



**LIDL GREAT BRITAIN LTD
STONEHAM LANE
SOUTHAMPTON**

**SURFACE & FOUL WATER DRAINAGE
TECHNICAL NOTE**

JULY 2022



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Lidl Great Britain Ltd
Stoneham Lane
Southampton
Surface & Foul Water Drainage Technical Note

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1 Introduction

- 1.1 Mayer Brown Ltd (MBL) have been commissioned by Lidl GB to produce a Drainage Technical Note (TN) to accompany a planning application for their proposed new store at Stoneham Lane, Eastleigh.

Planning Status & Background

- 1.2 Lidl have a contractual agreement to purchase the site from Highwood and the new store will be located within the “Local Centre” of Highwood’s much larger development known as “North Stoneham Park” that received planning approval in January 2016.
- 1.3 The outline permission approved for “North Stoneham Park” under planning reference **O/15/76023** can be partially described as follows *“Outline application with all matters reserved (except for access) for the demolition of existing buildings/structures and the development of: 1) on land south of Chestnut Avenue (North Stoneham Park) - 1100 dwellings (use class C3); - residential care home (use class C2); - **creation of a new local centre** - including a new primary school (2FE), children's pre-school nursery, community building, retail, office and other buildings and car parking”*
- 1.4 Reserved matters planning approval was subsequently obtained for the **Local Centre** in 2019 under planning reference **RM/18/84537**. A plan showing the approved Local Centre is contained in Appendix C of this TN.
- 1.5 A surface water technical note with drawings and calculations accompanied the approved RM scheme, which was produced by Odyssey Consulting Engineers in November 2018. The relevant extracts from this report are contained in Appendix G of this TN.
- 1.6 Lidl GB is to acquire the north-east section of the approved Local Centre. Highwood are providing a serviced site to Lidl GB, but it is necessary for Lidl GB to submit their own stand-alone full planning application for the store.
- 1.7 The planning application for the new store is not a reserved matters planning application. Therefore, the drainage related outlined planning conditions do not need to be discharged. Any new planning permission will, therefore, be subject to separate conditions relating to drainage matters (if necessary).

Purpose of this Technical Note

- 1.8 The purpose of this Technical Note is to accompany the planning application for the new Lidl store, explaining the drainage design philosophy and how it aligns with the outline approved masterplan.
- 1.9 This drainage strategy underlines the drainage principles for the safe and sustainable disposal of surface water produced by the development. The conditions currently existing in the location of the site are described, together with the methods used to identify and assess potential impacts caused by the development proposals. The mitigation measures proposed have been identified to avoid and/or reduce the impacts caused by the development.

Existing Site

- ## Proposed Layout

-
- The site plan shows a building with a red boundary and a green landscape area. The building layout includes a SEATING AREA, CHILLER, DELIVERY, SALES, WAREHOUSE, and BOTTLE STORE. A new access/egress to Highway Consultants Design Details is indicated. The parking lot contains 88 total parking spaces, with a note for 27 community parking spaces including 1 disabled space. The plan also shows a flag pole, a cycle link, and various dimensions for the building and parking areas.

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3 Flood Risk Overview

3.1 MBL have undertaken a review of the flood risks using the PUSH website. Eastleigh District Council's Strategic Flood Risk Assessment is within the PUSH partnership. The Partnership for Urban South Hampshire (PUSH) is a partnership of Hampshire County Council; Isle of Wight, Portsmouth and Southampton, plus the district authorities of: Eastleigh, East Hampshire, Fareham, Gosport, Havant, New Forest, Test Valley and Winchester.

3.2 As described in the latest PUSH SFRA (revised 2016) it has been prepared:

“to provide a robust, contemporary and sound analysis of flood risks from all sources and to provide up to date evidence base of flood risk information. The review aims to provide confidence that the SFRA is up to date, fit for purpose and provides a sound evidence base to underpin decision making on proposed allocations for housing and employment, which can be delivered within the context of flood risk”

3.3 The flood risk information obtained from the PUSH website is contained in Appendix N of this report. The flood risk review confirms the Development is not at risk of flooding from any source. A summary of the review is shown below in figure 3.1

