

10th March 2022

Our reference: 890564-R(0)

Your Ref: 5039/APP/2020/1339

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

Dear Sirs/Madam

RE: LIDL Foodstore Victoria Road Ruislip

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

A drainage statement has been produced to provide the necessary information for the Local Planning Authority, London Borough of Hillingdon, to discharge condition 7 of the application reference 5039/APP/2020/1339.

The condition wording is shown in *italics* below:

Prior to commencement (excluding demolition and site clearance), a scheme for the provision of sustainable water management shall be submitted to and approved in writing by the Local Planning Authority. The scheme shall clearly demonstrate how it manages water and demonstrate ways of controlling the surface water on site by providing information on:

a) Sustainable Drainage features:

i. Surface Water discharge – the submitted drainage strategy must identify the existing drainage infrastructure on the site, including details of control structures, attenuation features, pipe sizes and outfall locations.

ii. SuDS – the submitted drainage strategy should incorporate Sustainable Drainage System (SuDS) elements that are embedded, where practicable, within the landscaping plan for the development. Preference should be given to above-ground SuDS elements that control water at source and provide wider biodiversity, water quality and amenity benefits.

iii. Runoff rates – surface water discharge from the site must be no greater than 10l/s in line with condition 11 of permission 5039/APP/2015/4395.

iv. Drainage calculations – include calculations to demonstrate that the volume of storage and size of drainage features provided is adequate to control surface water for a range of storm duration and rainfall intensities for events up to and including the critical 1 in 100 plus 30% climate change rainfall event.

v. *Exceedance routes* – provide a plan showing the route surface water will take through the development for rainfall events exceeding the 1 in 100-year event. Where it is intended to store water on the ground surface, the maximum extent of overland flooding should be mapped and include details on flow paths, depths, and velocities. Safe access and egress for the site must be demonstrated.

b) *Long-term management and maintenance of the drainage system.*

i. *Provide a Management and Maintenance Plan for the drainage system that includes clear plans showing all of the drainage network above and below ground and identifies the responsibility of different parties for each component of the drainage network.*

ii. *Include details of necessary inspection regimes and maintenance frequencies.*

iii. *Where managed flooding of the ground surface is proposed, the plan should include the appropriate actions for those areas and document the actions required to ensure the safety of the users of the site during a rainfall event.*

Thereafter the development shall be implemented and retained/maintained in accordance with these details for as long as the development remains in existence.

Reason: To ensure that surface water runoff is controlled and to ensure the development does not increase in accordance with Policy EM6 Flood Risk Management in Hillingdon Local Plan: Part 1 – Strategic Policies (Nov 2012), Policy DME1 10 Water Management, Efficiency and Quality of Hillingdon Local Plan Part 2 Development Management Policies (January 2020), Policy 5.12 Flood Risk Management of the London Plan (March 2016) and Policy 5.13 Sustainable Drainage of the London Plan (March 2016).

