

SERVICING FEASIBILITY REPORT

161-171 Mill Street, Town of West Lincoln





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SECTION 1: BACKGROUND AND STUDY INTENT

1.1 SUBJECT SITE DETAILS

The subject site is actually currently comprised of main two parcels of approximately 2.45 hectares in area and occupied by two buildings, namely Legion Villa Seniors Citizens Complex Villa I and Villa II. Villa I (161 Mill Street) is 2-storeys with 30 units and Villa II (171 Mill Street) is 2-storeys with 32 units. The site is located easterly of and is accessed from the cul-de-sac portion of Mill Street and bounded by Twenty Mile Creek to the south (followed by residential properties and Rock Street Park), a municipal park to the west (followed by residential properties), private residences and the Royal Canadian Legion to the north (followed by St. Catharines Street) and former rail-line lands to the east (followed by commercial and residential properties).

The site is generally flat, sloping gently from north to Twenty Mile Creek along the south limit. The site is landscaped with a matured tree line along the creek.

There are easements for municipal sanitary sewer and municipal drain, as well as Regional sanitary trunk sewer main. We understand that the easement for the municipal drain is no longer required, and that the proposed building location will not conflict with or countermand the provisions of the remaining easements. We understand further than there is an easement in favour of the Ministry of Transportation across adjacent lands to the north of the site as a right-of-way for ingress and egress to St. Catharines Street.

1.2 PROPOSED PROJECT

Legion Villa proposes to add to the site a 6-storey, 52-unit seniors apartment building, generally aligned north-south and located between the 2 existing buildings. The proposed building footprint is approximately 990 square metres. Overall, open space will be reduced and impervious surface coverage, consisting of roof and parking area, will increase. Domestic water demand will increase commensurately with the number of units contemplated, as will sanitary sewage production. The attached Dwg. SDA1 shows the existing and conceptual future site plan for comparative purposes.

1.3 PURPOSE OF REPORT

The purpose of this report is to review servicing constraints and opportunities at a high level to assist the owners with regard to due diligence and budgeting. This report will serve to complement a separate 'Site Feasibility Report' prepared and submitted by Quartek Group in December of 2022. That report addressed planning and building issues.



SECTION 2: SERVICING REVIEW

2.1 WATER DISTRIBUTION

The existing facilities at Legion Villa are serviced with water supply, for both domestic use and fire fighting by an existing 150mmØ watermain generally running from west to east at the north end of the site. There is one (1) fire hydrant on site, located at the north limit of site, ostensibly intended to service the easterly building (171 Mill Street). There is also a municipal fire hydrant located at the easterly end of the Mill Street cul-de-sac, within a satisfactory distance of the building at 161 Mill Street and its principal entrance to service it for fire fighting.

The existing 150mmØ watermain is expected to be adequate to serve the new building with domestic water. Although the 150mmØ watermain from Canborough Street along Mill Street and on the subject site is a fairly lengthy 'dead-end' main, anticipated pressure losses given the total projected population including the new building are minimal. Thus, we feel that a simple connection to the existing main on site will be adequate for domestic water use.

The fire hydrant on site is located only approximately 15 metres from the NE corner of the proposed new building and approximately 75 metres travel distance from the currently proposed principal entrance for the new building. Accordingly, hydrant coverage appears to be satisfactory. We note that this will be reviewed by the Township Fire Department and it is possible that they may require an additional hydrant to suit the anticipated fire fighting methodology.

With regard to available fire flow, the existing watermain and fire hydrants are clearly considered adequate to serve the existing development. However, we note that the new building is to be 6-storeys in height, have fire hose cabinets and be sprinklered. We expect that spatial separation from the existing buildings may still exist such that multiple buildings will not require to be considered together for fire-fighting purposes. However, the new, larger building will have a higher fire flow demand than the existing buildings due to its larger size, if for no other reason. Based on the estimated building volume, our preliminary estimation of required fire flow is 105 L/s. This flow will result in unacceptable head loss in the Mill Street watermain and cannot likely be provided in any case. Accordingly, it is expected that it will be necessary to loop the watermain, presumably through the Royal Canadian Legion Hall site alongside the sanitary sewer, or preferably utilizing the right-of-way easement mentioned in Section 1.1 above. Assuming reasonable existing static pressures in the Smithville water distribution network in this area, the head losses would then be in an acceptable range and adequate pressure/flow available for fire fighting purposes.



Subject to the above observations and comments, water supply and distribution servicing for the proposed development is feasible.

