



BURNSIDE

**Functional Servicing Report - Fergus
Golf Course**

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**January 2022
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R.J. Burnside & Associates Limited

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WAT1: Preliminary Water Distribution Plan

SAN1: Preliminary Wastewater Distribution Plan

STM1: Preliminary Storm Servicing Plan

GRD1: Preliminary Grading Plan – South

GRD2: Preliminary Grading Plan – West

GRD3: Preliminary Grading Plan – North

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1.0 Introduction and Background

R.J. Burnside & Associates Limited (Burnside) has been retained by 883890 Ontario Limited c/o Fergus Development Inc. to prepare a Functional Servicing Report (FSR) for the proposed redevelopment of the Fergus Golf Club. A Stormwater Management Report will be submitted separately. This FSR has been prepared to accompany the applications for Plan of Subdivision, Plan of Condominium, Official Plan Amendment and Zoning By-law Amendment. It demonstrates that the subject lands can be provided with communal private servicing in accordance with applicable regulatory requirements and criteria.

1.1 Site Description and Context

The Fergus Golf Course is located along Wellington Road 19, east of Third Line, in the Township of Centre Wellington, Ontario.

The existing golf course (the "Site") consists of two parcels; the northwest parcel, which is 42.35 ha, situated on the north side of Wellington Road 19, and the southeast parcel, which is 39.85 ha, situated on the south side of Wellington Road 19. The proposed residential redevelopment is located on the southeast parcel (the "SE Site") and the communal water and wastewater services are integrated into the existing Golf Course, which will remain on the northwest parcel (the "NW Site"). Refer to Figure 1 for the location of the site, located within the "Figures" Appendix at the back of this Report.

The existing SE Site includes wetlands through which the Black Drain flows from the north side (Wellington Road 19) downstream towards the south-west of the SE Site.

1.2 Scope of Work

The proposed scope of work for the Fergus Golf Course redevelopment FSR will include the following:

- a) Overview of Existing Conditions
 - Confirm storm drainage areas from detailed mapping; and
 - Comprehensive Constraints Map to identify potential locations for SWM pond(s).
- b) Servicing, Grading and Limits of Development
 - Identify the water and sanitary servicing requirements for the development area;
 - Prepare a functional servicing system to provide water services as well as sanitary services out letting into a proposed communal onsite wastewater

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treatment facility with subsurface discharge located north of Wellington Road 19; and

- Prepare preliminary grading of roads, lots and / or blocks, and ponds with consideration for adjacent environmental features.

1.3 Background Studies and Documentations

The servicing concepts presented within this report have been developed to comply with the information contained in the following reports, which were established for this area. These following documents, studies, and reports have been incorporated unless otherwise noted:

Document Title	Prepared By	Date
Geotechnical Report on Fairview Golf Club – Lot 9 and 10, Concession 3 West Garafraxa Township, Ontario	R.J. Burnside & Associates Limited.	June 21, 1990
Hydro Geological Report on Fairview Golf Club – Lot 9 and 10, Concession 3 West Garafraxa Township, Ontario	R.J. Burnside & Associates Limited.	November 2, 1990
Revised Proposed Sewage Treatment and Disposal Plan Memo	C.C. Tatham & Associates Ltd. Consulting Engineers	February 15, 2018
Heritage Village Subdivision and Sarjeant Lands Proposed Wastewater Treatment Plant (WWTP)	Ainley Group Consulting Engineers Planners	March 1, 2018
Township of Centre Wellington – Water Supply Master Plan	AECOM Canada Ltd.	April 4, 2018
Preliminary Geotechnical Investigation Report, Proposed Residential Development – Fergus Golf Club	Golder Associates Limited	January 2022
Hydrogeological Assessment, Proposed Residential Development – Fergus Golf Club	Golder Associates Limited	January 2022
Environmental Impact Study	Beacon Environmental	January 2022
Preliminary Environmental Noise Report (Draft)	Fergus Development Inc.	January 2022
Fergus Golf Club – Redevelopment – Water Servicing Study	TMIG & T.Y. Lin International Company	January 2022

1.4 Existing Site Conditions

Currently the NE Site and the SE Site are occupied by the Fergus Golf Course.

The Fergus Golf Club is currently serviced by existing wells throughout the site. There are two existing wells on the NW Site (North Irrigation Well and Clubhouse Well) and two existing wells (South Irrigation Well and Old Clubhouse Well) on the SE Site. Another well on the northern parcel, PW2-1, was installed as part of the site investigations for the proposed redevelopment.

The Clubhouse is located on the NW Site and is serviced by the Clubhouse Well for water supply and an onsite sewage treatment and dispersal bed system. There is no sanitary service within the SE Site. The existing house on the south side is assumed to be serviced by an on-site sanitary system as well as by an existing well for water supply.

A minor drain (Black Drain) runs through the middle of the SE Site from Wellington Road 19 south west, connecting existing wetlands on the site with each other. There are multiple woodlots and wetlands within the development area of the SE Site, portions of which are proposed to be retained as part of the development plan per the Environmental Impact Study done by Beacon Environmental.

Please refer to Figure 2 for Existing Site Conditions.

1.4.1 Soil Conditions

A preliminary geotechnical investigation for the study area was completed by Golder Associates Limited. Based upon the findings, the Site is covered by topsoil underlain by sandy silty sand, silty clay to clayey silt with sand to silt with sand and silty clay to clayey silt till. The topsoil thickness generally ranged from 150 mm to 300 mm underlying organic silt layer extending to depths of about 0.70 m and 0.90 m (Elev. 425.70 m and 434.10 m). In addition, cobbles and boulders in the till deposit were detected within the site. For any additional detail information, please refer to the Geotechnical Report by Golder Associates Limited.

1.4.2 Groundwater Conditions

Groundwater conditions were monitored, and it was found that the water tables varied from 0.60 m to 7.30 m below ground level. The shallower water table depths were generally located in the southern portion of the south site, adjacent to the existing wetlands and Black Drain.

1.4.3 Environmental Features

A detailed description of the natural features and functions of the subject property is presented in the Environmental Impact Study by Beacon Environmental.

1.5 Proposed Site Concept

The proposed development will be on the 39.85 ha development site to the south of Wellington Road and will include 118 single family dwelling lots, two Open Space blocks totaling 6.34 ha, a new proposed sanitary pumping station (0.04 ha), and a Stormwater Management Pond for quality and quantity control.

Two access roads for the proposed subdivision on the SE Site will be provided along Wellington Road 19 as well as two accesses off Third Line. A proposed noise barrier wall will be introduced along specific section of Wellington Road 19. Where the noise barrier wall cannot provide a minimum height of 2.0 m for noise cancelation, a retaining wall will be incorporated to provide the minimum height requirement.

The SE Site will be serviced by a water and sanitary sewer system throughout, with a connection and discharge point at Wellington Road 19 and Street E. Additional utilities like hydro, gas and cable will also be provided from these specific connection points.

Please refer to Figure 3 for the proposed concept plan.

2.0 Grading and Storm Drainage

2.1 Site Grading

The conceptual site grading design for the SE Site provided in drawing GRD1, GRD2 and GRD3 of the FSR has been developed in consideration of the following requirements and constraints:

- Conformance with Centre Wellington grading and drainage criteria;
- Incorporating existing grades at road access points to Wellington Road 19 as well as Third Line;
- Matching of existing boundary grades at the property limits as well as existing wetland and wooded areas identified for protection;
- Optimization of earthworks (i.e., minimizing fill);
- Provision for adequate cover on proposed services;
- Provision for overland flow conveyance on the roadways to the proposed SWM ponds (i.e., major system storm drainage and emergency overland flow);
- Conveyance of stormwater within site and minimizing external runoff; and
- Incorporating proposed noise barriers along Wellington Road 19.

The proposed road grades indicated allow for overland flow conveyance on the future ROWs in order to direct major storm drainage to the future SMW pond located south of the existing wetland.

2.2 Existing Storm Drainage

The existing site topography generally drains to the existing drainage feature on the site, the Black Drain. The Black Drain is a municipal drainage channel, which enters the SE Site from the north side of Wellington Road 19, flowing south through the existing wetland areas continues south-west eventually draining into Irvine Creek. Irvine Creek generally flows in a southwesterly direction connecting to the Grand River in Elora. For more details concerning the existing Storm Drainage, please refer to the SWM Report prepared by Burnside dated January 2022.

Please refer to Figure 4, which shows the Existing Stormwater Drainage Area Plan.

2.3 Proposed Storm Drainage

One Stormwater Management (SWM) Pond is proposed, located south of the existing wetland area, to meet the SWM criteria with respect to the Quantity, Quality, Erosion Control, Water Balance and Conveyance of storm drainage for this development site. For more details concerning the Proposed Drainage Area, please refer to the SWM Report prepared by Burnside dated January 2022.

The Post Development Drainage Areas are shown on Figure 5.

2.4 Foundation Drain Collection

All proposed foundation drains will be connected to a separate storm sewer system, where required, as requested by the Centre Wellington Standards.

2.5 Minor System Conveyance

As per Centre Wellington standards, the minor system flow will be conveyed through a series of storm sewers sized in combination with catch basins (CB) located within the Right of Ways (ROW) and rear yards to convey the 5-year return period storm. One Storm Management Pond is proposed to collect the storm discharge, located south of the existing wetland.

Drawing STM1 shows the overall layout for the preliminary storm sewer network for proposed drainage areas.

2.6 Major System Conveyance

The major system will convey the 100-year storm within the proposed ROW and direct the flow into the proposed SWM pond as overland flow. For more details regarding the Major System Conveyance, please refer to the SWM Report prepared by Burnside, dated January 2022.

2.7 External Drainage Conveyance

There are six external drainage areas that flow through the SE Site and ultimately reach the existing Black Drain.

EXT1 (7.93 ha) coming into the SE Site via roadside ditches and a culvert under Wellington Road 1, which forms the start of the Black Drain.

The second external drainage area EXT2 (0.34 ha) is located on the south side of Wellington Road 19 and includes the South half of Wellington Road 19 and the roadside ditch. This area spills to the site via a drainage ditch, east of the Black Drain.

The third of these drainage areas EXT3 (1.23 ha) is located on the south side of Wellington Road 19 and includes the South half of Wellington Road 19 and the roadside ditch. It also includes the west side of 3rd Line and the roadside ditch.

The fourth drainage area EXT4 (0.18 ha) is located on the west side of 3rd Line and the roadside ditch at the south end of the SE Site. It currently appears that this drainage is held in the ditch and ultimately spills into the site via a low point on the east side of the SE Site.

The fifth and sixth external drainage areas EXT5 (8.51 ha) and EXT6 (15.73 ha) sheet drains towards the SE Site from the lands to the south.

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For more details regarding the External Drainage Conveyance, please refer to the SWM Report prepared by Burnside, dated January 2022.

3.0 Water Distribution

3.1 Water Design Criteria

The proposed water distribution within the property will be designed and constructed to current County of Wellington and MECF criteria and specifications, which are as follows:

- Peak hourly demand plus fire flow;
- Pressure in transmission watermains to be minimum 40 psi (275 kPa) during peak hour demands at hydrant elevation;
- Pressure in a transmission main under condition of simultaneous peak hour flow and fire flow demands is to be not less than 20 psi (140 kPa) at the point in the system where the fire flow is being drawn. Fire Flow shall be minimum 275 kPa (40psi); and
- Preferred pressures ranges are:
 - Average Day and Maximum Day: 50psi (350kPa) to 80psi (550kPa).
 - Minimum Hour and Peak Hour: 40psi (275kPa) to 100psi (700kPa).

3.2 Existing Water Infrastructure

The existing Fergus Golf Club is currently supplied with water by the existing well (Old Clubhouse Well) on the NW Site. No other water services are provided within the SE Site. The existing house on the south side is assumed to be serviced by an existing well for water supply.

3.3 Proposed Water Distribution Layout

The proposed water supply for the proposed subdivision will be delivered by one of the existing wells on the north side of Wellington Road 19. The Water supply requirement is estimated to be 150 m³/day for the Average Day Flow (AWD) and 250 m³/day for the Maximum Day Flow (MAF). Please refer to the Hydrogeological Report prepared by Golder for the exact source of water supply.

