

Memorandum

To	Ben MacGibbon - Lincoln Land Limited	From	Regan Smith
Copy		Reference	523406
Date	2023-02-23	Pages (including this page)	7
Subject	Infrastructure Servicing Summary – Proposed Retirement Village Development – 1506 Springs Road, Lincoln		

Introduction

Aurecon have been engaged to review and summarise existing available engineering and servicing information relating the proposed Arvida retirement village development of 1506 Springs Road. The purpose of this memo is to provide information on the engineering and servicing issues and how those issues would be addressed in the proposed development.

The memo is to support a referral application under the Covid-19 Recovery (Fast-track Consenting) Act 2020 and addresses the following items:

- Wastewater
- Water Supply
- Stormwater Management
- Landform Earthworks
- Power Supply
- Telco

The site is approximately 11 hectares in area and is bounded by residential land to the north and west (Vedeco Park Subdivision) and rural land to the east and south. The site is currently zoned for industrial land use. Submissions on the proposed Selwyn District Plan seek a change to a residential zone.

Wastewater

The wastewater discharge point for the site is to an existing SDC pump station is located immediately north of the site which discharges to a rising main in Springs Road (DN140 PE 100 PN12.5). The land level immediately around the pump station is approximately 11.3mRL and invert to the pump station is approximately 6.82mRL.

The wastewater pump station has been designed for an allowance of 8.3l/s peak wastewater inflow from the development site (Davis Ogilvie Memo – 3 Waters Servicing – Verdeco Park Zoning, Lincoln – SDC District Plans Review Submission dated 9/12/2020).

A preliminary estimate of the peak discharge from the proposed retirement village development is approximately 8.6 l/s. This is marginally higher than peak flow from the site allowed in the original pumps station design. If necessary, minor modification of the pumps or impellers may be required to accommodate the increased peak flow.

Based on an assessment of preliminary site design levels, the majority of the site can discharge to the pump station via gravity reticulation. A small portion of the southeast corner of the site may require a small pump station or pressure sewer solution.

In summary, it is expected that the existing wastewater pump station will, or could with minor modification, have the capacity to service the proposed retirement village development.

Water Supply

There is an existing DN200 uPVC PN12 water main located on the eastern side of Springs Road which terminates opposite the first flush basin to the north of the site.

The overall Verdecos Park water supply design considers the SDC 5 Waters Activity Management Plan (AMP) 2018 and Lincoln Master Plan. There is a DN150 ring main located within the existing Stage 6 of Verdecos Park which is located immediately north of the site and within Stage 3 located west of the site.

Preliminary water supply modelling undertaken Davis Ogilvie in 2021 indicated that the proposed retirement village development could also be serviced from a single connection by extension of the existing 200mm watermain in Springs Road. At the time it was noted that some sections of the existing pipe would exceed SDC guidelines for maximum head loss but the upgrading the affected portions of pipe to 225mm diameter would be sufficient to alleviate this.

Since then, further stages of the adjacent Te Whariki subdivision have been completed and there is now an additional 200mm diameter pipe network link out to Springs Road via Waikiriri Avenue, located between Verdecos Park connection and the site. This additional network link is likely to have alleviated the previous identified pipe capacity constraint, negating the need for upgrading of the existing Springs Road water main to service the proposed retirement village development.

In summary, the proposed development can be serviced by extension of the existing SDC watermain on Springs Road. Further investigation and updated network modelling will need to be undertaken to confirm whether any further upgrading may be required, but there are no significant impediments to providing reticulated potable and firefighting water supply to the proposed retirement village development.

Stormwater

The site is generally grades towards the southeast (refer attached Aurecon Existing Contour Plan) with ground conditions that are suitable for a soakage-based stormwater management system. There is an existing stormwater treatment and attenuation area immediately north of the site and a constructed stormwater swale along the western side of the site that discharges to a drain west of the Verdecos Park development.

Due to lack of formal downstream drainage infrastructure to the southeast of the site, a stormwater management system that maximises discharge to, and is integrated with, the existing Verdecos Park infrastructure was previously identified as the likely preferred option for stormwater management on the site. This can be achieved by minor reshaping of the site surface to drain the majority of stormwater towards the northern stormwater management area and to a new stormwater management area located in the southwest corner of the site. Both stormwater management areas would include first flush treatment, attenuation, and soakage disposal with secondary discharge to the existing stormwater swale.