The attached Conceptual Servicing Plan, Dwg. CSP1 shows relevant existing and conceptual proposed water supply servicing.

2.2 SANITARY SEWERAGE

The existing facilities at Legion Villa are serviced with sanitary sewage collection by an existing municipal sanitary sewer that traverses the site, generally from north-east to south-west, located on an easement in favour of the Township of West Lincoln. This municipal sewer outlets to an existing Niagara Region trunk sanitary sewer main that crosses the site from west to east near the south limit of the site. This trunk sewer is located on an easement in favour of the Niagara Region and outlets to the Smithville Sewage Pumping Station (SPS) located ± 100 metres east of the subject site between Hwy. 20 and Twenty Mile Creek.

It is anticipated that a connection for the proposed building can readily be made to the existing municipal sewer and that adequate capacity exists in that sewer and the trunk main to which it outlets. This will be confirmed by the Township and the Region during the formal review process; however, both jurisdictions have implied during the pre-consultation process that there are no anticipated impediments to sanitary sewer servicing.

Conceptual proposed sanitary servicing is shown on the attached Conceptual Servicing Plan, Dwg. CSP1.

2.3 SITE STORM DRAINAGE

Storm runoff is currently dealt with on site by sheet drainage from parking and landscaped areas into a shallow ditch or swale that runs essentially from the north limit of the site to the south, outletting into Twenty Mile Creek just above the 'normal' high water level. Some portions of the site drain overland directly into the creek without being captured by this swale.

Runoff from a small area of Township of West Lincoln owned road allowance at the easterly end of Mill Street is collected at a catchbasin along the curb on the Mill Street cul-de-sac and conveyed to the head of the swale near the north limit of the site. Township public works staff are in the process of confirmed the nature of that pipe and outlet, as well as determining if any easement exists to legalize the encroachment of this storm drainage outlet on Legion Villa property. We are awaiting word from the Township in this regard.



While it appears that it will not be difficult to continue to accommodate that component of the drainage across the Legion Villa site, it seems to us that an argument can be made that the Township should share in costs associated with accommodating it, given that both quantity and quality stormwater management works required by the Township will likely need to include for this off-site storm runoff in addition to that generated by the site itself.

Niagara Peninsula Conservation Authority (NPCA) staff have indicated that any new development in the area of the swale should be elevated above the floodplain elevation of 183.03 metres through fill placement. A supporting engineering analysis must be submitted at time of site plan approval should fill of more than 50 cubic metres *within the floodplain* be necessary. NPCA staff have also indicated that the new building is to be located outside a 30-metre setback from the watercourse; however, paved parking areas can be located within the 30-metre setback provided that surface elevations are above the 183.03 metre floodplain elevation.

It appears that it will be necessary to fill in the swale in order to accommodate the development. Given the lack of a future open space corridor that will be available to accommodate a swale or surface drainage course of any kind, it will be necessary to 'entomb' the swale using buried underground storm drainage piping. Preliminary review suggests that there will be just enough grade available from the north limit of the site to the high water level to accomplish this.

The pre-consultation notes imply that the NPCA will support the placement of fill mentioned above in principle, given the current flooding hazard on the site. While raising the site above the floodplain elevation will also provide necessary cover for the buried storm drainage piping, it will almost undoubtedly result in significantly greater volume of fill in the floodplain area than 50 c.m. Accordingly, detailed floodplain analysis may be required in order to support an application for a permit from the NPCA for the new building and associated site alterations.

In summary, while there will be some challenges to the issue of site drainage, it is anticipated that these challenges can be overcome and do not affect feasibility of the project.

Conceptual storm drainage works are shown on the attached Dwg. CSP1.



2.4 STORMWATER MANAGEMENT

The pre-consultation meeting notes indicate that Niagara Region requires that peak post-development storm flows are not to exceed peak pre-development flows for storms from 2-year through 100-year return period storms. While we are not necessarily convinced that this approach makes sense for this location on a creek of this length and nature, it is unlikely that the requirement will be relaxed or changed. Accordingly, as the amount of impervious area on site will be significantly increased (ie. there will be more roof and pavement than currently exists), it will be necessary to implement stormwater runoff controls. These will likely consist of 'wedge; storage in parking areas, and perhaps some below grade storage in over-sized pipes or specialty underground detention chambers. The opportunity for use of underground storage, however, will be limited due to the lack of significant grade for soil cover. There may also be an opportunity to use roof storage if consideration is given to a flat roof system or the new building.

