE DRAWINGS. THE CONTRACTOR SHALL CHECK & VERIFY ALL DIMENSIONS INCLUDING, SITE LEVELS, HEIGHTS AND ANGLES ON SITE PRIOR TO COMMENCING ANY WORK. THE COPYRIGHT TO THESE DRAWINGS AND ALL PARTS THERE OF REMAIN THE PROPERTY OF HAIGH WORKMAN. ©2006				1 of 1	

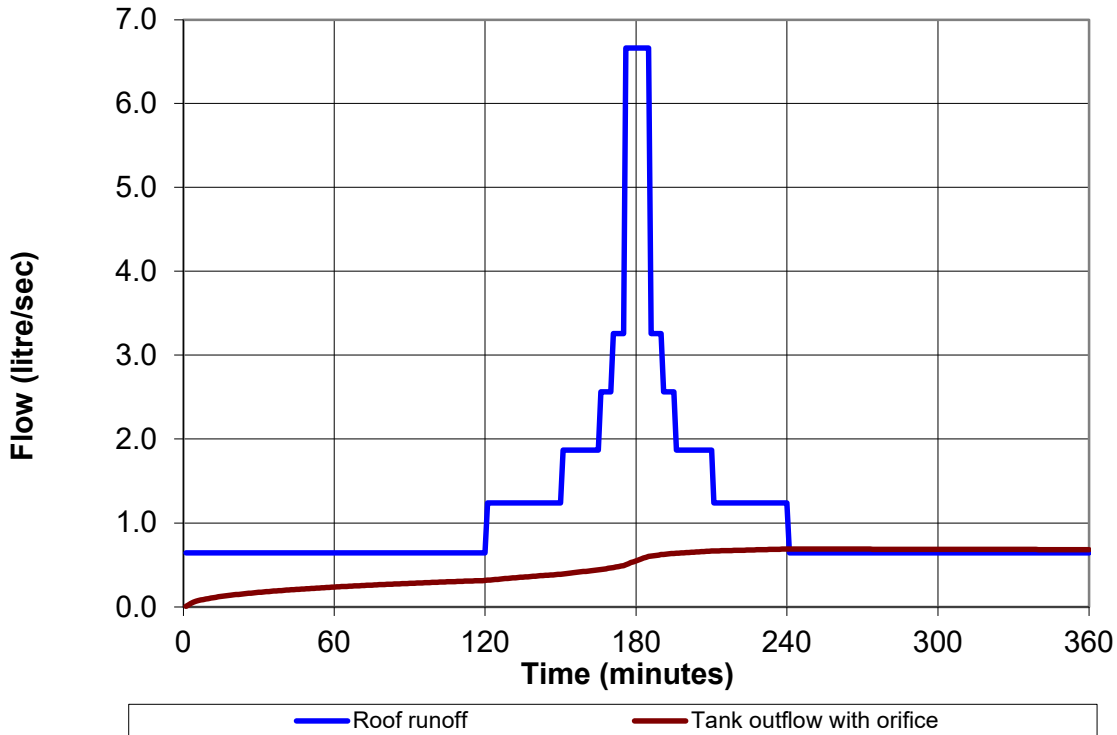
Stormwater Runoff Calculation

Haigh Workman Ltd

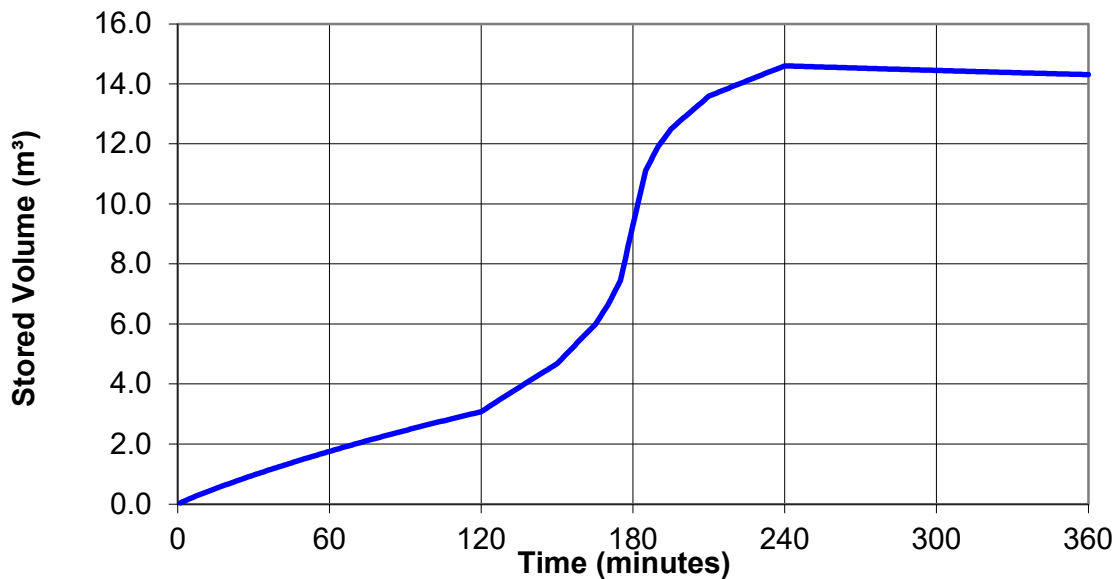
Job number 19 123

Project:	Residential development	House roof and deck area	244 m ²
Location:	36 Old Hospital Road, Whangaroa	Tank Diameter	3.0 m
Client:	Jenny Morgan	Area of tank	6.8 m ²
Designer:	RH	Diameter of orifice	15 mm
Date:	22/02/2024	Maximum attenuation	6.0 l/s

