

Building Code Clause(s) B1/B2

# **PRODUCER STATEMENT – PS1 – DESIGN**

(Guidance notes on the use of this form are printed on page 2)

**B. H. WILLIAMS CONSULTING ENGINEERS LTD**

ISSUED BY: Consulting Civil, Structural and Transport Engineers

(Design Firm)

TO: Inforce Global Limited

(Owner/Developer)

TO BE SUPPLIED TO: Porirua City Council

(Building Consent Authority)

IN RESPECT OF: Concrete Paving to Accessways

(Description of Building Work)

AT: Exploration Way

(Address)

LOT     DP     SO    

We have been engaged by the owner/developer referred to above to provide

services in respect of the requirements of

Clause(s) B1 & B2 of the Building Code for  
All ☐ or Part only ☒ (as specified in the attachment to this statement), of the proposed building work.

The design carried out by us has been prepared in accordance with:

☒ Compliance Documents issued by the Ministry of Business, Innovation & Employment

(verification method / acceptable solution)

☒ Alternative solution as per the attached schedule.

NZS 4404, Austroads Pavement Design, NZ

The proposed building work covered by this producer statement is described on the drawings titled

Prognit Ltd. (for Scope Only) 4 Slabs (Attached) + "Inforce" Spec. Sheet (7/8 & 9)

On behalf of the Design Firm, and subject to:

(i) Site verification of the following design assumptions Contractor to Verify Subgrade

(ii) All proprietary products meeting their performance specification requirements CBR 7.7%

I believe on reasonable grounds that a) the building, if constructed in accordance with the drawings, specifications, and other documents provided or listed in the attached schedule, will comply with the relevant provisions of the Building Code and that b), the persons who have undertaken the design have the necessary competency to do so. I also recommend the following level of construction monitoring/observation:

☐ CM1 ☒ CM2 ☐ CM3 ☐ CM4 ☐ CM5 (Engineering Categories) or ☒ as per agreement with owner/developer (Architectural)

I, B. H. Williams am:

(Name of Design Professional)

☒ CPEng 18595 #

☒ Reg Arch     #

I am a Member of: ☒ IPENZ ☐ NZIA and hold the following qualifications:

The Design Firm issuing this statement holds a current policy of Professional Indemnity Insurance no less than \$200,000\*.

The Design Firm is a member of ACENZ ☒

SIGNED BY B. H. Williams ON BEHALF OF

Date 04/11/2017 (signature) B.H. Williams

Note: This statement shall only be relied upon by the Building Consent Authority named above. Liability under this statement accrues to the Design Firm only. The total maximum amount of damages payable arising from this statement and all other statements provided to the Building Consent Authority in relation to this building work, whether in contract, tort or otherwise (including negligence), is limited to the sum of \$200,000\*.

This form is to accompany Form 2 of the Building (Forms) Regulations 2004 for the application of a Building Consent.

