Attachment 2

Preliminary Servicing Study REV02

Rem. Lot 1, Lots 2 & 3, Plan VIP2490, District Lot 53, Nanoose District,

Client: Williamson & Associates Professional Surveyors

3088 Barons Road, Nanaimo, BC, V9T 4B5

February 25, 2025

NEL project #: 0871-001

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Attachment 2

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General Information

As requested, due to the revisions which have taken place to the proposed development layout since the date of our previous servicing study, we have updated our review of the services available to the above referenced properties from the perspective of their ability to accommodate a proposed Regional Services Development consisting of 27 parcels of varying sizes, and park, trail, and buffer areas as shown on the Conceptual Plan prepared by Williamson & Associates Professional Surveyors dated April 28, 2022.

The subject properties are currently zoned F-SAP (Future Special Area Plan) which allows construction of one house and one secondary structure on a minimum parcel size of 10,000 Hectares.

The approximate areas of the subject properties are:

- Rem. Lot 1, District Lot 53, Nanoose District, Plan VIP 2490-92,689 m^2 (22.90 acres);
- Lot 2, District Lot 53, Nanoose District, Plan VIP 2490-83,194 m^2 (20.56 acres);
- Lot 3, District Lot 53, Nanoose District, Plan VIP 2460-74,870 m^2 (18.50 acres);

- Total approximate area included in development proposal - 250,753 m^2 (62.0 acres)

Rem. Lot 1 (7704 Superior Road) contains a watercourse protection area (DPA 1) due to the presence of Knarston Creek running along its easterly boundary. It is expected that there will be riparian and possibly Geotechnical setbacks associated with Knarston Creek which will limit development in close proximity to the creek and the ravine in which it flows. Knarston Creek and its banks along with the 15 metre SPEA and streamside protection setback are entirely contained within the proposed park dedication area. There is an associated development permit area which lies partially outside of the limits of the proposed park dedication.

There is currently one single family dwelling on 7704 Superior Road (Rem. Lot 1) which will ultimately be situated within the proposed park. We cannot confirm whether the house will remain or be removed.

The servicing comments have been separated by service type as detailed below.

Watermains

There is no District of Lantzville water service to the subject property at this time.

According to our review of the District of Lantzville Development Cost Charge (DCC) project list and associated mapping prepared by Koers & Associates Engineering Ltd., the subject properties will ultimately be serviced by a 300Ø watermain connected to the District of Lantzville watermain network by new mains to be constructed in Superior Road, Harby Road West, and Philip Road.

The current westerly limit of the District of Lantzville Water System on the south side of the Island Highway is located on Harby Road West opposite the westerly boundary of 7517 Harby Road West, approximately 800m to the east of the subject property. There is a 150Ø AC watermain at this location which would not have capacity to serve the subject properties or lands to the west. All existing undersized watermains along the alignment of the 300Ø watermain

referred to above between the proposed point of connection and the current westerly limit of the existing watermain network will be replaced by the proposed 300Ø watermain and existing services along the route connected to the new watermain.

The extent of any additional watermain upgrading required to provide service to the proposed development and confirmation of the final required watermain diameter will require input at design stage by Koers & Associates running the District of Lantzville Water System Model at the Developer's cost.

The internal road network will include construction of watermains sized to convey the theoretical fire and domestic flows including fire hydrants at the spacing dictated by the District of Lantzville Subdivision and Development Works and Services Bylaw No. 175, 2020 and including individual water services to each lot sized to accommodate the permissible development.

There is evidence of at least one well on site but we are not aware of its yield or water quality. It is not intended to be used to service the proposed development and will be decommissioned at development stage.

Based upon a maximum permissible velocity under fire flow conditions of 3.0 m/s alone, the maximum fire flow that could be supplied by the 300Ø watermain included in the DCC Project List servicing the subject properties is 212 l/s. Similarly, based upon a maximum permissible velocity under peak hour demand conditions of 1.5 m/s alone, the maximum peak hour flow that could be supplied by the 300Ø watermain included in the DCC Project List servicing the subject properties is 106 l/s.

