

Memorandum

To: Michael Campbell – Campbell Brown Planning Limited

From: Matt Jones

Date: 17 December 2021

Job No: 1628 M4

Subject: Stormwater design for the proposed residential subdivision at 2182 East Coast Road, Silverdale, Stages 3 and 4

This Memorandum has been prepared to detail the proposed stormwater drainage for the proposed Build Rich Limited Stage 3 and 4 residential development at 2182 East Coast Road, Silverdale. Stages 3 and 4 form the southern portion of the overall East Coast Heights development, please refer to figure 1 below:



Figure 1: overall East Coast Heights development

The site is comprised of 10.6027Ha of land and is located within the Silverdale Precinct of Auckland Council Unitary Plan. Stages 3 and 4 comprise 289 residential lots including two super lots containing 7 and 8 terraced units respectively. This results in a total of 302 household dwellings.

The subdivision has a total catchment area of 106,027m². The site is separated by a spur ridgeline extending east to west resulting with two sub-catchments. The northern area Catchment-1 of 73,112m² generally falling to the north and north west. The southern area Catchment-2 of 32,915m² generally falling to the south and west. Please refer to catchment areas in Figure 2 below:



Figure 2: Proposed catchments for stage 3 and 4

Stormwater runoff from Catchment-1 of 73,112m² will drain to an existing stormwater wetland within the Park n Ride site. Below is the design catchment area plan of the existing stormwater wetland. The existing stormwater catchment available in Catchment 4 in Figure 3 below is 73,149m². Therefore, the entirety Catchment-1 can discharge to the existing stormwater wetland.

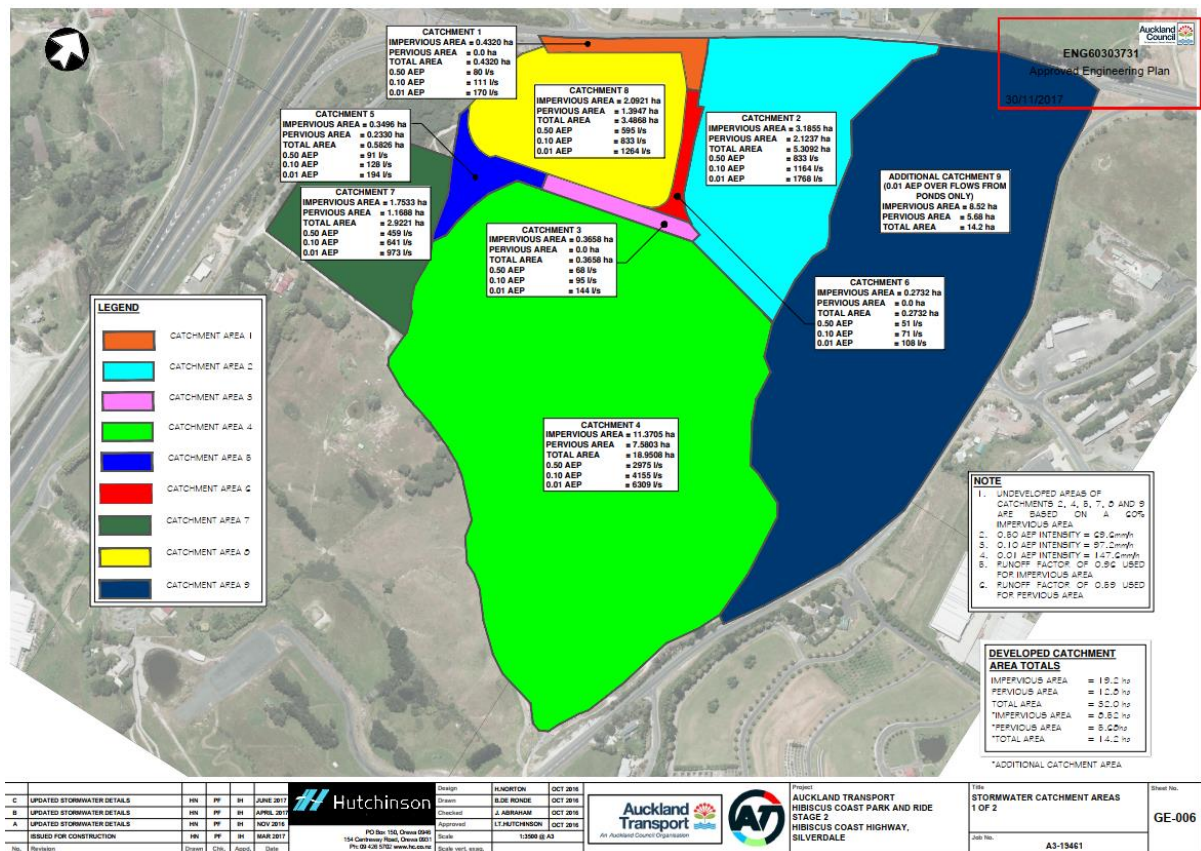


Figure 3: Existing wetland catchment

The existing stormwater wetland was designed by Hutchinson Consultants Limited. According to the Hutchinson design report referenced L19461 dated July 2017, the wetland was designed for the following:

- Catchment area of 32Ha.
- 60% impervious area average across entire catchment
- Stormwater treatment (WQV)
- Extended detention (EDV)
- 2-year attenuation
- 10-year attenuation
- 100-year attenuation.