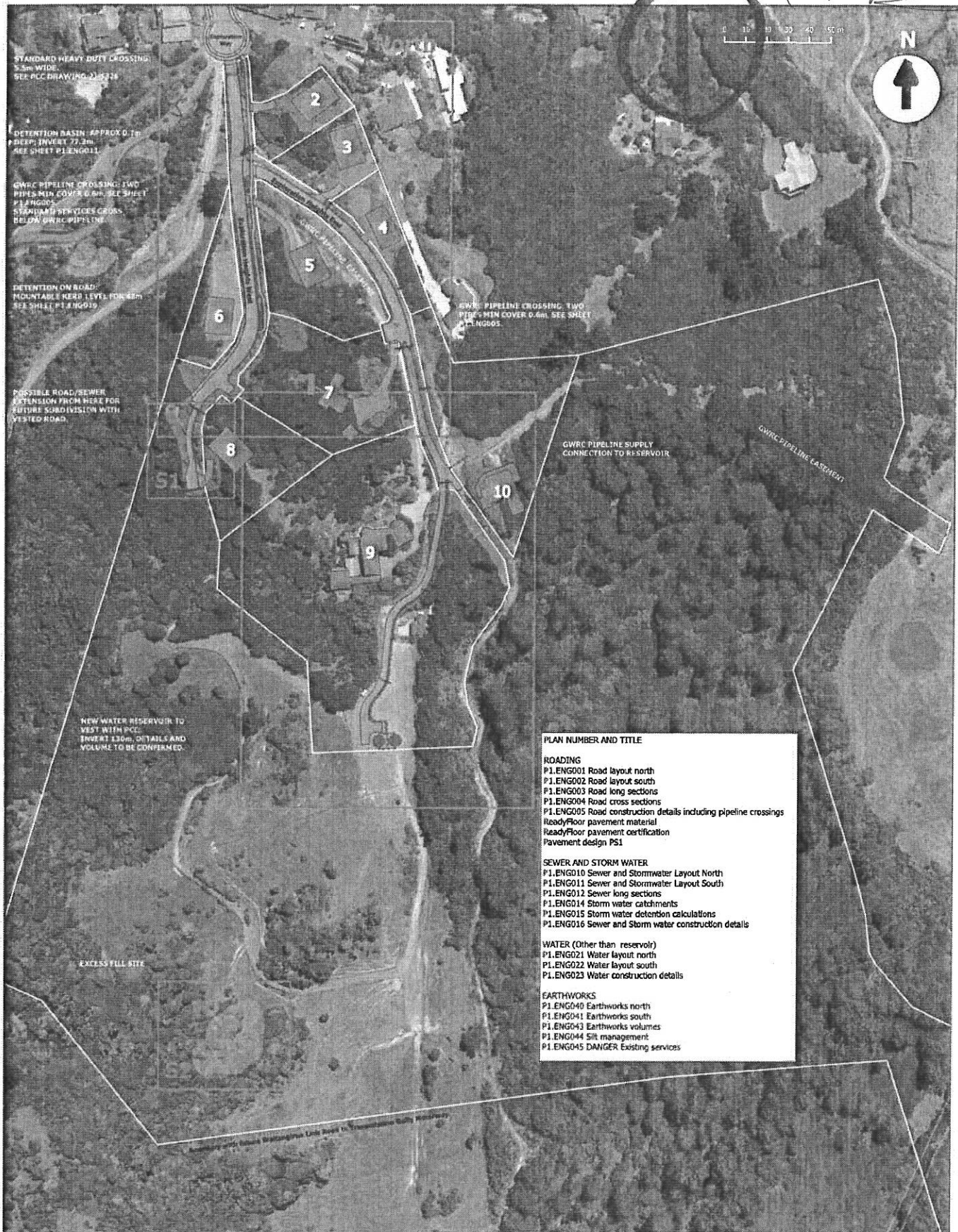
THIS FORM AND ITS CONDITIONS ARE COPYRIGHT TO ACENZ, IPENZ AND NZIA

This is a detailed street map of the Aotea and Cannons Creek regions in Auckland, New Zealand. The map shows a network of roads including Whitford Brown Ave., Waiwiti Ave., and several smaller residential streets such as Ashdale Rd, Holiday Rd, and Discovery Dr. Key landmarks like Pauatahanui Park and Cannons Creek Park are indicated. The map is sourced from Google Maps, as evidenced by the 'Google' logo at the bottom center.

## Exploration Heights

400m

(Scope of Feb 09)



Legend			
Plan location	Water main	Storm water	Cut
Proposed Roads and Buildings	Sewer main	Lot boundaries	Fill
		Other boundaries	

