25th April 2024

Our reference: 890564-R (1)

London Borough of Hillingdon
Planning Services
3N/04
Civic Centre
High Street
Uxbridge, Middlesex
UB8 1UW

Dear Sirs/Madam

LIDL Foodstore Victoria Road Ruislip

The demolition of a non-food retail unit and reconfiguration of the existing car park.

A drainage statement has been produced to provide the necessary information for the Local Planning Authority, London Borough of Hillingdon, in support for a planning application for the development listed above.

The information provided in this letter and opinions expressed are subject to RSK Group Service Constraints contained in **Appendix A**.

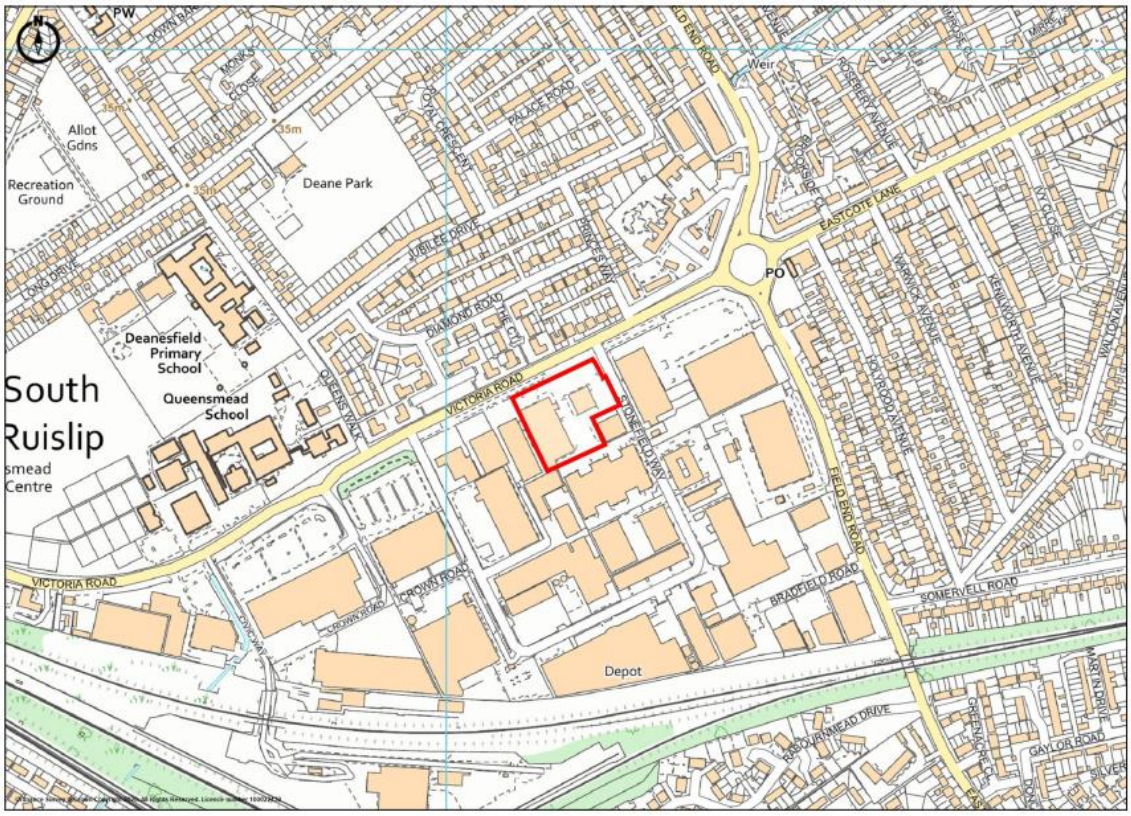
1. SITE LOCATION AND PROPOSALS

The site is located to the south of Victoria Road and to the west of Stonefield Way in South Ruislip in the London Borough of Hillingdon. Beyond the southern and western site boundaries lie other commercial properties within the Victoria Retail Park. The site can be located at post code HA4 0QQ and at National Grid Reference 512160,185588. A site location plan in included overleaf as **Figure 1**.

The site is approximately 0.94ha in size and currently comprises the Lidl South Ruislip retail store, the Benson for Beds unit and associated car parking. The existing site layout along with the topographical survey is included in **Appendix B.**

Proposals include the demolition of the Bensons for Bed unit, to provide additional car parking spaces. The proposed new site layout is included in **Appendix C.**

Figure 1: Site Location Plan



2. DEVELOPMENT DRAINAGE

2.1 EXISTING DRAINAGE

Sewer records have been obtained from Thames Water (**Appendix D**). The plans indicate the following network of public sewers in and around the site:

- A 225mm diameter foul water sewer crosses the southern portion of the site, conveying flow in a south westerly direction;
- A 225mm diameter foul water sewer is present beneath Stonefield Way and discharges into the aforementioned foul sewer;
- A 225mm diameter foul water sewer is present beneath Victoria Road, conveying flow in a south westerly direction;
- The 1219mm diameter Harrow Branch Sewer (foul trunk sewer) is located beneath Victoria Road and also conveys flow in a south westerly direction;
- The sewer records show the culverted watercourse beneath Victoria Road but indicate that this is not operated or maintained by TW;
- An 825mm diameter surface water sewer is present beneath Stonefield Way, conveying flow northwards before discharging into the culverted watercourse; and
- A number of other sewers are present surrounding the site to serve the wider area. All surface water sewers within the vicinity of the site are discharging to the culverted watercourse.

The existing Lidl store and associated car parking area have their own private drainage system. The private surface water drainage collects and attenuates the site's runoff in a geocellular tank prior to releasing it at a controlled rate of 11l/s into the culvert located on Victoria Road.

Appendix E includes a plan of the existing drainage arrangement.

2.2 OFF-SITE DISCHARGE OPTIONS

The Policy 5.13 Sustainable Drainage of the London Plan states that development proposals should aim to achieve greenfield run-off rates and ensure that surface water run-off is managed as close to its source as possible in line with the following drainage hierarchy:

1) Rainwater harvesting (including a combination of green and blue roofs)
2) Infiltration techniques and green roofs
3) Rainwater attenuation in open water features for gradual release
4) Rainwater discharge direct to a watercourse (unless not appropriate)
5) Rainwater attenuation above ground (including blue roofs)
6) Rainwater attenuation below ground
7) Rainwater discharge to a surface water sewer or drain
8) Rainwater discharge to a combined sewer

The London Plan advocates that infiltration should be considered as the primary option to discharge surface water from a developed site. However, the effectiveness of infiltration is completely dependent on the physical conditions at the site. The site is directly underlain by impermeable London Clay therefore infiltration is not considered feasible.

Discharging surface water directly to a local watercourse is not considered feasible as there are no suitable watercourses within the immediate vicinity of the site.

Following option is to discharge the surface water runoff resultant from the car park extension to the existing private surface water drainage sewer serving the Site.

2.3 PROPOSED SURFACE WATER DRAINAGE SCHEME

The limited space for development makes it impractical to use above ground SuDS elements to control the runoff in the new parking bays, Instead, gullies will be placed at the lowest points to collect the runoff.

A vortex flow control unit will be set up to replace the existing control unit to ensure that surface water discharge offsite does not exceed the existing rate of 11l/s for any rainfall events.

The existing drainage infrastructure will be retained as depicted in the surface water drainage strategy drawing in **Appendix F**.

The Hillingdon Council's section on SuDS information for major applications suggests that commercial premises should be provided with surface water storage up to the 1in100 year event plus an additional 20% to account for climate change.

To increase the capacity of the existing drainage network, a new attenuation tank will be installed at the previous location of the demolished Benson building.

Appendix G contains the drainage calculations showing that the storage volume of the existing and proposed drainage infrastructure is sufficient to accommodate the 1in100 year plus 20% climate change event, as advised.

A summary of the proposals is listed within the SuDS Proforma attached in **Appendix H**.

2.4 WATER QUALITY

The surface water runoff resulting from the future car park extension will be treated at the existing oil bypass separator installed just upstream to the existing geocellular tank. The existing unit currently has capacity to treat the additional flows resulting from the car park extension area.

2.5 MAINTENANCE AND OPERATIONAL CONSIDERATIONS

All SuDS and proprietary treatment features that will be put in place will stay under private ownership. The responsibility for inspection and maintenance will fall on either the future landowner or private management company.

Appendix I includes a comprehensive SuDS management strategy for the proposed development.

2.6 EXCEEDANCE FLOWS

The drainage strategy plan in **Appendix F** illustrates the routes for exceedance flows. There are no proposed control measures for these exceedance flows, as all surface water runoff from storm events up to the 1in100 year plus climate change will be accommodated on site.

3. CONCLUSION

This drainage statement and the associated Drainage Strategy demonstrate that the proposed development drainage complies with the requirements outlined by London Borough of Hillingdon Local Flood Authority with the main principles listed below:

- Policy SI13 Sustainable Drainage of the London Plan has been followed
- Surface water runoff treatment is provided via existing oil bypass separator complying with Policy DMEI 10: Water Management, Efficiency, and Quality in regard to avoiding pollution of the water environment.
- Surface water discharge from the site is no greater than the existing 11(l/s) for all storm period events.
- The proposed surface water drainage system caters for 20% allowance in increase intensity due to climate change with no flooding events registered
- Maintenance of drainage infrastructure to be provided by the current landowner and/or private management company
- The development proposals reduce the existing flood risk and does not increase flood risk on or offsite.

For RSK Company Limited

Assif M Salim

Enclosed:

Appendix A- RSK Group Service Constraints

Appendix B – Existing Site Plan / Topographical Survey

Appendix C – Proposed Site Plan

Appendix D – Sewer Records

Appendix E – Existing Drainage

Appendix F – Proposed Surface Water Drainage Strategy

Appendix G – Surface Water Drainage Calculations

Appendix H – SuDS Proforma

Appendix I – Detailed Maintenance Schedule

APPENDIX A
RSK GROUP SERVICE CONSTRAINTS

1. This report and the drainage design carried out in connection with the report (together the "Services") were compiled and carried out by RSK LDE Ltd (RSK) for LIDL GB (the "client") in accordance with the terms of a contract between RSK and the "client" dated 23rd October 2023. The Services were performed by RSK with the skill and care ordinarily exercised by a reasonable civil engineer at the time the Services were performed. Further, and in particular, the Services were performed by RSK considering the limits of the scope of works required by the client, the time scale involved and the resources, including financial and manpower resources, agreed between RSK and the client.

2. Other than that expressly contained in paragraph 1 above, RSK provides no other representation or warranty whether express or implied, in relation to the Services.

3. Unless otherwise agreed in writing, the Services were performed by RSK exclusively for the purposes of the client. RSK is not aware of any interest of or reliance by any party other than the client in or on the Services. Unless expressly provided in writing, RSK does not authorise, consent or condone any party other than the client relying upon the Services. Should this report or any part of this report, or otherwise details of the Services or any part of the Services be made known to any such party, and such party relies thereon that party does so wholly at its own and sole risk and RSK disclaims any liability to such parties. Any such party would be well advised to seek independent advice from a competent environmental consultant and/or lawyer.

4. It is RSK's understanding that this report is to be used for the purpose described in the introduction to the report. That purpose was a significant factor in determining the scope and level of the Services. Should the purpose for which the report is used, or the proposed use of the site change, this report may no longer be valid and any further use of or reliance upon the report in those circumstances by the client without RSK's review and advice shall be at the client's sole and own risk. Should RSK be requested to review the report after the date of this report, RSK shall be entitled to additional payment at the then existing rates or such other terms as agreed between RSK and the client.

5. The passage of time may result in changes in site conditions, regulatory or other legal provisions, technology or economic conditions which could render the report inaccurate or unreliable. The information and conclusions contained in this report should not be relied upon in the future without the written advice of RSK. In the absence of such written advice of RSK, reliance on the report in the future shall be at the client's own and sole risk. Should RSK be requested to review the report in the future, RSK shall be entitled to additional payment at the then existing rate or such other terms as may be agreed between RSK and the client.