Notwithstanding the challenges indicated above, we believe that it will be feasible to provide the desired level of stormwater detention necessary to satisfy the Region's criteria.

Niagara Region staff have also indicated that stormwater quality control is required to be 'treated' to an 'Enhanced' level, given the classification of the Twenty Mile Creek waters. This type of requirement is commonplace and anticipated. It is possible that the requirement will only be applied to the altered site area. However, given that most of the site will require to be drained through the new buried storm sewer system, essentially all of the runoff will likely need to be 'treated'. The most likely approach to quality stormwater management for this site is an oil/grit separator, given the limited amount of green space available upstream of the storm drainage outlet. However, consideration should be given to enhanced swales, infiltration trenches, bio-swales, etc., where possible. Not only might these practices result in reduced cost, they are preferred approaches from the point of view of sustainability and low impact design (LID).

In summary, while there will be some challenges to the issue of stormwater management, it is anticipated that these challenges can be overcome, although with some associated costs.

As mentioned in Section 2.2 above, we suggest it be considered that the Township should share in the cost of stormwater management works, as it appears that flows from the Mill Street road allowance will most likely required to be included in those works.

Conceptual proposed stormwater management facilities are shown on Dwg. CSP1.



2.5 TRAFFIC, ENTRANCES, PARKING & ACTIVE TRANSPORTATION

We do not perceive any issues with regard to the use of the existing vehicular entrance to the site from the cul-de-sac at the easterly end of Mill Street for the increased housing density on site. The increase in 'trip ends' generated by the new building is not expected to cause any issues with regard to traffic flow on Mill Street, nor with performance of the intersection of Mill Street at Canborough Street. Neither Region nor Township staff raised any concerns in this regard at the pre-consultation meeting. Parking provisions are addressed in the 'Site Feasibility Report' previously prepared by Quartek Group.

While it is acknowledged that proposed site alterations associated with the new building will conflict with some existing walking paths on site, we do not anticipate issues finding space to relocate these, given the intention to fill along the south side of the river above the normal high water level.

2.6 UTILITIES

Based on a telephone consultation with Niagara Peninsula Energy Inc. representative, we understand that there should be no issues servicing a new building, as there is existing u/g primary to the site and the additional load is not extended to present any problems. The 2 existing buildings are apparently serviced separately with existing underground electrical primary from St. Catharines Street. One feed for 161 Mill Street extends across the Royal Canadian Legion Hall property at 172 St. Catharines Street and there is a second feed for 171 Mill Street across the west side of 190 St. Catharines Street, presumably on the easement mentioned in Section 1. Each building has a dedicated transformer on site and we understand that these transformers are owned by Legion Villa. It is anticipated that a new transformer, with service extended from the existing transformer for 171 Mill Street, will be required for the new building, and detailed design of electrical supply/distribution may result in looping on site to achieve more robust and secure services. It may make sense to consider options for NPEI to take over ownership and maintenance of the primary system and transformers at that time as well.

We have reached out to Enbridge regarding natural gas servicing and are awaiting a response. Accordingly, although we are not currently aware of any gas servicing constraints, we cannot say for sure that there will be none. We will endeavour to apprise the Owners as soon as further information regarding gas servicing is available.



SECTION 3: SUMMARY

In summary, we do not anticipate any insurmountable issues relating to servicing the proposed development with water supply, sanitary sewers, storm drainage and stormwater management, transportation, electricity and natural gas. However, there are a few potential challenges that are likely to result in some increase in effort and/or cost over what might otherwise be expected. These include the need to loop watermain to St. Catherines Street to provide adequate flow and pressure for fire fighting, and a requirement for analysis of the impact of fill on the site on the existing Twenty Mile Creek floodplain. Also, we note that we are still awaiting information from Enbridge to confirm that natural gas servicing will be straightforward.