Hydrographs for House in 10 year ARI storm



Stored Volume in House Detention Tank



Stormwater Runoff Calculation

Haigh Workman Ltd

Job number 19 123

Project: Residential development

Studio roof area

73 m²

Location: 36 Old Hospital Road, Whangaroa

Tank Diameter

2.2 m²

Client: Jenny Morgan

Area of tank

7.4 m²

Designer: RH

Diameter of orifice

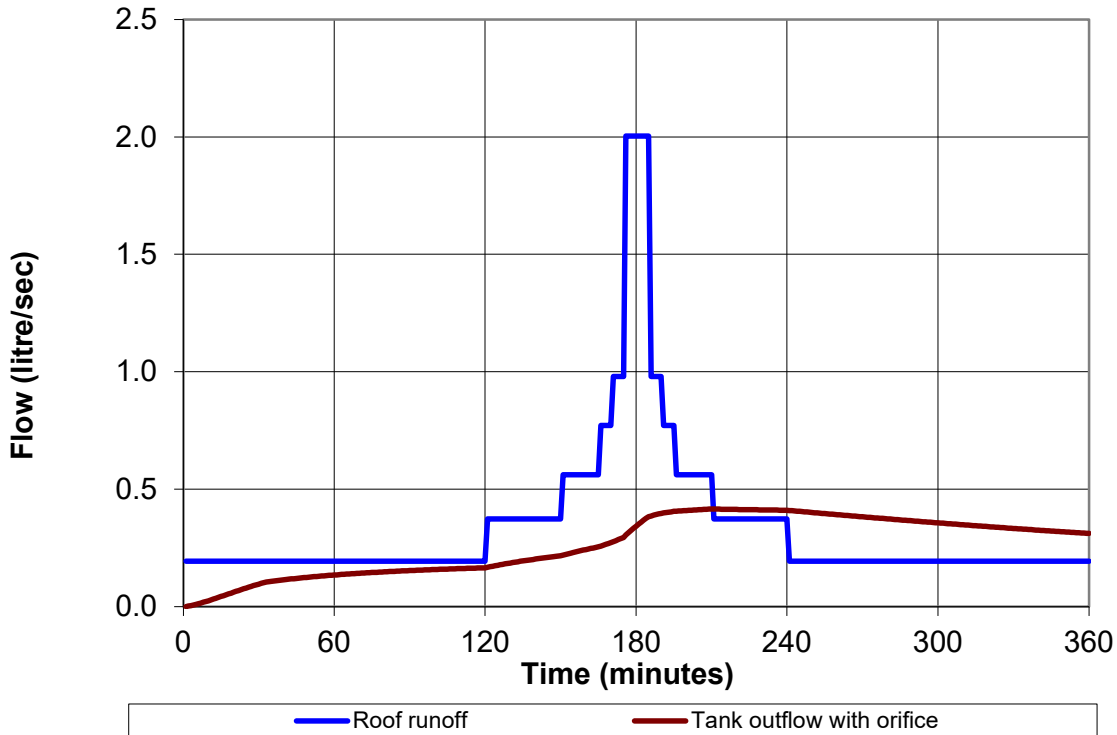
15 mm

Date: 22/02/2024

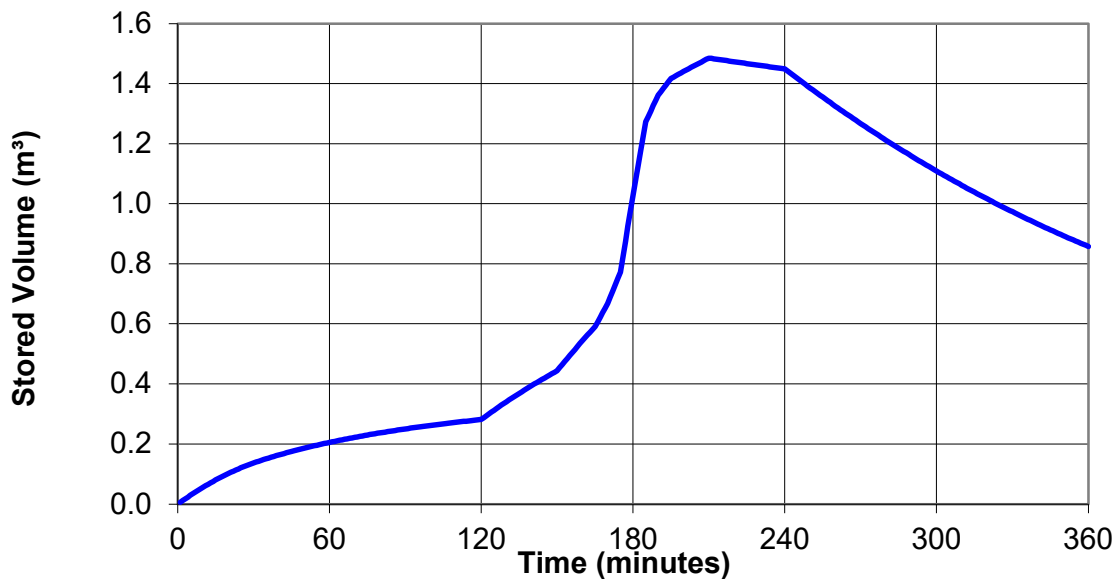
Maximum attenuation

1.6 L/s

Hydrographs for Studio in 10 year ARI storm



Stored Volume in each Studio Tank



0800 406 161 (09) 432 9188
info@dawsondesign.co.nz
 PO BOX 1140, WHANGAREI, 0140
www.dawsondesign.co.nz

CONTRACTOR TO CHECK ALL
DIMENSIONS & CONDITIONS
ON SITE BEFORE
COMMENCING WORK.

WORK ONLY TO FIGURED
DIMENSIONS. IN THE EVENT
OF A DISCREPANCY CONTACT
THE DESIGNER.

SITE PLAN

ISSUE DATE	5/02/2020
JOB NO.	18086