At Development Permit and Building Permit stage for future development on the parcels within subject properties, the building construction type, fire sprinkler configuration, largest unseparated fire area, and use will be governed by the available domestic and fire suppression water supply.

The conceptual water servicing layout is depicted on our preliminary on and off-site servicing plans appended to this report. Refer to Appendix A for the on-site schematic water servicing information. Refer to Appendix B for the off-site schematic water servicing information.

Sanitary Sewer

There is no District of Lantzville sanitary sewer servicing to the subject property at this time.

According to our review of the record drawings for Phase 3 of the District of Lantzville Sanitary Sewer project, discussions to date with District of Lantzville staff, and a preliminary report prepared by Koers & Associates, the point of connection for sanitary sewer servicing for the proposed development will be the westerly limit of the 300Ø sanitary sewer in Lantzville Road. Based upon the available record drawings it is our understanding that this point of connection is located in Lantzville Road approximately 100 metres to the west of the intersection of Lantzville Road and Hall Road.

Subject to design and subsequent approval by the District of Lantzville and their consultants, provision of sanitary sewer service to the subject properties would require construction of a gravity sewer in Lantzville Road from the current upstream limit of the 300Ø sanitary sewer noted above to the intersection of Lantzville Road and Superior Road, and southward in Superior Road to the south side of the Island Highway and the Island Corridor Foundation rail right of way

(formerly the E & N Railway) and continuing along Superior Road to the westerly limit of the Superior Road frontages of the subject properties.

Our conceptual design proposes that the deep section of the sanitary sewer in Lantzville Road and that portion of the sanitary sewer in Superior Road required to cross the Island Highway and the Island Corridor Foundation rail right of way would be installed using directional drilling. This approach was recently used on a project we were involved with which included a crossing of the Nanaimo Parkway and achieved a satisfactory result.

Due to the topography of the subject properties our conceptual design includes a sanitary sewer pumpstation located at the north-westerly corner of the proposed development which would convey sewage from the proposed development to the gravity sewer main to be constructed in Superior Road.

The proposed development would be provided with an internal gravity sanitary sewer system designed and constructed in accordance with District of Lantzville Engineering Standards including provision of servicing to each proposed lot to collect and convey sanitary sewage to the proposed pumpstation.

The conceptual sanitary sewer servicing layout is depicted on our preliminary on and off-site servicing plans appended to this report. Refer to Appendix C for the on-site schematic sanitary sewer servicing information. Refer to Appendix D for the off-site schematic sanitary sewer servicing information.

Drainage

There is no District of Lantzville piped storm sewer service to the site at the present time.

Drainage from approximately the easterly half of the site is tributary to Knarston Creek either directly or via an un-named tributary to Knarston Creek leaving the subject properties approximately 240 metres to the west of Superior Road. Knarston Creek flows through 7704 Superior Road from south to north, and crosses the railway and the Island Highway just to the west of Superior Road. The un-named tributary crosses the railway and the Island Highway separately (farther to the west) and joins Knarston Creek beyond the northerly limit of the Island Highway right of way.

Our review of the District of Lantzville Storm Drainage Study prepared by Koers & Associates dated July 2007 and inspection of downstream infrastructure indicates that the recommended peak flow diversion structure at the downstream end of Knarston Creek (down Benwaldun Road) has been completed, which was intended to eliminate the flooding hazard within the floodplain of Knarston Creek.

Drainage from the ditch along the south side of Superior Road has been directed by way of a cross-road culvert onto the subject properties where it discharges into a man-made ditch and ultimately spreads out over the ground surface before flowing into the un-named tributary to Knarston Creek referred to above.

The available topographical information indicates that approximately the westerly half of the subject properties is tributary to the ditch along the south side of the railway, which flows to the west for that portion of the subject properties' frontage on the railway right of way and ultimately

crosses the railway and the Island Highway opposite the south end of North Road, approximately 200 metres west of the westerly boundary of the subject properties. This drainage flows into Knarston Creek near its outlet.