The preliminary Water Distribution Plan (Drawing WAT1) of this FSR is a preliminary plan indicating connection points, as well as layout and routing for the proposed 150 mm watermain within the proposed subdivision. A minimum cover of 2.0 m will be ensured for the entire length of water services within the site.

The supply source on the NW Site will provide the minimum required pressure of 275 kPa (40 psi) for fire flow supply.

For any additional detailed information concerning required water infrastructure and upgrades, please reference Water Servicing Study by TMIG.

4.0 Wastewater Servicing

Municipal sanitary services are not available to the Site; therefore, onsite servicing is required. The existing golf course facility is serviced by an Ecoflo peat biofilter and Area Bed, with a capacity of approximately 5,500 L/day, located on the NW Site.

A new communal wastewater treatment facility is proposed to service the development and will consist of a wastewater treatment system with dispersal beds for dispersal of treated effluent into the subsurface. The wastewater treatment system would require an Environmental Compliance Approval (ECA) from the Ministry of the Environment Conservation and Parks (MECP). Regular operational oversight, as well as performance monitoring will be required. Since this would be a privately owned communal wastewater system, the owner will be required to enter into a Municipal Responsibility Agreement with the Township.

4.1 Wastewater Design Flows

Wastewater design flow rates have been estimated using a combination of the Township of Centre Wellington Draft Engineering Guidelines (2018), as well as Ontario Building Code (OBC) sewage flow rates for dwellings.

The average daily design flow is calculated using the Township guideline of 350 L/day per person, and a density of 3.094 persons per dwelling unit.

Table 1: Average Daily Wastewater Flows

	No. of Units	PPU	Total Population	Flow per Person (L/day)	Total Flow (L/day)
Single Family Units	118	3.094	371	350	127,782
Total ADF (rounded)					150,000

For the purposes of sizing the dispersal beds for dispersal of treated effluent, the average daily flow is not typically used. For stand-alone sewage systems, a higher design flow is required, to ensure the dispersal beds are conservatively sized to accommodate potential higher flow days, based on variable household use patterns. The daily design sewage flow for a single dwelling is typically calculated based on OBC values, which would be of 2,000 L for a four-bedroom dwelling. Given that this is a communal system servicing approximately 118 dwelling units, not all dwellings would produce their maximum daily flow on the same day. Therefore, it is proposed to incorporate flow balancing to manage higher flow days and provide a more consistent hydraulic loading to the system. The design sewage flows are summarized in Table 2.

Table 2: Design Daily Sewage Flows

	No. of Units	Flow per Dwelling (L/day)	Total Flow (L/day)
Single Family Units	118	2,000	236,000
Balanced Daily Design Flow (for Dispersal Bed Sizing)			208,000

Based on the projected design sewage flow of 236,000 L/day, the following sections describe the proposed wastewater system.

It should be noted that the calculated peak water demand is higher than the maximum daily wastewater flow rate, based on the requirement for the water system to meet peak instantaneous or peak hourly requirements. The wastewater treatment and dispersal system will incorporate flow equalization and balancing features to manage peak flows. As such, the wastewater system design flows are not directly comparable to water demand. The wastewater system has been designed based on a reasonable maximum flow expected from each dwelling unit (i.e., the 2,000 L/day per dwelling unit, as described above).

4.2 Sanitary Collection and Conveyance

Wastewater from the 118 unit development will be collected in a gravity sewer system and conveyed to a pumping station located on the east side of the proposed open space block (Block 16). The pumping station (designed by others) will pump sewage to the proposed onsite wastewater treatment system on the NW Site. Refer to Figure 6 for sanitary drainage areas.

4.3 Proposed Treatment System

The proposed wastewater treatment system will require an Environmental Compliance Approval (ECA) from the Ministry of the Environment Conservation and Parks (MECP) and therefore must be designed to meet their requirements for the level of treatment provided.

A preliminary nitrogen impact assessment has been completed by Burnside's hydrogeological team, to evaluate the level of treatment that would be required by the wastewater system prior to discharging the effluent to the subsurface. Based on groundwater level measurements provided by Golder, there is a groundwater divide on the property. The interpreted direction of shallow groundwater flow for the majority of the NW Site is generally toward the northeast, as shown on the Site Location Plan within the Hydrogeological Investigation Report by Golder. The SE Site is interpreted to flow toward the southwest. The dispersal beds have been located to maximize the available attenuation area between the beds and the north property boundary of the NW Site, which is considered the downgradient boundary.

The requirements for treatment are determined by the requirements to protect water resources, particularly the groundwater on neighboring properties (i.e., drinking water

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wells). We have completed a preliminary assessment of the direction of groundwater flow from the location of the existing and proposed dispersal beds, and it appears that groundwater is flowing toward the northern property boundary in a northeasterly direction. Therefore, a Reasonable Use Assessment must be completed to ensure the groundwater quality is maintained. The Ontario Drinking Water Objective (ODWO) for nitrate-nitrogen is 10 mg/L. According to the MECP's reasonable use policy the maximum allowable concentration of nitrate-nitrogen at the downgradient property boundary is 25% of the ODWO, or 2.5 mg/L.

To meet MECP requirement for 2.5 mg/L of nitrate-nitrogen at the downgradient property boundary, the wastewater treatment system will need to provide nitrification and denitrification as part of the treatment.

Based on the results of our preliminary impact assessment the following are the proposed effluent criteria that have been used for the preliminary design of the wastewater treatment system. The effluent criteria must be reviewed and confirmed through consultation with MECP.

Table 3: Proposed Effluent Criteria

Parameter	Proposed Effluent Objective (mg/L)
cBOD5	<10
TSS	<10
Nitrate-Nitrogen	< 4

The treatment system would generally consist of primary settling tanks, followed by the necessary aerobic and anoxic treatment processes to provide removal of solids, organics and nitrogen. Treated effluent would be pumped to the dispersal beds for dispersal into the soil. There are a number of different technologies that are capable of meeting the proposed effluent criteria. The specific type of treatment technology / system would be confirmed during detailed design and through consultation with MECP. The treatment system would be designed to treat the design daily sewage flow and would incorporate appropriate flow balancing facilities. The location of the proposed treatment system is shown on Figure 7.

4.4 Proposed Dispersal Beds

The dispersal beds are proposed to be located on the NW Site and would be constructed in approximately ten separate beds to distribute the effluent. Based on the preliminary geotechnical report completed by Golder, Boreholes 21-13, 21-14 and 21-15 are in the vicinity of the proposed dispersal beds on the site. The soils in these boreholes were reported to be primarily silty clay. In BH21-15, there was a shallow layer of silty sand, but the silty clay appears consistently through the majority of the boreholes on the Site. The dispersal beds have been sized based on the silty clay soils being the

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receiving layer for treated effluent. On this basis, it is proposed to construct the dispersal beds using imported sand material. The native soils have been assigned a conservative percolation rate (T-time) of 50 min/cm for the purposes of this preliminary report.

Since the dispersal beds would be receiving treated effluent, it is proposed to use raised Type A Dispersal Beds, which consist of a 200 mm stone layer protected by geotextile and underlain by a sand layer. The Type A dispersal bed must be constructed using imported sand with a T-time in the range of 6 to 10 min/cm with not more than 5 % passing the No. 200 sieve (i.e., not more than 5% silt/clay sized particles). The minimum depth of the sand layer is 300 mm, and the base of the stone layer must be 600 mm above the groundwater elevation and soil with a T-time greater than 50 min/cm. A minimum 15 m sand mantle is required beyond the edge of the stone layer, in the direction of flow. The detailed design of the leaching beds would be confirmed at a later stage of the project. For the purposes of this report, a conservative preliminary footprint is provided to confirm that there is adequate space on the property to accommodate the proposed Type A beds.

The minimum sand area for a Type A Dispersal Bed constructed on soils with a T-time of 50 min/cm is calculated according to the following formula:

$$A_{\text{sand}} = QT/400$$

Where:

Q = daily design flow (L/day)

T = percolation rate (T-time) of underlying native soil, to a maximum of 50 min/cm

It is proposed to use ten (10) Type A Dispersal Beds, each with an area of 2,600 m². This provides a total of 26,000 m², for the balanced daily design flow of 208,000 L/day.

The preliminary layout of the dispersal beds is shown in Figure 7. Further details on the design and construction of the bed would be provided during detailed design.

5.0 Utilities

Utilities will be installed in a joint utility trench. Design will be provided by the utility companies. It appears that there are connections for natural gas and electrical supply adjacent to the perimeter of the SE Site and during detailed design, consultation with Union Gas (natural gas) and Centre Wellington Hydro/ Hydro One (hydro), will be made to confirm adequate external utility supply will be confirmed.

6.0 Roadways

6.1 Road Right of Ways

All roadways Right-of-way-- (ROW) are proposed to be 12.0 m ROWs as per Figure 8. The proposed ROW will provide a 3.00 m traffic lane in each direction, 0.50 m wide curbs on both sides as well as a 2.50 m strip for planting and utilities on each side. The 12.0 m ROW will provide enough space for underground sanitary, forcemain and water services as well as storm sewers and the Black Drain Bypass.

7.0 Erosion and Sediment Control

The erosion and sediment control plan for the Site will be developed in accordance with the Centre Wellington and Grand River Conservation Authority (GRCA) guidelines. The plan will be completed at detail design stage prior to the undertaking of any grading activity on Site.

Erosion and sediment control will be implemented for all construction activities including topsoil stripping, foundation excavation and stockpiling of material. The following erosion and sediment control measures will be implemented.

- A temporary sediment control fence will be placed around the perimeter of all areas to be disturbed prior to grading. Double row fencing may be appropriate adjacent to sensitive natural areas;
- Appropriate designed sediment control ponds will be provided;
- Catchbasin sediment traps will be provided on existing catchbasins being possible being affected by the construction as well as new installed catchbasins within the new development Site;
- Check dams, etc., for erosion / velocity control will be provided; and
- Gravel mud mats will be provided at all construction access points to minimize off-site tracking of sediment.

All temporary erosion and sediment control measures will be routinely inspected and repaired if required during construction. Temporary controls will not be removed until the areas they served have been restored and stabilized.

Connection to LID measures will not be completed until the Site is stabilized with vegetation to minimize sediment accumulation and maintenance issue.

All reasonable measures will be taken to ensure that sediment loading is minimized both during and following construction. Additional details will be provided as part of the detailed design.

8.0 Conclusions and Recommendations

The report addressed the requirements for submission of a Functional Servicing Report to accompany the Draft Plan Application for the Fergus Golf Course Subdivision Redevelopment. This Functional Servicing Report demonstrates that the proposed development site can be developed on full private communal services as seen in the Conceptual Underground Servicing Plan Drawing (CUSP).

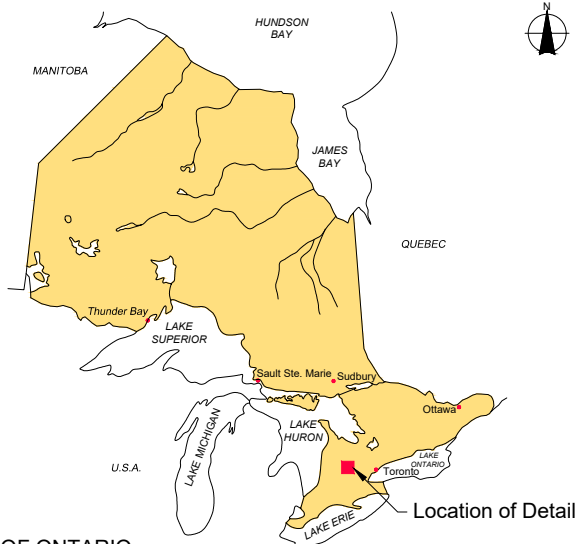


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Figures



KEY MAP OF ONTARIO



Client

FERGUS DEVELOPMENT INC.