DRAWN BY	DF
CHECKED BY	CD

PROPOSED NEW DWELLING
FOR

**36 OLD HOSPITAL ROAD
WHANGAROA 0478**

NO.	REVISION	DATE
1	SK-01	22.11.2018
2	DD-01	22.11.2018
3	REV-01	05.02.2020

1:200

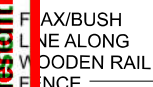
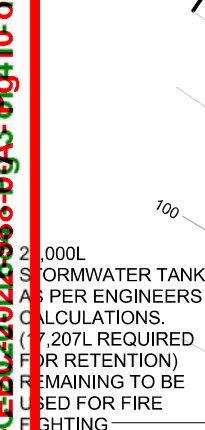
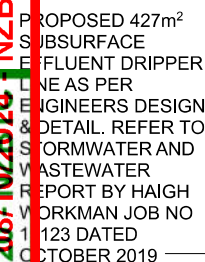
DRAWING CODE	DRAWING ISSUE
102	BC-02

SITE LEVELS/CONTOURS, EASEMENTS AND SERVICE LOCATIONS ARE TAKEN FROM COUNCIL GIS MAPS, CT, AND ON SITE SURVEY DATA RECORDED BY THE DESIGNER. CONTOURS WERE TAKEN FROM PLAN BY SURVEY & PLANNING SOLUTIONS (HISTORIC)

ALL WATER SUPPLY TO BE PROVIDED BY TANKS, PROMAX WATER FILTER 75LPM DUAL CARBON CARTRIDGE (RE-USEABLE SEDIMENT CARTRIDGE) + UV FILTER. AND PROMAX WATERPUMP WITH COVER INSTALLED AS PER MANUFACTURERS SPECIFICATIONS. DOWNPIPE TO BE FITTED WITH MARLEY FIRST FLUSH SYSTEM (OR SIM)

(617.20m² /1864.10m²) **33.10%**
(MAX 10% IMPERMEABLE SURFACES)