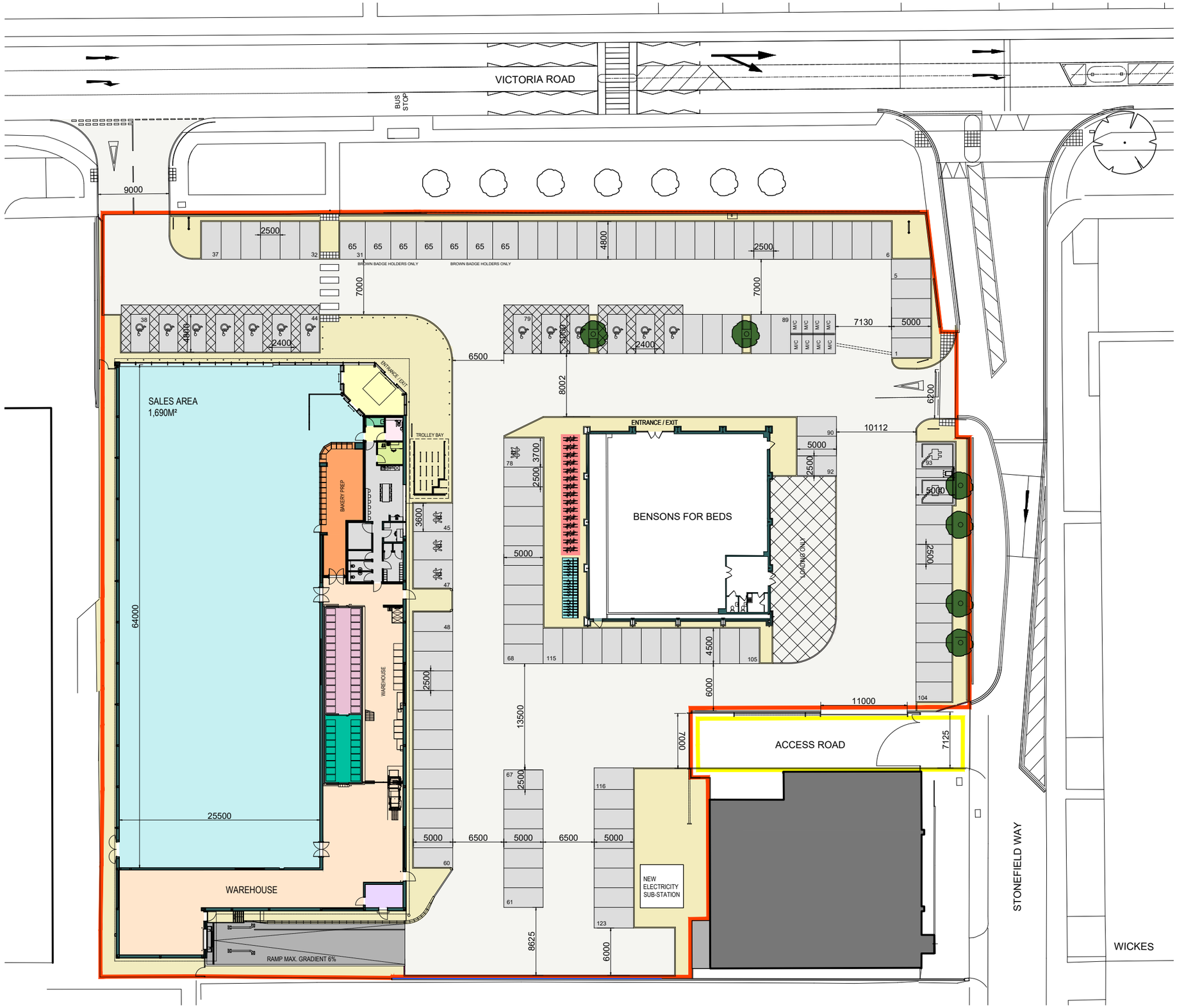
6. The observations and conclusions described in this report are based solely upon the Services, which were provided pursuant to the agreement between the client and RSK. RSK has not performed any observations, investigations, studies or testing not specifically set out or required by the contract between the client and RSK. RSK is not liable for the existence of any condition, the discovery of which would require performance of services not otherwise contained in the Services. For the avoidance of doubt, unless otherwise expressly referred to in the introduction to this report, RSK did not seek to evaluate the presence on or off the site of asbestos, electromagnetic fields, lead paint, heavy metals, radon gas or other radioactive or hazardous materials.

7. The Services are based upon RSK's observations of existing physical conditions at the site gained from a walk-over survey of the site together with RSK's interpretation of information including documentation, obtained from third parties and from the client on the history and usage of the site. The Services are also based on information and/or analysis provided by independent testing and information services or laboratories upon which RSK was reasonably entitled to rely. The Services clearly are limited by the accuracy of the information, including documentation, reviewed by RSK and the observations possible at the time of the walk-over survey. Further RSK was not authorised and did not attempt to independently verify the accuracy or completeness of information, documentation or materials received from the client or third parties, including laboratories and information services, during the performance of the Services. RSK is not liable for any inaccurate information or conclusions, the discovery of which inaccuracies required the doing of any act including the gathering of any information which was not reasonably available to RSK and including the doing of any independent investigation of the information provided to RSK save as otherwise provided in the terms of the contract between the client and RSK.

8. The phase II or intrusive environmental site investigation aspects of the Services is a limited sampling of the site at pre-determined borehole and soil vapour locations based on the operational configuration of the site. The conclusions given in this report are based on information gathered at the specific test locations and can only be extrapolated to an undefined limited area around those locations. The extent of the limited area depends on the soil and groundwater conditions, together with the position of any current structures and underground facilities and natural and other activities on site. In addition chemical analysis was carried out for a limited number of parameters [as stipulated in the contract between the client and RSK] [based on an understanding of the available operational and historical information,] and it should not be inferred that other chemical species are not present.

9. Any site drawing(s) provided in this report is (are) not meant to be an accurate base plan, but is (are) used to present the general relative locations of features on, and surrounding, the site. Features (boreholes, trial pits etc) annotated on site plans are not drawn to scale but are centred over the appropriate location. Such features should not be used for setting out and should be considered indicative only.

APPENDIX B
EXISTING SITE PLAN / TOPOGRAPHICAL SURVEY



NO DIMENSIONS TO BE SCALED FROM THIS DRAWING

Rev	Date	Reference	Drawn / Chk'd
P01	2020/01/28	P01 FIRST ISSUE	AA AA

SCHEDULE OF ACCOMMODATION - KEY

Site Area	0.94 ha (2.32 acres)		
Right of Way		sq m	
GIA	2,552	sq m	
GEA	2,635	sq m	
Sales area	1,690	sq m	
WAREHOUSE			
Warehouse	482	sq m	
Bakery Warehouse	63	sq m	
Additional Chillers	40	sq m	
Total Warehouse	585	sq m	
ANCILLARY AREA			
Bakery Prep	66	sq m	
Cash Office	9	sq m	
Cleaning Room	11	sq m	
Welfare area, wcs, etc	92	sq m	
Customer WC	6	sq m	
Utility	14	sq m	
Circulation	30	sq m	
Internal partitions	49	sq m	
Total Ancillary	277	sq m	
PARKING			
Standard	97		
Disabled	13		
Brown Badge	65 7		
Parent & child	4		
EVCP Active Terra S3 CJG charging station	2		
TOTAL	123	spaces	
Motor cycles	M/C 8		
Short stay cycles	30		
Long stay cycles (covered)	18		

Client

Lidl Great Britain Ltd

Project

Lidl
Victoria Road, South Ruislip

Title

Site Plan as Existing

Drawing Ref. 4908-0100

Revision P01

Scale - unless otherwise stated 1:500 @ A3

Status S0

Issued For Preliminary

KLH architects
The Old Steelyard, Poplar Lane
Sproughton, Ipswich, IP8 3HL
t.01473 689532
klh@klharchitects.com
www.klharchitects.com

Original Drawing Size: A0

NOTES:–

The accuracy and content of this drawing are dependent on the original specification and EDI should be consulted before use at other scales.

Where underground services are shown, all reasonable care has been taken within the spirit of the original specification and requirement. Before use of this information the user should consult EDI and satisfy themselves of the completeness and accuracy of such detail before undertaking any works. Due to the nature of this work and limitations imposed by ground conditions and the detection equipment no guarantee can be given that all services have been recorded. Trial holes should be dug at critical locations.

All reasonable care has been taken in the survey detail represented on this drawing but any discrepancies must be reported to EDI immediately.

Our aim is to produce the best possible results within the specification and cost constraints of our clients. Any comments are most welcome.

Levels shown at kerbs are channel level unless stated.

LEGEND

Features:
AV Air Valve
AB Air Brick
BD Bollard
BH Borehole
BM Benchmark
BP Boundary Post
BS Bus Stop
BT British Telecom
CL Cover Level
COL Column
CTV Cable TV Cover
DCH Drainage Channel
DF Drinking Fountain
DIS Disused
DK Drop Kerb
DPC Damp proof Course
EIC Electricity IC
EJ Expansion Joint
ER Earth Rod
FH Fire Hydrant
FHR Fire Hose Reel
FS Flagstaff
G Gully
GV Gas Valve
IC Inspection Cover
IL Invert Level
JBX Junction Box
KO Kerb Outlet
LB Letter Box
LBN Litter Bin
LLP Low Level LP
LP Lamp Post
MP Marker Post
MS Mile Stone
MT Mercury Telecom
OHL Overhead Line
OP Overflow Pipe
PM Parking Meter
PP Power Pole
RAD Radiator
RE Rodding Eye
RNP Road Name Plate
RS Road Sign
RSD Roller Shutter Door
RWP Rain Water Pipe
SD Service Duct
SV Stop Valve
TCB Telephone Call Box
TP Telegraph Pole
TS Traffic Signal
UB Universal Beam
UNK Unknown
UR Urinal
UTL Unable to lift
V Vent
VP Vent Pipe
WM Water Meter
WO Wash Out
WP Waste Pipe

Building Level Details:
D Door
EL Eave Level
FFL Floor Level
FRL Flat Roof Level
HL Head Level
PPL Parapet Level
RL Ridge Level
SL Sill Level
SP Springer of Arch
TA Top of Arch
W Window
12.34 Ceiling/Beam Soffit

Boundary Types:
BW Barbed Wire
CB Close Boarded
CH Chainlink
CI Corrugated Iron
CP Chestnut Paling
IR Iron Railing
IW Interwoven
LL Larch Lap
PAL Palisade
PR Post & Rail
PW Post & Wire
TNR Timber Knee Rail
RTW Retaining Wall
VSF Vehicle Safety Fence
WMF Wire Mesh Fence

Surfaces & Finishes:
B Brickwork
BB Breeze Block
C Concrete
CLT Ceiling Tiles
CP Carpet
CPS Concrete Paving Slabs
CPT Carpet Tiles
CR Concrete Render
CT Ceramic Tiles
FT Floor Tiles
HBD Hardboard
L Linoleum
P Plaster
PAV Brick Paviors
S Steel work
T Tarmac
TSP Textured Safety Paving
VT Vinyl Tiles

Services:
CATV cables
CCTV cables
Data cables
Electric cables
Foul water
Gas pipes
Heating duct
Service ducts
Storm water
Telecom cab.
Unidentified
Water pipes
150ø Pipe Diameter/Flow
Overhead Lines

Survey Station
Fence
Gate
Painted Road Markings
Edge of Vegetation
Kerb/Drop Kerb
Tree
Top / Bottom Banks
Building
Overhead Building Detail
Wall

Control: All levels and co-ordinates are related to the datums described.

The horizontal control of this survey is based on Ordnance Survey grid as translated from GPS coordinates using Leica's SmartNet service. We have applied a reverse scale factor to maintain true ground distances, based on station ST2. The vertical control of this survey is based on OS datum as translated from GPS coordinates using the OSGM15 transformation as supplied by the OS. This may differ from the existing OS benchmarks in the area which should be disregarded; all levels should be taken from EDI survey stations.

Station Schedule

Station	Easting	Northing	Level	Type
1	512178.243	185577.909	35.263	Hilti Nail
2	512167.551	185619.415	34.991	Hilti Nail
3	512112.309	185593.413	34.939	Hilti Nail
3A	512085.468	185596.097	35.108	Hilti Nail
4	512161.112	185525.678	35.036	Hilti Nail
5	512150.760	185579.146	35.255	Hilti Nail

Rev.	Job No.	Date	Revision Detail	Surveyor	Chkd

CLIENT

Lidl Great Britain Ltd
London South Property Office, 1st Floor
33 Aberconway Road
Morden
SM4 5LN

