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PLOT 9A FIRST STREET, MANCHESTER FLOOD RISK ASSESSMENT





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1. INTRODUCTION

1.1 Background

1.1.1 Ramboll UK Ltd ('Ramboll') was appointed by First Street Developments Ltd ('the Applicant') to undertake a Flood Risk Assessment (FRA) to accompany a planning application for the development of Plot 9a, First Street, Manchester, M15 4FN.

1.1.2 The key sources of information used to prepare this report include:

- An indicative proposed site plan by Jon Matthews Architects (Drawing Reference: A 1394 SK 0001 00 dated October 2016);
- A previous FRA conducted for the application site by Ramboll (Report Reference: R05_1620002943-RAM-05-XX-RP-Y-00001, July 2018);
- The Manchester City, Salford City and Trafford Councils' Hybrid Strategic Flood Risk Assessment (SFRA) (JBA Consulting, May 2010);
- United Utilities Sewer Record Plans;
- British Geological Survey (BGS) maps;
- National Planning Policy Framework (NPPF): Flood Risk; and
- The Environment Agency's (EA) online database of indicative floodplain and hydrogeological maps.

1.1.3 Whilst every care has been taken to ensure all information used in this assessment is up-to-date and accurate, Ramboll cannot accept liability for the accuracy or otherwise of any information derived from third party sources.

1.2 Scope and Objectives

1.2.1 This document considers the risks of various sources of flooding to the site and the consequent risk of flooding to downstream receptors (such as people, property, habitats, infrastructure and statutory sites) from the proposed development as a result of surface water runoff. A comparison is made between the current situation and the proposed future development.

1.2.2 This FRA has been carried out in accordance with the National Planning Policy Framework (NPPF)¹. It is to be used to assist the Local Planning Authority (LPA) and Environment Agency (EA), when considering the flooding issues of the proposed development, as part of a planning application. An FRA is required as the developable area larger than 1 hectare (ha).

1.2.3 This report provides the following information:

- A summary of the site conditions and baseline flood risk;
- An assessment of the fluvial flood risk to the site based upon flood mapping provided by the Environment Agency (EA) and in the Strategic Flood Risk Assessment (SFRA);
- An assessment of the flood risk from all other sources;
- A review of the development proposals, and suitability to the site given the identified flood risk; and
- Proposals to mitigate any flood risks to the development.

1.2.4 A previous FRA was prepared by Ramboll for the application site in relation to a previous planning application. Therefore, a revised FRA is required in this instance in relation to the current revised planning application for the site.

1.3 Limitations

- 1.3.1 This report has been prepared by Ramboll exclusively for the intended use by the client in accordance with the fee proposal document between Ramboll and the client defining, among other things, the purpose, the scope and the terms and conditions for the services. No other warranty, expressed or implied, is made as to the professional advice included in this report or in respect of any matters outside the agreed scope of the services or the purpose for which the report and the associated agreed scope were intended, or any other services provided by Ramboll.
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¹ Department of Communities and Local Government – National Planning Policy Framework (March 2012)

2. SITE CONTEXT

2.1 Application Site Description

- 2.1.1 The site is bound to the north by River Street, to the east by First Street, Plot 9b and Hulme Street is located to the south and to the west is Medlock Street. The site is located at approx. grid reference 383701, 397285. A short distance to the south of the site lies the A57 motorway.
- 2.1.2 The site currently comprises of offices and a hardstanding car park. Pedestrian access to the building is via office entrance on River Street. The total site area is 0.5ha.

2.2 Site Topography

- 2.2.1 No site topographic survey was available as part of the study. The topography has therefore been read from the online resource 'Topographic Map' which provides LiDAR based site topographic information. [Manchester topographic map, elevation, relief \(topographic-map.com\)](https://topographic-map.com).
- 2.2.2 Ground levels across the site are relatively flat with only a small decline in levels from 37m Above Ordnance Data (AOD) in the southeast corner to 35mAOD in the northwest corner.