## EXPLORATION HEIGHTS SUBDIVISION RC6601 PRE-ENGINEERING PLAN SET

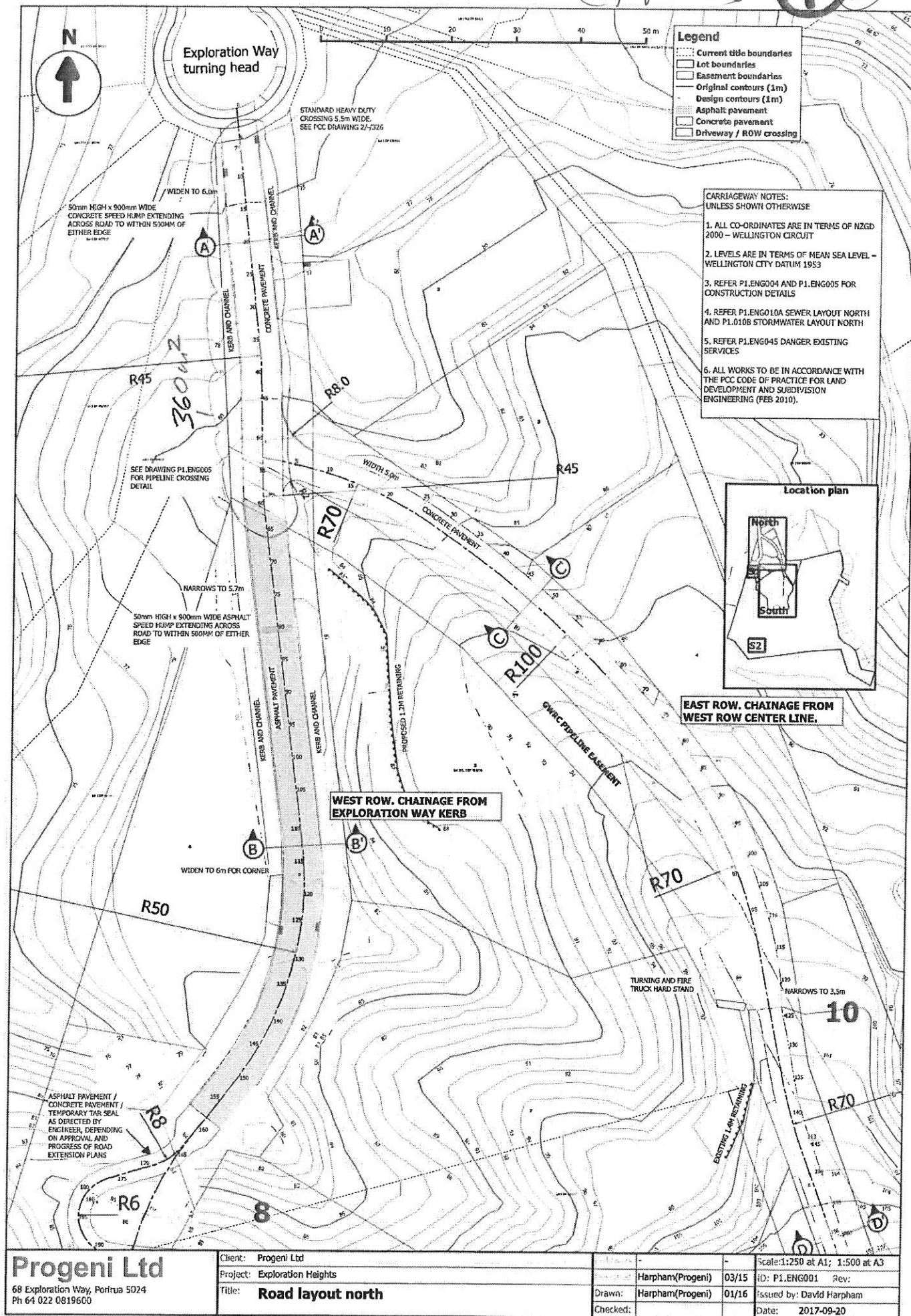
**Progeni Ltd**

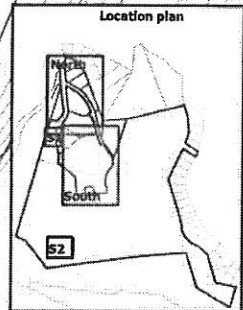
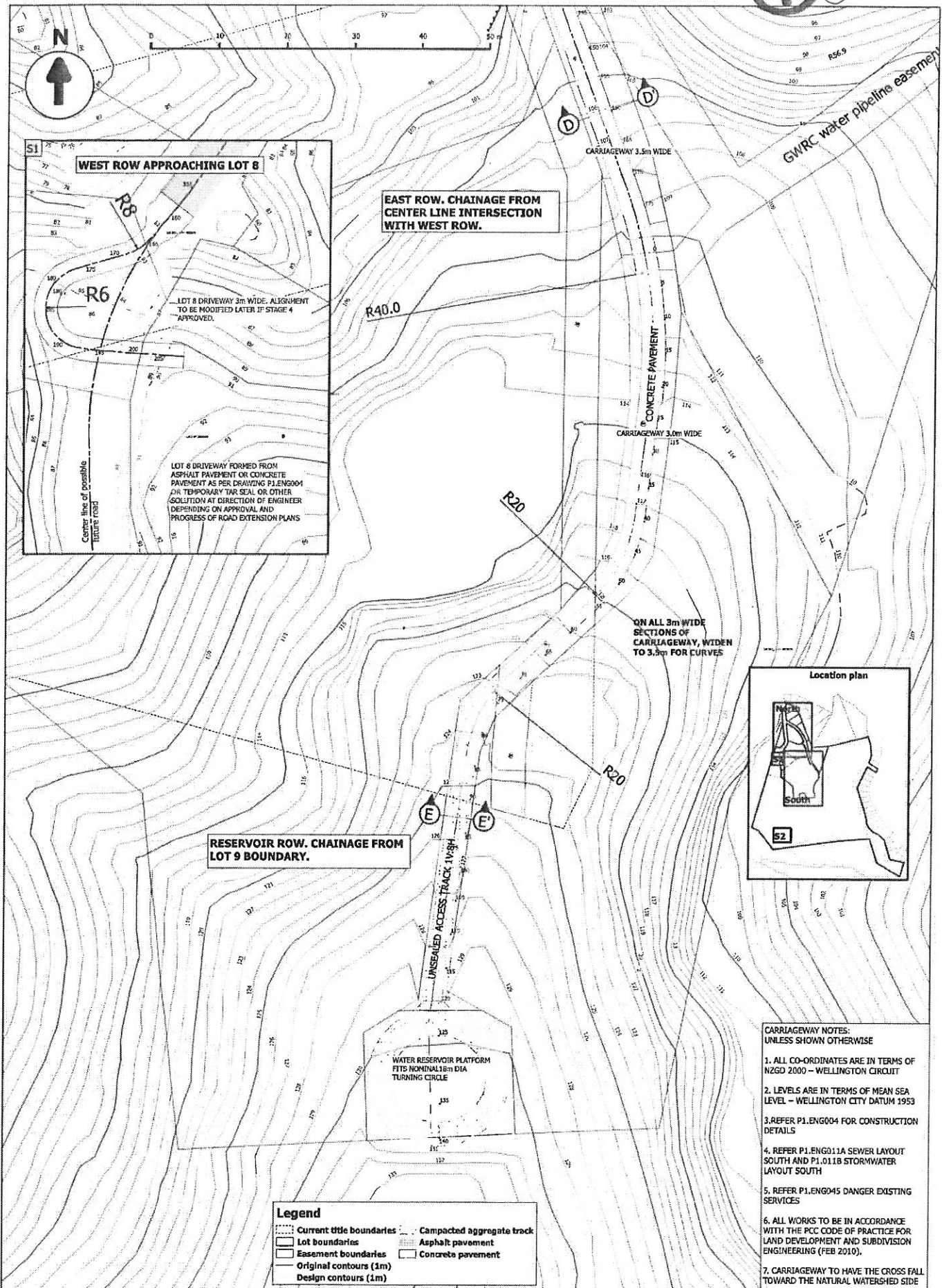
68 Exploration Way, Porirua 5024  
Ph 64 022 0819600

Client	Progeni Ltd	Fieldwork	-	Scale	1:800 at A1; 1:1600 at A3
Project	Exploration Heights	Author	-	ID	P1.ENG000 Rev:2016-01-21
Title	PRE-ENGINEERING PLAN SET OVERVIEW AND INDEX	Drawn	Harpham(Progeni)	01/16	Drawn by: David Harpham
Checked	-	Checked	-	01/16	2016-01-21

(Scope of Feb Only)