PROJECT

Topographic Survey
Lidl Store
Victoria Road
South Ruislip
HA4 0QQ

Job No.	Surveyor	Checked	Date	Scale
20336	GG	AR	Feb. 2022	1:200

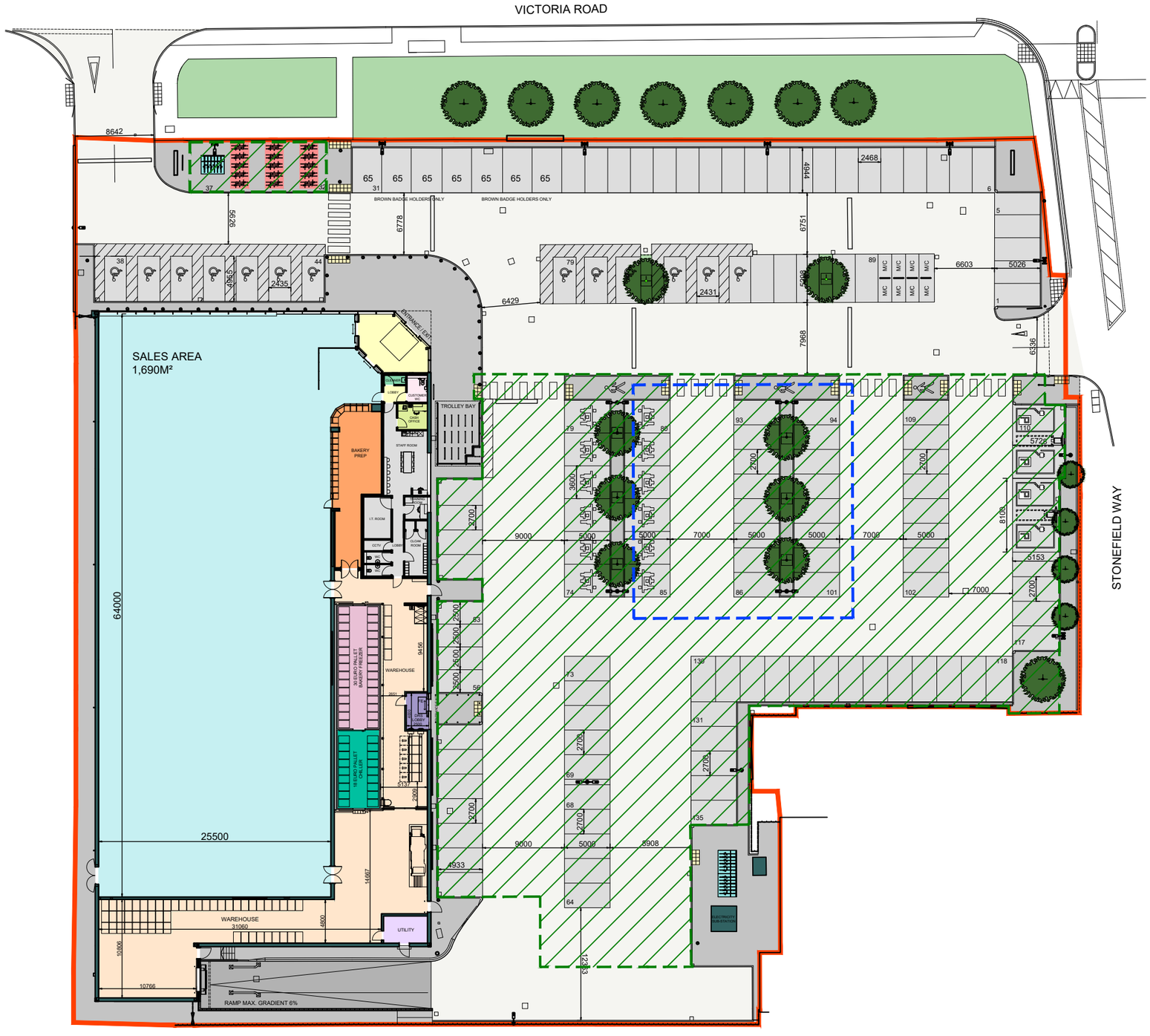
EDI SURVEYS LTD
163–165 Ranelagh Road, Ipswich, Suffolk IP2 0AH
Telephone | 01473 211222 Fax | 01473 221660
Email | enquiries@edisurveys.co.uk

DRAWING No. 20336/T/01–01 REV. –

APPENDIX C
PROPOSED SITE PLAN

www.rsklde.com

Abbey Park, Humber Road, Coventry CV3 4AQ UK
Tel +44 (0) 2476 505600
Email: LDEMids@rsk.co.uk



PARKING - KEY

Standard		99	Motor Cycles	M/C	8
Disabled	♿	13	Short Stay Cycle Parking		30
Brown Badge	65	7	Long Stay Cycle Parking		18
Parent & Child		12			
EVCP Active Terra S3 CJG charging station		4	EXTERNAL WORKS		
Total Parking		135	Re-surfacing Works	3,217	sq m
			To be Demolished		

NO DIMENSIONS TO BE SCALED FROM THIS DRAWING

Rev	Date	Reference	Drawn / Chk'd
P11	2023/01/06	PARKING SCHEDULE REVISED.	AA AA

SCHEDULE OF ACCOMMODATION - KEY

	Site Area	0.94 ha (2.32 acres)	
	Right of Way		
	GIA	2,552	sq m
	GEA	2,636	sq m
	Sales Area	1,690	sq m
	WAREHOUSE		
	Warehouse	458	sq m
	Bakery Warehouse	63	sq m
	Additional Chillers	40	sq m
	DRS Lobby	10	sq m
	Total Warehouse	571	sq m
	ANCILLARY AREA		
	Bakery Prep	78	sq m
	Cash Office	9	sq m
	Cleaner's Cupboard	2	sq m
	Welfare area, wcs, etc	100	sq m
	Customer WC	6	sq m
	Utility	14	sq m
	Circulation	43	sq m
	Internal Partitions	39	sq m
	Total Ancillary	291	sq m

Client

Lidl Great Britain Ltd

Project

Lidl
Victoria Road, South Ruislip

Title

Site Plan as Proposed - Option C

Drawing Ref.

4908-0104

Revision

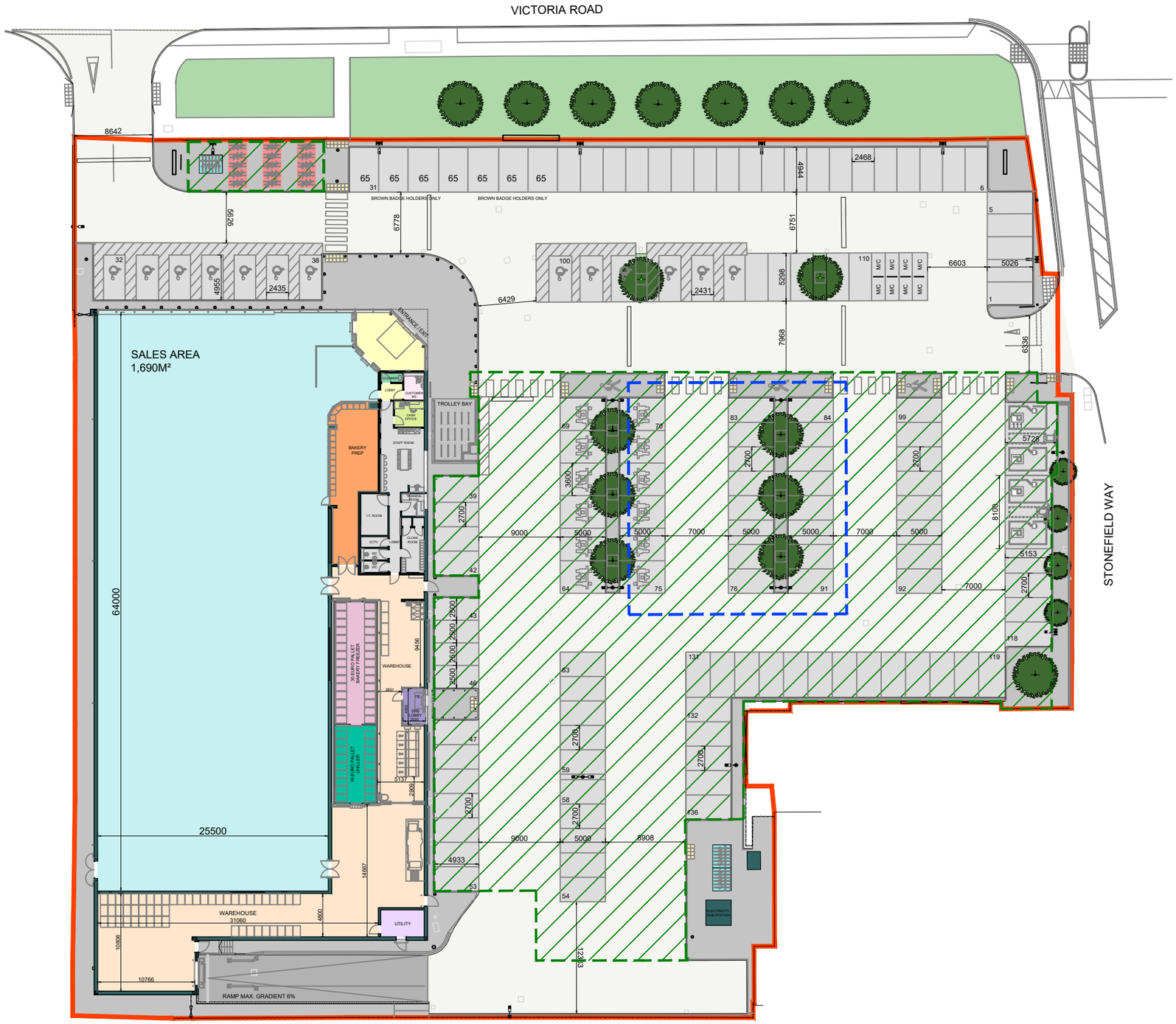
P11

Scale - unless otherwise stated		Status	Issued For
1:500	@ A3	S0	Preliminary

KLH architects
The Old Steelyard, Poplar Lane
Sproughton, Ipswich, IP8 3HL
t.01473 689532
klh@klharchitects.com
www.klharchitects.com

NO DIMENSIONS TO BE SCALED FROM THIS DRAWING

Rev	Date	Reference	Drawn / Chk'd
P03	2023/01/06	SOFT LANDSCAPING REVISED.	AA AA



Client

Lidl Great Britain Ltd

Project

Lidl
Victoria Road, South Ruislip

Title

Soft Landscaping Plan

Drawing Ref.	Revision
4908-0109	P03

Scale - unless otherwise stated		Status	Issued For
1:500	@ A3	S0	Preliminary

architects
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Sproughton, Ipswich, IP8 3HL
t.01473 689532
klh@klharchitects.com
www.klharchitects.com

APPENDIX D
THAMES WATER SEWER RECORDS

Asset location search

Thames Water Property Searches

RSK Land And Development Engineering Ltd
18Frogmore Road Frogmore Road In
HEMEL HEMPSTEAD
HP3 9RT

Search address supplied Lidl South Ruislip
Victoria Road
South Ruislip
HA4 0QQ

Your reference 890410

Our reference ALS/ALS Standard/2020_4193536

Search date 2 June 2020

Knowledge of features below the surface is essential for every development

The benefits of this knowledge not only include ensuring due diligence and avoiding risk, but also being able to ascertain the feasibility of any development.

Did you know that Thames Water Property Searches can also provide a variety of utility searches including a more comprehensive view of utility providers' assets (across up to 35-45 different providers), as well as more focused searches relating to specific major utility companies such as National Grid (gas and electric).

Contact us to find out more.

Thames Water Utilities Ltd
Property Searches, PO Box 3189, Slough SL1 4WW
DX 151280 Slough 13

searches@thameswater.co.uk
www.thameswater-propertysearches.co.uk

0845 070 9148

Asset location search

Property Searches

Search address supplied: Lidl South Ruislip, Victoria Road, South Ruislip, HA4 0QQ

Dear Sir / Madam

An Asset Location Search is recommended when undertaking a site development. It is essential to obtain information on the size and location of clean water and sewerage assets to safeguard against expensive damage and allow cost-effective service design.

The following records were searched in compiling this report: - the map of public sewers & the map of waterworks. Thames Water Utilities Ltd (TWUL) holds all of these.

This searchprovides maps showing the position, size of Thames Water assets close to the proposed development and also manhole cover and invert levels, where available.

Please note that none of the charges made for this report relate to the provision of Ordnance Survey mapping information. The replies contained in this letter are given following inspection of the public service records available to this company. No responsibility can be accepted for any error or omission in the replies.

You should be aware that the information contained on these plans is current only on the day that the plans are issued. The plans should only be used for the duration of the work that is being carried out at the present time. Under no circumstances should this data be copied or transmitted to parties other than those for whom the current work is being carried out.

Thames Water do update these service plans on a regular basis and failure to observe the above conditions could lead to damage arising to new or diverted services at a later date.

Contact Us

If you have any further queries regarding this enquiry please feel free to contact a member of the team on 0845 070 9148, or use the address below:

Thames Water Utilities Ltd
Property Searches
PO Box 3189
Slough
SL1 4WW

Email: searches@thameswater.co.uk
Web: www.thameswater-propertysearches.co.uk

Asset location search

Thames Water Property Searches

Waste Water Services

Please provide a copy extract from the public sewer map.

Enclosed is a map showing the approximate lines of our sewers. Our plans do not show sewer connections from individual properties or any sewers not owned by Thames Water unless specifically annotated otherwise. Records such as "private" pipework are in some cases available from the Building Control Department of the relevant Local Authority.

Where the Local Authority does not hold such plans it might be advisable to consult the property deeds for the site or contact neighbouring landowners.

This report relates only to sewerage apparatus of Thames Water Utilities Ltd, it does not disclose details of cables and or communications equipment that may be running through or around such apparatus.

The sewer level information contained in this response represents all of the level data available in our existing records. Should you require any further Information, please refer to the relevant section within the 'Further Contacts' page found later in this document.

For your guidance:

- The Company is not generally responsible for rivers, watercourses, ponds, culverts or highway drains. If any of these are shown on the copy extract they are shown for information only.
- Any private sewers or lateral drains which are indicated on the extract of the public sewer map as being subject to an agreement under Section 104 of the Water Industry Act 1991 are not an ‘as constructed’ record. It is recommended these details be checked with the developer.

Clean Water Services

Please provide a copy extract from the public water main map.

With regard to the fresh water supply, this site falls within the boundary of another water company. For more information, please redirect your enquiry to the following address:

Affinity Water Ltd
Tamblin Way
Hatfield
AL10 9EZ
Tel: 0345 3572401

For your guidance:

- Assets other than vested water mains may be shown on the plan, for information only.
- If an extract of the public water main record is enclosed, this will show known public water mains in the vicinity of the property. It should be possible to estimate the likely length and route of any private water supply pipe connecting the property to the public water network.

Payment for this Search

A charge will be added to your suppliers account.