The District of Lantzville Storm Drainage Study completed in 2007 indicated that the culvert crossing Lantzville Road at North Road was in need of upgrading including outlet improvements at that time. It is our understanding that this work has not been completed to date.

District of Lantzville regulations require that post development drainage networks serving new development "retain natural water flows on the land as long as possible, and maximize groundwater recharge".

Subject to verification by the Geotechnical Consultant that on-site soils are conducive to infiltration we propose a combination of the following measures to manage and treat runoff from the proposed development;

-installation of infiltration facilities on each lot at building construction stage to maximize the opportunity for storage/infiltration of runoff on each lot before it enters the storm sewer system. Each infiltration facility would be provided with a piped overflow to the storm drainage system to allow any stormwater that does not infiltrate the ground to overflow into the storm drainage network, once the infiltration facility is full and/or its capacity has been fully utilized;
-construction of raingardens along the northerly (low) boundary of each parcel into which the on-site drainage from each parcel would discharge. These raingardens would be constructed with sub-surface drain rock reservoirs to store runoff and take advantage of any opportunity for infiltration into the sub-soils, topped with layers of growth medium and plants specified by the Landscape Consultant to trap silt and contaminants in the stormwater prior to discharge into the receiving watercourses (Knarston Creek, its un-named tributary to the west and the railway ditch to the west of the un-named tributary to Knarston Creek);
-the raingardens would be provided with a piped overflow(s) into the Knarston Creek system and/or to the ditch along the south side of the railway as topography dictates, complete with appropriate energy dissipation measures to allow any flows that fail to infiltrate the ground to flow into the receiving watercourses without the possibility of erosion of the ravine bank, ditch side slope or the creek bed as the case may be at each discharge location;
-the stormwater detention and treatment measures would be designed and constructed by the developer of each individual parcel at building construction stage and would all be required to comply with District of Lantzville Bylaw 175, 220, along with any applicable Development Permit conditions and any conditions embedded in the zoning.

The conceptual servicing layout is depicted on our preliminary site servicing plan appended to this report. Refer to Appendix E for the schematic storm sewer servicing information.

Roadways

The access to the subject properties at this time is provided off that portion of Superior Road which runs along the southerly boundary of the subject properties.

Access to the developed parcels would be provided off the internal road network only, which would connect to Superior Road at two proposed intersections as indicated on the site plan prepared by Williamson & Associates. The final locations of these intersections would be

dependent upon the configuration of the final lot layout once all required design reviews have been completed and all required approvals obtained.

The scope of required off-site roadworks which may be required as a result of the proposed rezoning/development of the subject properties is the subject of a Traffic Study completed by Watt Consulting Group and future detailed design and associated review by both the District of Lantzville and the B.C. Ministry of Transportation and Infrastructure.

B.C. Hydro/Telus/Shaw Communications/FortisBC Gas

There is overhead 3-phase B.C. Hydro servicing along the south (far) side of Superior Road along with Telus and Shaw Communications servicing (also overhead).

It is proposed that the development would include underground B.C. Hydro, Telus and Shaw Communications servicing along with ornamental streetlighting. Connections to existing servicing would be at one or both of the proposed intersections with Superior Road based upon design information to be provided by B.C. Hydro, Telus, and Shaw Communications Inc. at the Developer's cost, at design stage.

FortisBC Gas service is available from an 88mm diameter gas main running along the south side of Superior Road fronting the subject property. Design for the on-site gas distribution system would be provided by FortisBC Gas at design stage.

Conclusions

Off-site extension/upgrading of both the District of Lantzville water system and the District of Lantzville sewer system will be required to accommodate the proposed development.