Figure Title

FERGUS GOLF COURSE

SITE LOCATION PLAN

Drawn

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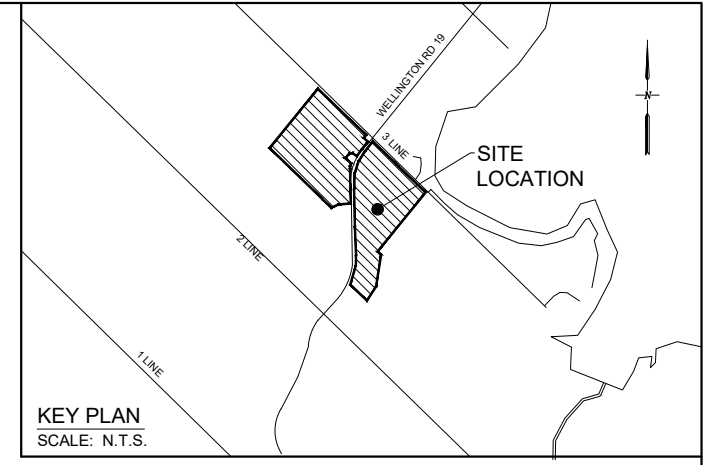
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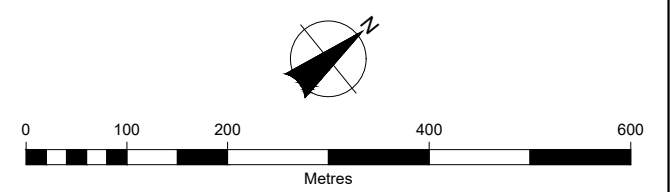
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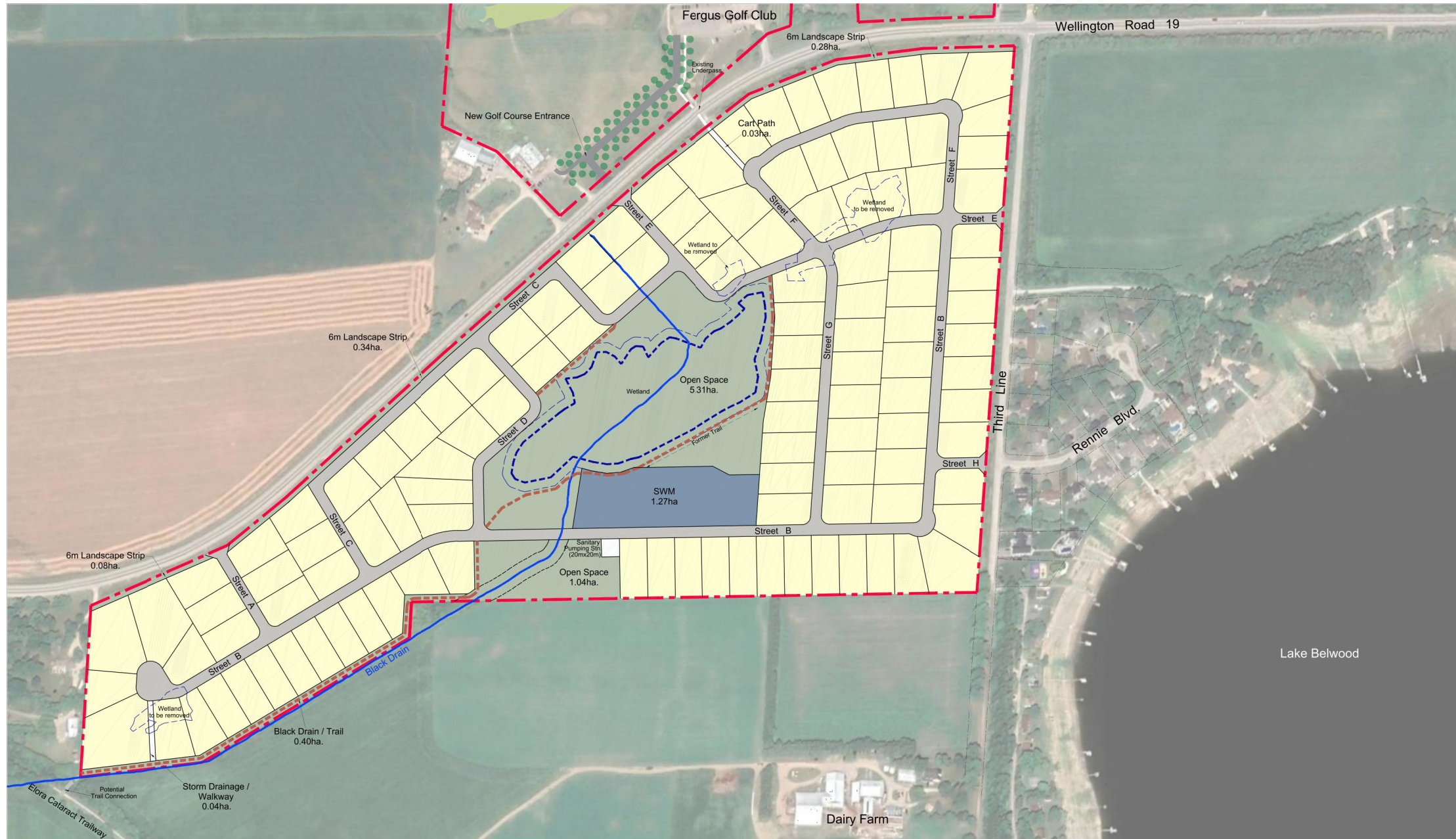
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- LEGEND**
- - - PROPERTY BOUNDARY
 - BH BOREHOLE



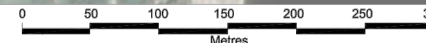
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EXISTING CONDITIONS			
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DEVELOPMENT CONCEPT
The Village At Fairview Greens

- 1/2 Acre Residential Lots
- GRCA Wetland / OP Core Greenlands
- 10m Wetland Buffer
- Potential Trails

Site Area: 39.85ha. (98.5ac.)
No. of Lots: 118
Area of wetlands to be removed: 7,076sq.m.

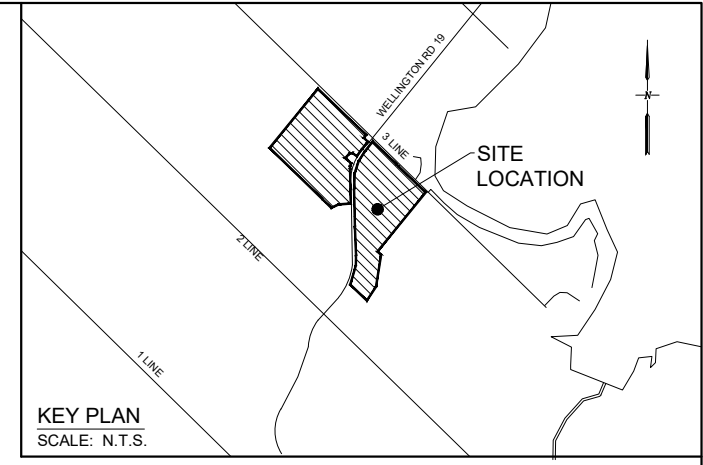



NOTE: This concept should be considered as a preliminary demonstration model that illustrates an 'order of magnitude' development scenario for the site. The number of lots are approximate and subject to more detailed design as well as municipal planning approvals.

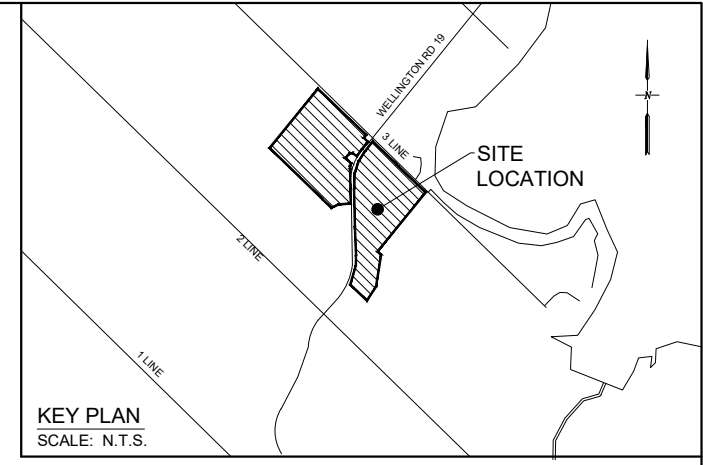
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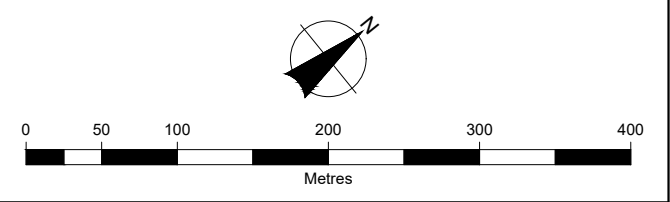
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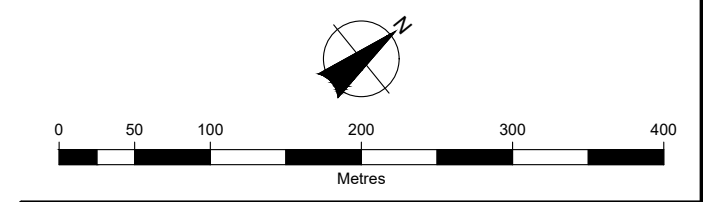
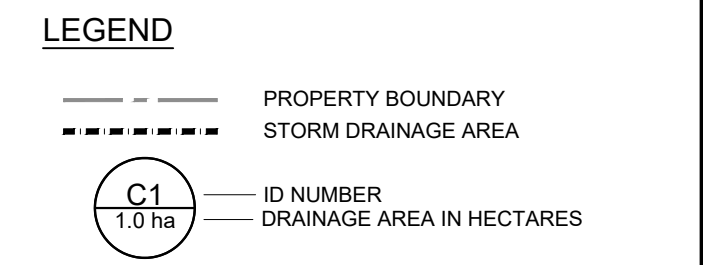
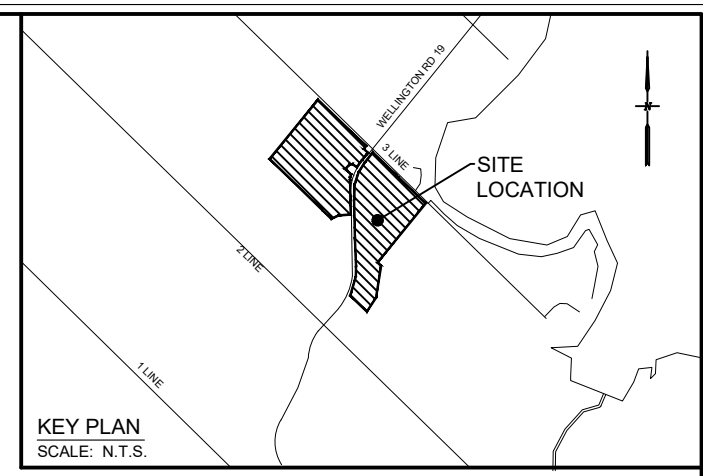
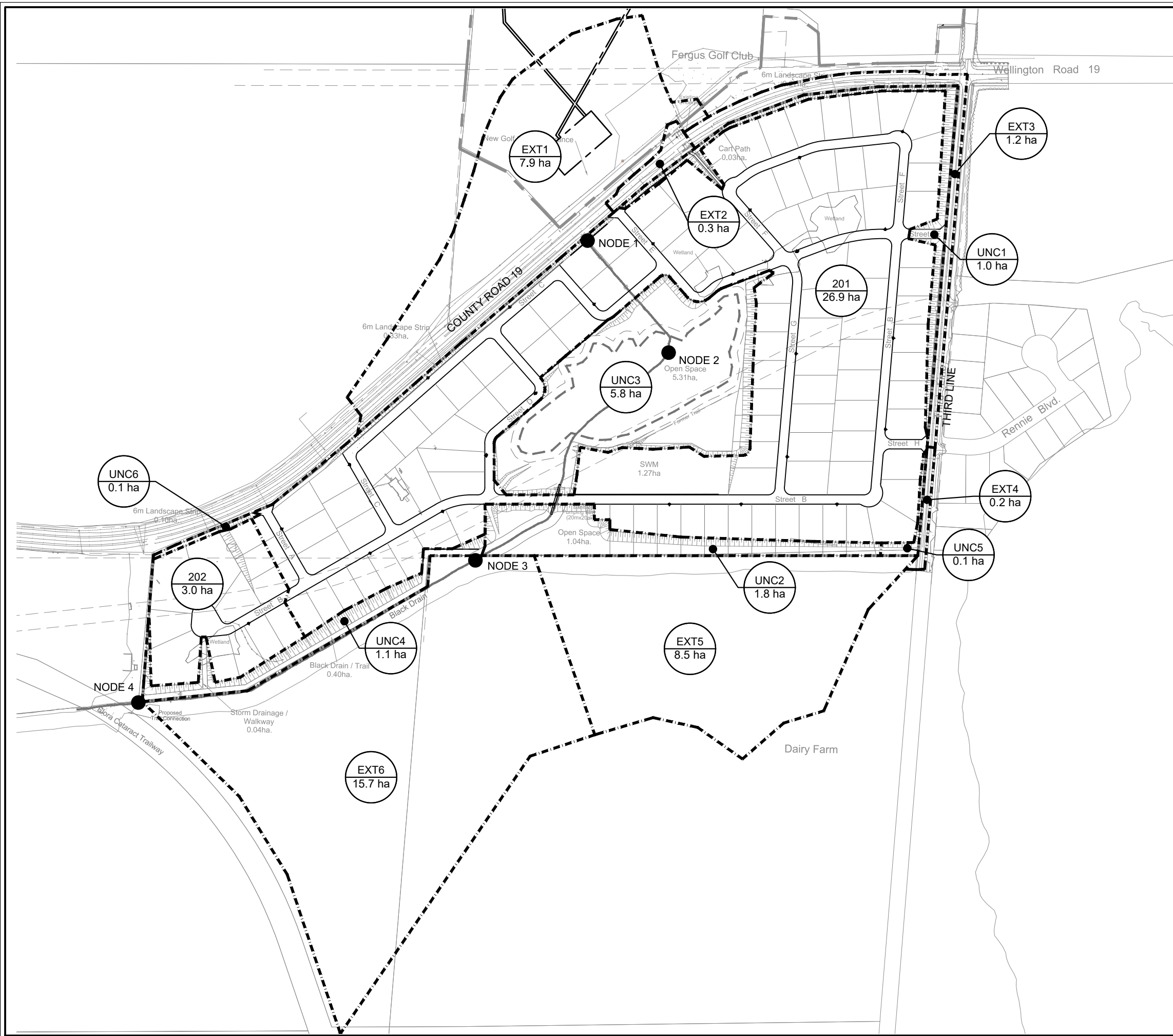
			