Further contacts:

Waste Water queries

Should you require verification of the invert levels of public sewers, by site measurement, you will need to approach the relevant Thames Water Area Network Office for permission to lift the appropriate covers. This permission will usually involve you completing a TWOSA form. For further information please contact our Customer Centre on Tel: 0845 920 0800. Alternatively, a survey can be arranged, for a fee, through our Customer Centre on the above number.

If you have any questions regarding sewer connections, budget estimates, diversions, building over issues or any other questions regarding operational issues please direct them to our service desk. Which can be contacted by writing to:

Developer Services (Waste Water)
Thames Water
Clearwater Court
Vastern Road
Reading
RG1 8DB

Tel: 0800 009 3921
Email: developer.services@thameswater.co.uk

Clean Water queries

Should you require any advice concerning clean water operational issues or clean water connections, please contact:

Developer Services (Clean Water)
Thames Water
Clearwater Court
Vastern Road
Reading
RG1 8DB

Tel: 0800 009 3921
Email: developer.services@thameswater.co.uk

Asset Location Search Sewer Map - ALS/ALS Standard/2020_4193536

The width of the displayed area is 500 m and the centre of the map is located at OS coordinates 512141,185571

The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified and established on site before any works are undertaken.

Based on the Ordnance Survey Map with the Sanction of the controller of H.M. Stationery Office, License no. 100019345 Crown Copyright Reserved.

NB. Levels quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates that no survey information is available

Manhole Reference	Manhole Cover Level	Manhole Invert Level
971D	n/a	n/a
971E	n/a	n/a
961C	n/a	n/a
971F	n/a	n/a
9702	34.81	33.44
9701	34.85	32.76
971A	n/a	n/a
981B	n/a	n/a
071B	n/a	n/a
0602	34.88	33.59
0601	36	34.2
071C	n/a	n/a
0803	34.92	33.61
0802	34.91	33
071A	n/a	n/a
1703	34.94	33.92
171F	n/a	n/a
171A	n/a	n/a
171H	n/a	n/a
1701	35.05	33.32
2702	35.11	33.72
2601	35.07	32.81
2703	35.56	34.71
2701	34.99	33.01
2704	34.98	34.07
3715	35.69	33.77
3807	35.98	34.26
3701	36.79	31.38
3705	36.77	33.75
3716	37.04	33.22
3714	37.82	35.47
3803	36.08	34.01
3702	36.02	33.48
3601	35.94	34.18
3802	36.02	34.83
3701B	36.01	34.79
3717	36.5	32.18
3801B	36	34.95
1612	n/a	n/a
171G	n/a	n/a
171C	n/a	n/a
1615	n/a	n/a
1611	n/a	n/a
171B	n/a	n/a
1610	n/a	n/a
1609	n/a	n/a
1804	35.07	34.17
1613	n/a	n/a
1616	n/a	n/a
1614	n/a	n/a
1702	34.88	33.07
1617	n/a	n/a
1704	34.89	33.94
171E	n/a	n/a
1705	34.97	33.82
1606	35.07	30.97
171D	n/a	n/a
1706	n/a	n/a
1618	n/a	n/a
271B	n/a	n/a
271C	n/a	n/a
271A	n/a	n/a
9404	34.37	32.81
0406	n/a	n/a
0407	n/a	n/a
041D	n/a	n/a
0402	34.72	32.27
951B	n/a	n/a
051A	n/a	n/a
951C	n/a	n/a
0501B	34.68	32.31
951A	n/a	n/a
9504	34.68	31.88
9506	34.63	31.76
0501	34.52	30.46
0603	34.62	31.99
9602	34.79	32.78
9603	34.74	33.39
3401	36	33.55
2403	36.01	34.01
341A	36.32	n/a
3410	36.14	33.62
1402	n/a	n/a
3402	36.04	34.04
3406	36.04	34.53
3403	36.72	34.29
3405	36.72	34.6
2410	n/a	n/a
2407	35.55	34.22
2408	35.74	34.16
2405	36.43	34.96

Manhole Reference	Manhole Cover Level	Manhole Invert Level
2411	n/a	n/a
2505	35.44	34.16
2502	35.47	33.11
1501	34.98	32.43
2504	35.29	33.66
351A	n/a	n/a
351B	n/a	n/a
2501	35.2	32.66
2503	35.23	33.69
1602	35.02	33.16
1604	34.98	33.72
1601	34.72	32.1
1608	35.01	n/a
0302	36.86	34.61
0303	36.81	35.04
031A	n/a	n/a
931A	n/a	n/a
031D	n/a	n/a
031C	n/a	n/a
0304	35.58	33.77
041B	n/a	n/a
041C	n/a	n/a
041A	n/a	n/a
0405	34.31	32.85
9401	34.39	31.89
9403	34.35	32.78
1302	37.2	34.6
131B	n/a	n/a
2301	36.68	34.25
2303	36.65	34.28
2402	36.16	33.46
2302	36.11	33.54
3304	36.41	34.03
3404	36.17	33.93
3301	36.61	33.76
331D	36.31	33.96
331H	36.68	33.9
3302	n/a	n/a
331G	36.82	34.55
3303	36.74	34.94
331J	36.73	34.16
331B	36.91	35.03
331F	36.92	34.21
331C	37	35.11
331I	36.96	34.33
331E	37.26	35.33
331A	37.22	34.51
871B	n/a	n/a
8701	34.79	32.47
8502	34.48	31.41
971B	n/a	n/a
9505	34.47	31.42
9501	34.63	31.72
961D	n/a	n/a
871A	n/a	n/a
9601	35.01	32.61
9604	35.02	33.39
961B	n/a	n/a
971C	n/a	n/a

ALS Sewer Map Key

Public Sewer Types (Operated & Maintained by Thames Water)

Foul: A sewer designed to convey waste water from domestic and industrial sources to a treatment works.

Surface Water: A sewer designed to convey surface water (e.g. rain water from roofs, yards and car parks) to rivers or watercourses.

Combined: A sewer designed to convey both waste water and surface water from domestic and industrial sources to a treatment works.

- Trunk Surface Water
- Trunk Foul
- Storm Relief
- Trunk Combined
- Vent Pipe
- Bio-solids (Sludge)
- Proposed Thames Surface Water Sewer
- Proposed Thames Water Foul Sewer
- Gallery
- Foul Rising Main
- Surface Water Rising Main
- Combined Rising Main
- Sludge Rising Main
- Proposed Thames Water Rising Main
- Vacuum

Sewer Fittings

A feature in a sewer that does not affect the flow in the pipe. Example: a vent is a fitting as the function of a vent is to release excess gas.

- Air Valve
- Dam Chase
- Fitting
- Meter
- Vent Column

Operational Controls

A feature in a sewer that changes or diverts the flow in the sewer. Example: A hydrobrake limits the flow passing downstream.

- Control Valve
- Drop Pipe
- Ancillary
- Weir

End Items

End symbols appear at the start or end of a sewer pipe. Examples: an Undefined End at the start of a sewer indicates that Thames Water has no knowledge of the position of the sewer upstream of that symbol, Outfall on a surface water sewer indicates that the pipe discharges into a stream or river.

- Outfall
- Undefined End
- Inlet

Other Symbols

Symbols used on maps which do not fall under other general categories

- Public/Private Pumping Station
- Change of characteristic indicator (C.O.C.I.)
- Invert Level
- Summit

Areas

Lines denoting areas of underground surveys, etc.

- Agreement
- Operational Site
- Chamber
- Tunnel
- Conduit Bridge

Other Sewer Types (Not Operated or Maintained by Thames Water)

- Foul Sewer
- Surface Water Sewer
- Combined Sewer
- Gulley
- Culverted Watercourse
- Proposed
- Abandoned Sewer

Notes:

1) All levels associated with the plans are to Ordnance Datum Newlyn.
2) All measurements on the plans are metric.
3) Arrows (on gravity fed sewers) or flecks (on rising mains) indicate direction of flow.
4) Most private pipes are not shown on our plans, as in the past, this information has not been recorded.
5) 'na' or '0' on a manhole level indicates that data is unavailable.
6) The text appearing alongside a sewer line indicates the internal diameter of the pipe in milimetres. Text next to a manhole indicates the manhole reference number and should not be taken as a measurement. If you are unsure about any text or symbology present on the plan, please contact a member of Property Insight on 0845 070 9148.

Terms and Conditions

All sales are made in accordance with Thames Water Utilities Limited (TWUL) standard terms and conditions unless previously agreed in writing.

1. All goods remain in the property of Thames Water Utilities Ltd until full payment is received.
2. Provision of service will be in accordance with all legal requirements and published TWUL policies.
3. All invoices are strictly due for payment 14 days from due date of the invoice. Any other terms must be accepted/agreed in writing prior to provision of goods or service, or will be held to be invalid.
4. Thames Water does not accept post-dated cheques-any cheques received will be processed for payment on date of receipt.
5. In case of dispute TWUL`s terms and conditions shall apply.
6. Penalty interest may be invoked by TWUL in the event of unjustifiable payment delay. Interest charges will be in line with UK Statute Law 'The Late Payment of Commercial Debts (Interest) Act 1998'.
7. Interest will be charged in line with current Court Interest Charges, if legal action is taken.
8. A charge may be made at the discretion of the company for increased administration costs.

A copy of Thames Water's standard terms and conditions are available from the Commercial Billing Team (cashoperations@thameswater.co.uk).

We publish several Codes of Practice including a guaranteed standards scheme. You can obtain copies of these leaflets by calling us on 0800 316 9800

If you are unhappy with our service you can speak to your original goods or customer service provider. If you are not satisfied with the response, your complaint will be reviewed by the Customer Services Director. You can write to her at: Thames Water Utilities Ltd. PO Box 492, Swindon, SN38 8TU.

If the Goods or Services covered by this invoice falls under the regulation of the 1991 Water Industry Act, and you remain dissatisfied you can refer your complaint to Consumer Council for Water on 0121 345 1000 or write to them at Consumer Council for Water, 1st Floor, Victoria Square House, Victoria Square, Birmingham, B2 4AJ.

Ways to pay your bill

Credit Card	**BACS Payment**	**Telephone Banking**	**Cheque**
Call **0845 070 9148** quoting your invoice number starting CBA or ADS / OSS	Account number **90478703** Sort code **60-00-01** A remittance advice must be sent to: **Thames Water Utilities Ltd., PO Box 3189, Slough SL1 4WW.** or email **ps.billing@thameswater.co.uk**	By calling your bank and quoting: Account number **90478703** Sort code **60-00-01** and your invoice number	Made payable to '**Thames Water Utilities Ltd**' Write your Thames Water account number on the back. Send to: **Thames Water Utilities Ltd., PO Box 3189, Slough SL1 4WW** or by DX to **151280 Slough 13**

Thames Water Utilities Ltd Registered in England & Wales No. 2366661 Registered Office Clearwater Court, Vastern Rd, Reading, Berks, RG1 8DB.

APPENDIX E
EXISTING DRAINAGE PLAN

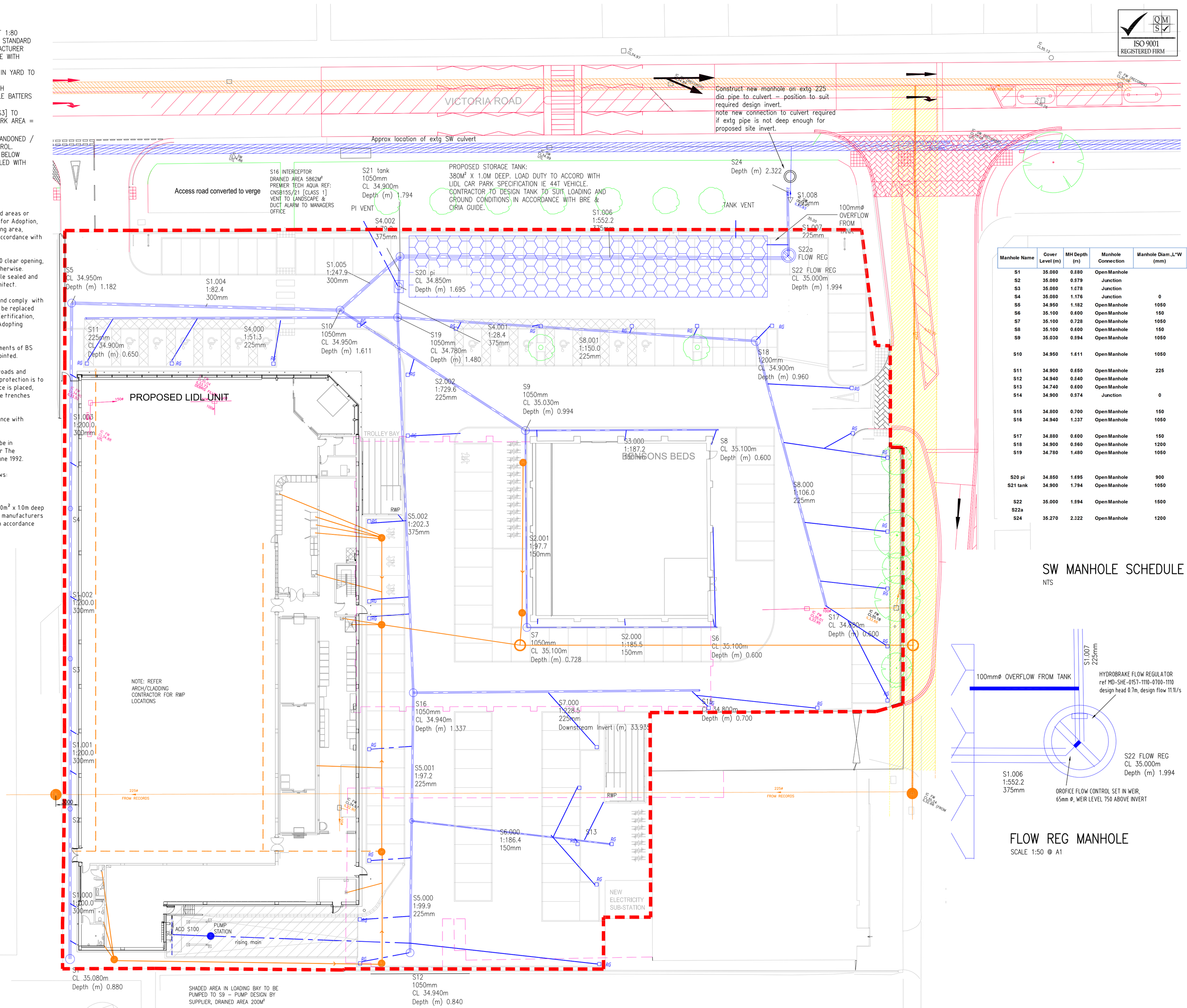
A1

NOTE:

