

Technical Note

Project:	P21-184 Littlestone, Kent		
Subject:	Technical Note – LLFA Response to Overland Flow Routing		
Prepared by:	Ben McManus – Project Engineer	Date:	13th April 2022
Authorised by:	Nick Fenton – Associate	Status:	S2 - Information
Document Ref:	0058-RLL-00-XX-TN-C-002	Revision:	P04

1 Introduction



The site is located, as outlined above has an area of approximately 6.5 hectares and is accessed off Victoria Road West; centred at approximate OS grid reference: E 607853, N 124350. It has a topographical range of 3.04mAOD on the western boundary to 2.18mAOD on the south-eastern boundary. The development consists of 80 residential dwellings.

Rodgers Leask Ltd have been commissioned by Legal and General to undertake a Technical Note for the site off Victoria Road West, Littlestone, Kent with the purpose of demonstrating that the detailed design makes consideration of the rerouting of existing ditches and overland flow routes without detriment to existing properties to the north. The proposals respond to the principles outlined within the Flood Risk Assessment (FRA) that was undertaken by Herrington Consulting Ltd for the Vendor in April 2019. The FRA Compliance Technical Note can be provided if required.

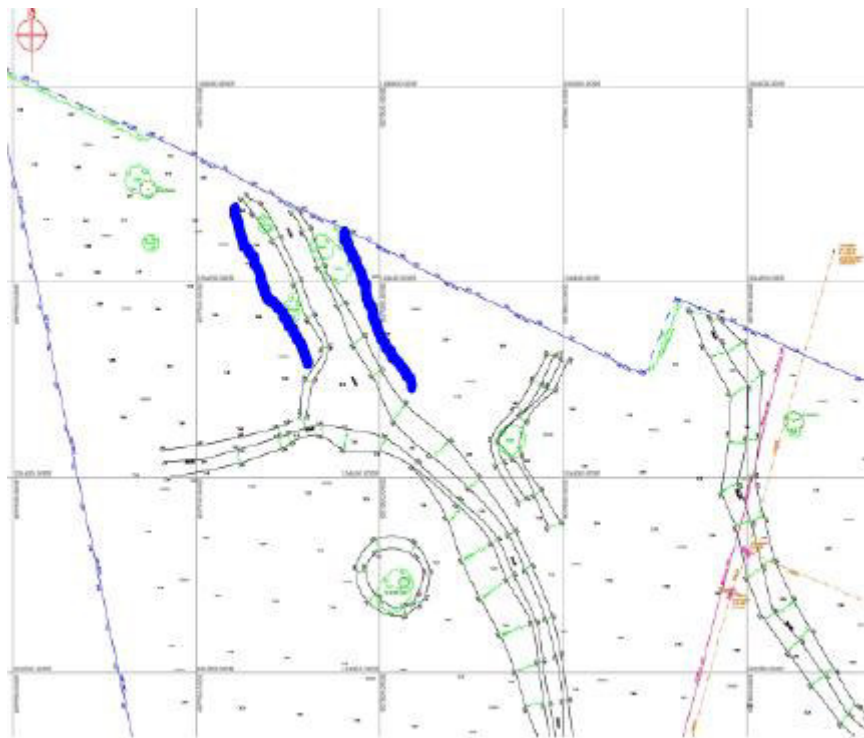
2 LLFA Conditions and Designer's Responses

Within this section of the report the main sources of flooding have been extracted and summarised from the Herrington FRA, Section 3. The purpose is to outline the main considerations required of the detailed drainage design and how the Rodgers Leask proposals compare.

2.1 Ditch Infilling

Comment:

Residents Association have expressed concerns regarding the infill of a ditch on the northern boundary of the site. The below is a snippet taken from the Topographical Land Survey and shows the ditch's relative position (highlighted in a blue outline). The LLFA have also received photographs from the Residents Association that have shown this feature holding and conveyancing surface water runoff from the surrounding land.



Designer's Response:

At the most northern part of the ditch shown above the base level is 2.30 mAOD, which falls in a south easterly direction to a level of 1.89 mAOD in the centre of the site (see Appendix A). Based on the FRA that was undertaken by Herrington Consulting Ltd and as shown on the Overland Flow Routing drawing (Appendix B) ditch A at the northern part of the site is to be enhanced. Currently, it is believed that the feature shown above is holding surface water runoff that overtops from ditch A due to capacity limitations in the pipe network that leaves the north-eastern corner of the site. Therefore, the intention of the proposed ditch A overflow is to convey flows through the site without ponding within localised low alleviating the problem described above.