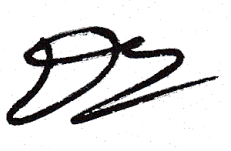
The extent and configuration of the required upgrades will require liaison with the District of Lantzville and their Consultants in order to ensure that the off-site servicing works address the long term requirements of the District of Lantzville in addition to providing service to the proposed development.

On site drainage is proposed to be collected and conveyed by way of a network of storm sewers to be designed and constructed at subdivision stage. Private detention/infiltration/treatment facilities will be provided by the ultimate developer of each lot in order to maintain post development stormwater discharge rate and water quality as close to pre-development levels as possible. No alteration of the tributary area boundaries between those portions of the subject properties contributing drainage to the downstream watercourses that currently accept drainage from the naturally tributary portions of the subject properties is proposed, in order to minimize impact upon the downstream drainage networks to which the subject properties are tributary.

Roadway upgrading requirements associated with the proposed rezoning will be subject to the conclusions of the Traffic Study prepared by Watt Consulting Group, the conditions of rezoning, the conditions of P.L.A., and District of Lantzville input during the detailed design process.

Should you require any further information in order to complete your review of the foregoing, please contact the undersigned.

Yours truly,
Newcastle Engineering Ltd.



Drew Beiderwieden, P.Eng.

Copy to: Mr. Darwin Mahlum

APPENDIX A

Schematic Site Servicing Plan – Water

Attachment 2

PRELIMINARY
NOT FOR CONSTRUCTION

PLAN 10796

B
PLAN 27393

AATS ROAD

R5
PLAN 10796

R'A'
DD19108-N
PLAN 2319

PCL A
DD 375779-I

4
PLAN 22548

A
PLAN 19861

R1
PLAN 7779

SUPERIOR ROAD

ISLAND HIGHWAY

E&N RAILWAY

PROPOSED CLOSED ROAD

1
0.364 ha

2
0.316 ha

3
0.290 ha

4
0.248 ha

5
0.243 ha

6
0.253 ha

7
0.276 ha

8
0.261 ha

9
0.224 ha

10
0.224 ha

11
0.223 ha

12
0.224 ha

13
0.23 ha

14
0.76 ha

15
0.43 ha

16
0.27 ha

17
0.26 ha

18
0.32 ha

19
0.303 ha

20
0.231 ha

21
0.287 ha

22
0.328 ha

23
0.273 ha

25
1.25 ha

24
8.98 ha
(22.2 acres)

26
1.23 ha

27
1.70 ha

200ø

ROAD

NANOOSE
INDIAN
RESERVE

PROPOSED CLOSED ROAD

FIRE HYDRANT (TYP.)

ALL PIPE SIZES SUBJECT TO
CONFIRMATION AT DESIGN STAGE

BUFFER / TRAIL

20m BUFFER / SETBACK

10m GREENWAY / TRAIL BUFFER

PLAN 40250

PLAN VIP68209

PARK
1.84 ha

waterfall CREEK

KNARSTON

approx. CL

TOP OF BANK

road
0.21 ha

HARLEY DRIVE

R1
PLAN 22899

2
PLAN 22899

14
PLAN 22899

13
PLAN 22899

15
PLAN 22899

16
PLAN 22899

R17
PLAN 22899

2
PLAN 23069

1
PLAN 23069

GAYLYN PLACE

1
PLAN 23508

46
AN 24270

NORMAREL
DRIVE

1

A

2

3

4

5
16980

A
PLAN 8353

RA
PLAN 31232

1
PLAN 40566

STONE ROAD

1
PLAN 37913

PLAN 64652

2
PLAN 6397

1
PLAN 6397

1
PLAN 6396

TO HARBY
ROAD WEST

VANDENHOEK
ROAD

250ø

300ø

300ø

ISSUED FOR REZONING APPLICATION – NOT FOR CONSTRUCTION

PROJECT NAME	CLIENT NAME	DRAWING TITLE	
SUPERIOR ROAD DEVELOPMENT	SINCANA LAND CORP	SCHEMATIC SITE SERVICING PLAN–WATER APPENDIX A	NEWCASTLE ENGINEERING LTD. 4–3179 BARONS ROAD NANAIMO, B.C. V9T 5W5

Scale	1:2500
Drawn	JTD
Date:	06–09–22
Dwg. No.	A

APPENDIX B

Schematic Off-site Servicing Plan – Water

Attachment 2

PRELIMINARY
NOT FOR CONSTRUCTION

300ø (TYP.)