- ALL GULLY CONECTIONS TO BE 150 DIA AT 1:80
- GULLIES TO BE IN ACCORDANCE WITH LIDL STANDARD FOR POSITION IN PARKING BAYS & MANUFACTURER
- WORKS TO PUBLIC SEWERS IN ACCORDANCE WITH S106 AGREEMENTS & SFA.
- PUMPING STATION TO ACO S100 CHANNEL IN YARD TO SUPPLIERS DESIGN & DETAILS
- TANK TO BE INTALLED IN ACCORDANCE WITH MANUFACTURERS DETAILS UTILISING SUITABLE BATTERS OR EARTHWORKS SUPPORT.
- CLASS 1 PETROL INTERCEPTOR [MANHOLE S3] TO MANUFACTURERS DETAILS, DRAINED CAR PARK AREA = 5862m²
- ALL EXISTING PRIVATE DRAINAGE TO BE ABANDONED / REMOVED TO APPROVAL OF BUILDING CONTROL.
  - MANHOLES TO BE REMOVED TO 1000 BELOW PROPOSED GROUND LEVEL & BACKFILLED WITH LEAN MIX
  - PIPES TO BE GROUTED

Notes

1. All works and materials in heavily trafficed areas or highways to be in accordance with Sewers for Adoption, 5th. edition, 2001. All drainage within building area, non-trafficed hardstandings etc to be in accordance with building regulations.
2. Manhole covers and frames to be 600 x 600 clear opening, in accordance with EN 124, unless noted otherwise. Manhole covers within buildings to be double sealed and recessed to suit finish as required by Architect.
3. Vitrified clay pipes to be flexibly jointed and comply with the requirements of EN 295. Clayware may be replaced with suitable PE products with Agrement Certification, subject to approval of Building Control / Adopting Authority.
4. Concrete pipes to comply with the requirements of BS 5911, class M strength and to be flexibly jointed.
5. Where cover to pipes is less than 1200 in roads and hardstandings or 900 elsewhere concrete protection is to be provided as detail, N.B Until final surface is placed, heavy traffic is not to be allowed over pipe trenches without special provisions.
6. Pipes and fittings are to be laid in accordance with Manufacturers recommendations.
7. Permanent trench reinstatements are to be in accordance with the HAUC Specification For The Reinstatement Of Openings In Highways, June 1992.
8. Hydrobrake flow control required as follows:
   ref MD-SHE-0153-1110-1000-1110
   design head 1.0m, design flow 11.1l/s
9. Surface water storage tank comprising 340m² x 1.0m deep cellular tank, min cover in accordance with manufacturers requirements to suit 44T vehicle loading in accordance with Lidl Spec.



SW DRAINAGE GA
SCALE 1:250 @ A1

Manhole Name	Cover Level (m)	MH Depth (m)	Manhole Connection	Manhole Diam.,L*W (mm)	Pipe Out PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Pipes In Backdrop (mm)
S1	35.080	0.880	Open Manhole		S1.000	34.200	300				
S2	35.080	0.579	Junction		S1.001	34.101	300	S1.000	34.101	300	
S3	35.080	1.678	Junction		S1.002	34.002	300	S1.001	34.002	300	
S4	35.080	1.176	Junction	0	S1.003	33.904	300	S1.002	33.904	300	
S5	34.950	1.182	Open Manhole	1050	S1.004	33.768	300	S1.003	33.768	300	
S6	35.100	0.600	Open Manhole	150	S2.000	34.500	150				
S7	35.100	0.728	Open Manhole	1050	S2.001	34.372	150	S2.000	34.372	150	
S8	35.100	0.600	Open Manhole	150	S3.000	34.500	150				
S9	35.030	0.594	Open Manhole	1050	S2.002	34.036	225	S2.001	34.111	150	
								S3.000	34.365	150	253
S10	34.950	1.611	Open Manhole	1050	S1.005	33.339	300	S1.004	33.339	300	
								S2.002	33.996	225	582
S11	34.900	0.650	Open Manhole	225	S4.000	34.250	225				
S12	34.940	0.840	Open Manhole		S5.000	34.100	225				
S13	34.740	0.600	Open Manhole		S6.000	34.140	150				
S14	34.900	0.574	Junction	0	S5.001	33.926	225	S5.000	33.926	225	
								S6.000	34.019	150	17
S15	34.800	0.700	Open Manhole	150	S7.000	34.100	225				
S16	34.940	1.337	Open Manhole	1050	S5.002	33.603	375	S5.001	33.753	225	
								S7.000	33.935	225	182
S17	34.880	0.600	Open Manhole	150	S8.000	34.280	225				
S18	34.900	0.560	Open Manhole	1200	S8.001	33.940	225	S8.000	33.940	225	
S19	34.780	1.480	Open Manhole	1050	S4.001	33.300	375	S4.000	33.450	225	
								S5.002	33.358	375	58
								S8.001	33.625	225	175
S20 pi	34.850	1.695	Open Manhole	900	S4.002	33.155	375	S4.001	33.155	375	
S21 tank	34.900	1.794	Open Manhole	1050	S1.006	33.106	375	S1.005	33.297	300	116
								S4.002	33.106	375	
S22	35.000	1.594	Open Manhole	1500	S1.007	33.006	225	S1.006	33.006	375	
S22a					S1.008	32.990	225	S1.007	32.990	225	
S24	35.270	2.322	Open Manhole	1200		OUTFALL		S1.008	32.948	225	

SW MANHOLE SCHEDULE
NTS

FLOW REG MANHOLE
SCALE 1:50 @ A1

NOTE
DO NOT SCALE FROM THIS DRAWING, UTILISE ONLY NUMBERED DIMENSIONS.
THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ENGINEERS DRAWINGS, NOTIFY MP CONSULTING ENGINEERS IMMEDIATELY OF ANY DISCREPANCIES.
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QMS ISO 9001 REGISTERED FIRM

B	NETWORK AND FLOW REG UPDATED	18.04.17
A	TANK AND FLOW REG UPDATED	09.01.17

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project
Lidl RUISLIP

client
LIDL

drawing title
PROPOSED SW DRAINAGE GA

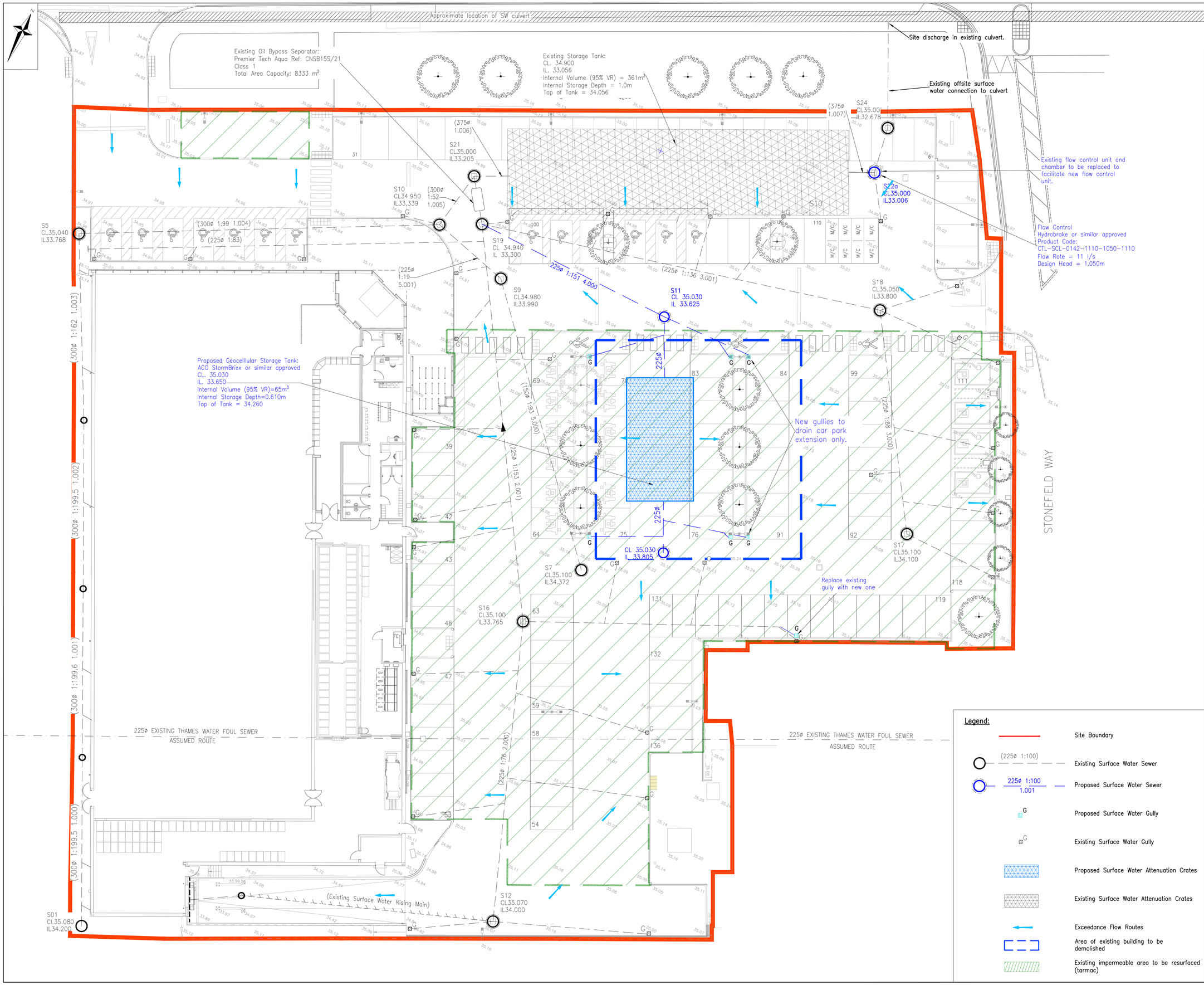
scale	date	drawn	checked
AS PLAN	DEC 15	RSM	RSM

status
TENDER

drawing number
2472–S110

revision
B

APPENDIX F
PROPOSED SURFACE WATER DRAINAGE STRATEGY



CIVIL / STRUCTURAL DESIGN RISK MANAGEMENT

Abnormal or unusual residual risks associated with the design outcomes shown on this drawing are:–

RSK LDE LTD has followed its Design Risk Management process for Hazard Elimination and Risk reduction in developing the designs shown on this drawing.
Abnormal or unusual residual risks may be shown above where it is considered that such risk may not normally be expected by competent persons engaged on work of this nature or type.

Notes:

1. This drawing presents the Proposed Surface Water Drainage Strategy for Lidl South Ruislip project.
2. Proposed site plan taken from KLH Architects drawing number 4908–0101 Rev P11 dated 06.01.23.
3. Existing drainage information taken from MP Consulting Engineers drawing 2472–S110 Rev B dated 18.04.17.
4. Existing drainage to be verified onsite prior to the start of any construction works.
5. This drawing should be only used for planning purposes and not for construction.

Rev.	Date	Amendment	Drawn	Chkd.	Appd.
P03	24.04.23	Updated to suit site layout reference 4908-0104-P11.	SM	AS	APT
P02	10.03.22	Updated to suit site layout reference 4908-0101-P07.	AS	AS	APT
P01	07.03.2022	Preliminary issue.	TRF	AS	APT

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Client: LIDL GmBH

Project Title: LIDL SOUTH RUISLIP

Status: PLANNING

Drawing Title: PROPOSED DRAINAGE STRATEGY

Drawn	Date	Checked	Date	Approved	Date
TRF	03.03.2022	AS	03.03.2022	APT	03.03.2022

Scale	Orig Size	Dimensions
1:250	A1	m

Project No. 890564

Drawing File: 890564-RSK-ZZ-XX-DR-C-0003-Proposed Drainage Strategy.dwg

Drawing No.