Respectfully Submitted,

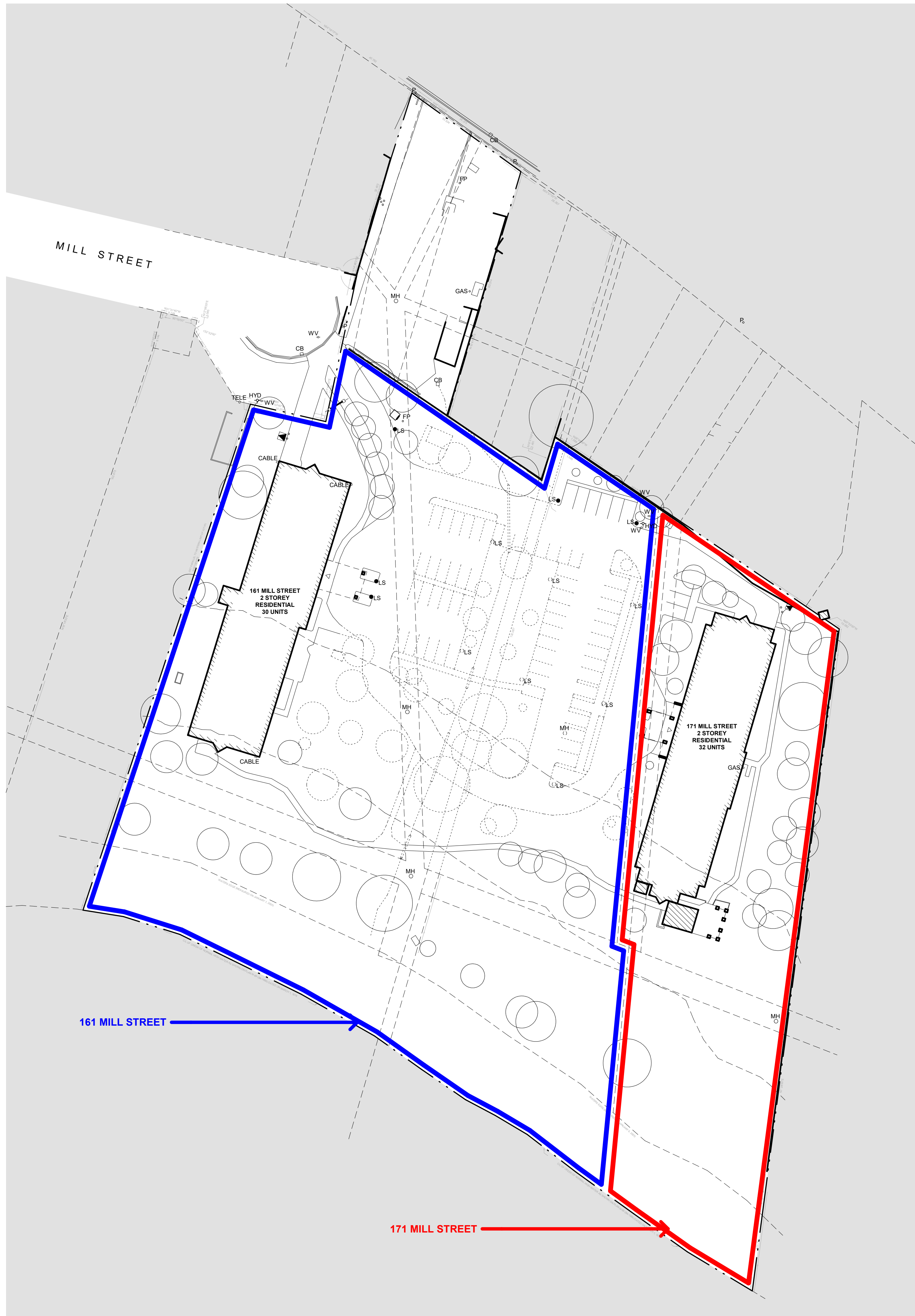
A handwritten signature in black ink, appearing to read 'Doug Peters'.

Doug Peters, P. Eng.
Quartek Group Inc.