Client FERGUS DEVELOPMENT INC.			
Figure Title FERGUS GOLF COURSE PROPOSED CONCEPT PLAN			
Drawn BF	Checked DN	Date 22/01/21	3
Scale N.T.S.	Project No. 300052719		



- LEGEND**
- STORM DRAINAGE AREA
 - EXISTING OVERLAND FLOW DRAINAGE
 - ID NUMBER
DRAINAGE AREA IN HECTARES

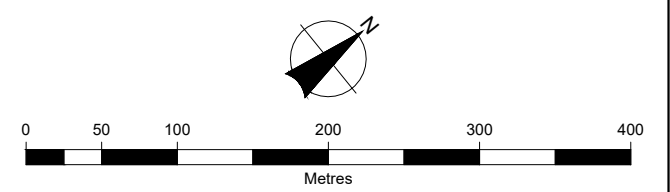
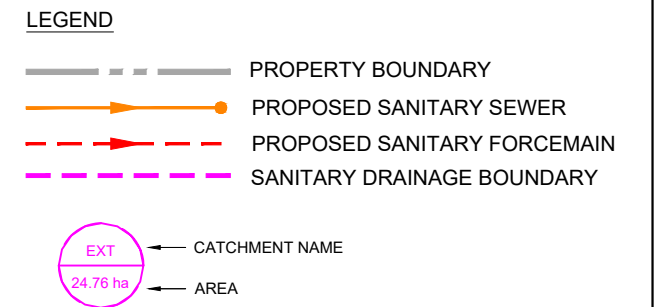
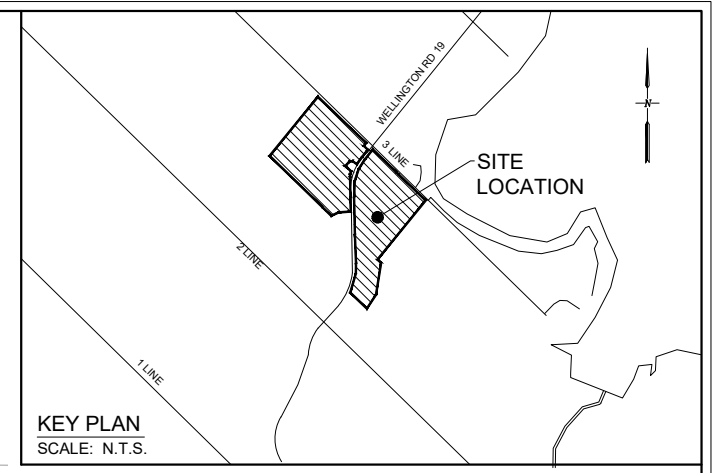
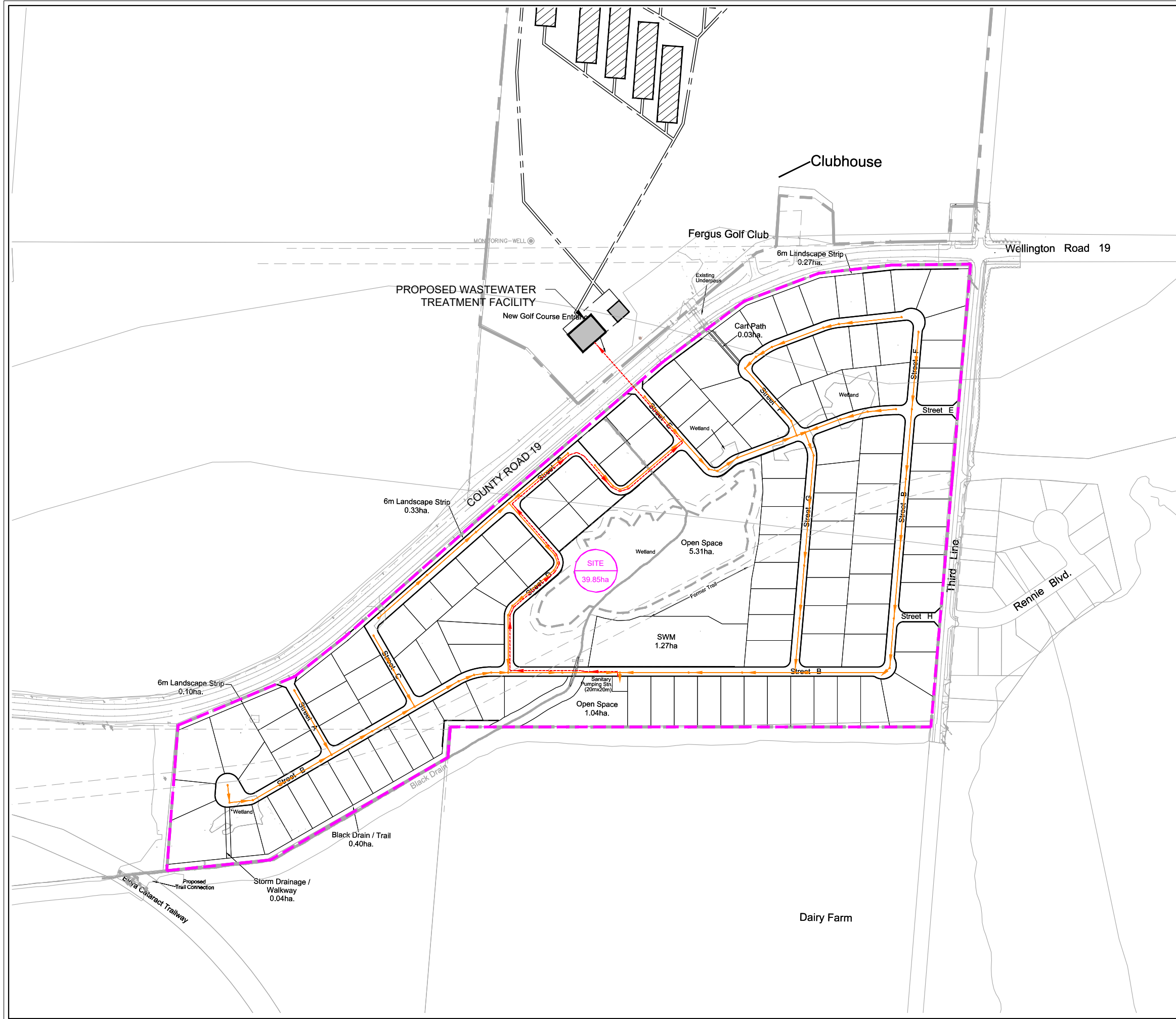


Client FERGUS DEVELOPMENT INC.			
Figure Title FERGUS GOLF COURSE PRE-DEVELOPMENT DRAINAGE PLAN			
Drawn BF	Checked DN	Date 22/01/21	Figure No. 4
Scale 1:7500	Project No. 300052719		

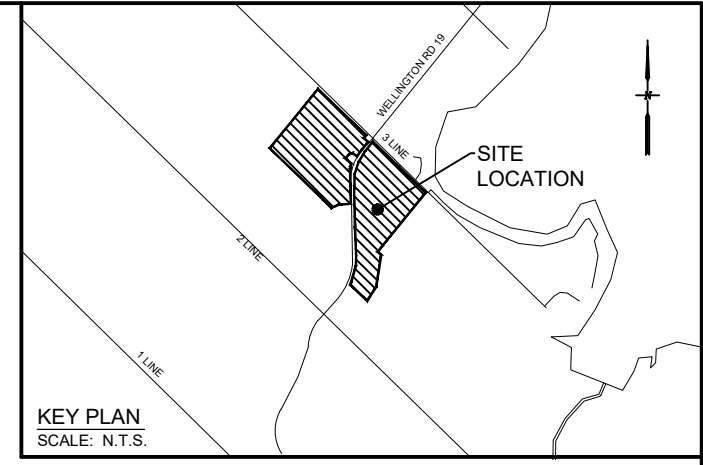
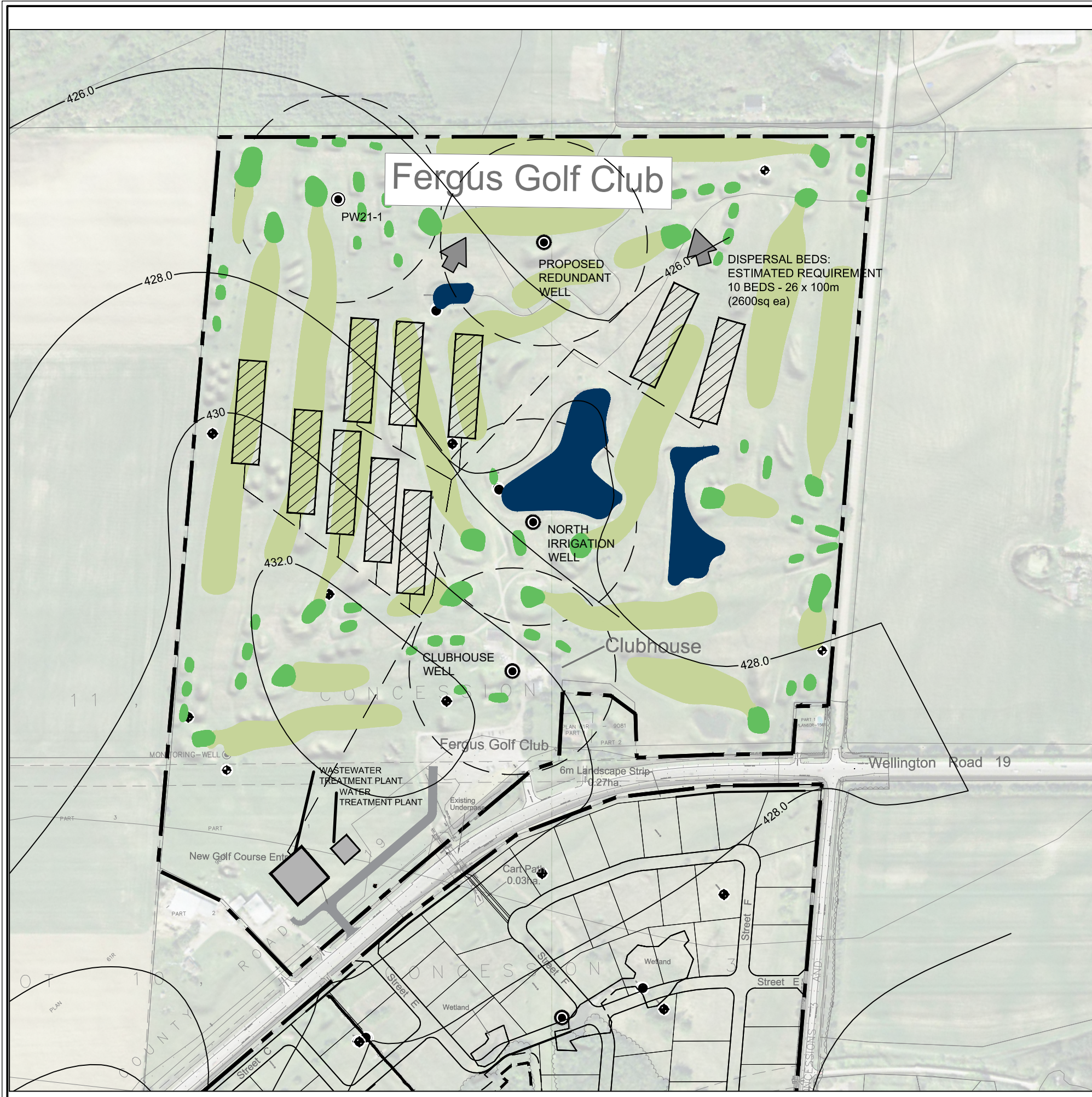