1a

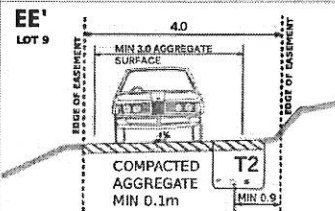
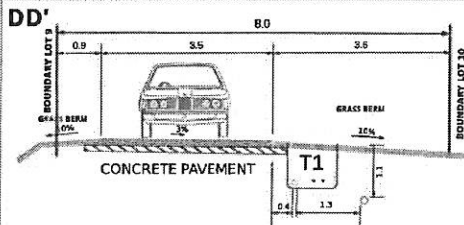
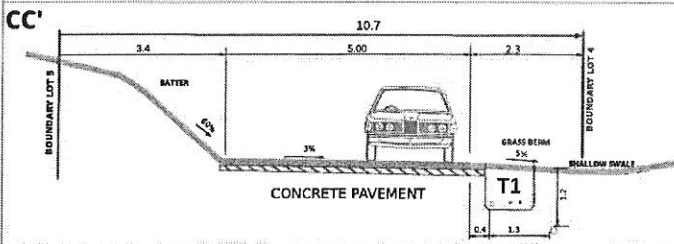
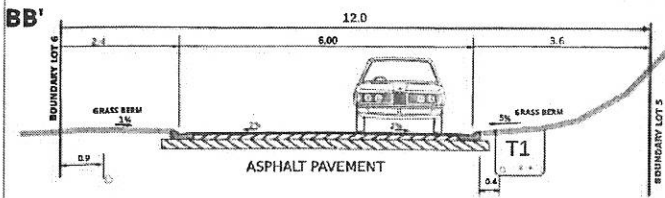
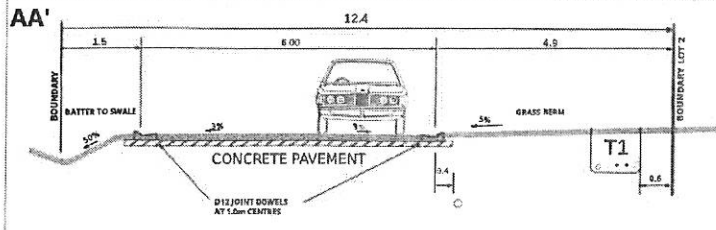




**Progeni Ltd**  
68 Exploration Way, Porirua 5024  
Ph 64 022 0819600

Client: Progeni Ltd  
Project: Exploration Heights  
Title: **Road layout south**

Fieldwork	-	Scale: 1:250 at A1; 1:500 at A3
Drawn by	Harpham(Progeni)	03/15 ID: P1.ENG002 Rev:
Checked by	Harpham(Progeni)	01/16 Issued by: David Harpham
Project no		Date: 2017-09-20



#### TRENCH NOTES:

##### TOP LAYER:

- TRAFFICKED AREAS AS FOR ADJACENT PAVEMENT DESIGN.
- UN-TRAFFICKED AREAS ARE TO HAVE A MINIMUM OF 75mm TOPSOIL COVER SEED WITH GRASS AND LIGHTLY COMPACTED.

##### BACKFILL:

- TRAFFICKED AREAS ARE TO BE AP65 COMPACTED IN LAYERS.
- UN-TRAFFICKED AREAS ARE TO BE FILLED FROM CLEAN INSITU MATERIAL FREE OF ORGANIC MATTER AND DETRITUS COMPACTED IN LAYERS.

##### BEDDING SAND COVERAGE (excluding power ducts):

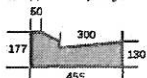
- MINIMUM 100mm ABOVE AND BELOW PIPE/DUCT.
- MINIMUM 75mm FROM PIPE/DUCT TO SIDE OF TRENCH.