It is proposed that stages 3 and 4 will have less than an average 60% impervious area, therefore no further stormwater treatment or attenuation is required for the northern Catchment-1 area discharging to the existing stormwater wetland.

The site is within the SMAF 1 control under the Auckland Unitary Plan. SMAF 1 requires stormwater detention and retention. As described above, the downstream stormwater wetland has been designed to provide the treatment and detention requirements for the proposed dwellings in Catchment-1. Due to ground conditions, discharge of stormwater to ground is prohibited by the NDC.

The subdivision will be serviced by a gravity piped stormwater network as shown in Figure 4 above. Each lot will be serviced by a 100mm diameter uPVC lot connection. Runoff from the road network will be collected in stormwater catchpits.



Please refer to preliminary and general plans 1628-RC-PG101 to PG105 and stormwater plans 1628-RC-SW401 to SW404 attached for the proposed stormwater system layout. Please feel free to contact us if you require any further information.

GD01 Design Sheet - retention and detention volume calculator

For use with GD01 - Stormwater Guidelines for the Auckland Region

Date: 1/12/2021

Address: 2182 East Coast Road, Silverdale (Stages 3 and 4)

Project: East Coast Heights (Residential Lots)

Reviewer: M. Jones

INITIAL PARAMETERS

Total site area 250 m²

Pre-construction site areas

Existing Impervious area 0.00 m²

Existing Pervious area 250.0 m²

% Imperviousness 0.00%

Post-construction site areas

New / redeveloped impervious area 150 m²

Existing impervious area remaining untouched 0 m²

post-development pervious area 100.0 m²

% New/redeveloped imperviousness 60.0%

Total new and redeveloped imperviousness > 50% Yes

Area for hydrology mitigation Total Site Area m²

CONTROL DATA

Rainfall depth 37.0 mm

Hydrological soil group Group C 74

Impervious SCS curve number (CN) 98

SUMMARY

	Total Impervious	Total Pervious	% total impervious	% total pervious
Pre-development condition	N/A	250	0%	100%
Post-development condition	150	100	60%	40%

Post-development runoff volume 5.71 m³

Pre-development runoff volume 2.11 m³

Hydrology mitigation volume 3.60 m³

Retention volume 0.75 m³

Detention volume 2.85 m³

Notes:

[1] if development is <50m² then no mitigation required

[1a] Where new/redeveloped impervious area <50% of total site area, hydrology mitigation is required for new/redeveloped impervious area only

[1b] Where new/redeveloped impervious area >50% of total site area, hydrology mitigation is required for the total site area

[2] Select rainfall based on 24-hour 90th/95th percentile rainfall event

[3] CN of 98 for impervious areas. Refer to Table 1 above right (or TP108 Table 3.3) for CN to pervious areas.

[4] Pre-developed condition is defined as site condition prior to any development and therefore by definition 100% pervious; if unknown assume site was pasture

[5] Retention vol. = 5 mm over for the impervious area that requires hydrology mitigation as per note [1a] and [1b], taking into account that retention is not required any pervious areas.

[5a] If soil infiltration < 2mm/hr AND there's no option of re-use either, then the retention volume can be taken up by the equivalent volume as additional detention

[6] If retention vol > difference between post- and pre- dev. runoff, then required detention is zero (not negative)

	Pre-development (perv.)			Post development (Imperv.)		Post development (Perv.)	
	Value	Unit		Value	Unit	Value	Unit
CN	74	-	CN	98.00	-	74	-
Pre -soil storage	89.24	mm	Post- soil storage	5.18	mm	89.24	mm
Initial abstraction	5.00	-	Initial abstraction	0.00	-	5	-
Pre runoff depth	8.45	mm	Post runoff depth	32.45	mm	8.45	mm