HARBY ROAD WEST

FOR CONTINUATION REFER TO SCHEMATIC SITE SERVICING PLAN–WATER

ALL PIPE SIZES SUBJECT TO CONFIRMATION AT DESIGN STAGE

ISLAND HIGHWAY

HARBY

PETE

ROSSITER AVENUE

JOY WAY

ROAD

INDUSTRIAL

E & N

ROAD

ROAD

MARY

ROAD

METRO

FOREST TURN

PHILIP

HARWOOD

DRIVE

ELIZABETH WAY

ANDREA

CRESCENT

ROAD

FERNMAR ROAD

AINSWORTH PLACE

CLARK CRESCENT

PHILIP

DRIVE

AULDS ROAD

HARWOOD

ROAD

POINT OF CONNECTION (SUBJECT TO DESIGN)

AULDS ROAD

ISLAND HIGHWAY

ISSUED FOR REZONING APPLICATION – NOT FOR CONSTRUCTION

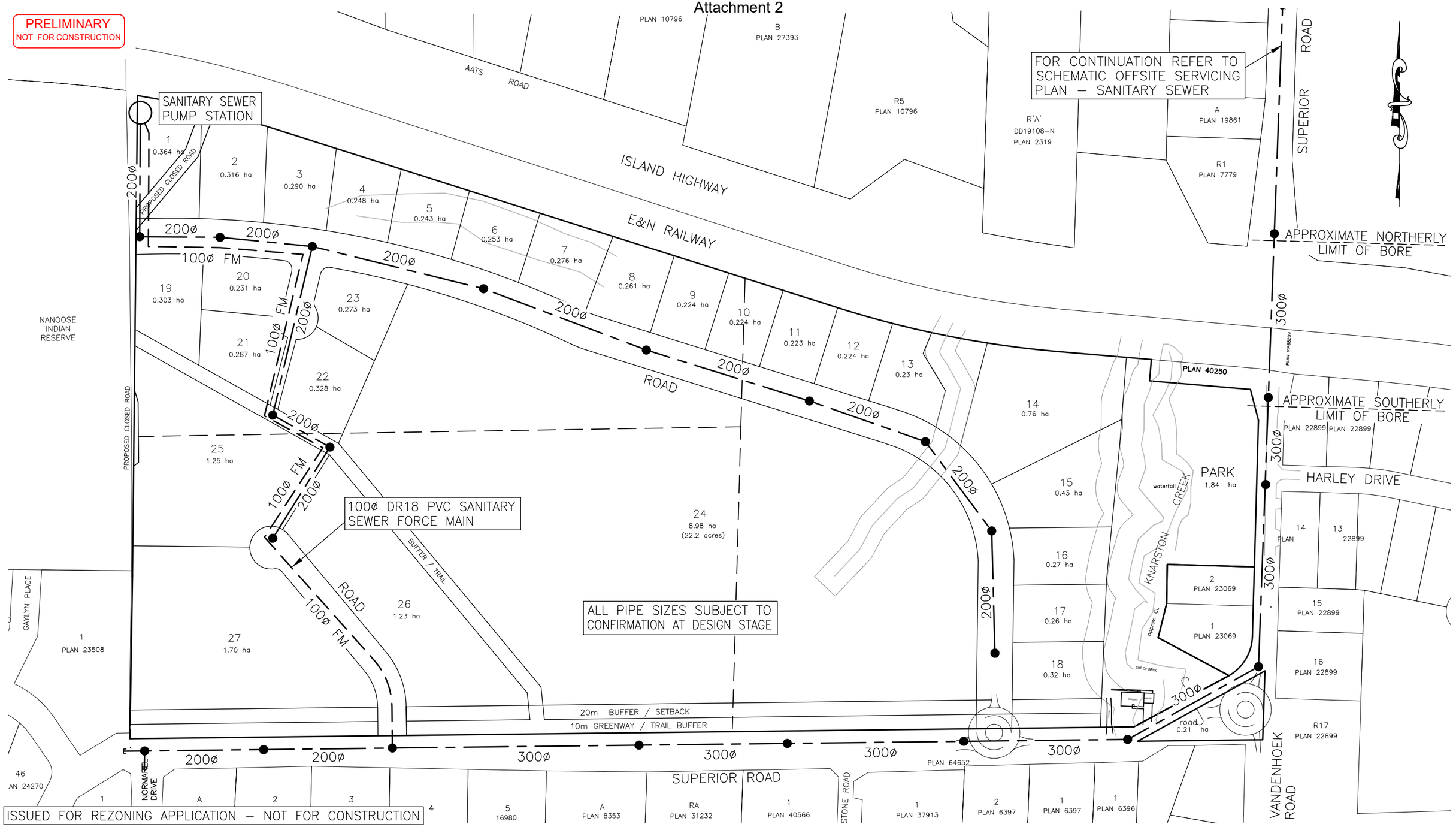
PROJECT NAME SUPERIOR ROAD DEVELOPMENT	CLIENT NAME SINCANA LAND CORP	DRAWING TITLE SCHEMATIC OFFSITE SERVICING PLAN–WATER APPENDIX B	NEWCASTLE ENGINEERING LTD. 4–3179 BARONS ROAD NANAIMO, B.C. V9T 5W5	Scale 1:5000 Drawn JTD Date: 06–09–22 Dwg. No. B