2.2 Western Agricultural Land beyond the Site Extents

Comment:

Digital Terrain Modelling of the adjacent western farmland parcel would appear to suggest that levels generally fall towards this ditch.

Designer's Response:

Legal and General have now had further topographical survey undertaken and the findings are included within Appendix A of this report. It can be seen that the levels in this agricultural field do not consistently slope in a single direction towards the site but rather fall in a north to south direction with localised high and low spots. On this basis, it is believed that most of the runoff from this area is likely to enter the ditch to the south of the field rather than be conveyed across into the proposed site. Nevertheless, as an additional precaution it is the intention to drag a ditch along the site's western boundary to encourage any flows towards the ditch at the south, which can be seen in the Overland Flow Routing drawing contained within appendix B.

2.3 Flood Risk Mitigation Methods

Comment:

The layout indicates that housing would be placed over this ditch and without controls likely increase the flood risk for existing properties and the newly proposed ones. The LLFA would therefore seek for further analysis into these flows and to ensure suitable measures (such as compensatory storage or flow diversions) would be in place to protect the existing and proposed properties from flood risks.

Designer's Response:

Whilst it is noted that ditches are to be infilled and placed over with proposed properties, the ditches that have been proposed are intended to replace them whilst increasing the overall attenuation storage volume and enhance the flow routing through the site in a more controlled manner.

Within the Herrington Consulting Ltd FRA they proposed to reprofile and add ditches to provide adequate storage as well as the inclusion of an area of flood compensation to the south that in total will provide approximately 1,914m³ of additional flood storage. The most northern ditch is being reprofiled to provide additional storage that connects into the existing headwall to the northeast and the ditch travelling south from here has been designed as an overflow to convey flows safely through the site before re-joining the ditch on the southeast of the site. Further precaution has also been taken by providing a conveyance ditch along the western perimeter. This will have a positive impact on the flood risk and will divert surface water run off from the existing and proposed properties.

2.4 Land Raising

Comment:

In addition to the above, our previous consultation response sent on the 1st of September 2021 raised queries regarding the proposed land raising on site, specifically in relation to rear garden properties adjacent to existing rear gardens along Queens Road. We would note that this appears to remain unaddressed, and we would seek that this is also clarified.