2.3 Geological Setting and Groundwater

- 2.3.1 The British Geological Survey (BGS) map of the area (1:50,000 scale map series), accessed via online digital mapping², indicates the site is underlain by Chester Pebble Beds Formation – Sandstone with the superficial deposits comprising of Glaciofluvial Sheet Deposits – Sand and Gravel.

2.4 Hydrogeological Setting

- 2.4.1 DEFRA's Magic Map³ classified the site as having medium to high risk of groundwater vulnerability, this is based on the likelihood of a pollutant reaching the groundwater. The site contains a Principal Aquifer with the superficial drift as Secondary A:

Principal Aquifer: "layers of rock or drift deposits that have high intergranular and/ or fracture permeability – meaning they usually provide a high level of water storage. They may support water and/ or river base flow on a strategic scale."

Secondary A Aquifer: "permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers"

2.5 Existing Hydrology

- 2.5.1 There are no watercourses situated within the site itself. At its closest point the River Medlock is located approximately 135 m north of the site. The river is culverted with areas of open channel occurring to the northeast and northwest of the site.
- 2.5.2 The Rochdale Canal is approximately 250 m north of the proposed site.

2.6 Existing Drainage

² The British Geological Survey (BGS) Geology of Britain Viewer. <http://www.bgs.ac.uk/data/mapViewers/home.html> (accessed July 2021)

³ DEFRA Magic Map. <https://magic.defra.gov.uk/MagicMap.aspx> (accessed July 2021)

- 2.6.1 A review of the United Utilities public sewer records has been undertaken. A network of public sewers is located within the local area.
- 2.6.2 The site is served by a combined surface and foul water system. A 600 mm by 500 mm sewer is located on Hulme Street. A 590 mm by 680 mm brick combined sewer runs alongside the eastern site boundary in a southeast to northwest direction, from Manhole 7201 to Manhole 7203. From here, the sewer runs east along River Street in a 610mm concrete sewer to connect to a large storage chamber out of the site boundary.
- 2.6.3 Sewer records indicate there is a high-level overflow from the storage tank into the River Medlock, the extent of its use was unable to be determined.

3. BASELINE FLOOD RISK

3.1 Fluvial Flood Risk

- 3.1.1 The Environment Agency flood risk mapping indicates the site is located in flood zone 1⁴, low risk with an a less than 1 in 1,000 annual probability of river or sea flooding. A review of the local hydrology indicates there is no risk of flooding from the River Medlock or the Rochdale Canal.
- 3.1.2 The flood risk from fluvial sources is therefore considered to be low.

3.2 Surface Water Flooding

- 3.2.1 The Environment Agency flood mapping for surface water⁵ indicates that whilst the majority of the site is at very low risk of flooding, localised areas of low and medium risk do exist which coincide with the site boundaries, River Street to the north and First Street to the east. Existing drainage records indicate the presence of drainage features on River Street and First Street.
- 3.2.2 The topographic map shows the site to be sloping from east to west, in times of future rainfall events it is expected that overland flow paths will be created, possibly resulting in water entering the building.

Based on the above, the risk of flooding from surface water is considered to be very low for the majority of the site, but with areas of low to medium risk.

3.3 Risk from Sewer Flooding

- 3.3.1 Drainage records indicate a combined system between foul and surface water, allowing the risk of sewer flooding to be low. There is however an inherent risk that future intense rainfall could cause flooding to the site, this will be managed through the modern design and construction of the drainage system.
- 3.3.2 No information regarding existing system was provided, but also there were no reports of historic capacity or flooding issues.

3.4 Groundwater Flood Risk

- 3.4.1 A review of the SRFA indicates the site is situated in an area at risk of groundwater flooding. The Report states that groundwater susceptibility is defined on the underlying geology. There are no known records of previous groundwater flooding for site or any adjacent sites.
- 3.4.2 Site topography, groundwater flooding tends to cause risk to properties within lower areas of topographies i.e., valley floors or predominantly flat land. As the site is located on a gradual slope, any emerging groundwater would be removed by gravity. Whilst some overland flow may occur if a spring is present, generally the risk to buildings is low. Ordnance Survey (OS) Mapping does not indicate the presence of any emerging springs within the site.