APPENDIX C

Schematic Site Servicing Plan – Sanitary Sewer

Attachment 2

PRELIMINARY
NOT FOR CONSTRUCTION



ISSUED FOR REZONING APPLICATION – NOT FOR CONSTRUCTION

PROJECT NAME SUPERIOR ROAD DEVELOPMENT	CLIENT NAME SINCANA LAND CORP	DRAWING TITLE SCHEMATIC SITE SERVICING PLAN–SANITARY SEWER APPENDIX C	NEWCASTLE ENGINEERING LTD. 4–3179 BARONS ROAD NANAIMO, B.C. V9T 5W5

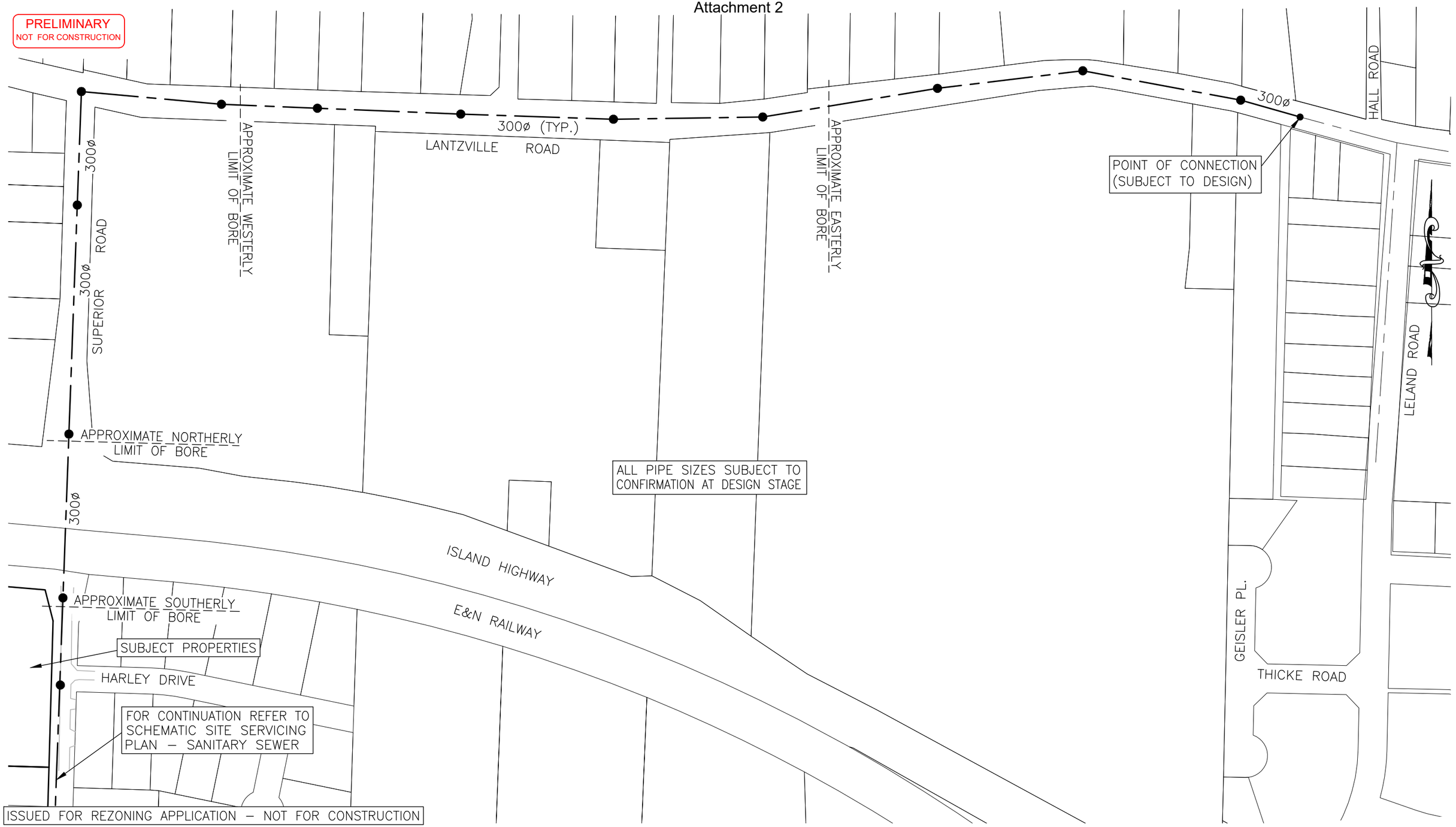
Scale	1:2500
Drawn	JTD
Date:	06–09–22
Dwg. No.	C