Client FERGUS DEVELOPMENT INC.			
Figure Title FERGUS GOLF COURSE POST-DEVELOPMENT DRAINAGE PLAN			
Drawn BF	Checked DN	Date 22/01/21	5
Scale 1:7500	Project No. 300052719		

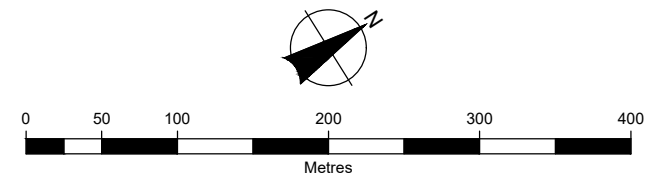
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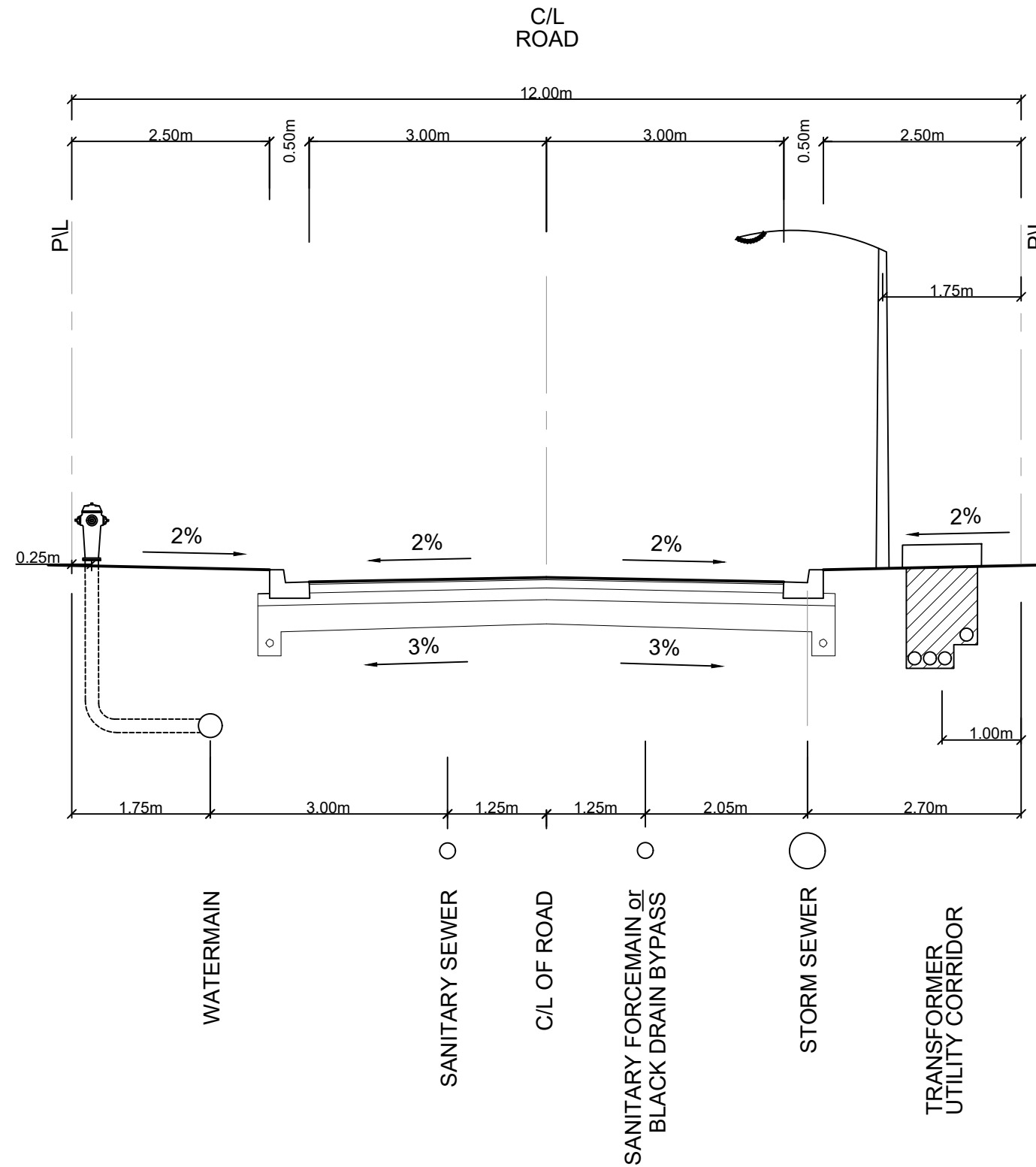
Client FERGUS DEVELOPMENT INC.			
Figure Title FERGUS GOLF COURSE SANITARY DRAINAGE AREA PLAN			
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Scale 1:5000	Project No. 300052719		



- LEGEND**
- PROPERTY BOUNDARY
 - PROPOSED TYPE A DISPERSAL BEDS
 - INTERPRETED DIRECTION OF GROUNDWATER FLOW
 - BOREHOLE/WELL LOCATION (GOLDER)
 - 320.5 GROUNDWATER CONTOUR



Client			
FERGUS DEVELOPMENT INC.			
Figure Title			
FERGUS GOLF COURSE			
PROPOSED WASTEWATER TREATMENT SYSTEM AND DISPERSAL BED CONCEPT			
Drawn	Checked	Date	Figure No.
BF	AE	22/01/21	7
Scale	Project No.		
1:4000	300052719		



PROPOSED 12.0m RIGHT OF WAY

N.T.S.



Client
FERGUS DEVELOPMENT INC.

Figure Title
FERGUS GOLF COURSE
TYPICAL CROSS SECTION OF PROPOSED STREET -
12.0m ROW

Drawn BF	Checked DN	Date 22/01/21	Figure No. 8
Scale N.T.S.	Project No. 300052719		

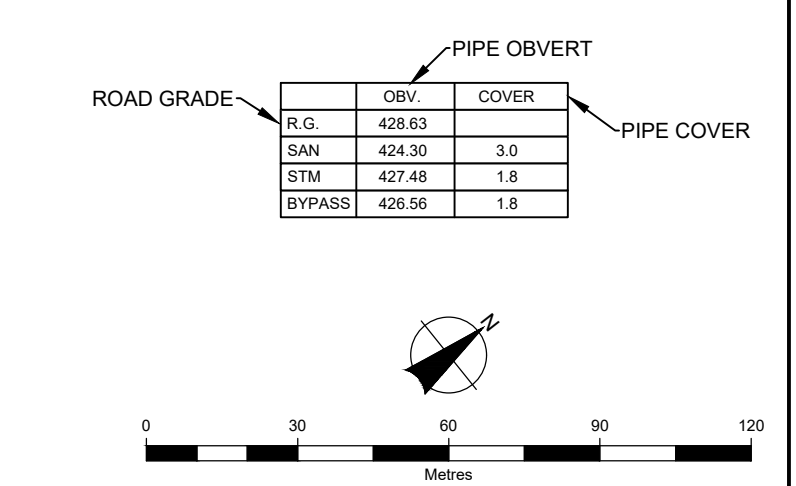
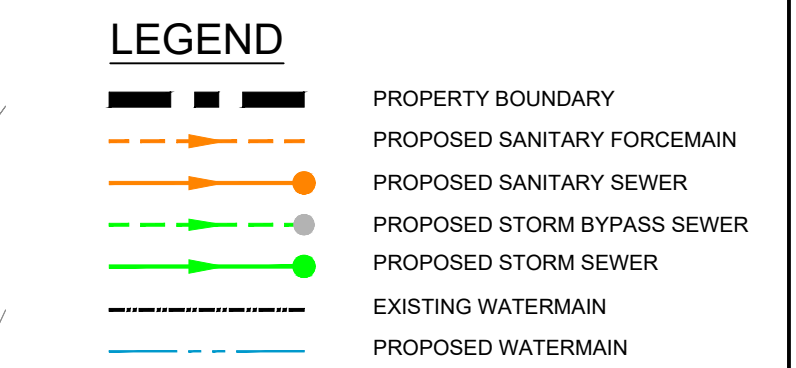
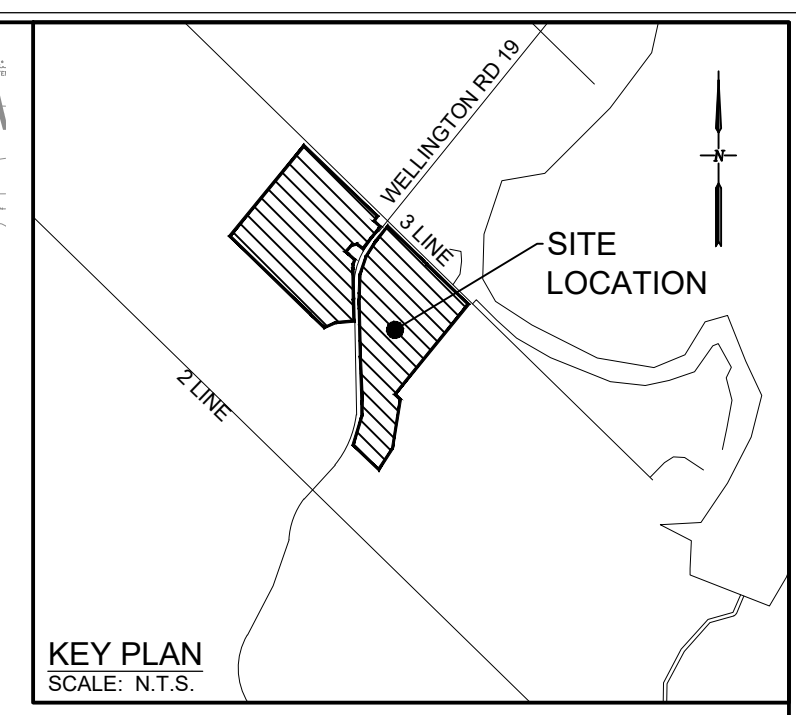
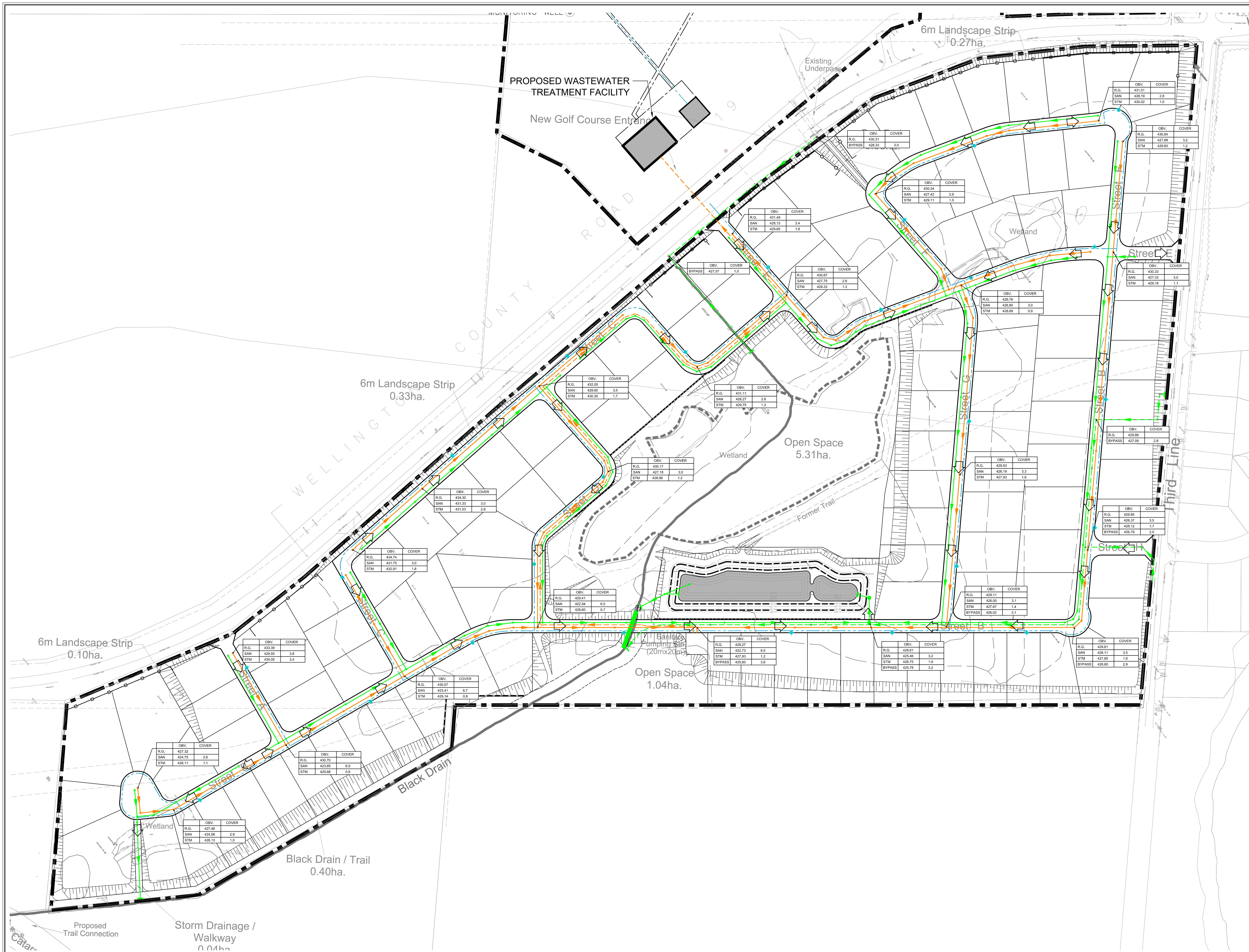