To tie into the existing boundary levels appropriately in the southeast corner of the site, a small portion of the site would continue to drain to the existing roadside drain on Springs Road. With the diversion of much of the site north and west, the runoff to this point will be less than pre-development so no attenuation will be required. Appropriate water quality management will be needed.

The overall development site is within the LII River Catchment. In order to mitigate water quantity effects, any stormwater discharge to the western boundary drain would be attenuated to pre-developed flows for storms up to and including the 2% AEP, 8 hour rainfall event.

In order to mitigate water quality effects, stormwater would need to be treated appropriately prior to discharge from the site. A conceptual stormwater management plan would likely include:

- Reticulated stormwater system including sumps to remove gross pollutants
- Discharge to First Flush Basin for treatment of stormwater
- Discharge to Detention Basin for further treatment of stormwater and quantity management
- Discharge to ground where appropriate soil conditions allow
- Limited-rate discharge to western boundary drain
- Secondary flow paths provided

An indicative stormwater management plan based on this approach is illustrated on the attached Devcorp Site Plan and Aurecon Preliminary Proposed Contours plan.

Landform and Bulk Earthworks

As noted in the stormwater section above, some bulk earthworks will be required to recontour the site to optimise the stormwater management while still tying into the surrounding boundary conditions. This will require some cut and fill earthworks to achieve the desired site contour for the proposed development.

An initial high level bulk earthworks design was undertaken to understand the rough order earthworks quantities (refer attached existing and proposed contour plans) The preliminary assessment indicates bulk earthworks volumes in the order of 36,000 cubic metres cut and 13,000 cubic metres fill would be required to achieve the desired site landform. There is also expected to be in the order of 15,000 cubic metres of surplus topsoil as a result of development works that will require removal from the site.

This assessment does not account for localised earthworks related to cutting in roads, service trenches, etc. The earthworks design will be refined and optimised with further design development.

Power

There are existing Orion HV in Springs Road and within the adjacent Verdeco Park subdivision. The expected power demand for the proposed retirement village has been estimated to be similar to the expected demand for the previous industrial land zoning of the site.

Based on initial discussions with the Verdeco Park power designer, it is expected that the retirement village development can be serviced from the existing power network on Springs Road or form extension of the network from within Verdeco Park.