Project	Orig.	Vol./Sys.	Lev./Loc.	Type	Role	Draw. No.	Rev.
890564	RSK	ZZ	XX	DR	C	0003	P03

Scale 1:250
0 2.5 5 7.5 10 12.5m

Legend:

- Site Boundary
- (225ø 1:100) — Existing Surface Water Sewer
- 225ø 1:100 / 1.001 — Proposed Surface Water Sewer
- G — Proposed Surface Water Gully
- G — Existing Surface Water Gully
- Proposed Surface Water Attenuation Crates
- Existing Surface Water Attenuation Crates
- Exceedance Flow Routes
- Area of existing building to be demolished
- Existing impermeable area to be resurfaced (tarmac)

APPENDIX G
SURFACE WATER DRAINAGE CALCULATIONS

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	1	Maximum Rainfall (mm/hr)	999.9
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	20.000	Minimum Backdrop Height (m)	5.000
Ratio-R	0.400	Preferred Cover Depth (m)	1.200
CV	0.750	Include Intermediate Ground	✓
Time of Entry (mins)	5.00	Enforce best practice design rules	✓

Nodes

Name	Area (ha)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
1	0.038	35.080	1050	512120.189	185505.722	0.880
2	0.038	35.040	1050	512111.579	185523.498	0.939
3	0.038	35.000	1050	512102.989	185541.299	0.998
4	0.038	35.000	1050	512094.393	185559.075	1.097
5	0.063	34.900	1050	512084.248	185578.466	1.132
10	0.060	34.950	1050	512121.767	185597.978	1.611
12	0.043	34.940	1050	512163.291	185527.400	0.940
16	0.080	34.940	1050	512151.004	185560.523	1.175
New Tank	0.079	35.030		512150.184	185599.871	1.405
17	0.068	35.100	1050	512186.926	185589.506	1.000
18	0.050	34.900	1050	512172.581	185611.672	1.100
7	0.033	35.100	1050	512154.491	185568.940	0.728
9	0.100	34.980	1050	512131.006	185595.471	0.990
19	0.100	34.780	1350	512126.219	185600.229	1.480
21	0.020	34.850	1350	512122.923	185604.873	1.645
Existing Tank	0.092	34.900		512141.262	185617.152	1.845
22a		35.000	1500	512164.888	185625.877	1.994
Outfall		34.925	1350	512163.997	185631.256	2.247

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.000	1	2	19.751	0.600	34.200	34.101	0.099	199.5	300	5.30	53.2
1.001	2	3	19.765	0.600	34.101	34.002	0.099	199.6	300	5.59	51.8
1.002	3	4	19.745	0.600	34.002	33.903	0.099	199.4	300	5.89	50.4
1.003	4	5	21.885	0.600	33.903	33.768	0.135	162.1	300	6.19	48.7
1.004	5	10	42.289	0.600	33.768	33.339	0.429	98.6	300	6.63	46.7
1.005	10	21	6.991	0.600	33.339	33.205	0.134	52.2	300	6.69	46.1
2.000	12	16	35.329	0.600	34.000	33.765	0.235	150.3	225	5.55	53.4
2.001	16	19	46.807	0.600	33.765	33.460	0.305	153.5	225	6.29	52.1
3.000	17	18	26.403	0.600	34.100	33.800	0.300	88.0	225	5.32	48.9
3.001	18	19	47.753	0.600	33.800	33.450	0.350	136.4	225	6.03	51.2
4.000	New Tank	19	28.687	0.600	33.625	33.450	0.175	163.9	225	5.47	53.4
5.000	7	9	35.432	0.600	34.372	34.065	0.307	115.4	150	5.63	52.0
5.001	9	10	9.573	0.600	33.990	33.489	0.501	19.1	225	5.69	51.4
2.003	19	21	5.695	0.600	33.300	33.205	0.095	59.9	375	6.34	48.6

Name	US Node	DS Node	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	1	2	1.109	78.4	5.5	0.580	0.639	0.038	54	0.647
1.001	2	3	1.109	78.4	10.7	0.639	0.698	0.076	74	0.780
1.002	3	4	1.109	78.4	15.6	0.698	0.797	0.114	91	0.871
1.003	4	5	1.232	87.1	20.1	0.797	0.832	0.152	98	1.006
1.004	5	10	1.583	111.9	27.2	0.832	1.311	0.215	100	1.314
1.005	10	21	2.181	154.2	51.0	1.311	1.345	0.408	119	1.966
2.000	12	16	1.064	42.3	6.2	0.715	0.950	0.043	58	0.767
2.001	16	19	1.053	41.9	17.4	0.950	1.095	0.123	101	1.003
3.000	17	18	1.394	55.4	9.0	0.775	0.875	0.068	61	1.032
3.001	18	19	1.117	44.4	16.4	0.875	1.105	0.118	94	1.035
4.000	New Tank	19	1.018	40.5	11.4	1.180	1.105	0.079	81	0.876
5.000	7	9	0.934	16.5	4.7	0.578	0.765	0.033	54	0.802
5.001	9	10	3.007	119.6	18.5	0.765	1.236	0.133	59	2.193
2.003	19	21	2.343	258.8	55.3	1.105	1.270	0.420	117	1.877

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.006	21	Existing Tank	3.920	0.600	33.205	33.055	0.150	26.1	375	6.70	43.5
1.007	Existing Tank	22a	3.025	0.600	33.055	33.006	0.049	61.7	375	6.73	42.3
1.008	22a	Outfall	5.452	0.600	33.006	32.678	0.328	16.6	225	6.75	43.0

Name	US Node	DS Node	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Pro Depth (mm)	Pro Velocity (m/s)
1.006	21	Existing Tank	3.556	392.8	100.0	1.270	1.470	0.848	129	2.992
1.007	Existing Tank	22a	2.309	255.0	107.8	1.470	1.619	0.940	170	2.218
1.008	22a	Outfall	3.225	128.2	109.6	1.769	2.022	0.940	160	3.607

Simulation Settings

Rainfall Methodology	FSR	Summer CV	0.900	Drain Down Time (mins)	1440
FSR Region	England and Wales	Winter CV	0.900	Additional Storage (m³/ha)	0.0
M5-60 (mm)	20.000	Analysis Speed	Normal	Check Discharge Rate(s)	x
Ratio-R	0.400	Skip Steady State	x	Check Discharge Volume	x

Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)	Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0	100	20	0	0
30	0	0	0				

Node 22a Online Hydro-Brake® Control

Flap Valve	x	Objective	(CL) Minimise blockage risk
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	33.006	Product Number	CTL-SCL-0142-1110-1050-1110
Design Depth (m)	1.050	Min Outlet Diameter (m)	0.225
Design Flow (l/s)	11.1	Min Node Diameter (mm)	1200

Node Existing Tank Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	33.055
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	448

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	380.0	0.0	1.000	380.0	0.0	1.001	0.0	0.0

Node New Tank Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	33.625
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	228

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	113.0	0.0	0.610	113.0	0.0	0.611	0.0	0.0

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
2 year 15 minute summer	141.566	40.058	2 year 60 minute winter	40.727	16.200
2 year 15 minute winter	99.345	40.058	2 year 120 minute summer	37.449	9.897
2 year 30 minute summer	91.753	25.963	2 year 120 minute winter	24.880	9.897
2 year 30 minute winter	64.388	25.963	2 year 180 minute summer	28.672	7.378
2 year 60 minute summer	61.301	16.200	2 year 180 minute winter	18.637	7.378

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
2 year 240 minute summer	22.636	5.982	30 year 600 minute winter	13.498	5.404
2 year 240 minute winter	15.039	5.982	30 year 720 minute summer	17.490	4.687
2 year 360 minute summer	17.235	4.435	30 year 720 minute winter	11.754	4.687
2 year 360 minute winter	11.203	4.435	30 year 960 minute summer	14.215	3.743
2 year 480 minute summer	13.550	3.581	30 year 960 minute winter	9.416	3.743
2 year 480 minute winter	9.003	3.581	30 year 1440 minute summer	10.161	2.723
2 year 600 minute summer	11.088	3.033	30 year 1440 minute winter	6.829	2.723
2 year 600 minute winter	7.576	3.033	100 year +20% CC 15 minute summer	418.486	118.417
2 year 720 minute summer	9.878	2.647	100 year +20% CC 15 minute winter	293.674	118.417
2 year 720 minute winter	6.639	2.647	100 year +20% CC 30 minute summer	274.758	77.747
2 year 960 minute summer	8.113	2.136	100 year +20% CC 30 minute winter	192.813	77.747
2 year 960 minute winter	5.374	2.136	100 year +20% CC 60 minute summer	183.946	48.611
2 year 1440 minute summer	5.891	1.579	100 year +20% CC 60 minute winter	122.209	48.611
2 year 1440 minute winter	3.959	1.579	100 year +20% CC 120 minute summer	111.074	29.354
30 year 15 minute summer	268.706	76.035	100 year +20% CC 120 minute winter	73.795	29.354
30 year 15 minute winter	188.566	76.035	100 year +20% CC 180 minute summer	83.767	21.556
30 year 30 minute summer	174.929	49.499	100 year +20% CC 180 minute winter	54.451	21.556
30 year 30 minute winter	122.757	49.499	100 year +20% CC 240 minute summer	65.123	17.210
30 year 60 minute summer	116.589	30.811	100 year +20% CC 240 minute winter	43.266	17.210
30 year 60 minute winter	77.459	30.811	100 year +20% CC 360 minute summer	48.580	12.501
30 year 120 minute summer	70.438	18.615	100 year +20% CC 360 minute winter	31.578	12.501
30 year 120 minute winter	46.797	18.615	100 year +20% CC 480 minute summer	37.697	9.962
30 year 180 minute summer	53.298	13.715	100 year +20% CC 480 minute winter	25.045	9.962
30 year 180 minute winter	34.645	13.715	100 year +20% CC 600 minute summer	30.518	8.347
30 year 240 minute summer	41.604	10.995	100 year +20% CC 600 minute winter	20.851	8.347
30 year 240 minute winter	27.641	10.995	100 year +20% CC 720 minute summer	26.943	7.221
30 year 360 minute summer	31.221	8.034	100 year +20% CC 720 minute winter	18.107	7.221
30 year 360 minute winter	20.295	8.034	100 year +20% CC 960 minute summer	21.799	5.740
30 year 480 minute summer	24.324	6.428	100 year +20% CC 960 minute winter	14.440	5.740
30 year 480 minute winter	16.160	6.428	100 year +20% CC 1440 minute summer	15.476	4.148
30 year 600 minute summer	19.756	5.404	100 year +20% CC 1440 minute winter	10.401	4.148

Results for 2 year Critical Storm Duration. Lowest mass balance: 95.80%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	1	10	34.263	0.063	7.9	0.0548	0.0000	OK
15 minute summer	2	10	34.193	0.092	15.7	0.0796	0.0000	OK
15 minute summer	3	11	34.120	0.118	23.3	0.1021	0.0000	OK
15 minute summer	4	11	34.033	0.130	30.7	0.1126	0.0000	OK
15 minute summer	5	11	33.897	0.129	43.4	0.1115	0.0000	OK
15 minute summer	10	11	33.534	0.195	82.1	0.1686	0.0000	OK
15 minute summer	12	10	34.069	0.069	8.9	0.0597	0.0000	OK
15 minute summer	16	11	33.892	0.127	25.3	0.1100	0.0000	OK
60 minute summer	New Tank	38	33.681	0.056	10.9	5.9880	0.0000	OK
15 minute summer	17	10	34.177	0.077	14.1	0.0663	0.0000	OK
15 minute summer	18	11	33.920	0.120	24.4	0.1036	0.0000	OK
15 minute summer	7	11	34.440	0.068	6.9	0.0586	0.0000	OK
15 minute summer	9	10	34.070	0.080	27.4	0.0690	0.0000	OK
15 minute summer	19	11	33.474	0.174	70.7	0.2489	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
15 minute summer	1	1.000	2	7.8	0.541	0.100	0.2871
15 minute summer	2	1.001	3	15.4	0.705	0.197	0.4335
15 minute summer	3	1.002	4	23.2	0.845	0.296	0.5422
15 minute summer	4	1.003	5	31.0	1.065	0.355	0.6361
15 minute summer	5	1.004	10	43.6	1.127	0.390	1.6337
15 minute summer	10	1.005	21	82.4	1.743	0.534	0.3304
15 minute summer	12	2.000	16	8.8	0.550	0.207	0.5878
15 minute summer	16	2.001	19	24.6	1.089	0.589	1.0591
60 minute summer	New Tank	4.000	19	5.4	0.713	0.134	0.2177
15 minute summer	17	3.000	18	14.0	0.877	0.252	0.4372
15 minute summer	18	3.001	19	23.8	1.131	0.536	1.0051
15 minute summer	7	5.000	9	6.7	0.882	0.407	0.2699
15 minute summer	9	5.001	10	27.3	2.307	0.228	0.1133
15 minute summer	19	2.003	21	70.7	1.349	0.273	0.2986