BUILD RICH LIMITED

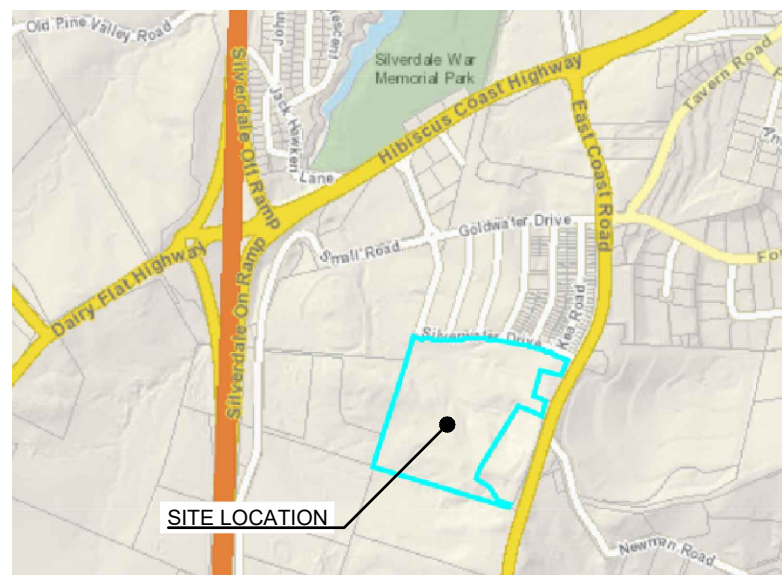
2182 EAST COAST ROAD SILVERDALE

EAST COAST HEIGHTS - STAGE 3 & 4

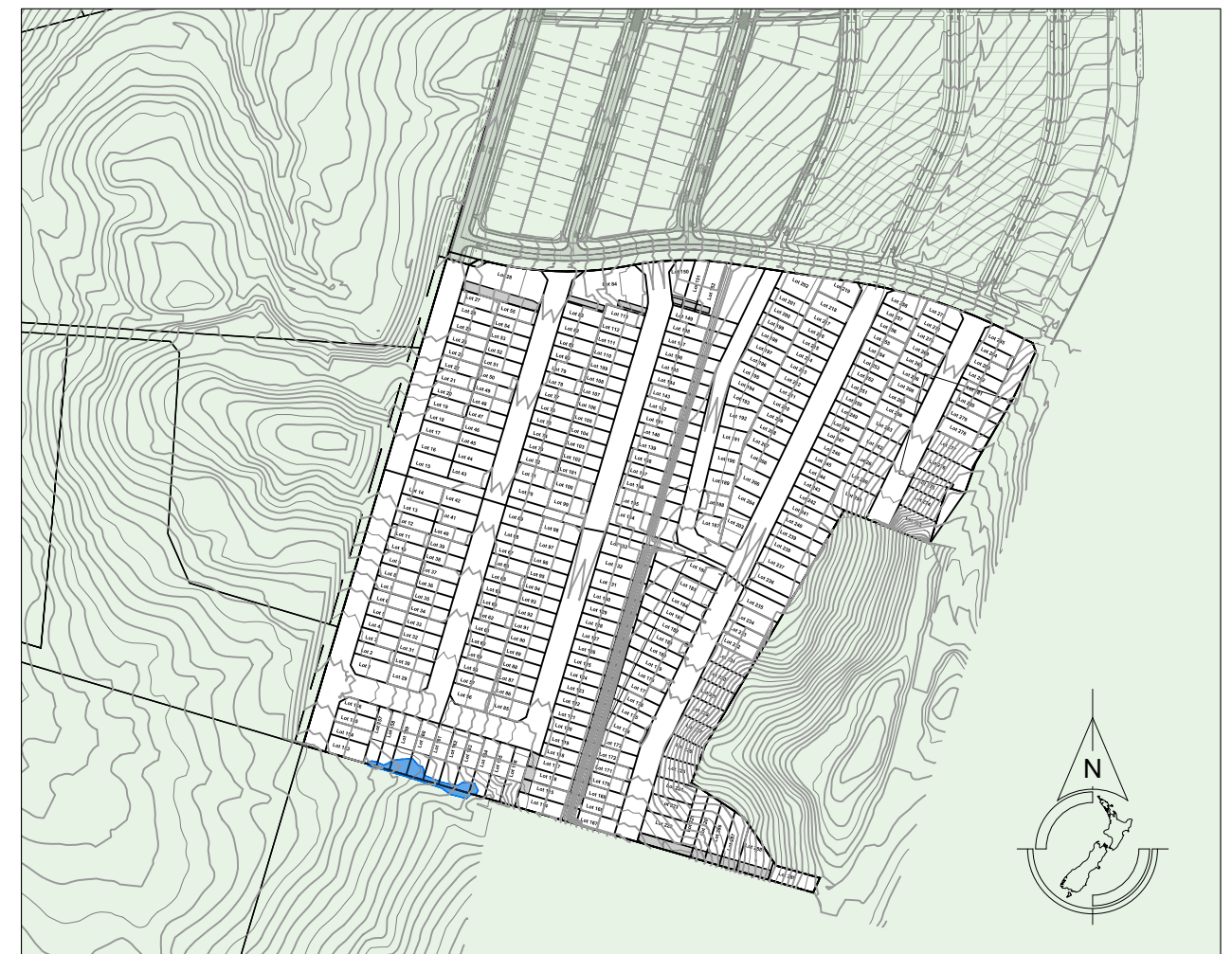
RESOURCE CONSENT PLANS



- PG100 - PRELIMINARY & GENERAL**
- EW200 - EARTHWORKS**
- RD300 - ROADING**
- SW400 - STORMWATER**
- WW500 - WASTEWATER**
- WS600 - WATER SUPPLY**