Flood Mechanism	Source	Flood Risk to the Development	Mitigation Required?
Fluvial	N/A	Low	No
Tidal	N/A	Low	No
Groundwater	Underlying geology and groundwater levels	Low	No
Surface Water / Overland Flow	Runoff from surrounding elevated land and highway corridors	Low	No
Infrastructure Failure	Surface water systems and Water mains	Low	No

Table 3.1: Flood Risk Summary

Sequential Test

3.4 The National Planning Policy Framework states that “The aim of the sequential test is to steer new development to areas with the lowest risk of flooding from any source”. Having completed a review of the potential flood risks to the Development it can be concluded it is not at risk of flooding from any source and, as such, it is not necessary for it to be subject to a sequential test.

4 Surface Water Drainage

Reserved Matters Approved Strategy

- 4.1 As explained in the introduction the proposed Lidl store will be located in the northeast corner of the “Local Centre”, which is part of the much larger overall “North Stoneham Park” development.
- 4.2 Reserved Matters planning approval was obtained for the Local Centre in 2019 and a surface water technical note (with drawings and calculations) accompanied the application. The surface water strategy was produced by Odyssey Consulting Engineers in November 2018 and the relevant extracts from this report are contained in Appendix G of this TN.
- 4.3 The Odyssey drainage plan is included within Appendix G that shows all surface water run-off draining to a couple of infiltration tanks located in the carpark to the front and rear of the building (Tanks AT01 & AT04).
- 4.4 The original outline approved scheme had allocated a peak allowable discharge rate of 17 litres/second from the Local Centre, but this assumed infiltration drainage would not be possible.
- 4.5 The site is underlain by river terrace deposits that have a high rate of permeability. Site specific infiltration testing was subsequently carried out in accordance with BRE 365 and it was determined that rate of infiltration at the site is very good. The rate of infiltration is shown in the constraint plan in Appendix E is 8.46 x 10⁻⁴ metres/second

Existing Surface Water Drainage

- 4.6 As explained in paragraph 2.3 access to the new store will be via Whieldon Way that was recently constructed as part of the Local Centre overall development. According to the Odyssey drainage plan located within Appendix G this is drained using gullies to an oversized (attenuation) sewer that flows south and then east along the southern boundary of the store site. Although Whieldon Way is within the planning application boundary this existing drainage and associated gullies will remain unaltered.
- 4.7 There are no other existing surface water sewers within the new store site.

Drainage Hierarchy

- 4.8 Eastleigh Borough Council as the Lead Local Flood Authority (LLFA) are predominantly concerned about the quantity, rate and quality of surface water run-off leaving the development site.
- 4.9 Sustainable Urban Drainage Systems (SUDS) are a range of techniques that aim to mimic the way rainfall drains in natural systems and so reduces the hydraulic and hydrological impact on the local area and downstream catchments. There are several options available to impose surface water restrictions on proposed development plots such as oversized sewers, below ground storage tanks, attenuation ponds and basins, swales, permeable paving, or infiltration systems.
- 4.10 To determine the most sustainable method of surface water disposal the hierarchy from approved document part H was used, see below:
- **An adequate soakaway or some other adequate infiltration system** – Site specific infiltration testing was undertaken in accordance with BRE365 to inform the reserved matter application in 2018. The rate of infiltration is good at 8.46×10^{-4} metres/second. See constraint plan in Appendix E.
 - **A Watercourse** – There are no watercourses in the vicinity of the site.
 - **A Sewer** – There are surface water sewers within the application boundary, as discussed in paragraph 4.6, but it is not necessary to use these because infiltration is possible within the store site. See paragraph 4.11 below.
- 4.11 On the basis infiltration will be possible it is proposed to discharge surface water to the ground using a large infiltration tank located in the car park at the front of the new store.

Calculations

- 4.12 The source control function in microdrainage has been used to size the proposed soakaway tank. Based on a total drained area of 0.544 hectares and an infiltration rate of 8.46×10^{-4} m/sec the volume of the infiltration tank is 120m³ for up to and including the 1in100yr+40% climate change event, refer to Appendix J.
- 4.13 The rate of infiltration is very good so the 50% drain down time for the 1in100yr storm event is considerably less than 24 hours.

Proposed Surface Water Disposal

- 4.14 A site specific surface water drainage strategy for the Lidl site has been created and can be found in Appendix H.