##### GENERAL NOTES:

1. SWALES AND GRASS BERMS ARE TO HAVE A MINIMUM OF 75mm TOPSOIL COVER SEED WITH GRASS AND LIGHTLY COMPACTED.
2. BERMS ADJACENT TO PAVEMENTS TO BE 15mm ABOVE SUCH EXCEPT WHERE PAVEMENT CROSSFALL DISCHARGES TO BERM THE BERM SHALL BE 15mm BELOW THE ADJACENT PAVEMENT.
3. ALL KERBS AND CHANNELS TO BE PLACED ON A MINIMUM OF 150mm COMPACTED THICKNESS OF AP65 SUBBASE, WITH FINAL DEPTH TO BE CONFIRMED AFTER TESTING SUBGRADE.
4. DEPTH OF COMPACTED THICKNESS OF AP65 SUBBASE FOR PAVEMENTS TO BE CONFIRMED AFTER TESTING SUBGRADE.
4. ALL WORK TO BE IN ACCORDANCE WITH PCC CODE OF LAND DEVELOPMENT AND SUBDIVISION ENGINEERING (2010) AND RELEVANT NEW ZEALAND STANDARDS.

#### KERB AND CHANNEL

SCALE 1:25 (A3 1:50)  
Deano's Kerb MKC 12 or similar  
as approved by engineer.



#### CONCRETE PAVEMENT LAYERS:

- 1) 145mm 30MPa STEEL FIBRE REINFORCED CONCRETE TO DRAMIX REQ'S
- 2) 100mm MIN COMPACTED THICKNESS AP40 BASECOURSE
- 3) SHAPED AND COMPACTED SUBGRADE CBR 7%

SCALE 1:25 at A3

#### NOTES:

- 1) CONCRETE TO HAVE 40mm DEEP SAW CUTS PLACED EVERY 4m. CUTS ARE TO BE MADE AS SOON AS POSSIBLE BEFORE CONCRETE CURING AND CONTRACTION TAKES PLACE.
- 2) SEE P51 BY AIREY CONSULTANTS LTD ON 12 FEB 2016

#### ASPHALT PAVEMENT LAYERS:

- 1) 30mm COMPACTED THICKNESS MIX 10 ASPHALT ON WATERPROOF COAT.
- 2) 120mm MIN COMPACTED THICKNESS AP40 BASECOURSE.
- 3) 230mm MIN COMPACTED THICKNESS AP65 SUBBASE.
- 4) SHAPED AND COMPACTED SUBGRADE CBR 7%.

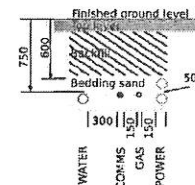
FINAL DEPTH OF PAVEMENT TO BE CONFIRMED BY ENGINEER AFTER TESTING SUBGRADE.

#### PIPE KEY

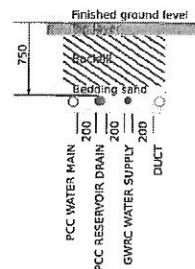
- Power: 4/120 AL XLPE 400V cable in 100mm Orange duct (for spare power duct)
- Gas: 50mm PE yellow (<210Kpa)
- Telecom fibre microducts
- PCC Water main: 125mm OD PE100 SDR11
- GWRC Water supply: 63mm OD PE100 SDR11
- Reservoir drain: 110mm OD PE100 SDR17
- PCC Sewer main: 160mm OD PE100 SDR17

#### TRENCH KEY AND MINIMUM CLEARANCE SPECIFICATIONS SCALE 1:25 (A3 1:50)

#### T1 Shared services trench



#### T2 Lot 10 to Water Reservoir



**Progeni Ltd**

68 Exploration Way, Porirua 5024, NZ  
Ph 022 0819600

Client: Progeni Ltd  
Project: Exploration Heights

Title: **Road cross sections**

Feasibility

Design:

D Harpham

Drawn:

D Harpham

Checked:

Scale: 1:100 at A3

ID: P1.ENG004 Rev

Issued by: D Harpham

Date: 2017-09-26



**INFORCE**  
CONCRETE, SIMPLIFIED.

# PRODUCER STATEMENT

For the INFORCE fibre-reinforced ROW slabs on grade at new access-way at Exploration Heights, Whitby

INFORCE Global Ltd confirm that INFORCE RADMIX47SSF fibre at a dose rate of 4kg/m<sup>3</sup> will provide the required load ratings and structural integrity as per the attached design and slab dimension plan providing that:

- CBR >7
- Granular Sub-base compacted AP40 not less than 100mm depth
- Concrete compressive strength is 30MPa
- Slab thickness is not less than 145mm
- The slabs are unrestrained
- Not more than 25 metres between construction joints
- Not more than 4 metres between sawcuts
- 7 days continuous water curing or AQURON 1000 or a membrane curing compound that complies with the moisture retention requirements of ASTM C-309 applied within 12 hours of pour.