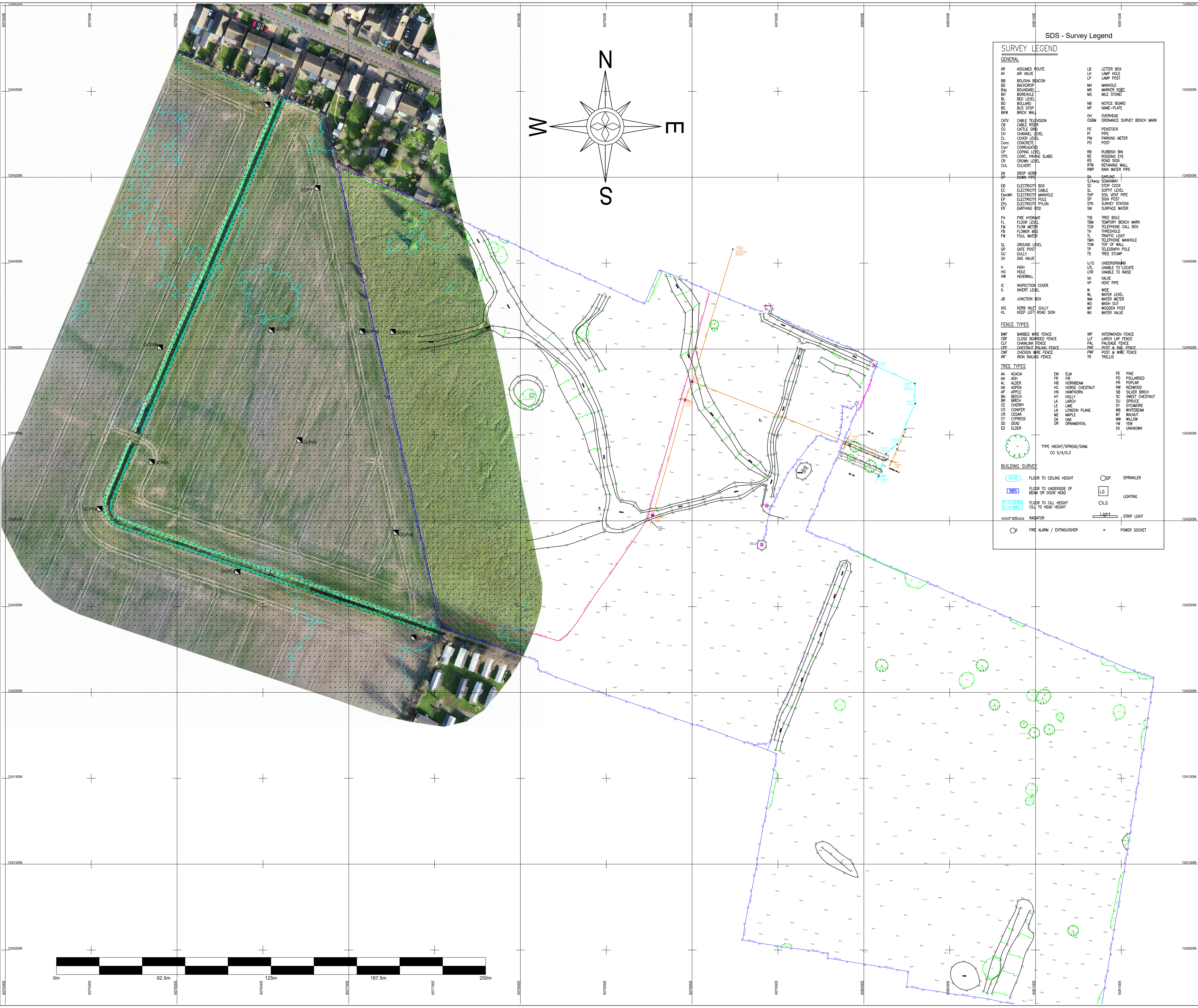
Designer's Response:

Due to the site being within a flood zone it was recommended that all buildings at risk were raised a minimum of 300mm above the existing level. As noted, we are raising the land more than this and this has been proposed as a solution for this site due to the shallow nature of groundwater and underlying strata, which tends to be running sands. It is also about the constructability and safety of the construction workers that will be working on this site.

As shown on the Overland Flow Routing drawing we are proposing the inclusion of land drainage in the rear gardens of the properties described, which will connect into ditch A as to prevent any runoff entering the existing properties gardens.

Appendices

Appendix A - Topographical Survey



KEY (EPS Aerial Survey Area to the West):

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SPOT LEVEL

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GROUND CONTROL POINT

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MAJOR CONTOUR

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MINOR CONTOUR

Notes:

1. This drawing illustrates a combined survey using EPS aerial survey data gathered on 18/02/2022 (see Dwg. Ref UK22.5818_002) and a third party survey drawing produced by SDS, Ref: 205290 TOPO MERGE WITH DRAINAGE (Nov 2016) provided by L&GMGH.

2. EPS aerial survey is shown with the orthomosaic base image to the west of the survey area. Contours and spot levels representative of ground levels, following removal of vegetation, buildings, cars, etc.

3. Both EPS Aerial Survey and SDS Survey geolocated to OSGB36 + Ordnance Datum Newlyn using GPS. Aerial Survey data is accurate to within circa +/- 30mm horizontally and +/- 45mm vertically. SDS accuracy is not noted on their drawing.

4. Further measurements can be taken from the aerial survey via the following web hosted Pix4D model link:

https://cloud.pix4d.com/site/149011/dataset/1085278/map?shareToken=9194cc2e-2089-47e4-831d-763db3c27bf8f

Please note that information in Pix4D is provided as a Digital Surface Model (DSM), so care is required when interrogating near vegetation. Please also note that this data should be handled with care and in accordance with GDPR, used for the purpose of the project only.