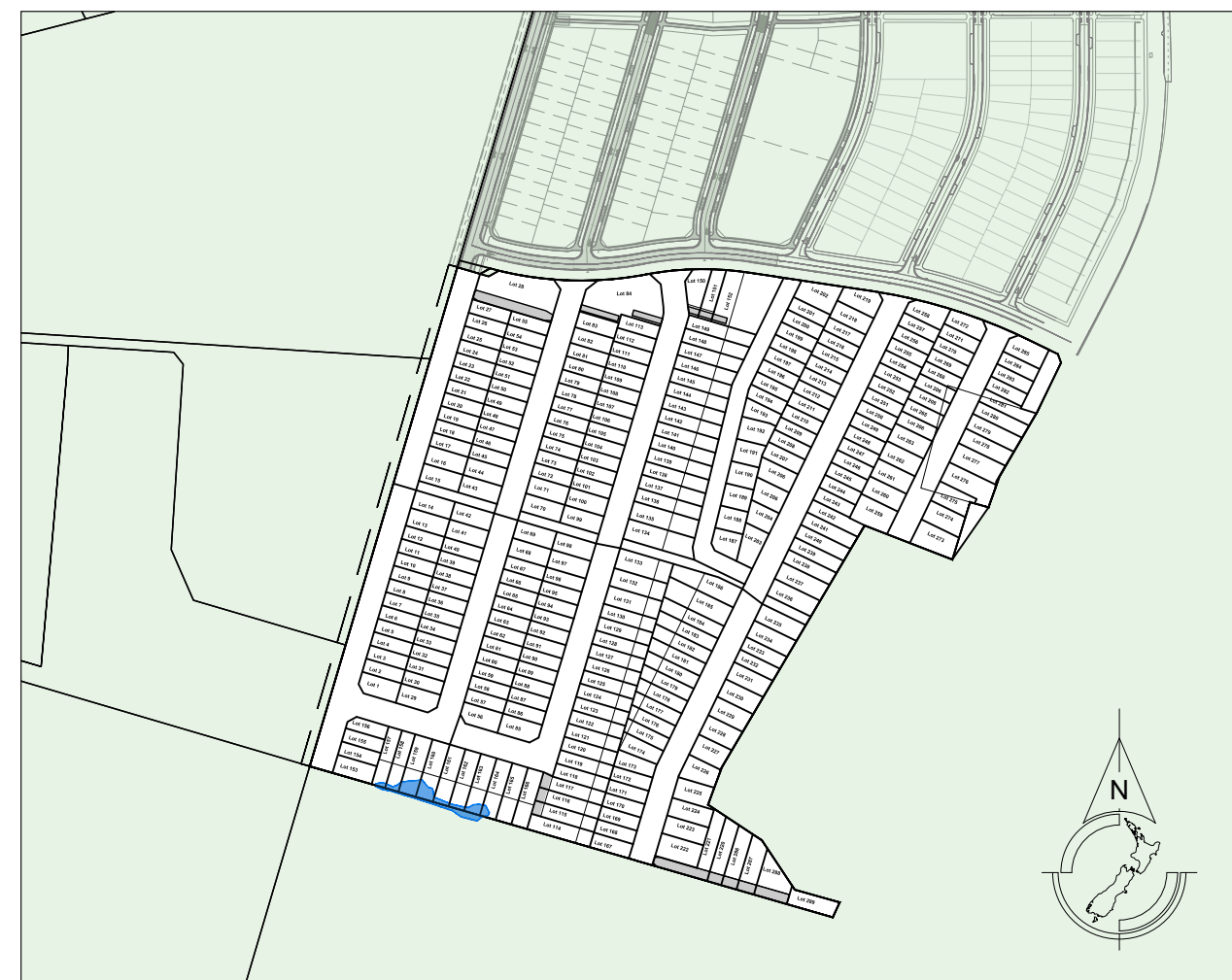


SITE LOCALITY



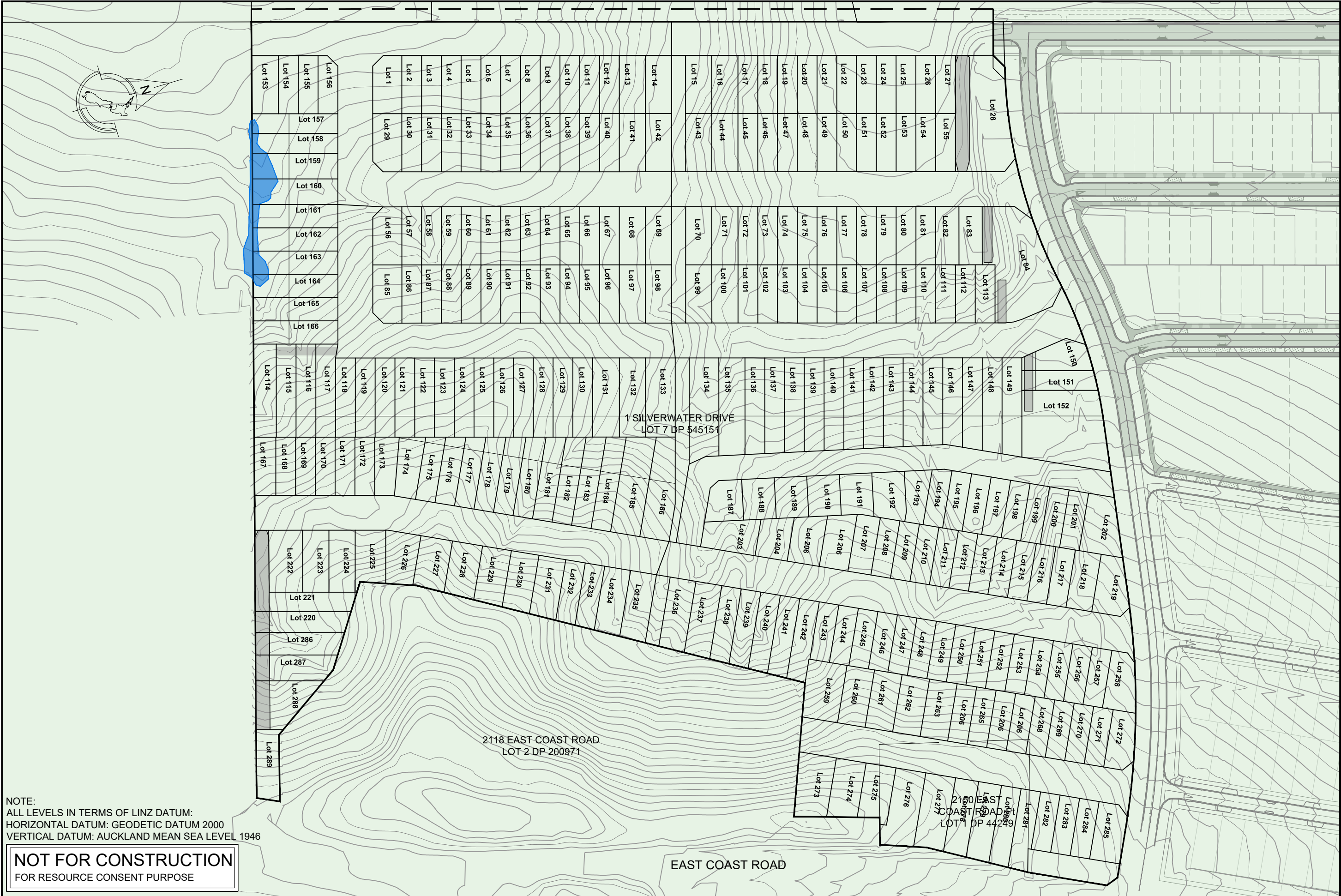
PRELIMINARY & GENERAL PG100

PG101	COVER PAGE
PG102	CONTENTS PAGE
PG103	EXISTING SITE PLAN
PG104	PROPOSED DEVELOPMENT OVERVIEW PLAN
PG105	PROPOSED STAGING PLAN



JOB NUMBER: 1628

REV.	DESCRIPTION	CHECK	APPD	DATE	SCALE	N.T.S AT A3		CLIENT BUILD RICH LIMITED Conditions of Use: These drawings shall only be used for the purpose for which they were supplied. Do not measure off this drawing. If doubt please contact Engineer.	SITE ADDRESS 2182 EAST COAST ROAD SILVERDALE (STAGE 3 & 4) DRAWING TITLE CONTENTS PAGE	DRAWING NUMBER 1628 - RC - PG102		 Ph: 09 426 6552 Web: www.aspeng.co.nz
						NAME	DATE			DATE	REVISION	
					DESIGN	JH	12.21					
					DRAWN	JH	12.21					
					DRAWING CHECK	PF	12.21					
					DESIGN CHECK	PF	12.21					
					APPROVED	PF	12.21					



NOTE:
ALL LEVELS IN TERMS OF LINZ DATUM:
HORIZONTAL DATUM: GEODETIC DATUM 2000
VERTICAL DATUM: AUCKLAND MEAN SEA LEVEL 1946

NOT FOR CONSTRUCTION
FOR RESOURCE CONSENT PURPOSE

REV.	DESCRIPTION	CHECK	APP'D	DATE	SCALE	1:1500 AT A3	
						NAME	DATE
					DESIGN	JH	12.21
					DRAWN	JH	12.21
					DRAWING CHECK	PF	12.21
					DESIGN CHECK	PF	12.21
					APPROVED	PF	12.21

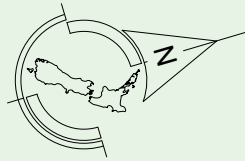
CLIENT
BUILD RICH LIMITED
Conditions of Use: These drawings shall only be used for the purpose for which they were supplied. Do not measure off this drawing. If doubt please contact Engineer.