BURNSIDE

[THE DIFFERENCE IS OUR PEOPLE]

Drawings

Drawings

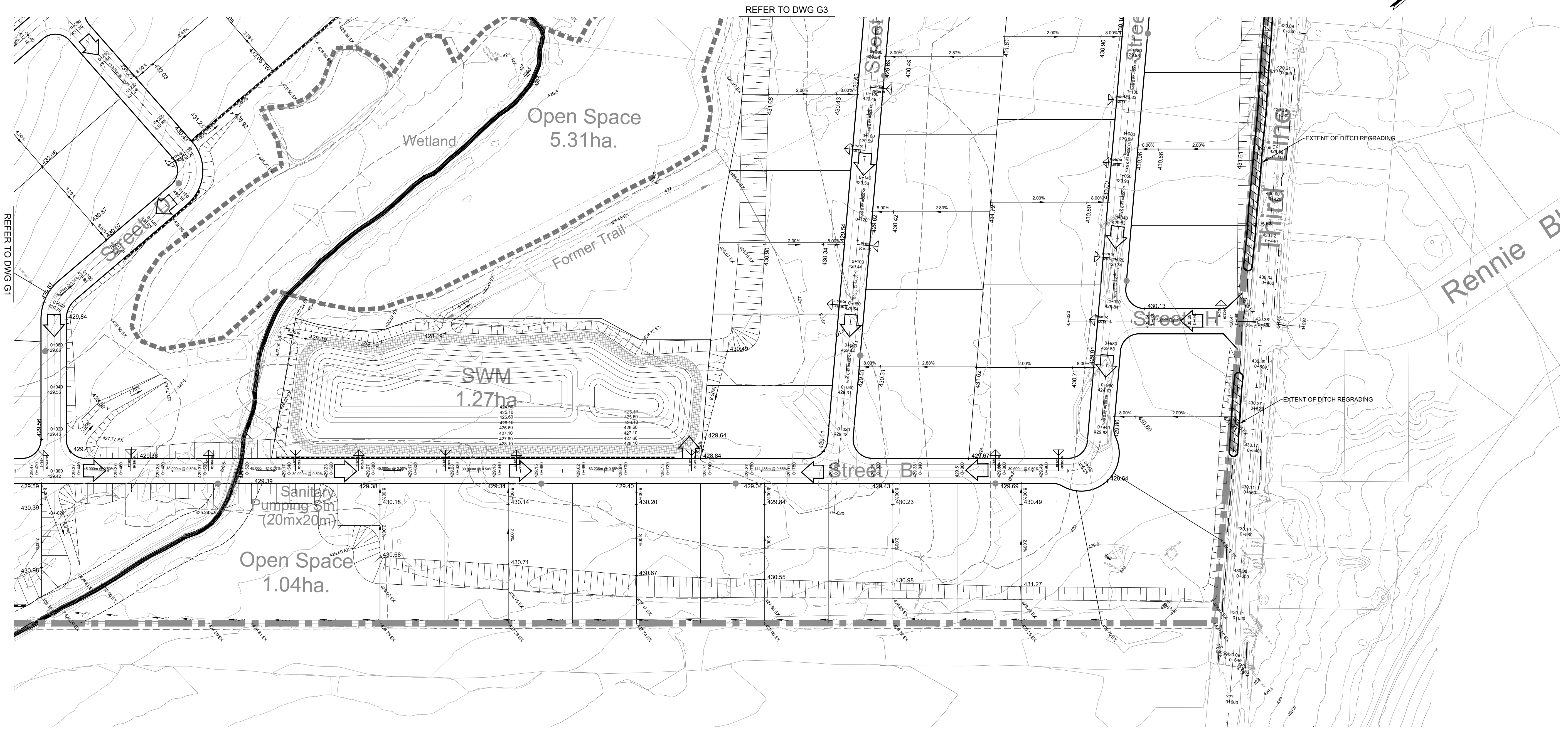
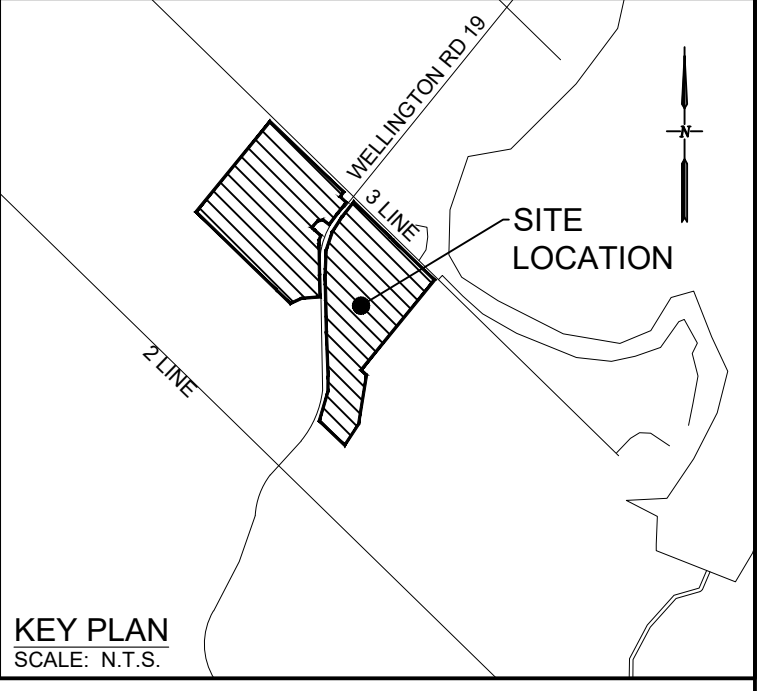


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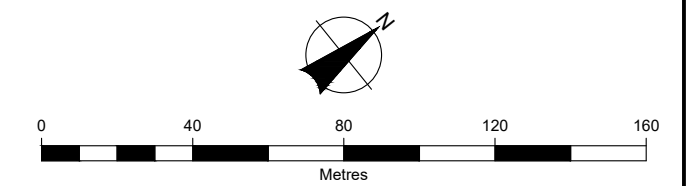
Client: **FERGUS DEVELOPMENT INC.**

Figure Title: **FERGUS GOLF COURSE**
CONCEPTUAL UNDERGROUND SERVICING PLAN

Drawn: BF	Checked: DN	Date: 22/01/21	Figure No.:
Scale: 1:1500	Project No.:	300052719	CUSP

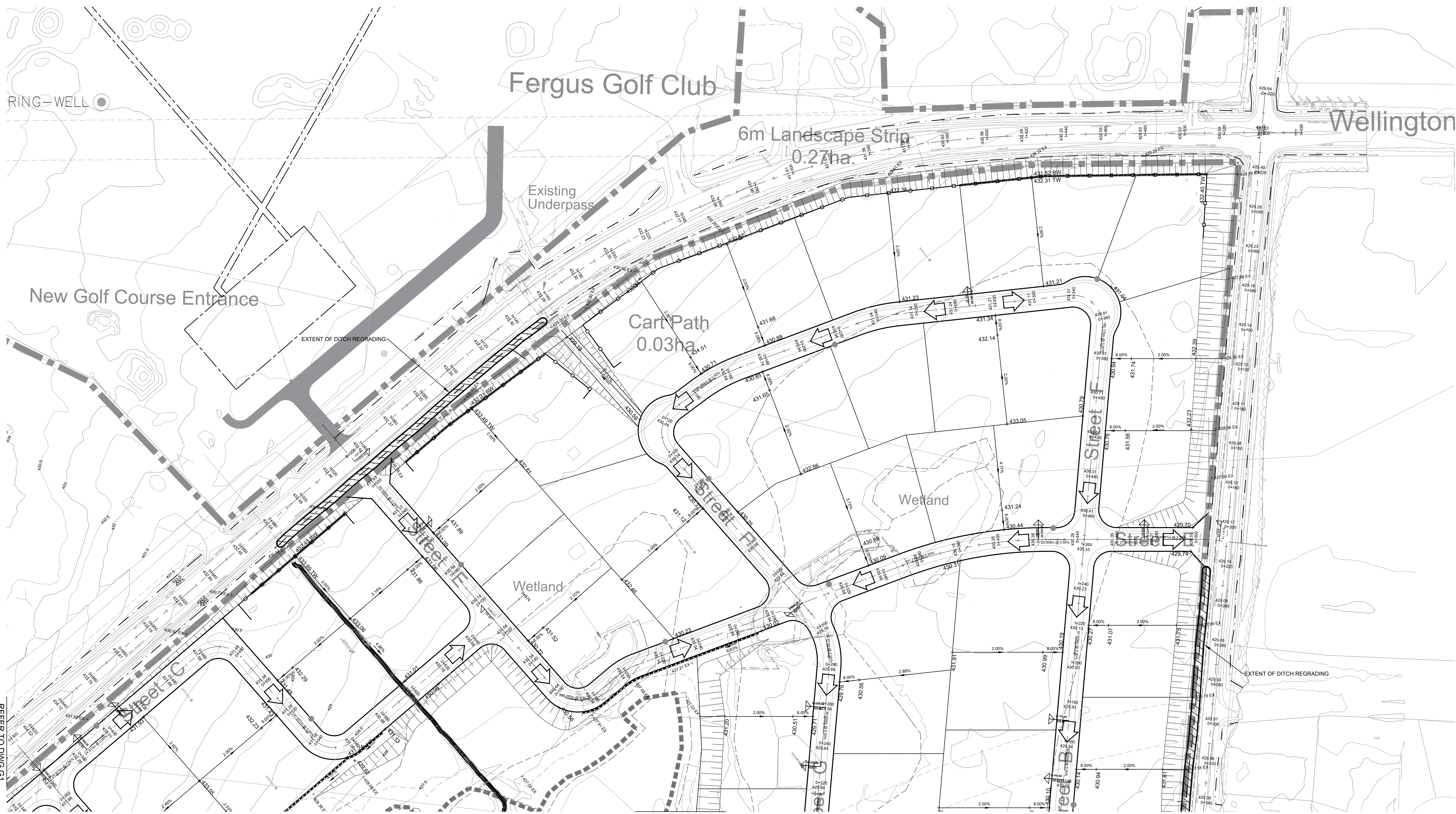


- LEGEND**
- PROPERTY BOUNDARY
 - EASEMENT
 - EXISTING CONTOUR
 - EXISTING ELEVATION
 - PROPOSED ELEVATION
 - PROPOSED SLOPE
 - PROPOSED OVERLAND FLOW DIRECTION
 - MAX. 3:1 SIDE SLOPES
 - PROPOSED RETAINING WALL
 - PROPOSED NOISE WALL (BY OTHERS)
 - PROPOSED SWALE
- LOT TYPES:**
- F FRONT DRAINAGE
 - S SPLIT DRAINAGE
 - WO WALK OUT LOT
 - LO LOOK OUT LOT