Telco

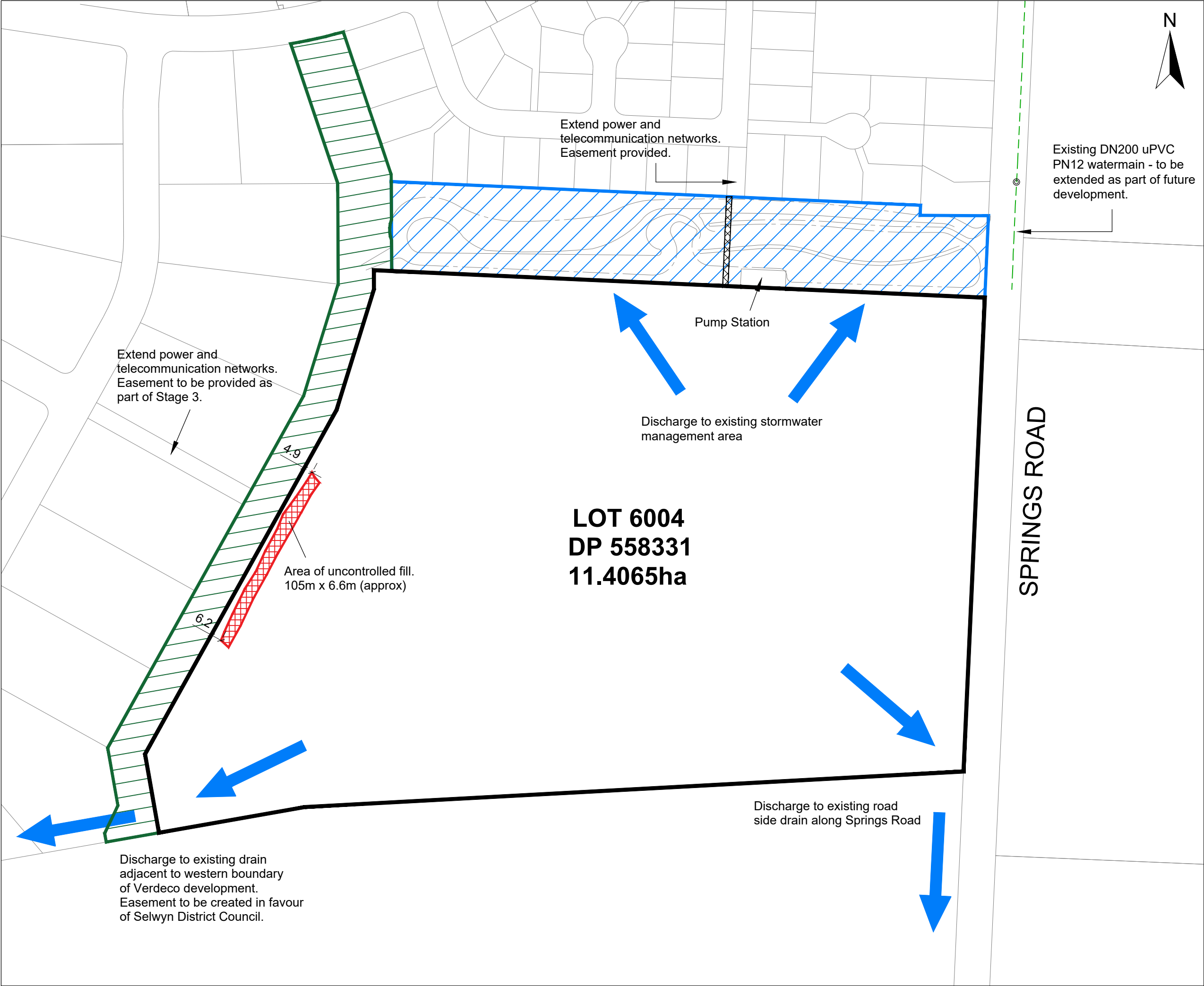
Enable plans indicate existing ducts located in Springs Road near Verdeco Drive and through the Lot 309 within Verdeco Park on the northern boundary of the site.

Enable has been supplying Lincoln with the majority of the new fibre services and is continuously expanding the local Network. They have confirmed that a development of this nature can be serviced by extending its existing network.

Summary

Attachments:






1. Devcorp Site Plan
2. Aurecon Existing Contour Plan
3. Aurecon Preliminary Proposed Contours Plan



DEVCORP



next level
DEVELOPMENTS

-  Stormwater Management Area - Vested in Council
-  Reserve Area - To be Vested
-  Extent of Uncontrolled Material - approx.720m²
-  Easements
-  Stormwater Discharge