SITE ADDRESS
2182 EAST COAST ROAD SILVERDALE (STAGE 3 & 4)
DRAWING TITLE
EXISTING SITE PLAN

DRAWING NUMBER	
1628 - RC - PG103	
DATE	REVISION
DEC 2021	-



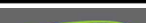
Ph: 09 426 6552
Web: www.aspeng.co.nz



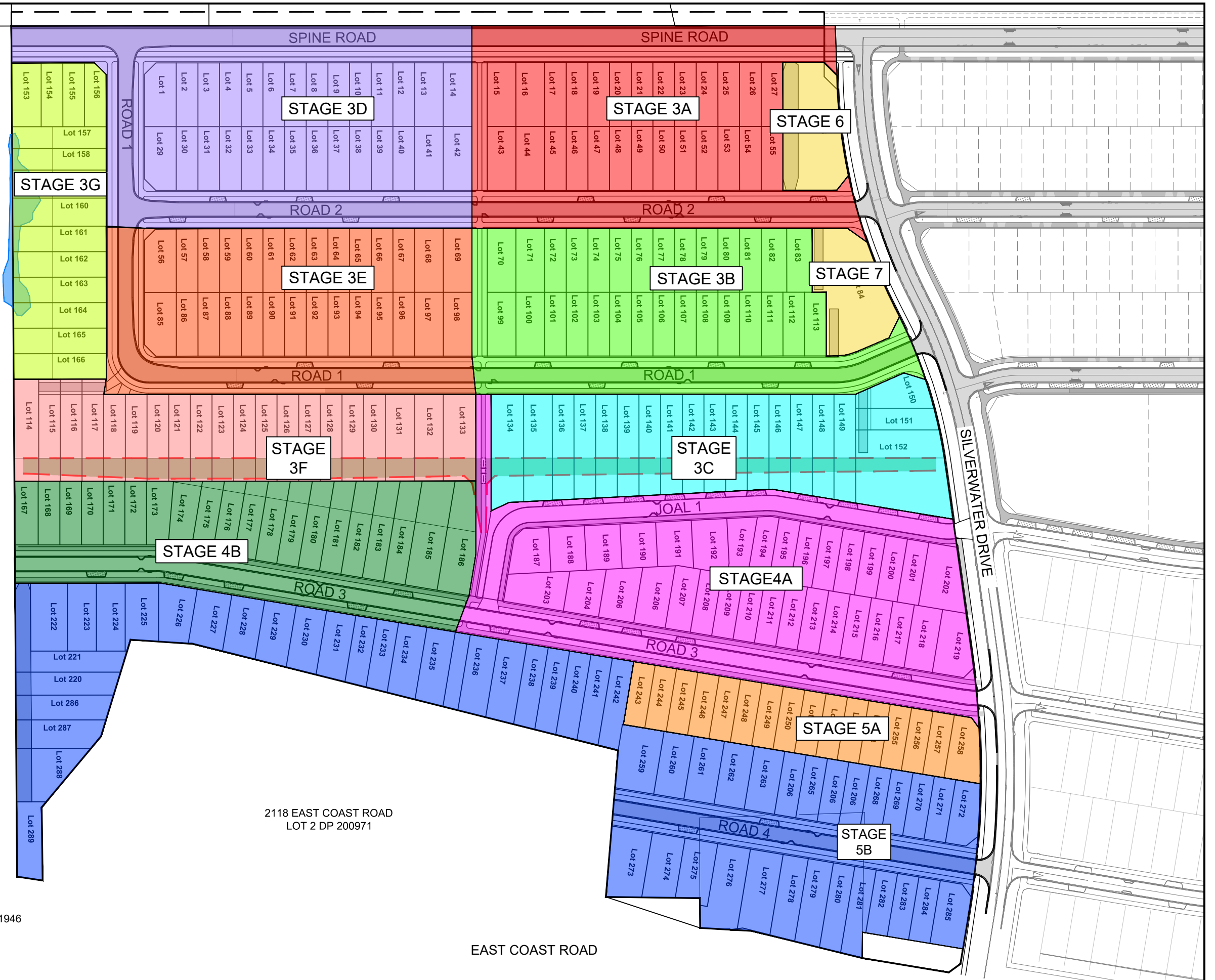
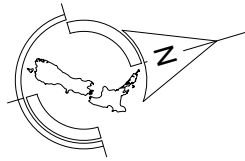
NOTE:
ALL LEVELS IN TERMS OF LINZ DATUM:
HORIZONTAL DATUM: GEODETIC DATUM 2000
VERTICAL DATUM: AUCKLAND MEAN SEA LEVEL 1946

NOT FOR CONSTRUCTION
FOR RESOURCE CONSENT PURPOSE

REV.	DESCRIPTION	CHECK	APP'D	DATE	SCALE 1:1500 AT A3			CLIENT BUILD RICH LIMITED	SITE ADDRESS 2182 EAST COAST ROAD SILVERDALE (STAGE 3 & 4)	DRAWING NUMBER 1628 - RC - PG104	
					NAME	DATE	DRAWING TITLE PROPOSED DEVELOPMENT OVERVIEW PLAN <th rowspan="4">DATE DEC 2021</th> <th rowspan="4">REVISION -</th>			DATE DEC 2021	REVISION -
					DESIGN	JH 12.21					
					DRAWN	JH 12.21					
					DRAWING CHECK	PF 12.21					
					DESIGN CHECK	PF 12.21	<i>Conditions of Use: These drawings shall only be used for the purpose for which they were supplied. Do not measure off this drawing. If doubt please contact Engineer.</i>				
					APPROVED	PF 12.21					