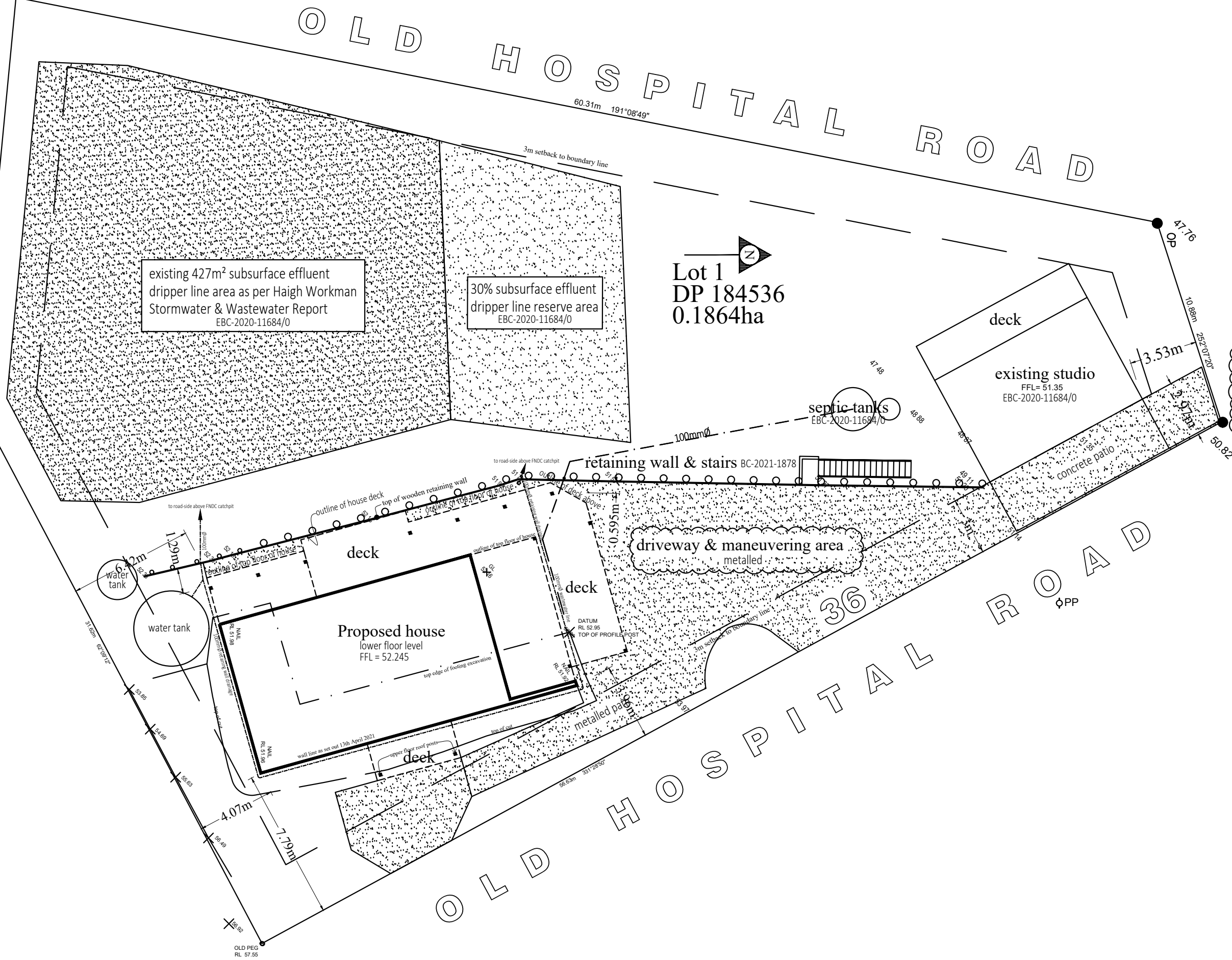
FNDC - Approved Building Consents and Donations - 43-4410-1312-2810720 - NZBTC



Scale 1:200

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Notes:
district plan zone:
site is in Coastal Living zone

wind zone:
building site wind zone is 'very high'

exposure zone:
building site exposure zone is 'D'

ground:
see Haigh Workman Geotechnical Investigation & Retaining Wall Design Report attached

exposure zone:
building site exposure zone is C

topography:
building site contour is near flat

excavation:
maximum depth: <2m
maximum volume: <3m³

plumbing & drainage:
all plumbing & drainage work is to fully comply with NZBC G13/AS1 & all local body regulations
wastewater is to be piped to existing connection

building coverage:	
area of site	1864m²
existing studio footprint	54m²
Proposed house footprint	108.76m²
total building coverage	162.76m²

8.73% of site has building coverage

site coverage:	
area of site	1864m²
existing studio roof area	67.32m²
Proposed house roof area	204.36m²
house decks	35.76m²
driveways, paths	250.0m²
total impermeable surfaces	557.44m²

29.90% of site has impermeable surfaces
10% impermeable surfaces is permitted
see RC2200280

site plan 1:200

Proposed house for Jenny & Peter Morgan, 36 Old Hospital Road, Whangaroa

amendment: driveway concrete apron deleted- driveway will be metalled
licence to occupy application for 2- 10,000litre water tanks (for fire fighting purposes)
on road reserve at northern edge of property

DALLEN ADAMS
15071
b
DALLEN ADAMS