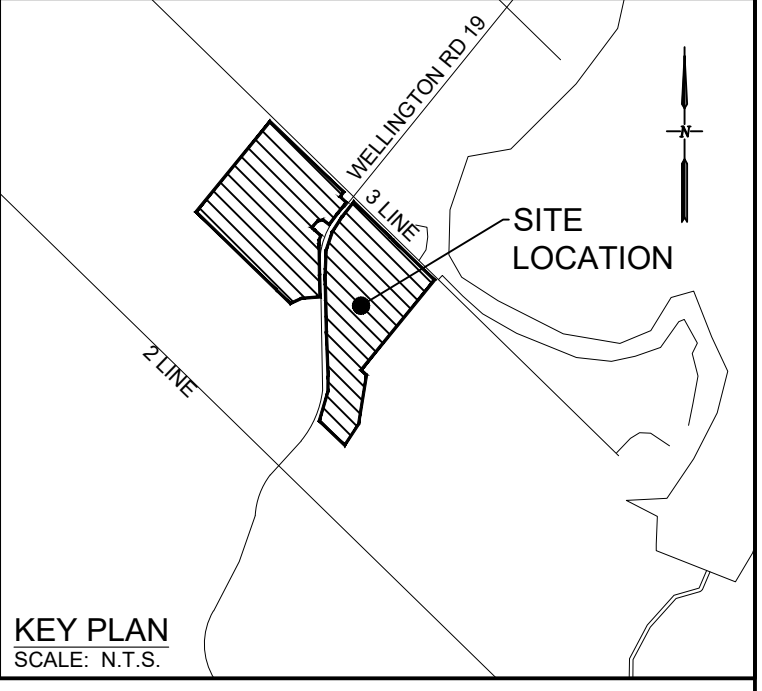
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Client FERGUS DEVELOPMENT INC.			
Figure Title FERGUS GOLF COURSE GRADING PLAN			
Drawn BF	Checked DN	Date 22/01/21	Figure No. G2
Scale 1:1000	Project No. 300052719		

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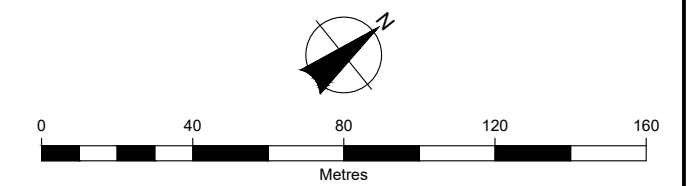


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REFER TO DWG G2

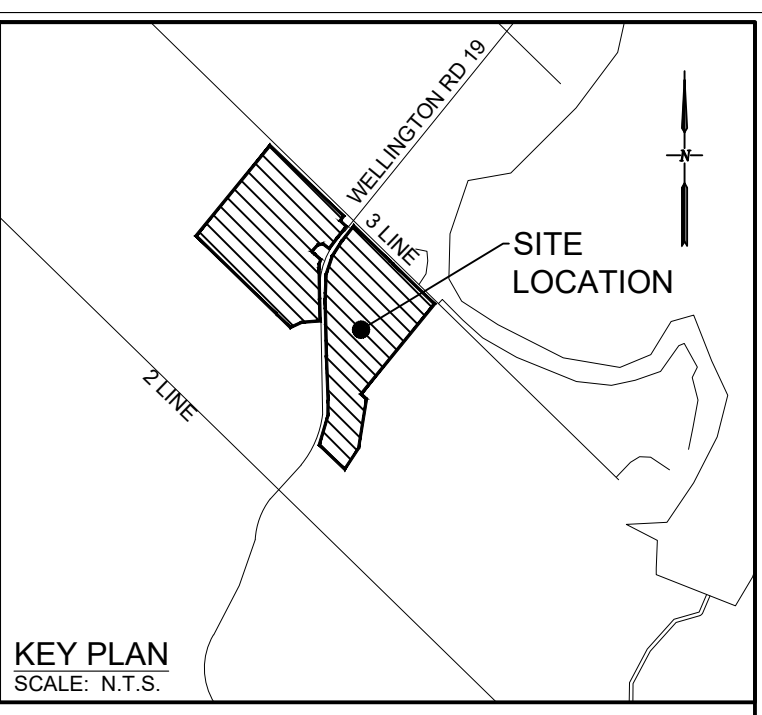
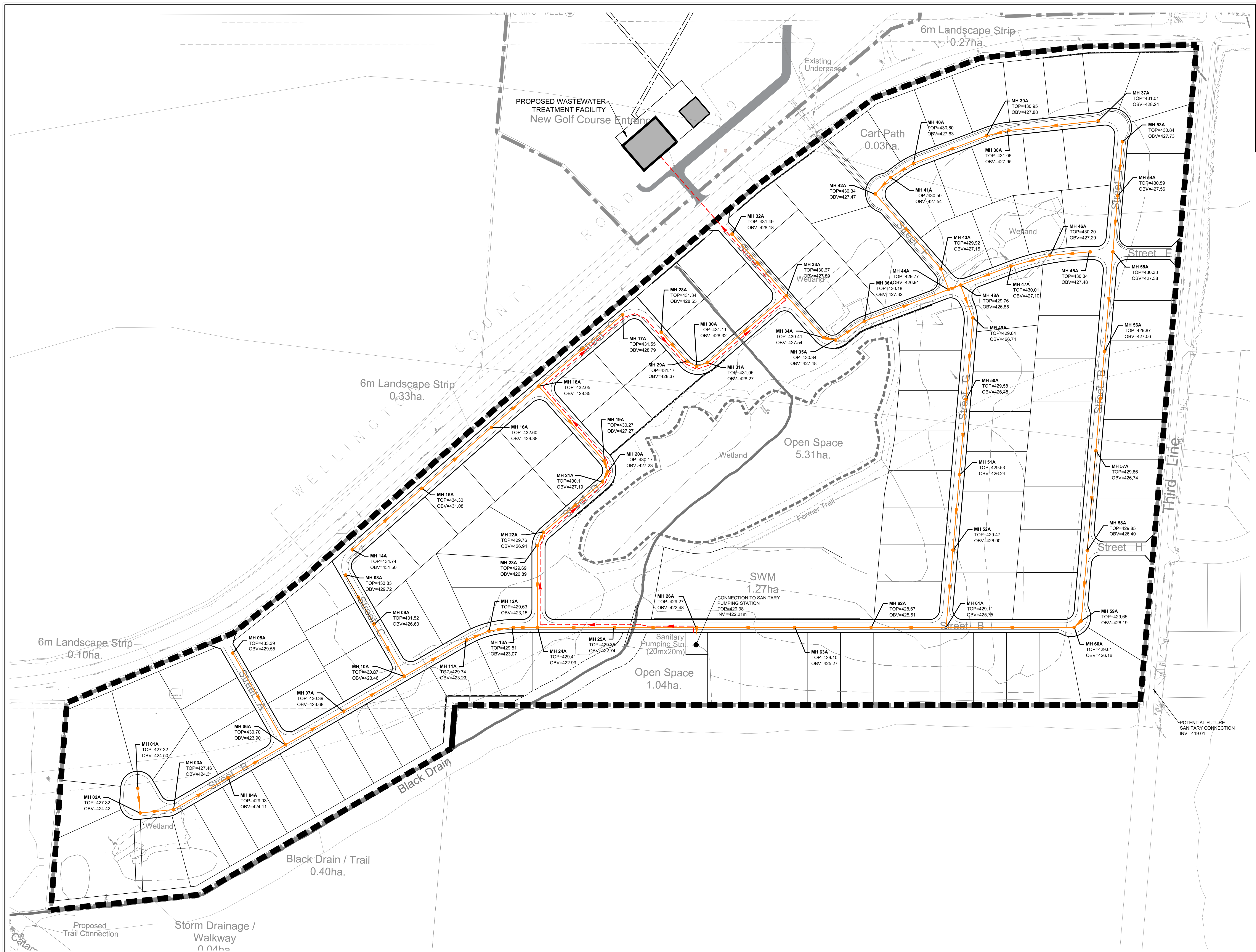


- LEGEND**
- PROPERTY BOUNDARY
 - EASEMENT
 - EXISTING CONTOUR
 - EXISTING ELEVATION
 - PROPOSED ELEVATION
 - PROPOSED SLOPE
 - PROPOSED OVERLAND FLOW DIRECTION
 - MAX. 3:1 SIDE SLOPES
 - PROPOSED RETAINING WALL
 - PROPOSED NOISE WALL (BY OTHERS)
 - PROPOSED SWALE
- LOT TYPES:**
- FRONT DRAINAGE
 - SPLIT DRAINAGE
 - WALK OUT LOT
 - LOOK OUT LOT

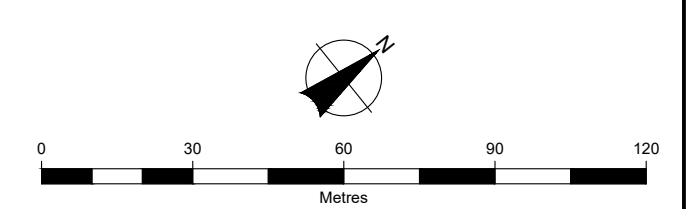


BURNSIDE			
Client FERGUS DEVELOPMENT INC.			
Figure Title FERGUS GOLF COURSE			
GRADING PLAN			
Drawn BF	Checked DN	Date 22/01/21	Figure No. G3
Scale 1:1000	Project No. 300052719		