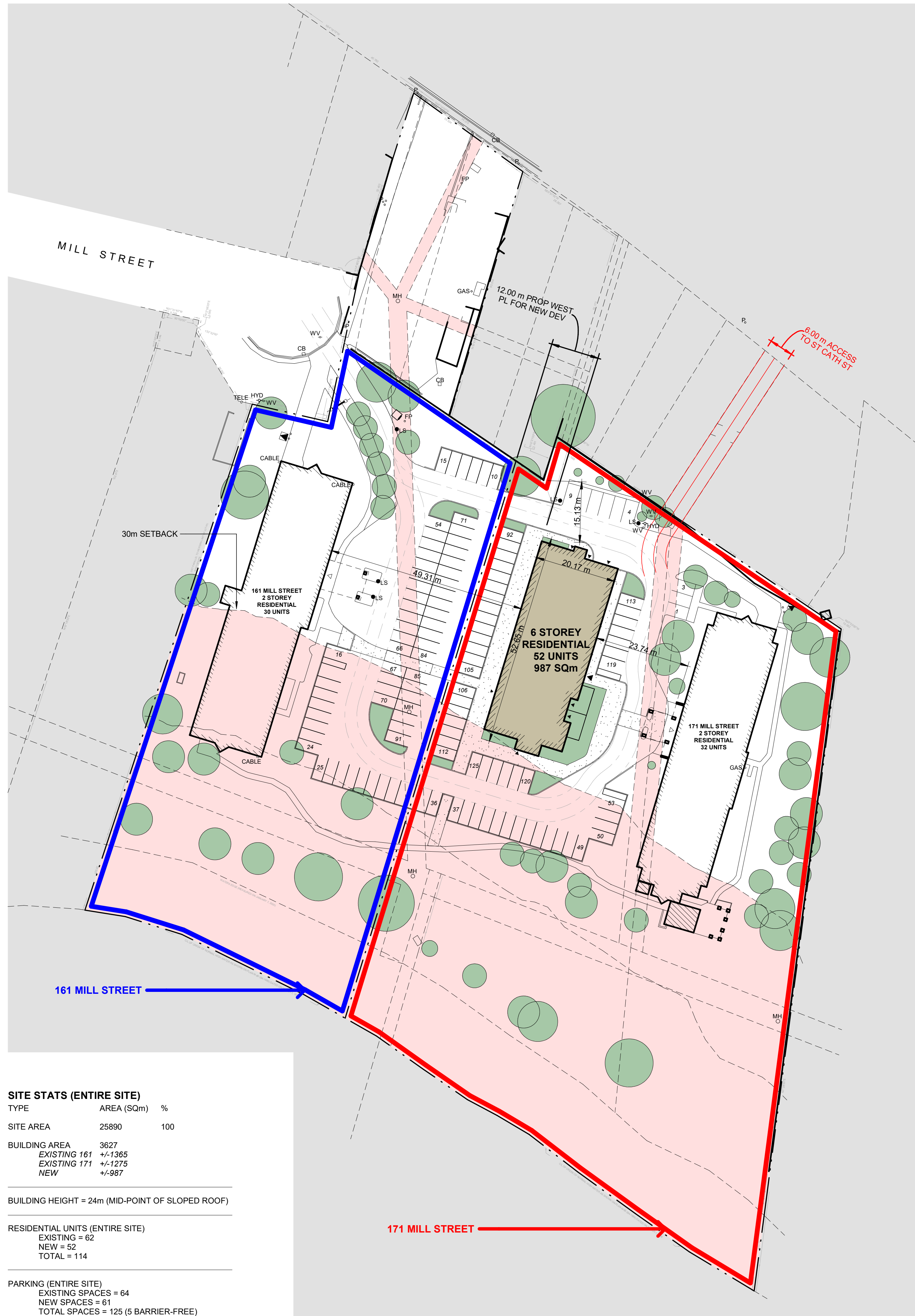
Attachments:

- Drawing SDA1 – Site Plan (shows existing and conceptual proposed site plans)
- Drawing CSP1 – Conceptual Servicing Plan

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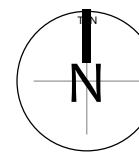


1 SITE PLAN - EXISTING
SDA1 1" = 50'



SITE STATS (ENTIRE SITE)		
TYPE	AREA (SQm)	%
SITE AREA	25890	100
BUILDING AREA	3627	
EXISTING 161	+/-1365	
EXISTING 171	+/-1275	
NEW	+/-987	
BUILDING HEIGHT = 24m (MID-POINT OF SLOPED ROOF)		
RESIDENTIAL UNITS (ENTIRE SITE)		
EXISTING = 62		
NEW = 52		
TOTAL = 114		
PARKING (ENTIRE SITE)		
EXISTING SPACES = 64		
NEW SPACES = 61		
TOTAL SPACES = 125 (5 BARRIER-FREE)		

2 SITE PLAN - NEW
SDA1 1" = 50'



C FINAL REPORT	15NOV2022 NY
B PRECONSULTATION	05AUG2022 NY
A CLIENT REVIEW	02AUG2022 NY
Issue	Issued for Date Init.