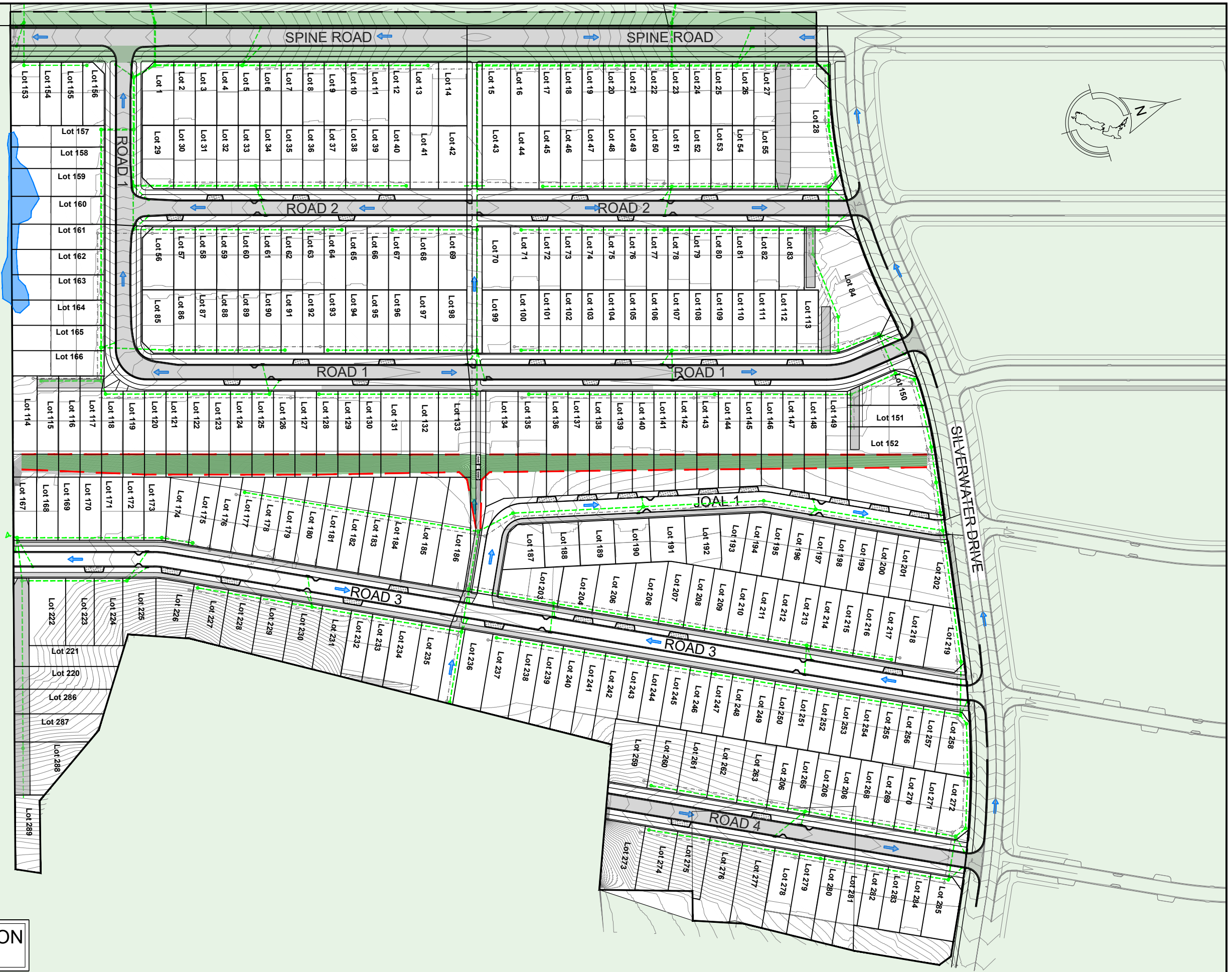
Ph: 09 426 6552
Web: www.aspeng.co.nz



NOTE:
ALL LEVELS IN TERMS OF LINZ DATUM:
HORIZONTAL DATUM: GEODETIC DATUM 2000
VERTICAL DATUM: AUCKLAND MEAN SEA LEVEL 1946

NOT FOR CONSTRUCTION
FOR RESOURCE CONSENT PURPOSE

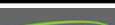
REV.	DESCRIPTION	CHECK	APP'D	DATE	SCALE	1:1500 AT A3		CLIENT BUILD RICH LIMITED Conditions of Use: These drawings shall only be used for the purpose for which they were supplied. Do not measure off this drawing. If doubt please contact Engineer.	SITE ADDRESS 2182 EAST COAST ROAD SILVERDALE (STAGE 3 & 4)	DRAWING NUMBER 1628 - RC - PG105		
						NAME	DATE			DATE	REVISION	
						DESIGN	JH		12.21	DRAWING TITLE PROPOSED DEVELOPMENT STAGING PLAN	DEC 2021	-
						DRAWN	JH		12.21			
						DRAWING CHECK	PF		12.21			
						DESIGN CHECK	PF		12.21			
						APPROVED	PF	12.21	 Ph: 09 426 6552 Web: www.aspeng.co.nz			



NOTE:
ALL LEVELS IN TERMS OF LINZ DATUM:
HORIZONTAL DATUM: GEODETIC DATUM
2000
VERTICAL DATUM: AUCKLAND MEAN SEA
LEVEL 1946

NOT FOR CONSTRUCTION
FOR RESOURCE CONSENT PURPOSE

REV.	DESCRIPTION	CHECK	APP'D	DATE	SCALE 1:1500 AT A3			CLIENT BUILD RICH LIMITED	SITE ADDRESS 2182 EAST COAST ROAD SILVERDALE (STAGE 3 & 4)	DRAWING NUMBER 1628 - RC - SW401	
					NAME	DATE	DATE DEC 2021			REVISION -	
					DESIGN	MJ					12/21
					DRAWN	MJ					12/21
					DRAWING CHECK	PF					12/21
					DESIGN CHECK	PF	12/21	DRAWING TITLE PROPOSED STORMWATER OVERALL PLAN			
					APPROVED	PF	12/21				
								Conditions of Use: <i>These drawings shall only be used for the purpose for which they were supplied. Do not measure off this drawing. If doubt please contact Engineer.</i>			