3.5 Risk from Reservoirs, Canal and Other Artificial Sources

- 3.5.1 A review of the reservoir flood risk mapping does not indicate the site to be at risk, furthermore in the absence of any artificial sources, the risk of flooding from these sources is considered to be low.

⁴ <https://flood-map-for-planning.service.gov.uk/confirm-location?easting=515970&northing=157515&placeOrPostcode=KT22%207SA>

⁵ <https://flood-warning-information.service.gov.uk/long-term-flood-risk/map?easting=515970&northing=157515&map=SurfaceWater>

3.6 Flood Risk Summary

3.6.1 A summary of the risk of flooding from all sources is provided in Table 3.1.

Table 3.1: Flooding Sources at the Proposed Development Site

Sources of Flooding	High	Medium	Low	Comments
Fluvial			✓	
Surface water		✓	✓	
Sewer flooding			✓	
Groundwater			✓	
Reservoirs, canals and other artificial sources			✓	

4. ASSESSMENT OF NEW DEVELOPMENT

4.1 Development Proposal

- 4.1.1 It is proposed to redevelop the application to provide a new development comprising a basement housing a car park and plant rooms, offices and roof terrace/plant area.
- 4.1.2 The height of the building is basement plus 9 stories. The proposed offices will be located across 8 floors, with the fitness area located on the ground floor and a tenant external terrace on the 9th floor.
- 4.1.3 A proposed Site Masterplan (PL1471.1-PLA-XX-00-DR-L-0001-Landscape GA) is included in Appendix A

4.2 Flood Risk Vulnerability

- 4.2.1 According to Table 2 (Flood Risk Vulnerability Classification) in the Planning Practice Guidance to NPPF, buildings used for offices are classified as "Less Vulnerable". Table 3 (Flood Risk Vulnerability and Flood Zone Compatibility) in the Planning Practice Guidance to NPPF, states that "Less Vulnerable" developments are appropriate to locate in Flood Zones 1.

4.3 Sequential Test

- 4.3.1 The Sequential Test aims to steer development to areas with the lowest probability of flooding. In accordance with the NPPF "More Vulnerable" developments are suitable for location in Flood Zone 1; therefore, the sequential test is deemed to have been passed and the Exception Test is not required for the proposed development.