APPENDIX D

Schematic Off-Site Servicing Plan – Sanitary Sewer

Attachment 2

PRELIMINARY
NOT FOR CONSTRUCTION



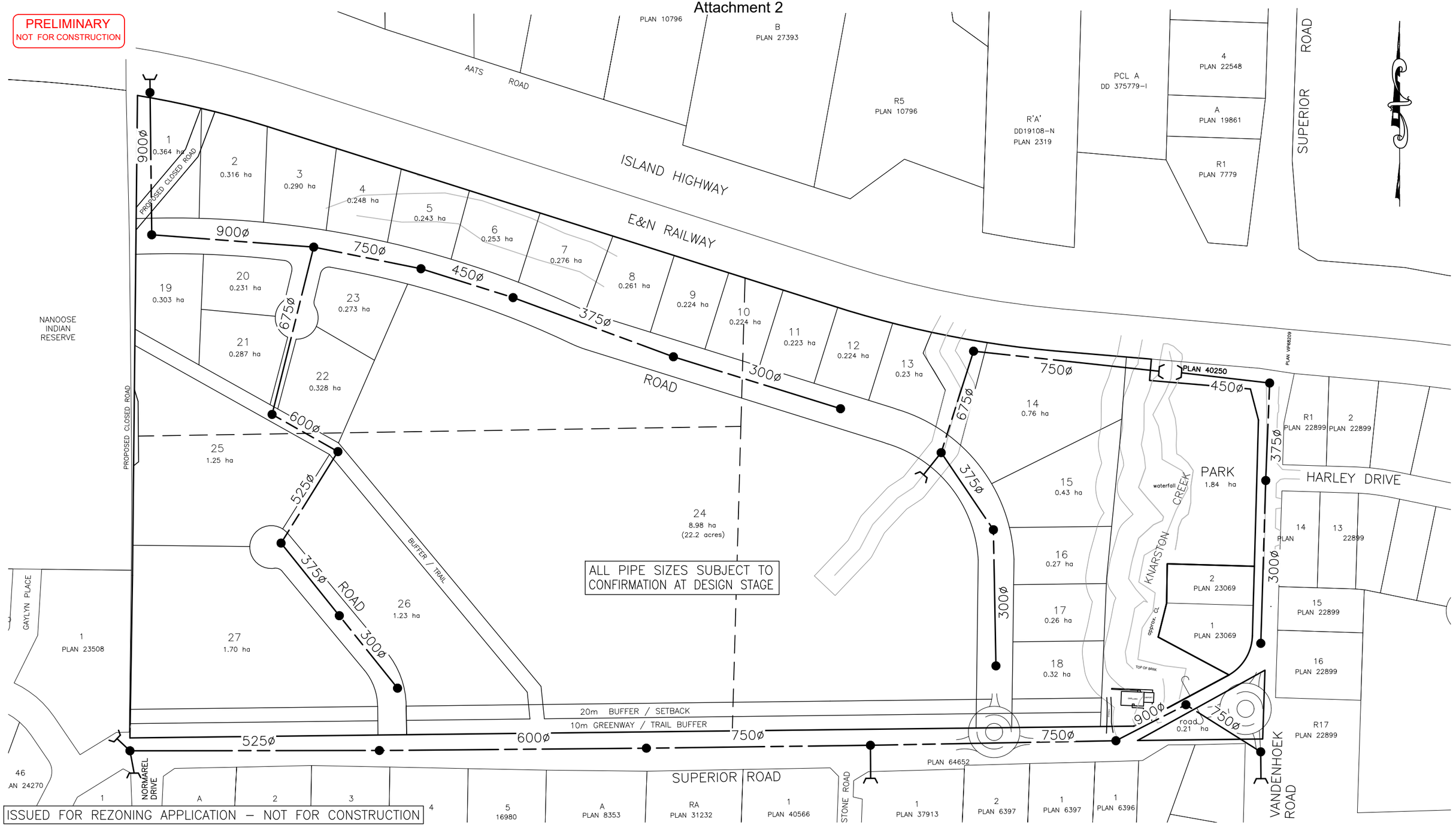
PROJECT NAME SUPERIOR ROAD DEVELOPMENT	CLIENT NAME SINCANA LAND CORP	DRAWING TITLE SCHEMATIC OFFSITE SERVICING PLAN–SANITARY SEWER APPENDIX D	NEWCASTLE ENGINEERING LTD. 4–3179 BARONS ROAD NANAIMO, B.C. V9T 5W5	Scale 1:2500 Drawn JTD Date: 06–09–22 Dwg. No. D

APPENDIX E

Schematic Site Servicing Plan – Storm Sewer

Attachment 2

PRELIMINARY
NOT FOR CONSTRUCTION



ISSUED FOR REZONING APPLICATION – NOT FOR CONSTRUCTION

PROJECT NAME SUPERIOR ROAD DEVELOPMENT	CLIENT NAME SINCANA LAND CORP	DRAWING TITLE SCHEMATIC SITE SERVICING PLAN–STORM SEWER APPENDIX E	NEWCASTLE ENGINEERING LTD. 4–3179 BARONS ROAD NANAIMO, B.C. V9T 5W5

Scale	1:2500
Drawn	JTD
Date:	06–09–22
Dwg. No.	E