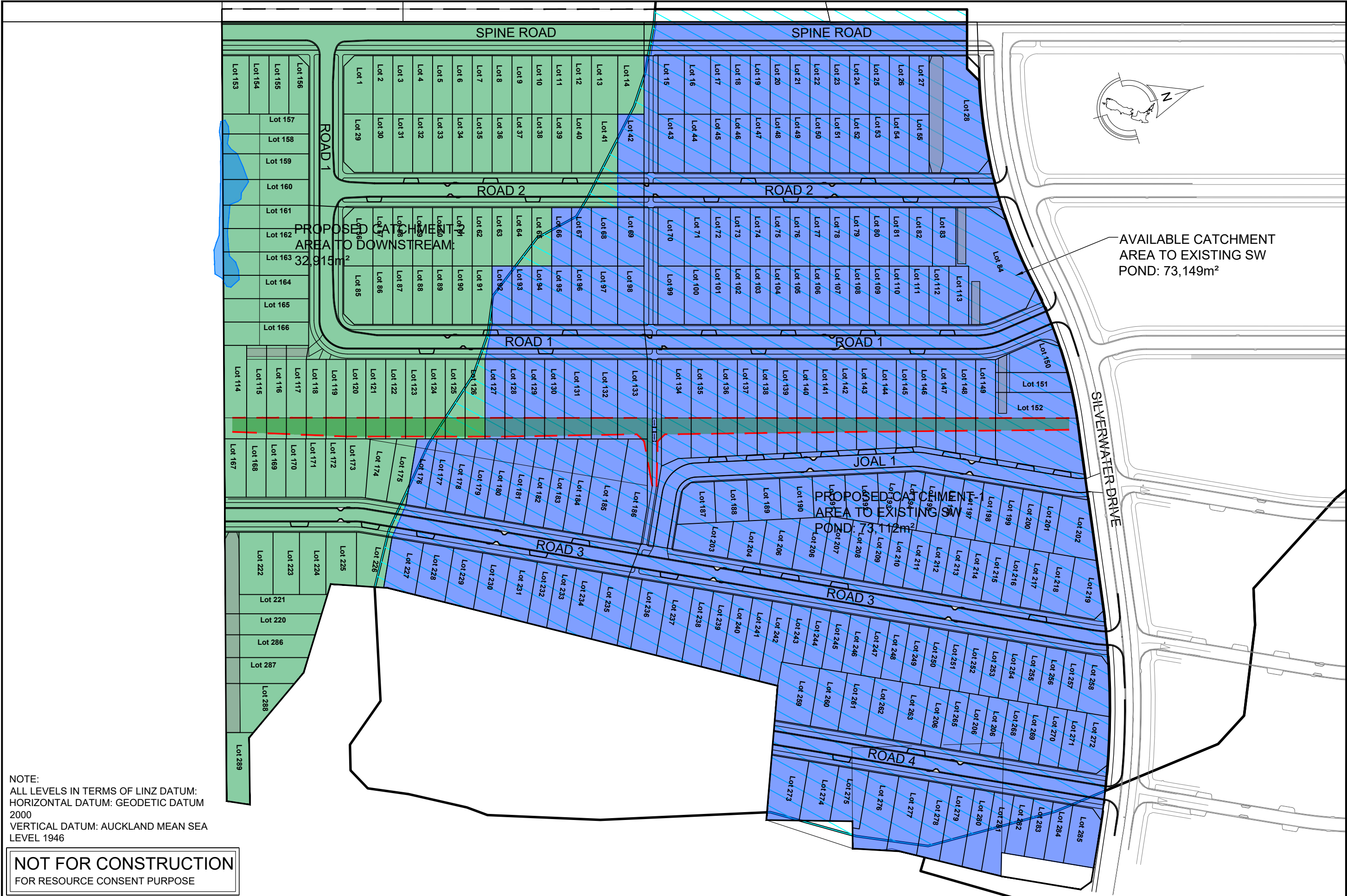
Ph: 09 426 6552
Web: www.aspeng.co.nz



NOT FOR CONSTRUCTION
FOR RESOURCE CONSENT PURPOSE

NOTE:
ALL LEVELS IN TERMS OF LINZ DATUM:
HORIZONTAL DATUM: GEODETIC DATUM 2000
VERTICAL DATUM: AUCKLAND MEAN SEA LEVEL 1946

REV.	DESCRIPTION	CHECK	APP'D	DATE	SCALE	1:1000 AT A3	NAME	DATE	CLIENT	SITE ADDRESS	DRAWING NUMBER	DATE	REVISION	ASPIRE CONSULTING ENGINEERS
									BUILD RICH LIMITED	2182 EAST COAST ROAD SILVERDALE (STAGE 3 & 4)	1628 - RC - SW402	DEC 2021	-	Ph: 09 426 6552 Web: www.aspeng.co.nz
									Conditions of Use: These drawings shall only be used for the purpose for which they were supplied. Do not measure off this drawing. If doubt please contact Engineer.	DRAWING TITLE				
										PROPOSED STORMWATER PLAN WEST				



REV.		DESCRIPTION	CHECK	APP'D	DATE	SCALE 1:1500 AT A3			CLIENT BUILD RICH LIMITED Conditions of Use: These drawings shall only be used for the purpose for which they were supplied. Do not measure off this drawing. If doubt please contact Engineer.	SITE ADDRESS 2182 EAST COAST ROAD SILVERDALE (STAGE 3 & 4)	DRAWING NUMBER 1628 - RC - SW404	
						NAME	DATE	DATE			REVISION	
						DESIGN	MJ	12/21				
						DRAWN	MJ	12/21				
						DRAWING CHECK	PF	12/21				
						DESIGN CHECK	PF	12/21				
						APPROVED	PF	12/21				
									DRAWING TITLE PROPOSED STORMWATER CATCHMENT PLAN	DEC 2021	-	
											 Ph: 09 426 6552 Web: www.aspeng.co.nz	