- 4.15 A levels strategy has also been produced by One Design Architects that has been used to inform the drainage strategy, refer to Appendix I.
- 4.16 The infiltration tank has a volume of 120m³ and has been positioned in the centre of the car park to store water from the overall drainage network. The tank is set a sufficient distance away from building foundations or critical infrastructure.
- 4.17 The following outlines how water from the Lidl store will drain:
- Water from the roof of the building will drain via a piped network directly into the infiltration tank.
 - The car park will drain via a gully system and through a petrol interceptor, Appendix K, to provide treatment, before discharging into the proposed new soakaway.
- 4.18 The drainage design will ensure that all flows are safely contained within the drainage network (below ground) for up to and including the 1in100year event +40% climate change.
- 4.19 The proposed attenuation tank will be a proprietary crate system chosen by the Main Contractor based on availability and price. (A typical product is the Geolight system manufactured and supplied by SDS limited as shown in Appendix L).
- 4.20 The Geolight system incorporates a perforated pipe through the center of the tank laid within a granular bedding that is wrapped within a geotextile. All surface water run-off needs to pass through this filter system before it enters the soakaway tank and eventually into the underlying ground. There are also catchpits in the upstream manholes. This arrangement will significantly limit the amount of silt and debris that could potentially enter the soakaway tank.
- 4.21 Lidl also have a standard set of details for drainage features for their sites which is provided in Appendix M.

Surface Water Treatment

- 4.22 A petrol interceptor will be included in the surface water drainage system, which will remove any oil, silts and sediments present in the water prior to discharging into the sewer. The method of collection and conveyance in the upstream drainage network will use gullies and catchpits to capture silt prior to reaching the separator.

Adoption and Maintenance

- 4.23 The proposed surface and foul water sewer water network will remain in Lidl's ownership. This will enable tight control over the operation and maintenance of the drainage/SuDS systems on site.

Design Criteria

- 4.24 The proposed development has been designed to current best practice for both piped drainage (Part H of the Building Regulations), adoptable sewers (Sewers for Adoption 7th Edition) and Sustainable Drainage (CIRIA C753 – The SUDS Manual), and any subsequent revisions or further publications of best practice. In this way, the surface water drainage design for the site has been developed in accordance with all relevant standards and guidelines.
- 4.25 The surface water network design and rate of surface water runoff will be based on the Modified Rational method and designed in accordance with the Wallingford Procedure. To carry out the design of the networks, a number of Global Variables are used. These Global Variables/parameters are related to the location of the site in the UK and have been obtained from Maps for “design and analysis of urban storm drainage – Wallingford procedure”. These are as follows;
- Region = England & Wales
 - $M(5-60) = 19.50\text{mm}$
 - Ration (r) = 0.35
- 4.26 The positive surface water system will be designed such that:
- The pipes remain unsurcharged during the 1 in 2 year design storm;
 - The system will not flood during the worst case 1 in 30 year storm with a free outfall;
 - The surface water run-off from the proposed development will be contained on site for up to and including the worst case 1 in 100 year storm event, plus an additional 40% for climate change;
 - The pipe velocities are such that self-cleansing is achieved at lesser more moderate storm intensities: -
 - o Pipe roughness (k_s) = 0.6
 - o Minimum pipe velocity at full flow = 1.0m/s
 - o Percentage Impermeable areas:

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- Buildings = 100%
- Roads & Footpaths = 100%
- Parking = 100%
- Soft Landscaping = 0%

5 Foul Drainage

Existing Foul Drainage

- 5.1 The Odyssey constraints drawing in Appendix E shows there is an existing 225mm diameter foul sewer running through the Lidl GB site. It is unknown if this existing pipe is owned/adopted by Southern Water yet.
- 5.2 This existing sewer will be diverted to avoid a clash with the proposed new Lidl building as shown on the proposed sewer diversion plan in Appendix F.
- 5.3 If this pipe is already owned by Southern Water the diversion will need to be agreed under a S185 agreement.

Proposed Layout

- 5.4 The proposed foul sewers serving the development will drain to the diverted foul sewer along the western boundary of the site and will connect at two locations.
- 5.5 The proposed foul sewers will fall on a gravity basis (no pumps required) to the proposed connection points as shown on the MBL drainage general arrangement drawing in Appendix H.
- 5.6 A section 106 application to connect will be made to Southern Water at the detailed design stage to gain permission to connect to the diverted sewer.