Issued 10/10/2017

Signed: Finn McGaveston  
Director



October 2017

## **Specification for Concrete ROW slabs on grade @ Exploration Way, Whitby**

Minimum CBR	= 7%
Minimum Granular Sub-base	= 100mm of compacted AP40
Minimum Final Modified Sub-grade Modulus	= 51MN/m <sup>3</sup>
Concrete Compressive Strength	= 30MPa
Minimum Slab Thickness	= 145mm

iNFORCE RADMIX 47SSF shall be added to the concrete mix at a rate of 4kg/m<sup>3</sup>. Addition of the fibre to be carried out in compliance with the instructions from iNFORCE Ltd

- Construction joints @ <25metre nominal spacing
- Saw-cut 40mm depth @ 4 metre centers within 12 hours of placing and finishing
- Recommend thoroughly wetting the base course immediately prior to placing concrete.
- Curing must be either 7 days continuous water curing, or Aquaron 1000 or a membrane curing compound that complies with the moisture retention requirements of ASTM C-309.
- Refer NZS3109 for guidance relating to unfavorable weather conditions, construction joints, vibration, placing and finishing, minimum cover to steel, striking of formwork.

Issued 18/10/2017

# SSF47

## STRUCTURAL SYNTHETIC



INFORCE SSF47 is a macro structural synthetic fibre that gives optimum performance in highly corrosive environments.

SSF47 is ideally suited in pre-cast, shotcrete and slabs-on-ground, plus it performs in many other applications. Higher Re3 values are achieved in slabs on grade when using this fibre.

Easy handling environmentally friendly recycled packaging leaves no waste on site as the entire package is thrown into the mix during batching.

The fibre is evenly dispersed through the matrix, ensuring no balling or pumping problems will occur.

Dramatically speeds up construction and reduces labour time by completely eliminating the need for steel mesh reinforcement.

### KEY BENEFITS

- Safer and easier to handle than conventional reinforcement.
- Improves impact and first-crack resistance.
- Higher Re3 values in slabs on grades.
- Will not rust.

## TECHNICAL INFORMATION

### SSF47 FIBRE

Material Type	100% Polyolefin polymer
Tensile Strength	Min. 550Mpa
Melting Point	160 °C
Appearance	Embossed
Alkali Resistance	Excellent
Dosage	2-10kg per m <sup>3</sup>

### FIBRE SELECTION GUIDE

Fibre	Length	Width	Application
47SSF	48mm	1.2855mm	Exterior concrete slabs, industrial & commercial yards

### QUALITY & TESTING

Beam results with SSF Fibre at 4, 6 & 8 kg dose rates. Results of flexural strength characteristics are summarised in the table. Average flexural strength parameters from the load-deflection curves (average of three beams) by test methods ASTM 1018 and JSCE - S14.

Dose (Kg)	First-Crack Deflect (mm)	First-Crack Load (kN)	Flexural Tensile Strength (Mpa)	First-Crack Strength (Mpa)	Flexural Tough at 2mm (J)	Eqv't Flexural Strength (MPa)	Max Load Before Failure (kN)	Eqv't Flexural Ratio Re3 (%)
4	0.025	14.284	4.01	4.01	170	2390	14.284	60
6	0.034	12.087	3.76	3.36	177	2440	13.452	64
8	0.083	11.880	4.55	3.36	232	3286	16.071	73

### PACKING

- 5KG boxes.
- Fibres wrapped in water soluble plastic pucks (parallel packed) in biodegradable boxes.

### SAFETY

- We recommend that gloves and eye protection be used when handling or adding fibre.

**INFORCE**  
SIMPLY WITH CONFIDENCE.

**SSF47**  
STRUCTURAL SYNTHETIC