Rev	Date	Drawn	Description	Chk'd

eps

The Geotechnical and Environmental Engineers

www.epstrategies.co.uk

Site

Queens Road West, Littlestone Kent

Title

Combined Topo Survey (Client: L&G Modular Homes)

Surveyed	FA	Drawn	FA
Chk.	KW	Date	24/02/2022
Scale	[A1 Sheet] Drawing Reference		
1:1000	UK22.5818_002		
Job No	UK22.5818		Rev 0

Appendix B – Overland Flow Routing

GENERAL NOTES

- Do not scale this drawing. If in doubt, ask.
- This drawing is to be read in conjunction with all other relevant Engineers, Architects and specialist design drawings and details.
- All dimensions are in metres unless noted otherwise. All levels are in metres unless noted otherwise.
- Any discrepancies noted on site are to be reported to the Engineer immediately.
- Sewers shall be constructed to the satisfaction of Southern Water and in accordance with Appendix C of the UK Water Sewerage Sector Guidance "Design and Construction Guidance" 2020.
- All clauses referenced relate to Appendix C of the UK Water Sewerage Sector Guidance "Design and Construction Guidance" 2020, unless noted otherwise.
- The Contractor shall check all tie-ins for line and level with existing at least 3 weeks prior to the commencement of any works. The Engineer shall be notified immediately in writing, should any errors be found.
- It is the responsibility of the Contractor to locate any service apparatus in the vicinity of the works.
- It is the responsibility of the Contractor to execute the works at all times in strict accordance with the requirements of the Health And Safety At Work Act 1974, and the C.O.M. Regulations 2015. The Contractor will be deemed to have allowed for full compliance, including full liaison with the Principal Designer, within his rates.
- The Contractor is responsible for ensuring that all works are to the satisfaction of the site Engineer, and shall be deemed to have included within his rates for any necessary testing.
- The Contractor will be responsible for providing all necessary de-watering and trench support to execute the works in a satisfactory manner, and shall be deemed to have allowed for the same within his rates.
- All buried concrete products and mortar shall be made using sulphate resisting cement.
- All pipes shall be laid with soffits level unless stated otherwise.
- Design subject to approval by KCC and SW.
- Where FV crosses above SW the pipe trench to be lined with 1200 gauge impermeable membrane to eliminate any chances of cross contamination.
- Infill covers and frames within black paved areas are not to be used.
- Easements at any change of width should be 3.0m either side of pipes up to Ø375mm, and 3.5m either side of pipes greater than Ø375mm.
- All manhole covers to be in accordance with the BS EN 124 Class D400 and endorsed FV or SW as appropriate.
- All manhole covers and frames to be kitemarked.
- Protective concrete cover slabs to be used on pipes in non-surfaced areas which don't achieve Ø100mm cover and in trafficked areas that don't achieve 1200mm cover.
- Precast concrete manhole rings are not to be cut under any circumstances.
- All proposed landscaping and tree planting adjacent to sewers shall be in accordance with clauses BS 1 10 and BS 6.

KEY

- Development Boundary
- Proposed Ø300 Culvert
- Existing Drainage
- Ø1500mm Perforated Land Drain
- Overland Flow Route
- Proposed Overflow & Alternate Ditch Route
Proposed ditch line to be provided, data to accommodate overflow route through development in the event of surcharging to specified ditch to the north.
- Flood Compensation Zone
Levels lowered locally to provide a minimum of 1.144m additional flood storage. This volume has been based on Herrington Consulting Limited Flood Risk Assessment.

Health and safety symbols refer to reference numbers indicated on Designer Risk Assessment Number: 21184-RL-22-XX-HS-C-001

Health & Safety Information Key

- Used to provide design specific safety information that may not be obvious to a competent contractor but may be useful
- Used to restrict/prevent a possible action, e.g. stop construction traffic from entering an area
- Used to warn of significant design hazards, adding recommendations
- Used to encourage a positive action, e.g. use of robust protection for inspection chambers

Rev	Date	Amendments	By	CHK
C	13.04.22	Footpaths through POS adjacent to Ditch A updated to reflect amended Architect's layout.	BRM	MJA
B	07.04.22	Footprint of attenuation updated as requested by the Architect.	BRM	MJA
A	06.04.22	FFLs added and attenuation storage enlarged updated as requested by LG 04.04.22	BRM	MJA

Client
Consulting Engineers

LEGAL AND GENERAL MODULAR HOMES

Project
VICTORIA ROAD WEST, LITTLESTONE, KENT

Drawing Title
OVERLAND FLOW ROUTING

Status
PLANNING

Scale	Drawn	Checked	Date
1:500 @ A0	BRM	NMF	31.03.22
Drawing Number	Revision		
0058-RL-00-XX-DR-C-1015	C		

Scale Bar
1:500
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