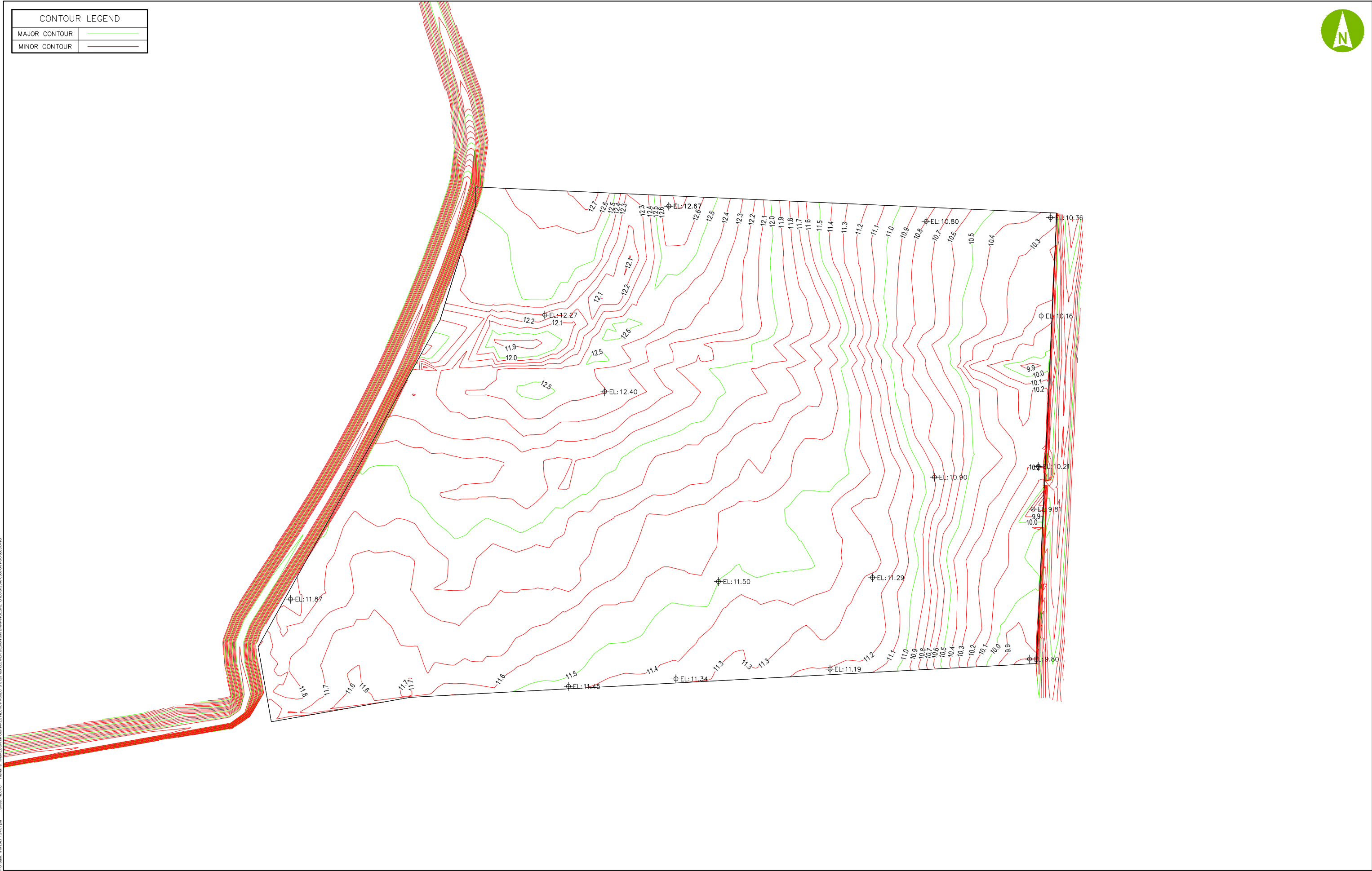
REVISION DETAILS		BY	DATE
A	Preliminary Issue	MM	08.21
B	Update Contam Area	MM	08.21

DESIGN	MM	1506 SPRINGS RD LINCOLN
DRAWN	MM	
CHECKED	MM / SK	
APPROVED	SK	

NEXT LEVEL
DEVELOPMENTS LIMITED

VERDECO PARK
SITE PLAN

SCALE	1:2000@A3	REV
COUNCIL	Selwyn District Council	SB
DWG NO	210820.Verdeco.Site Plan .dwg	





aurecon

www.aurecongroup.com

CLIENT

REV

DATE

REVISION DETAILS

APPROVED

SCALE

SIZE

WORK IN PROGRESS

PROJECT

ARVIDA LINCOLN SITE

EXISTING CONTOURS

TITLE

DRAWING No.

PROJECT No.