Proposed Foul Flows

- 5.7 The application is for a new supermarket where the foul flows from the welfare facilities and refrigeration units will be minimal, anticipated to be no more than 1 litres/second.

Design Criteria

- 5.8 The proposed foul sewers will be designed in accordance with the Design and Construction Guidance, BS EN 752 – Drain and sewer systems outside buildings and Building Regulations - part H (2015).

Adoption and Maintenance

- 5.9 The proposed foul network will be maintained by Lidl which should enable tight control over the operation and maintenance of the drainage systems on site.

6 Conclusion

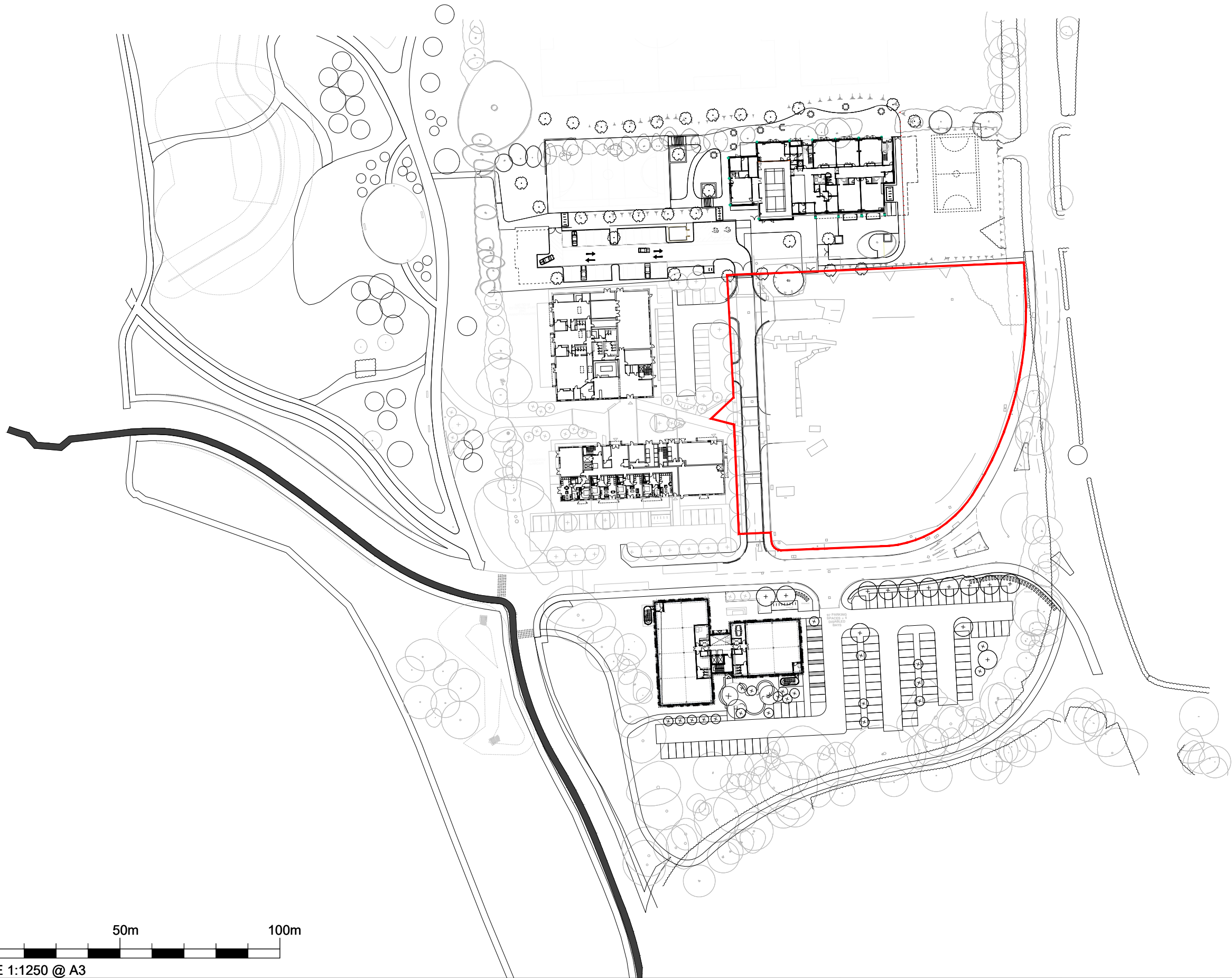
- 6.1 The outline approved “North Stoneham Park” planning application was accompanied by flood risk assessment (FRA) that established there are no flood risks to the Local Centre and, as such, the proposed levels are be dictated by boundary and engineering constraints as opposed to a predicted fluvial or tidal flood level.
- 6.2 MBL have also undertaken a review of the flood risks using the PUSH website that confirms the Development will not be at risk of flooding from any source so it will not need to be subject to a sequential test. A summary of the review is shown below in figure 6.1