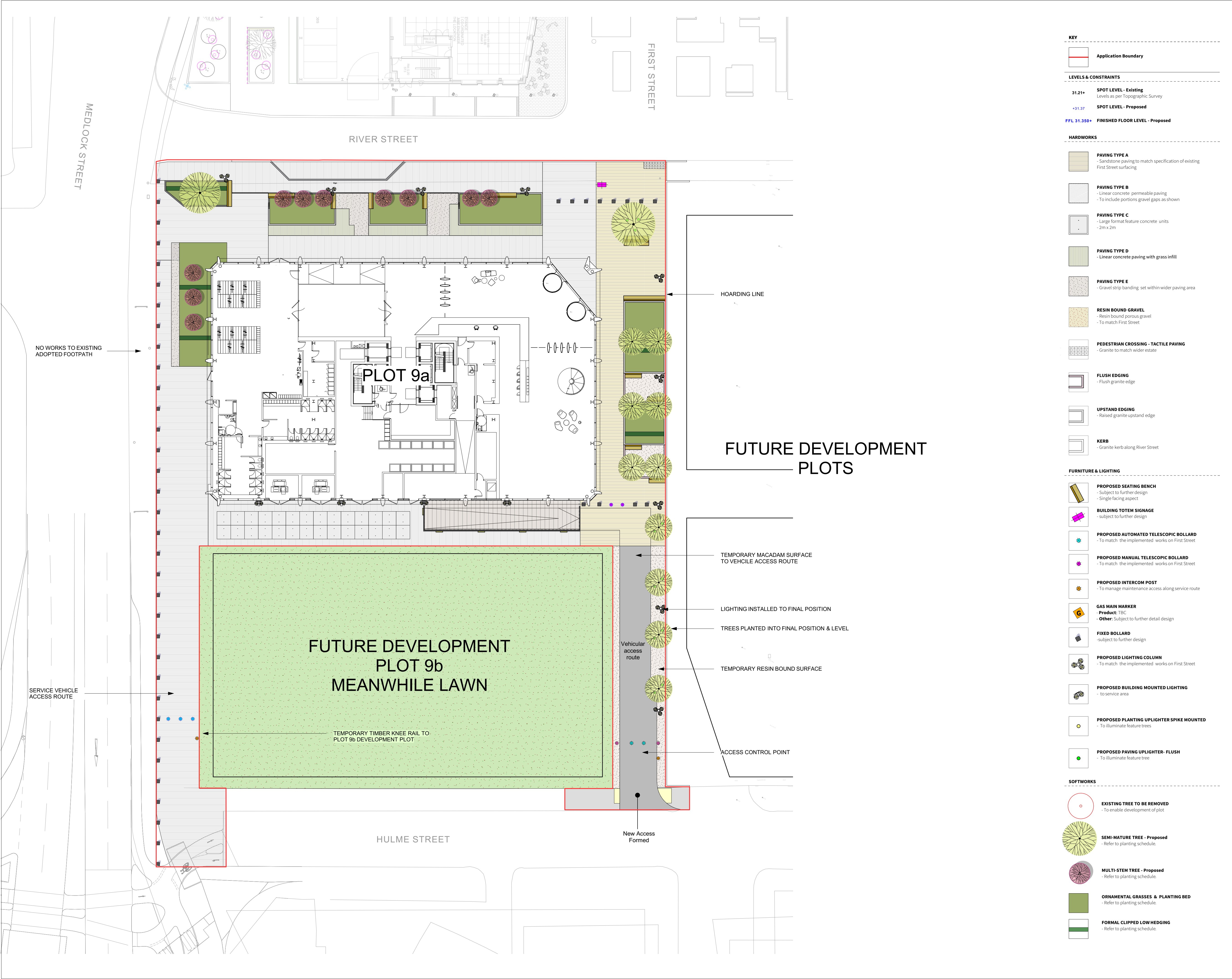
4.4 Mitigation Measures

- 4.4.1 The NPPF identifies the need for sustainable management of surface water runoff for all new developments, it is recommended that sustainable drainage systems (SuDs) be used to mitigate this.
- 4.4.2 The measures proposed are as follows:
 - Subsurface Storage – Oversized pipes and tank systems that can be used to create a below ground storage system
 - Permeable Paving – Paving that allows infiltration to reduce the rate of runoff
 - Green/Brown Roof – A multi-layered systems with vegetation cover over a drainage layer, intercepting and retaining precipitation
 - Blue Roof – Similar to that of green/brown roof yet the precipitation is stored and then released slowly through orifice plates to the wider drainage network
 - Rainwater Harvesting – Rainwater from the roof is used to supply toilets, washing machines and the irrigation system
- 4.4.3 The above should form part of the detailed site design once the final masterplan is available, and once the design of external areas has been undertaken.

5. SUMMARY

- 5.0.1 It is proposed to redevelop Plot 9a, First Street, Manchester. The development consists of a basement level plus 9 stories.
- 5.0.2 A review of all available information relating to flood risk has been undertaken, and an assessment made of the existing baseline flood risk and the potential future risk to the development. A summary of the risk from each source is as follows:
- Fluvial/tidal – located in flood zone 1, and as such is a low risk from fluvial flooding;
 - Surface water – generally very low risk across the site, but with localised areas of low to medium risk;
 - Sewer flooding – considered to be low with no details of historic flooding being noted;
 - Groundwater – located in an area of groundwater susceptibility yet based on a review of the groundwater levels and topographic map the risk is low;
 - Reservoirs, canal and other artificial sources – considered to be low based on no potential sources being located within vicinity of the site.
- 5.0.3 Surface water drainage will be managed on site through the use of restricted discharge into combined public sewers within the vicinity of the site.
- 5.0.4 The proposed development is classified by the NPPF as 'less vulnerable' and is appropriate for Flood Zone 1. Meaning the sequential test is passed and the exception test is not required.
- 5.0.5 Based on the findings in this report no further flood risk assessment is needed.