Seal

Do not scale drawings. Report any discrepancies to Quartek Group Inc. before proceeding.
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Project Title

LEGION VILLA

161-171 MILL STREET

Drawing Title

SITE PLAN

Drawn

NY

Designed by

NY

Scale

1" = 50'

Date Created

07 JUL 2022

Job Number

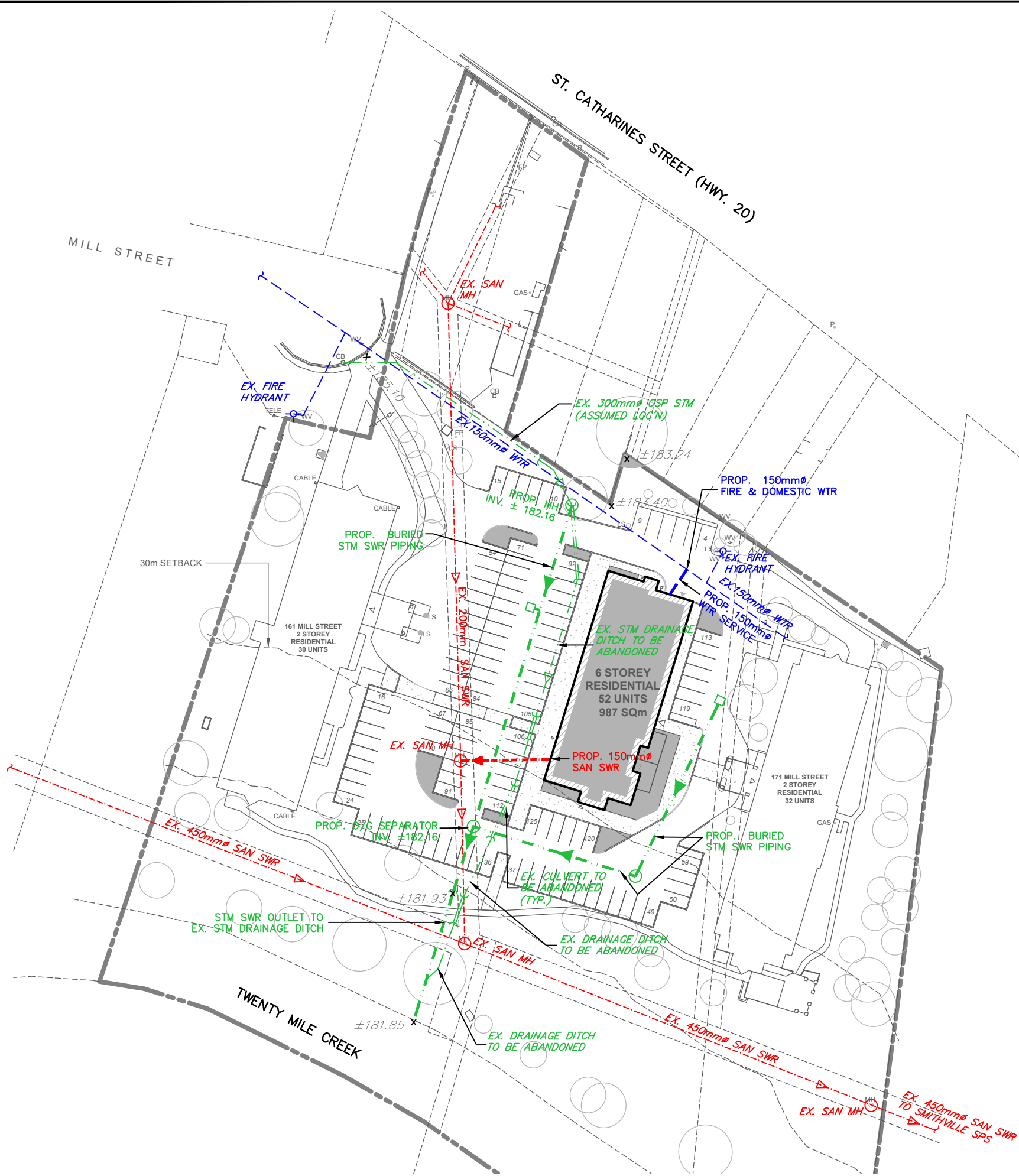
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Issue

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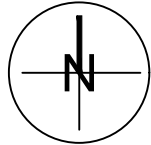
Drawing Number

SDA1



LEGEND

- PROPERTY LINE
- EXISTING GROUND ELEVATION
- EXISTING WATERMAIN
- PROPOSED WATERMAIN
- EXISTING SANITARY
- PROPOSED SANITARY
- EXISTING STORM
- PROPOSED STORM



A FEASIBILITY REVIEW 16 MAR 2023 RM
issue issued for date init.
seal

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project title
LEGION VILLA
161-171 MILL STREET
drawing title
**CONCEPTUAL
SERVICING PLAN**
drawn by
RM
scale
1 : 1000
job number
22095
designed by
D.Peters
date
13 MAR 2023
issue
A
drawing number
CSP1

16 Mar 2023
PRELIMINARY