AREA

TYPE

DISC

NUMBER

REV

A

2021.06.16

FOR INFORMATION

R.SMITH

AS SHOWN

A1

512318

0000

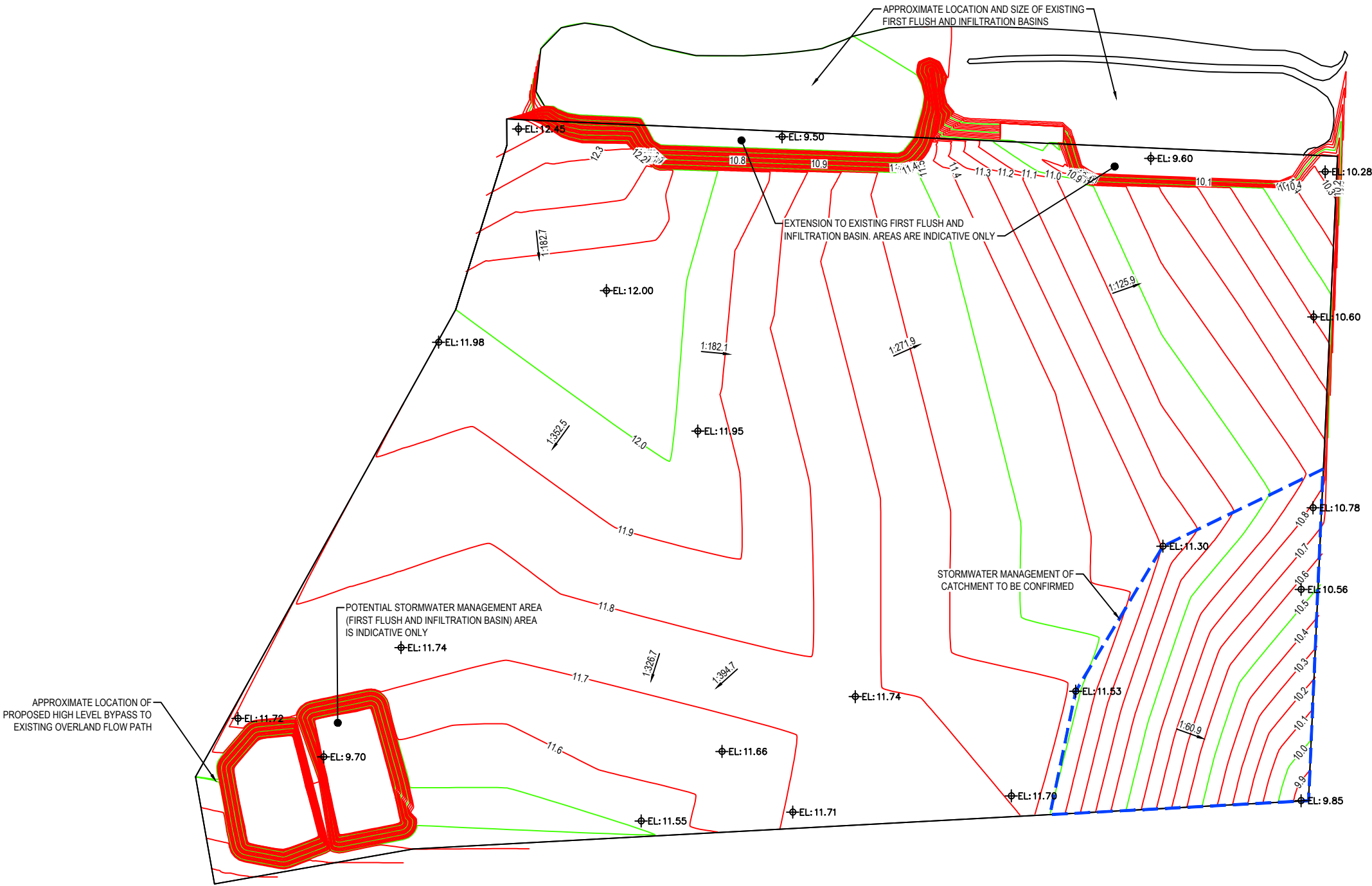
SKT

CC

0000

A

CONTOUR LEGEND	
MAJOR CONTOUR	—
MINOR CONTOUR	—



Plot Date: 14/07/2021 14:52:24 PM C:\Users\N2DCH\Documents\Projects\512318\Deliverables\Drawings\Sheet\512318-0000-SKT-CC-0001.DWG



CLIENT			
REV	DATE	REVISION DETAILS	
A	2021.06.17	FOR INFORMATION	
B	2021.07.13	FOR INFORMATION	

REV	DATE	REVISION DETAILS	APPROVED
A	2021.06.17	FOR INFORMATION	R.SMITH
B	2021.07.13	FOR INFORMATION	R.SMITH

SCALE	SIZE
AS SHOWN	A1
DRAWN	
J.WARLICH-KOOLE	
DESIGNED	
J.TUCKER	
REVIEWED	

WORK IN PROGRESS
APPROVED
DATE

PROJECT	ARVIDA LINCOLN SITE
TITLE	PROPOSED CONTOURS
DRAWING No.	512318
PROJECT No.	0000
AREA	SKT
TYPE	CC
DISC	0001
NUMBER	B
REV	