Results for 2 year Critical Storm Duration. Lowest mass balance: 95.80%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	21	11	33.392	0.187	157.1	0.2675	0.0000	OK
120 minute summer	Existing Tank	102	33.360	0.305	98.5	110.0424	0.0000	OK
120 minute summer	22a	102	33.360	0.354	41.9	0.6252	0.0000	SURCHARGED
15 minute summer	Outfall	1	32.678	0.000	11.1	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
15 minute summer	21	1.006	Existing Tank	157.0	4.764	0.400	0.1725
120 minute summer	Existing Tank	1.007	22a	41.9	0.749	0.164	0.3082
120 minute summer	22a	Hydro-Brake®	Outfall	11.1			

Results for 30 year Critical Storm Duration. Lowest mass balance: 95.80%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	1	10	34.288	0.088	15.0	0.0758	0.0000	OK
15 minute summer	2	10	34.237	0.136	29.9	0.1176	0.0000	OK
15 minute summer	3	11	34.179	0.177	44.4	0.1536	0.0000	OK
15 minute summer	4	11	34.101	0.198	58.5	0.1718	0.0000	OK
15 minute summer	5	11	33.977	0.209	82.2	0.1809	0.0000	OK
15 minute summer	10	11	33.757	0.418	154.4	0.3617	0.0000	SURCHARGED
15 minute summer	12	10	34.098	0.098	17.0	0.0845	0.0000	OK
15 minute summer	16	11	33.999	0.234	48.4	0.2027	0.0000	SURCHARGED
180 minute winter	New Tank	180	33.727	0.102	6.7	10.9224	0.0000	OK
15 minute summer	17	10	34.209	0.109	26.9	0.0946	0.0000	OK
15 minute summer	18	11	33.997	0.197	46.4	0.1705	0.0000	OK
15 minute summer	7	10	34.473	0.101	13.0	0.0876	0.0000	OK
15 minute summer	9	10	34.101	0.111	52.0	0.0958	0.0000	OK
180 minute winter	19	180	33.728	0.428	35.0	0.6122	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
15 minute summer	1	1.000	2	14.9	0.623	0.190	0.4744
15 minute summer	2	1.001	3	29.4	0.791	0.374	0.7331
15 minute summer	3	1.002	4	44.0	0.951	0.561	0.9163
15 minute summer	4	1.003	5	58.5	1.203	0.672	1.1143
15 minute summer	5	1.004	10	81.4	1.233	0.727	2.5966
15 minute summer	10	1.005	21	154.2	2.190	1.000	0.4921
15 minute summer	12	2.000	16	16.8	0.622	0.397	0.9891
15 minute summer	16	2.001	19	44.5	1.217	1.063	1.7125
180 minute winter	New Tank	4.000	19	6.3	0.740	0.156	0.8204
15 minute summer	17	3.000	18	26.7	1.002	0.482	0.7321
15 minute summer	18	3.001	19	44.8	1.270	1.007	1.6796
15 minute summer	7	5.000	9	12.7	1.020	0.767	0.4395
15 minute summer	9	5.001	10	51.8	2.474	0.433	0.2833
180 minute winter	19	2.003	21	40.3	1.026	0.156	0.6281

Results for 30 year Critical Storm Duration. Lowest mass balance: 95.80%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
180 minute winter	21	180	33.726	0.521	76.3	0.7461	0.0000	SURCHARGED
180 minute winter	Existing Tank	176	33.726	0.671	95.2	242.3841	0.0000	SURCHARGED
180 minute winter	22a	176	33.726	0.720	46.1	1.2720	0.0000	SURCHARGED
15 minute summer	Outfall	1	32.678	0.000	11.1	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
180 minute winter	21	1.006	Existing Tank	76.1	2.526	0.194	0.4324
180 minute winter	Existing Tank	1.007	22a	46.1	0.738	0.181	0.3336
180 minute winter	22a	Hydro-Brake®	Outfall	11.1			

Results for 100 year +20% CC Critical Storm Duration. Lowest mass balance: 95.80%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	1	12	34.993	0.793	23.4	0.6867	0.0000	FLOOD RISK
15 minute summer	2	12	34.984	0.883	43.7	0.7648	0.0000	FLOOD RISK
15 minute summer	3	12	34.949	0.947	62.9	0.8205	0.0000	FLOOD RISK
15 minute summer	4	12	34.872	0.969	82.6	0.8387	0.0000	FLOOD RISK
15 minute summer	5	12	34.721	0.953	110.6	0.8251	0.0000	FLOOD RISK
15 minute summer	10	12	34.211	0.872	216.5	0.7548	0.0000	SURCHARGED
15 minute summer	12	11	34.811	0.811	26.5	0.7024	0.0000	FLOOD RISK
15 minute summer	16	11	34.724	0.959	70.0	0.8307	0.0000	FLOOD RISK
240 minute winter	New Tank	184	34.060	0.435	20.2	46.7275	0.0000	SURCHARGED
15 minute summer	17	11	34.846	0.746	41.8	0.6463	0.0000	FLOOD RISK
15 minute summer	18	11	34.673	0.873	67.4	0.7559	0.0000	FLOOD RISK
15 minute summer	7	12	34.877	0.505	20.3	0.4372	0.0000	FLOOD RISK
15 minute summer	9	11	34.495	0.505	77.7	0.4374	0.0000	SURCHARGED
120 minute winter	19	116	34.068	0.768	74.8	1.0985	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
15 minute summer	1	1.000	2	21.4	0.658	0.273	1.3909
15 minute summer	2	1.001	3	44.8	0.815	0.572	1.3918
15 minute summer	3	1.002	4	60.3	0.931	0.768	1.3904
15 minute summer	4	1.003	5	79.4	1.175	0.912	1.5411
15 minute summer	5	1.004	10	111.7	1.586	0.998	2.9780
15 minute summer	10	1.005	21	214.8	3.051	1.393	0.4923
15 minute summer	12	2.000	16	24.0	0.669	0.568	1.4051
15 minute summer	16	2.001	19	68.2	1.716	1.630	1.8616
240 minute winter	New Tank	4.000	19	-12.5	0.750	-0.308	1.1409
15 minute summer	17	3.000	18	38.1	1.078	0.686	1.0501
15 minute summer	18	3.001	19	65.7	1.652	1.479	1.8992
15 minute summer	7	5.000	9	18.0	1.045	1.091	0.6238
15 minute summer	9	5.001	10	75.1	2.455	0.628	0.3807
120 minute winter	19	2.003	21	71.6	1.079	0.277	0.6281

Results for 100 year +20% CC Critical Storm Duration. Lowest mass balance: 95.80%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute winter	21	116	34.068	0.863	147.9	1.2353	0.0000	SURCHARGED
240 minute summer	Existing Tank	232	34.057	1.002	144.6	361.1805	0.0000	SURCHARGED
180 minute winter	22a	164	34.057	1.051	52.7	1.8576	0.0000	SURCHARGED
15 minute summer	Outfall	1	32.678	0.000	11.1	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
120 minute winter	21	1.006	Existing Tank	147.2	3.194	0.375	0.4324
240 minute summer	Existing Tank	1.007	22a	39.3	0.714	0.154	0.3336
180 minute winter	22a	Hydro-Brake®	Outfall	11.1			

APPENDIX H
SUDS PROFORMA

1. Project & Site Details

Project / Site Name (including sub-catchment / stage / phase where appropriate)	Lidl South Ruislip
Address & post code	Victoria Road, Ruislip HA4 0QQ
OS Grid ref. (Easting, Northing)	E 512139.0986
	N 185590.0634
LPA reference (if applicable)	
Brief description of proposed work	Demolition of the existing building Bensons for Beds Building and use the space for additional car parking
Total site Area	9400 m^2
Total existing impervious area	9400 m^2
Total proposed impervious area	9400 m^2
Is the site in a surface water flood risk catchment (ref. local Surface Water Management Plan)?	The site is situated in an area of low surface water flood risk. Please refer to the document attached to the proforma.
Existing drainage connection type and location	Pipe connection to existing culvert. Location shown on drawing RSK-C-0003 Drainage Strategy
Designer Name	Assif Salim

2. Proposed Discharge Arrangements

2a. Infiltration Feasibility

Superficial geology classification	London Clay
Bedrock geology classification	London Clay formation
Site infiltration rate	m/s
Depth to groundwater level	m below ground level
Is infiltration feasible?	Not possible

2b. Drainage Hierarchy

	Feasible (Y/N)	*Proposed (Y/N)*
1 store rainwater for later use	N	N
2 use infiltration techniques, such as porous surfaces in non-clay areas	N	N
3 attenuate rainwater in ponds or open water features for gradual release	N	N
4 attenuate rainwater by storing in tanks or sealed water features for gradual release	Y	Y
5 discharge rainwater direct to a watercourse	N	N
6 discharge rainwater to a surface water sewer/drain	Y	Y
7 discharge rainwater to the combined sewer.	N	N

2c. Proposed Discharge Details

Proposed discharge location	See drawing RSK-C-0003 Drainage Strategy
Has the owner/regulator of the	The existing offsite drainage connection will

Designer Position	Senior Civil Engineer
Designer Company	RSK Land and Development Engineering

3. Drainage Strategy

3a. Discharge Rates & Required Storage

	Greenfield (GF) runoff rate (l/s)	*Existing discharge rate (l/s)*	*Required storage for GF rate (m^3)*	*Proposed discharge rate (l/s)*
Qbar				
1 in 1		11	426	11
1 in 30		11	426	11
1 in 100		11	426	11
1 in 100 + CC			426	11
Climate change allowance used		20%		

3b. Principal Method of Flow Control	Vortex Flow Control Unit

3c. Proposed SuDS Measures

	Catchment area (m^2)	*Plan area (m^3)*	*Storage vol. (m^3)*
Rainwater harvesting	0		0
Infiltration systems	0		0
Green roofs	0	0	0
Blue roofs	0	0	0
Filter strips	0	0	0
Filter drains	0	0	0
Bioretention / tree pits	0	0	0
Pervious pavements	0	0	0
Swales	0	0	0

discharge location been consulted?	be maintained, with no increase of surface water flows.

4. Supporting Information

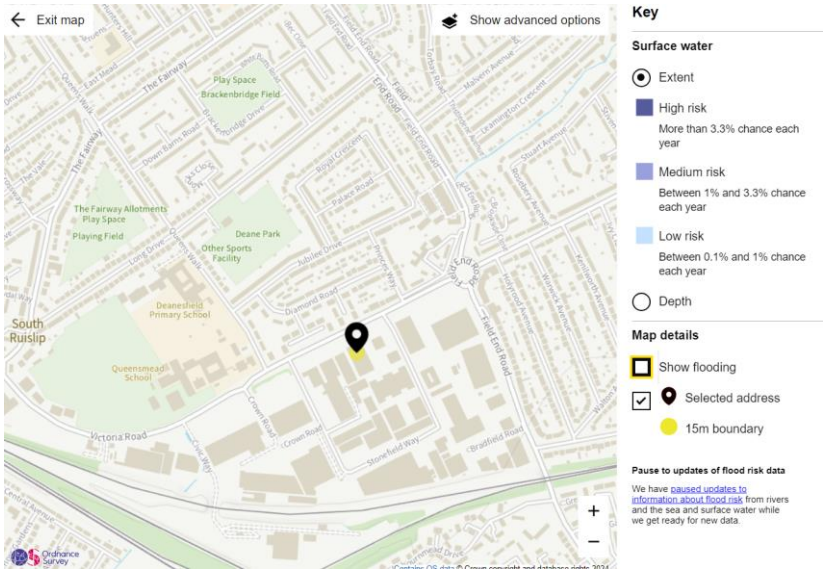
4a. Discharge & Drainage Strategy	*Page/section of drainage report*
Infiltration feasibility (2a) – geotechnical factual and interpretive reports, including infiltration results	Section 2.2 Offsite Discharge Options
Drainage hierarchy (2b)	Section 2.2 Offsite Discharge Options
Proposed discharge details (2c) – utility plans, correspondence / approval from owner/regulator of discharge location	N/A - No changes to offsite connection are proposed. No increase in flow rates.
Discharge rates & storage (3a) – detailed hydrologic and hydraulic calculations	Section 2.3 - Refer to Drainage calculations in Appendix G
Proposed SuDS measures & specifications (3b)	