APPENDIX A LANDSCAPE GENERAL ARRANGEMENT



KEY

Application Boundary

LEVELS & CONSTRAINTS

31.21+

SPOT LEVEL - Existing
Levels as per Topographic Survey

+31.37

SPOT LEVEL - Proposed

F.F.L. 31.350+

FINISHED FLOOR LEVEL - Proposed

HARDWORKS

PAVING TYPE A
- Sandstone paving to match specification of existing First Street surfacing

PAVING TYPE B
- Linear concrete permeable paving
- To include portions gravel gaps as shown

PAVING TYPE C
- Large format feature concrete units
- 2m x 2m

PAVING TYPE D
- Linear concrete paving with grass infill

PAVING TYPE E
- Gravel strip banding set within wider paving area

RESIN BOUND GRAVEL
- Resin bound porous gravel
- To match First Street

PEDESTRIAN CROSSING - TACTILE PAVING
- Granite to match wider estate

FLUSH EDGING
- Flush granite edge

UPSTAND EDGING
- Raised granite upstand edge

KERB
- Granite kerb along River Street

FURNITURE & LIGHTING

PROPOSED SEATING BENCH
- Subject to further design
- Single facing aspect

BUILDING TOTEM SIGNAGE
- Subject to further design

PROPOSED AUTOMATED TELESCOPIC BOLLARD
- To match the implemented works on First Street

PROPOSED MANUAL TELESCOPIC BOLLARD
- To match the implemented works on First Street

PROPOSED INTERCOM POST
- To manage maintenance access along service route

GAS MAIN MARKER
- Product: TBC
- Other: Subject to further detail design

FIXED BOLLARD
- Subject to further design

PROPOSED LIGHTING COLUMN
- To match the implemented works on First Street

PROPOSED BUILDING MOUNTED LIGHTING
- to service area

PROPOSED PLANTING UPLIGHTER SPIKE MOUNTED
- To illuminate feature trees

PROPOSED PAVING UPLIGHTER- FLUSH
- To illuminate feature tree

SOFTWORKS

EXISTING TREE TO BE REMOVED
- To enable development of plot

SEMI-MATURE TREE - Proposed
- Refer to planting schedule.

MULTI-STEM TREE - Proposed
- Refer to planting schedule.

ORNAMENTAL GRASSES & PLANTING BED
- Refer to planting schedule.

FORMAL CLIPPED LOW HEDGING
- Refer to planting schedule.

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NOTES:

- Do not scale from this drawing.
- Always work to noted dimensions.
- All dimensions are in millimetres unless otherwise stated.
- All setting out, levels and dimensions to be agreed on site.
- The dimensions of all materials must be checked on site before being laid out.
- This drawing must be read with the relevant specification clauses and detail drawings.
- Order of construction and setting out to be agreed on site.

P28	21-12-21	PLANNING	RM	RM
P27	17-12-21	PLANNING	RM	RM
P26	08-12-21	PLANNING	RM	RM
P25	02-12-21	PLANNING	RM	RM
P24	29-11-21	PLANNING	BT	RM
P23	27-09-21	PLANNING	JC	RM

Revision	Date	Description	Drawn	Apprvd.

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Drg Title Landscape GA

Created on	Created by	Approved by
13-06-19	JC	RM

Scale	Size	Workstage
1:200	A1	Planning

Drg No.	Suitability	Revision
PL1471.1-PLA-XX-00-DR-L-0001	S1	P28

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