Flood Mechanism	Source	Flood Risk to the Development	Mitigation Required?
Fluvial	N/A	Low	No
Tidal	N/A	Low	No
Groundwater	Underlying geology and groundwater levels	Low	No
Surface Water / Overland Flow	Runoff from surrounding elevated land and highway corridors	Low	No
Infrastructure Failure	Surface water systems and Water mains	Low	No

Table 6.1: Flood Risk Summary

- 6.3 The site is underlain by river terrace deposits that have a high rate of permeability. Site specific infiltration testing has confirmed rate of infiltration is very good. Therefore, the surface water run-off from the proposed store, car park and service area will discharge via a network of pipes and gullies into a proprietary soakaway tank position in the centre of the car park.
- 6.4 The SuDS features will ensure excess water will be safely contained within the site boundary up to and including the 1 in 100 year event plus 40% climate change.
- 6.5 The proposed foul sewers serving the new store will discharge into the diverted 225mm diameter public foul sewer that will pass through the site and adjacent the new store building. The foul flows from the new store will be minimal, anticipated to be no more than 1 litres/second.
- 6.6 Having completed this drainage Strategy, the conclusion is that the proposed new Lidl store is not at risk of flooding and can be safely constructed without flooding itself and will not increase the risk of flooding to downstream/surrounding properties.

APPENDIX A: Site Location



SCALE 1:1250 @ A3

RIBA 
Chartered Practice

arb Architects
Registration
Board



DIMENSIONS TO BE CONFIRMED ON SITE PRIOR TO START OF WORKS AND ODA TO BE INFORMED OF DISCREPANCIES IMMEDIATELY. NO DIMENSIONS TO BE SCALED FROM THIS DRAWING.
ALL MATERIALS AND WORKS ARE TO BE CARRIED OUT IN ACCORDANCE WITH THE LATEST REVISION OF THE APPROPRIATE BRITISH STANDARDS OR EURO CODE.
PLANNING APPROVAL, CURRENT BUILDING REGULATIONS AND CODES OF PRACTICE.
PARTY WALL ACT - NOTICES UNDER THE PARTY WALL ACT ARE TO BE SERVED BY THE PROPERTY OWNER OR APPOINTED THIRD PARTY BY PROPERTY OWNER, HEALTH AND SAFETY - COM 2015 REGULATIONS APPLY TO ALL CONSTRUCTION WORKS TO BE CARRIED OUT AND APPLY TO DESIGNERS, CONTRACTORS AND THE CLIENT. AS SUCH ALL PARTIES HAVE DUTIES UNDER THESE REGULATIONS.

Notes



Rev	Description	Date	Rev by	Chk by
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Revisions

Client
LIDL GREAT BRITAIN LTD.
Foxes Park, Brownhill Way, Nursling, Hampshire,
SO16 0AW
Project
STONEHAM LANE, EASTLEIGH,
SOUTHAMPTON