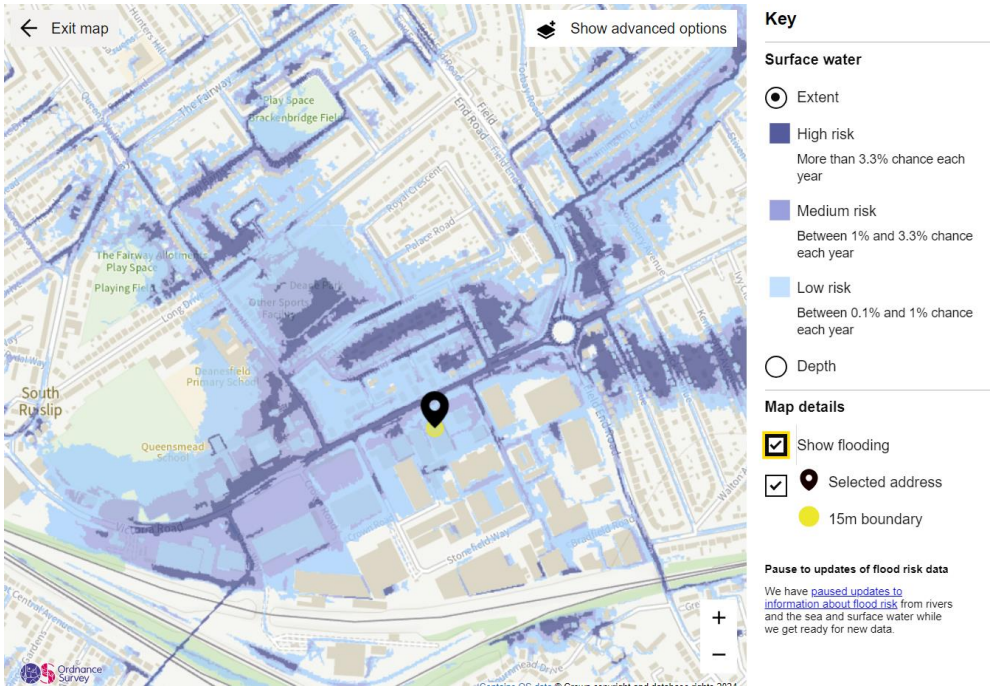
4b. Other Supporting Details	*Page/section of drainage report*
Detailed Development Layout	Please see Appendix C
Detailed drainage design drawings, including exceedance flow routes	Please see Appendix F
Detailed landscaping plans	Soft landscaping plan in Appendix C
Maintenance strategy	Please see Appendix I
Demonstration of how the proposed SuDS measures improve:	Water quality achieved by existing bypass separator

	Basins/ponds	0	0	0
	Attenuation tanks	9400		426
	Total	**9400**	**0**	**426**

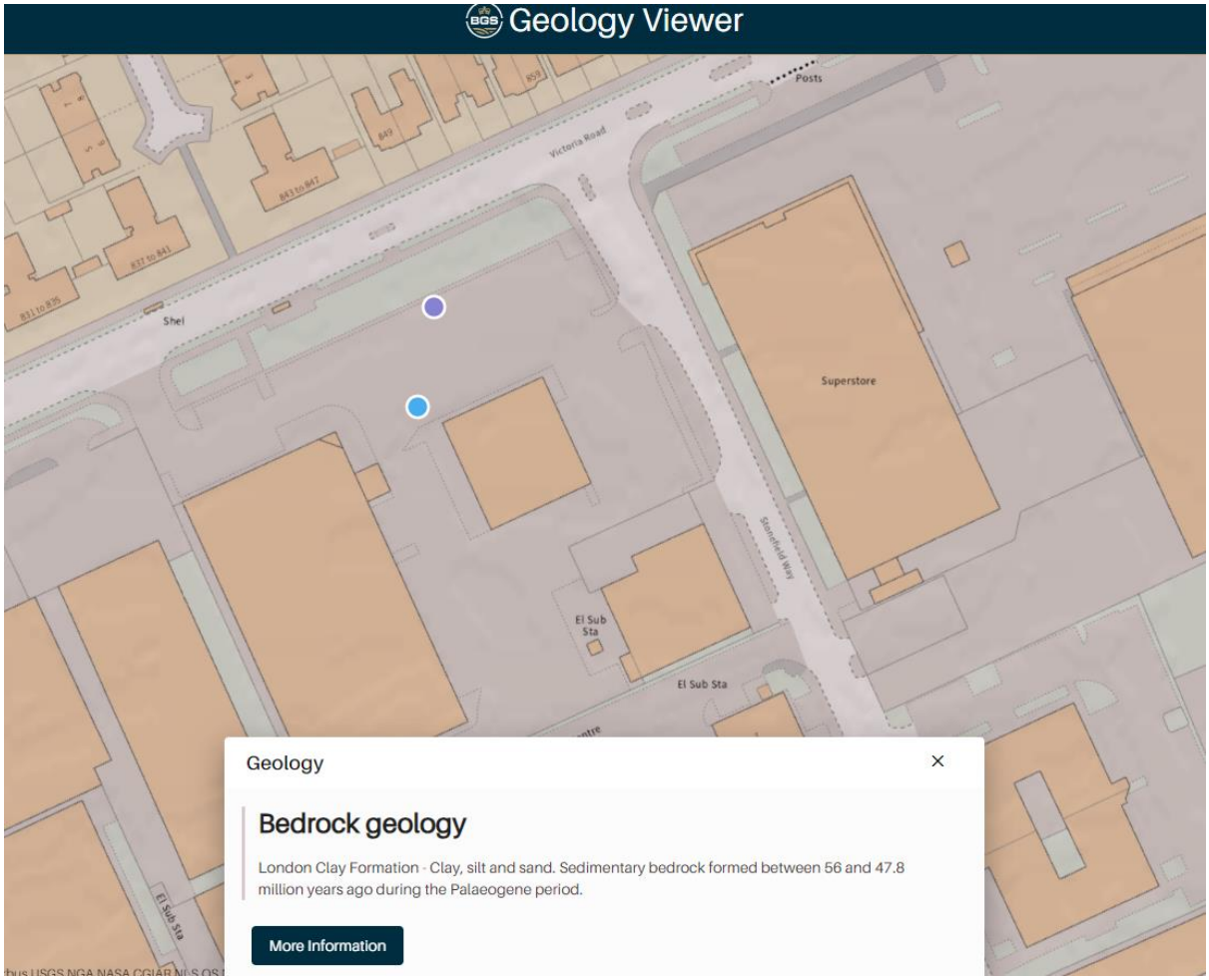
	a) water quality of the runoff?	
	b) biodiversity?	
	c) amenity?	

Assessment of Surface Water Flood Risk – [Where do you want to check? - Check your long term flood risk - GOV.UK (check-long-term-flood-risk.service.gov.uk)]





Geological Information



APPENDIX I
DETAILED MAINTENANCE SCHEDULE

LIDL GB

DEMOLITION OF A NON-FOOD RETAIL UNIT AND EXTENSION AND RECONFIGURATION OF THE EXISTING CAR PARK

Sustainable Drainage System (SuDS) Management Strategy

Project No.890564

THE QUEEN'S AWARDS FOR ENTERPRISE: INTERNATIONAL TRADE 2016

MANAGEMENT SYSTEM CERTIFICATION DNV·GL ISO 9001 = ISO 14001 OHSAS 18001

INVESTORS IN PEOPLE

LDE CIVILS | STRUCTURES | HYDROLOGY an RSK company

24TH APRIL 2024

RSK GENERAL NOTES

Project No.: 890564

Title: SuDS Maintenance Schedule

Client: LiDL GB

Date: 24th April 2024

Office: RSK Land and Development Ltd, Coventry, Abbey Park, Humber Road, CV3 4AQ

Status: Final

Author		**Technical reviewer**	
Date:	24/04/2024	Date:	24/04/2024
Project manager			
Date:	24/04/2024		

CONTENTS

1 INTRODUCTION

This management strategy has been prepared by RSK Land and Development Engineering Ltd on behalf of *LIDL GB*, to support a planning application to the development.

The SUDS considered for the purposes of this statement, include drainage features that will be employed to reduce and manage surface water runoff from the development to a design return period of One hundred years plus climate change. This is required so that The Development will not increase the risk of flooding to the site and its environs. All drainage on site is taken to the underlying strata via infiltration features. Such features include the following:

- Geocellular Tank
- Existing Proprietary treatment system

This document outlines the long-term maintenance of the proposed surface water system and will refer to the following documents, some of which provide further detail on the maintenance operations required:

- CIRIA Report C753, *'The SUDS Manual'*, 2015
- CIRIA Report C625, *'Model Agreements for Sustainable Water Management Systems'*, 2004; and
- Interpave, *'Permeable pavements: Guide to the Design, Construction and Maintenance of Concrete Block Permeable Pavements'*, ed. 4, 2006.

2 MAINTENANCE RESPONSIBILITIES

Responsibility for drainage within England and Wales rests with various bodies. For The Development, the drainage responsibilities will be divided between the following:

- **Private Landowner / Management Company** – The landowner/Management Company will be responsible for the maintenance of drainage features within the Site to maintain all the new site drainage features such as the geocellular attenuation tank, road gullies and bypass separator.

3 MAINTENANCE REGIME

As the maintenance of the communal SuDS features will be carried out via a Management Company, the form of agreement should include the required maintenance listed below. Should the maintenance be transferred at a later date to a public body, then the model agreement SuDS MA1 should be used, details of which can be found in the CIRIA guidance C625.

The following section describes the required maintenance for each feature in turn. The SuDS maintenance requirements listed below should be reviewed after the first 5 years, with a view to agreeing a new regime for the ongoing maintenance.

Notwithstanding the routine inspections and maintenance requirements, after severe storm events all features shall be inspected to clear debris and repair damaged structures or features. Records of the maintenance carried out shall be prepared by the Management Company.

3.1 Storage Tanks

Maintenance schedule	Required action	Typical frequency
Regular maintenance	Inspect and identify any areas that are not operating correctly. If required, take remedial action	Monthly for 3 months, the annually
	Remove debris from the catchment surface (where it may cause risks to performance)	Monthly
	For systems where rainfall infiltrates into the tank from above, check surface of filter for blockage by sediment, algae or other matter; remove and replace surface infiltration medium as necessary.	Annually
	Remove sediment from pre-treatment structures and/or internal forebays	Annually, or as required
Remedial actions	Repair/rehabilitate inlets, outlet, overflows and vents	As required
Monitoring	Inspect/check all inlets, outlets, vents and overflows to ensure that they are in good condition and operating as designed	Annually
	Survey inside of tank for sediment build-up and remove if necessary	Every 5 years or as required

3.2 An example of operation and maintenance requirements for a proprietary treatment system

Maintenance schedule	Required action	Typical frequency
Routine maintenance	Remove litter and debris and inspect for sediment, oil and grease accumulation	Six monthly
	Change the filter media	As recommended by manufacturer

Maintenance schedule	Required action	Typical frequency
	Remove sediment, oil, grease and floatables	As necessary – indicated by system inspections or immediately following significant spill
Remedial actions	Replace malfunctioning parts or structures	As required
Monitoring	Inspect for evidence of poor operation	Six monthly
	Inspect filter media and establish appropriate replacement frequencies	Six monthly
	Inspect sediment accumulation rates and establish appropriate removal frequencies	Monthly during first half year of operation, then every six months

3.3 Vortex Flow Control Manhole

Maintenance schedule	Required action	Typical frequency
Occasional maintenance	Remove litter, debris, and detritus that enters the drainage system	Six monthly, or as required
	Inspect inlets, outlets and overflows for blockages, and clear if required	Six monthly, or as required
	Inspection Hydrobrake bypass door, open and close door, greasing of door to prevent mechanism from seizing	Six monthly, or as required
Remedial actions	Replace components of Hydrobrake if faulty in line with manufacturers guidance.	As required
	Replace entire Hydrobrake if components cannot be replaced in accordance with manufacturers guidance.	As required

APPENDIX A
INSPECTION CHECKLIST

General information			
Site ID			
Site location and co-ordinates (GIS if appropriate)			
Elements forming the SuDS scheme		Approved drawing reference	
Inspection frequency		Approved specification reference	
Type of development		Specific purpose of any parts of the scheme (e.g. biodiversity, wildlife and visual aspects)	

Inspection Date	Details	Y/N	Action required	Date completed	Details	Y/N	Action required	Date completed
General inspection items								
Is there any evidence of erosion, channelling, ponding (where not desirable) or other poor hydraulic performance?								
Is there any evidence of accidental spillages, oils, poor water quality, odours or nuisance insects?								
Have any health and safety risks been identified to either the public or maintenance operatives?								
Silt/Sediment accumulation								
Is there any sediment accumulation at inlets (or other defined accumulation zones such as the surface of filter drains or infiltration basins and within proprietary devices)? If yes, state depth (mm) and extent. Is removal required? If yes, state waste disposal requirements and confirm that all waste management requirements have been complied with (consult environmental regulator)								
Is surface clogging visible potentially problematic where water has to soak into the underlying construction or ground (e.g. underdrained swale or infiltration basin)?								

Inspection Date	Details	Y/N	Action required	Date completed	Details	Y/N	Action required	Date completed
Does permeable or porous surfacing require sweeping to remove silt?								
Is there evidence of litter accumulation in the system? If yes, is this a blockage risk?								
Is there any evidence of any other clogging or blockage of outlets or drainage paths?								
Is the vegetation condition satisfactory (density, weed growth, coverage etc)? (check against approved planting regime)								
Does any part of the system require weeding, pruning or mowing? (check against maintenance frequency state in approved design).								
Is there any evidence of invasive species becoming established? If yes, state action required								
Are any check dams or weirs in good condition?								
Is there any evidence of any accidental damage to the system (e.g. wheel ruts?)								
Is there any evidence of cross connections or other unauthorised inflows?								
Is there any evidence of tampering with the flow control?								
Are there any other matters that could affect the performance of the								

Inspection Date	Details	Y/N	Action required	Date completed	Details	Y/N	Action required	Date completed
system in relation to the design objectives for hydraulic, water quality, biodiversity and visual aspects?								
Other observations								
Information appended (e.g. photos)								
Continue as current Increase maintenance Decrease maintenance								
Proposed date for next inspection								