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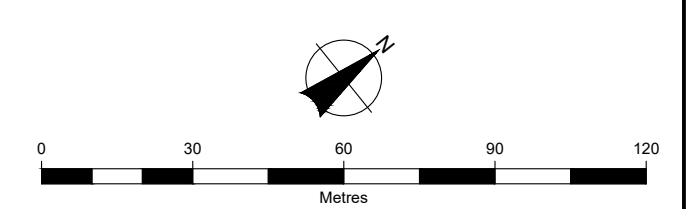
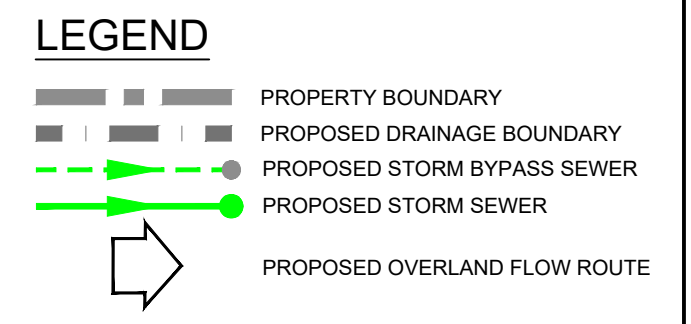
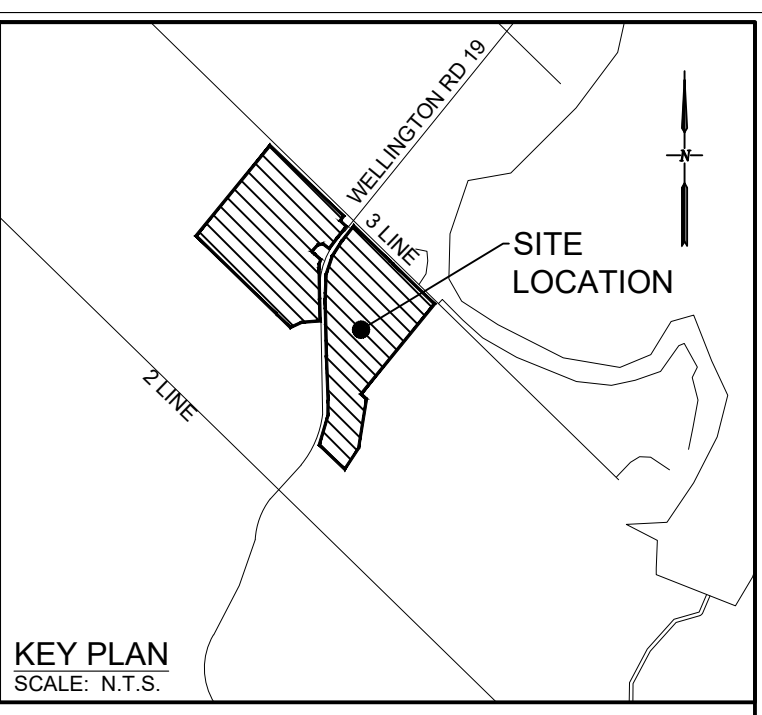
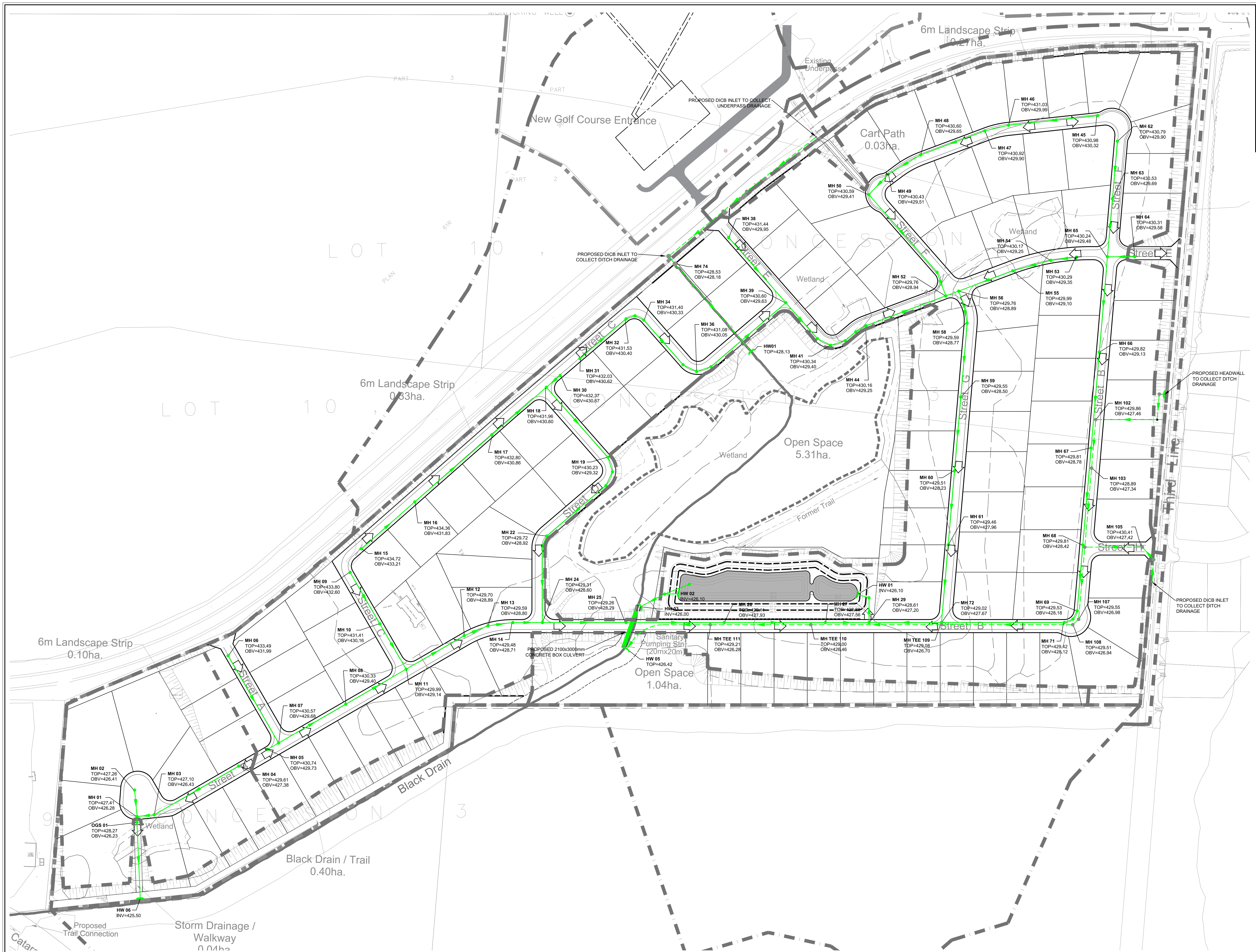


- LEGEND**
- PROPERTY BOUNDARY
 - PROPOSED LOCAL SANITARY SEWER
 - PROPOSED SANITARY FORCEMAIN
 - SANITARY DRAINAGE BOUNDARY



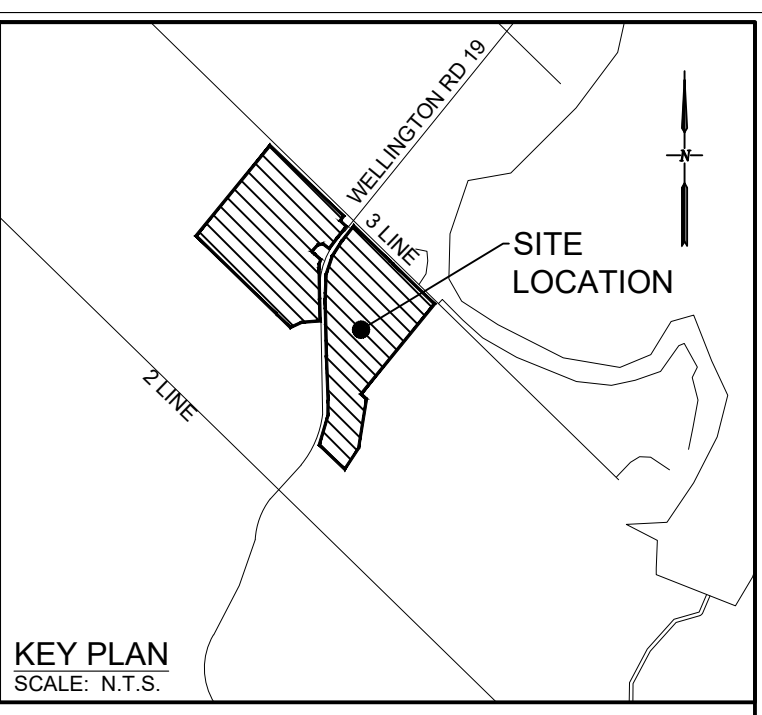
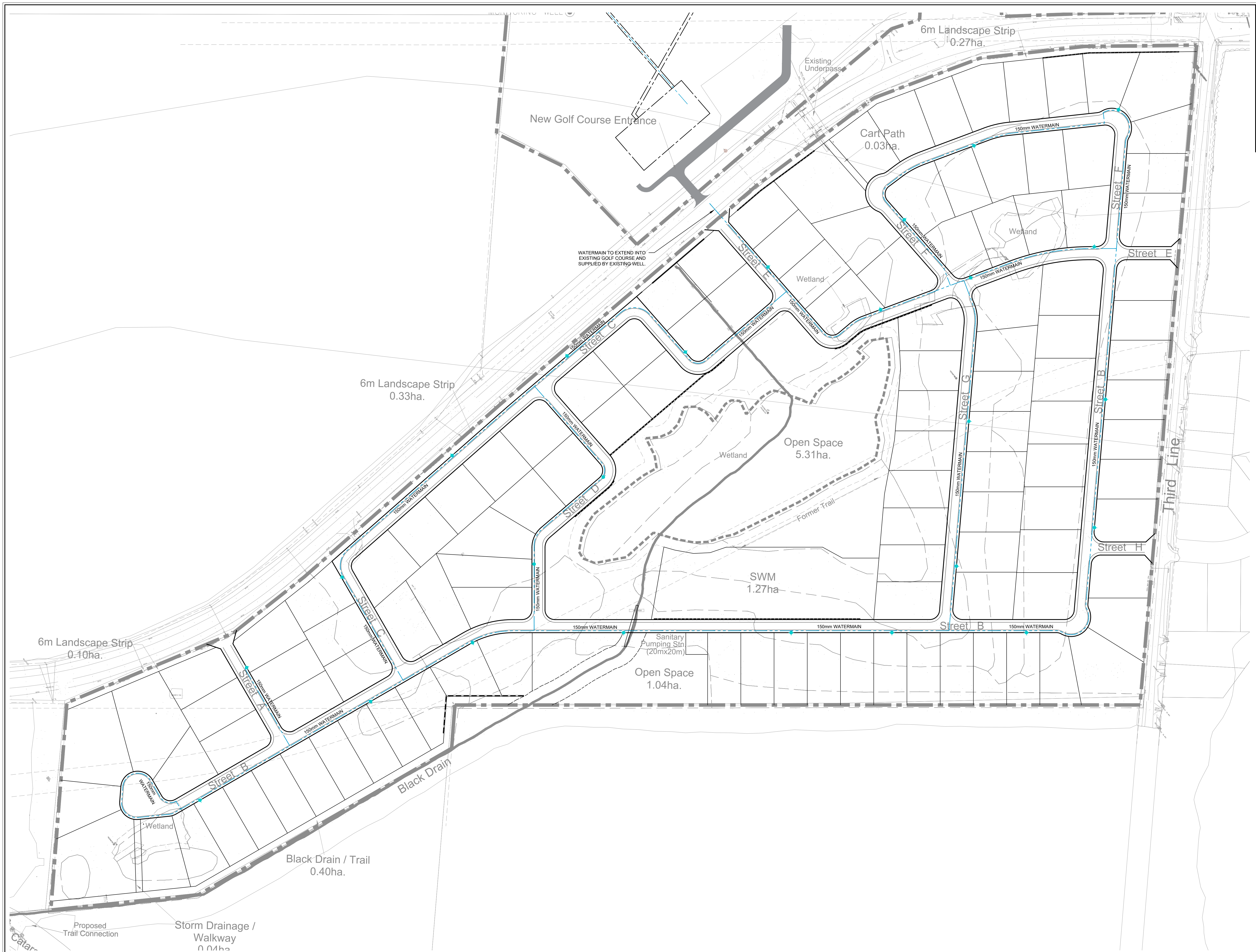
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Client FERGUS DEVELOPMENT INC.			
Figure Title FERGUS GOLF COURSE			
PRELIMINARY SANITARY SERVICING PLAN			
Drawn BF	Checked DN	Date 22/01/21	Figure No. SAN1
Scale 1:1500	Project No. 300052719		

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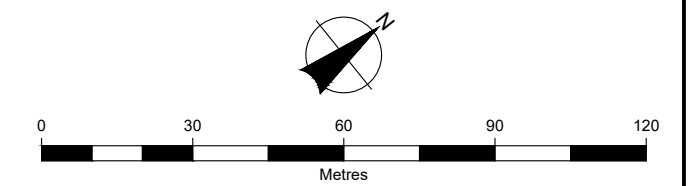


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Client FERGUS DEVELOPMENT INC.			
Figure Title FERGUS GOLF COURSE PRELIMINARY STORM SERVICING PLAN			
Drawn BF	Checked DN	Date 22/01/21	Figure No. STM1
Scale 1:1500		Project No. 300052719	

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- LEGEND**
- PROPERTY BOUNDARY
 - PROPOSED WATERMAIN
 - PROPOSED HYDRANT



BURNSIDE			
Client FERGUS DEVELOPMENT INC.			
Figure Title FERGUS GOLF COURSE PRELIMINARY WATER SERVICING PLAN			
Drawn BF	Checked DN	Date 22/01/21	Figure No. WAT1
Scale 1:1500	Project No. 300052719		

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