Drawing
LOCATION PLAN

Project No:
20321

Drawing No:
AD 100

Purpose of Issue
PLANNING

Scale @ A3
1:1250

Drawn
NE

Checked
LMC

Revision
-

Date
MAY 2022

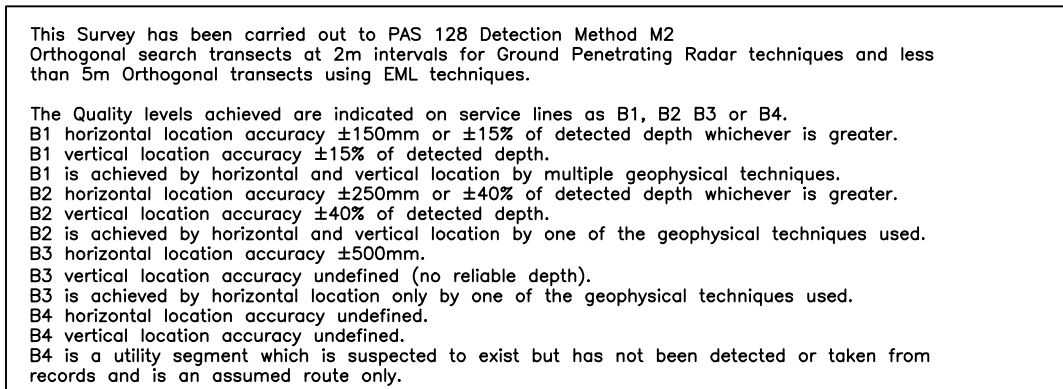


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Architectural

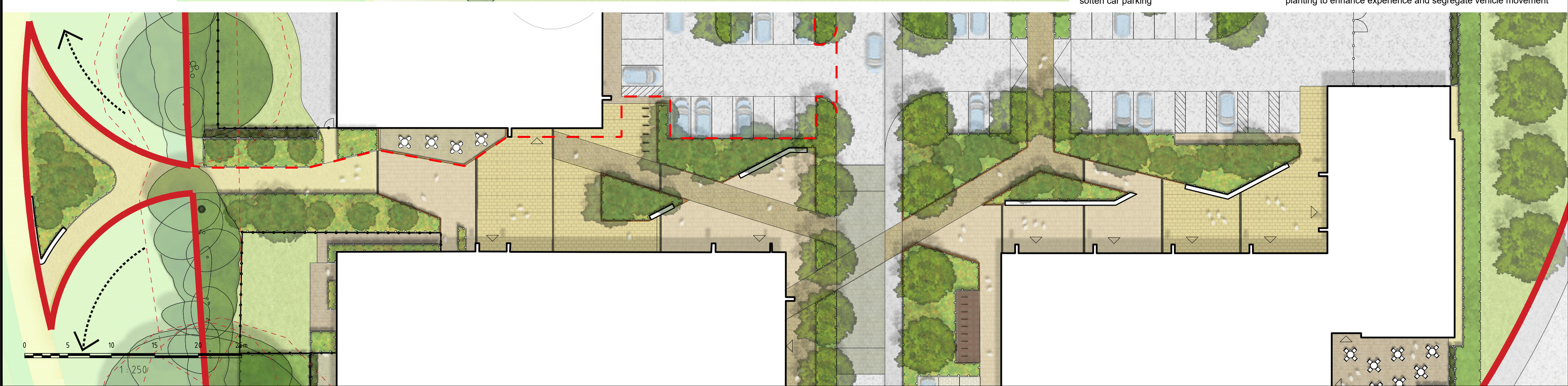
DO NOT USE FOR CONSTRUCTION

APPENDIX B: Topographic Survey

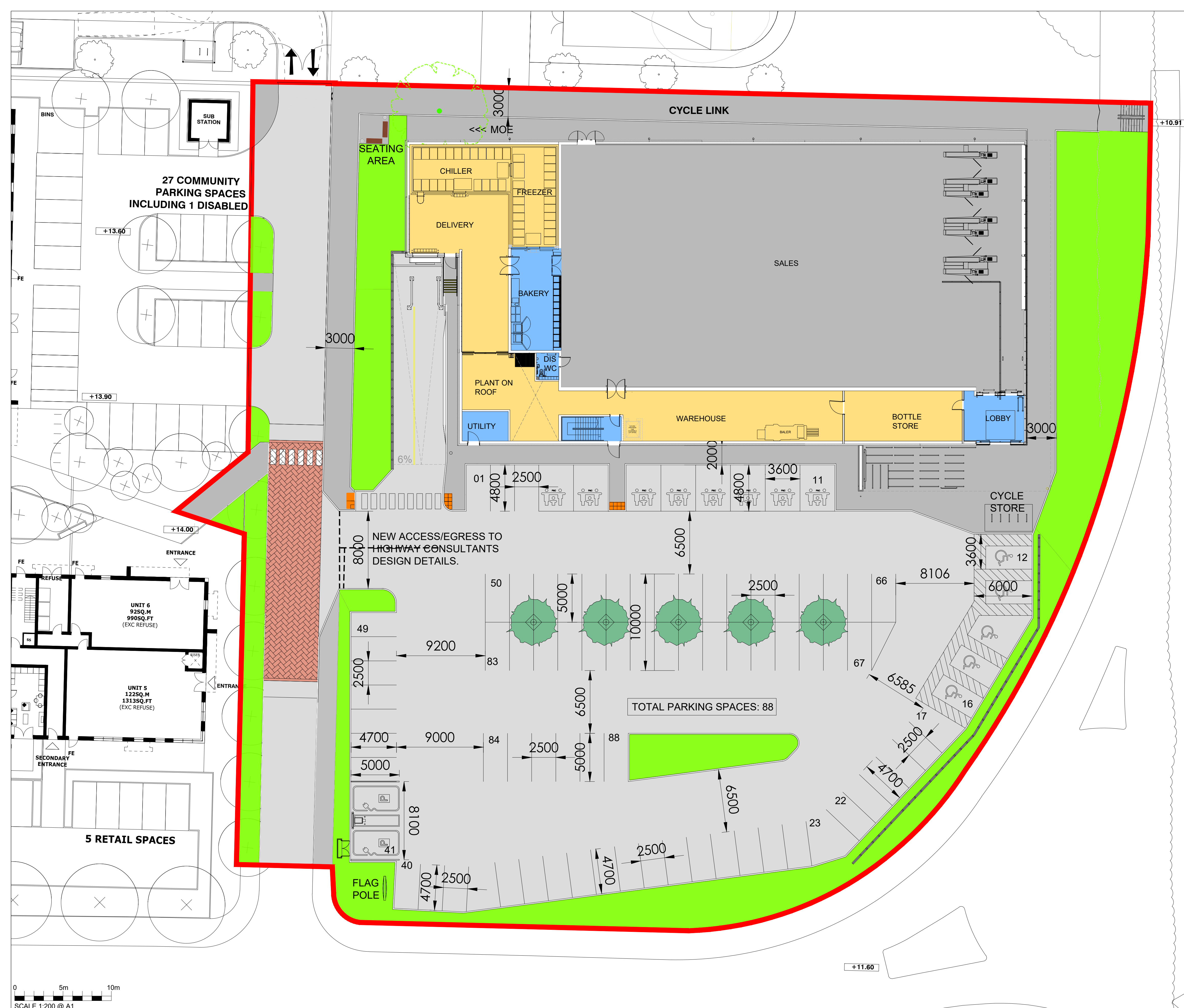


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APPENDIX C: Planning Background, North Stoneham Local Centre



APPENDIX D: Proposed Layout & Roof Plan



- LEGEND**
- BOUNDARY LINE
 - PROPOSED ZEBRA CROSSING AND TACTILE PAVING
 - PROPOSED PARENT AND CHILD CAR PARKING SPACES
 - PROPOSED DISABLED CAR PARKING SPACES
 - PROPOSED LANDSCAPED AREAS
 - PROPOSED CYCLE PARKING
 - PROPOSED TROLLEY BAY

SCHEDULE	
LIDL - BESPOKE ECO STORE	
GROUND FLOOR	
Sales Area	1210m ²
Warehouse GIA inc. freezer/chiller	485 m ²
Ancillary GIA inc all welfare & bakery	123 m ²
Internal walls	30 m ²
GIA	1848 m ²
FIRST FLOOR	
Ancillary	132 m ²
Internal walls	7 m ²
GIA (excluding vertical circulation)	139 m ²
TOTAL GIA	1987 m ²
Total Site Area Red (Approximate)	7239 m ²
Standard Parking Spaces	73 spaces
Disabled Parking Spaces	05 spaces
P&T Parking Spaces	08 spaces
EVC Spaces	02 spaces
Total Parking Spaces	88 spaces