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

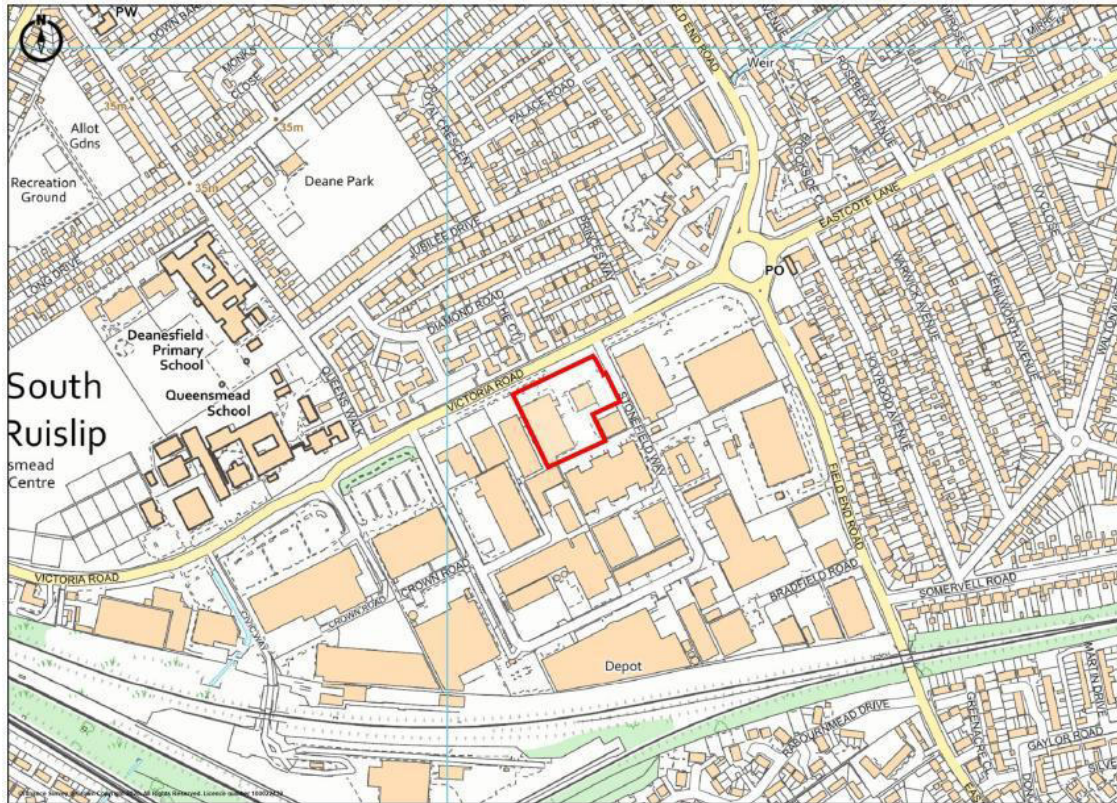
The site is located to the south of Victoria Road and to the west of Stonefield Way in South Ruislip in the London Borough of Hillingdon. Beyond the southern and western site boundaries lie other commercial properties within the Victoria Retail Park. The site can be located at post code HA4 0QQ and at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

The car park extension will be onto Benson's building unit hardstanding area so there is no net increase in impermeable area as part of the proposals.

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 possess their own private drainage systems. The surface water component of the site gathers and attenuates the sites runoff within a geocellular tank before discharging at a restricted rate to the culverted watercourse at Victoria Road.

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

Due to the small development space available it is not feasible to implement above ground SuDS elements to manage the runoff that will result from the new car park extension. Gullies will then be installed to receive surface water runoff along with a new attenuation geocellular tank to attenuate and balance the surface water flows of the drainage system.

A new flow control unit will be installed in lieu of the existing to ensure that the surface water discharge offsite is no greater than 10l/s for all rainfall events.

The proposed and the existing site drainage infrastructure to be retained is illustrated in the surface water drainage strategy drawing included in **Appendix E**.

The calculations in **Appendix F** demonstrate that the volume of storage and the size of the existing and proposed drainage infrastructure are adequately sized to contain the 1 in 100 year plus 30% climate change rainfall event.

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 to be implemented will remain in private ownership and the future landowner or a private management company will be responsible for the inspection and maintenance.

A detailed SuDS Management Strategy for the proposed development is contained in **Appendix G**.

2.6 EXCEEDANCE FLOWS

The exceedance flow routes are shown in the drainage strategy plan contained within **Appendix E**. No control measures for exceedance flows are proposed as all surface water runoff up to the 1in100 year climate change storm events will be stored 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 within planning condition 7 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 10 (l/s) for all storm period events.
- The proposed surface water drainage system caters for 30% 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 Salim



Civil Engineer



Enclosed:

Appendix A- RSK Group Service Constraints

Appendix B – Existing Site Plan

Appendix C – Proposed Site Plan

Appendix D – Sewer Records

Appendix E – Proposed Drainage Strategy

Appendix F – Drainage Calculations

Appendix G – Detailed Maintenance Schedule



APPENDIX A

Service Constraints

1. This letter 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". 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 taking into account 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 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 hereof, 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.



APPENDIX B

Existing Site Plan

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	482 sq m
Warehouse	63 sq m
Bakery Warehouse	40 sq m
Additional Chilliers	585 sq m
Total Warehouse	

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	7
Parent & child	65
EVC/CP Active Terra S3	4
CJS 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

Scale - unless otherwise stated

1:500 @ A3

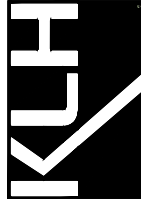
Revision

P01

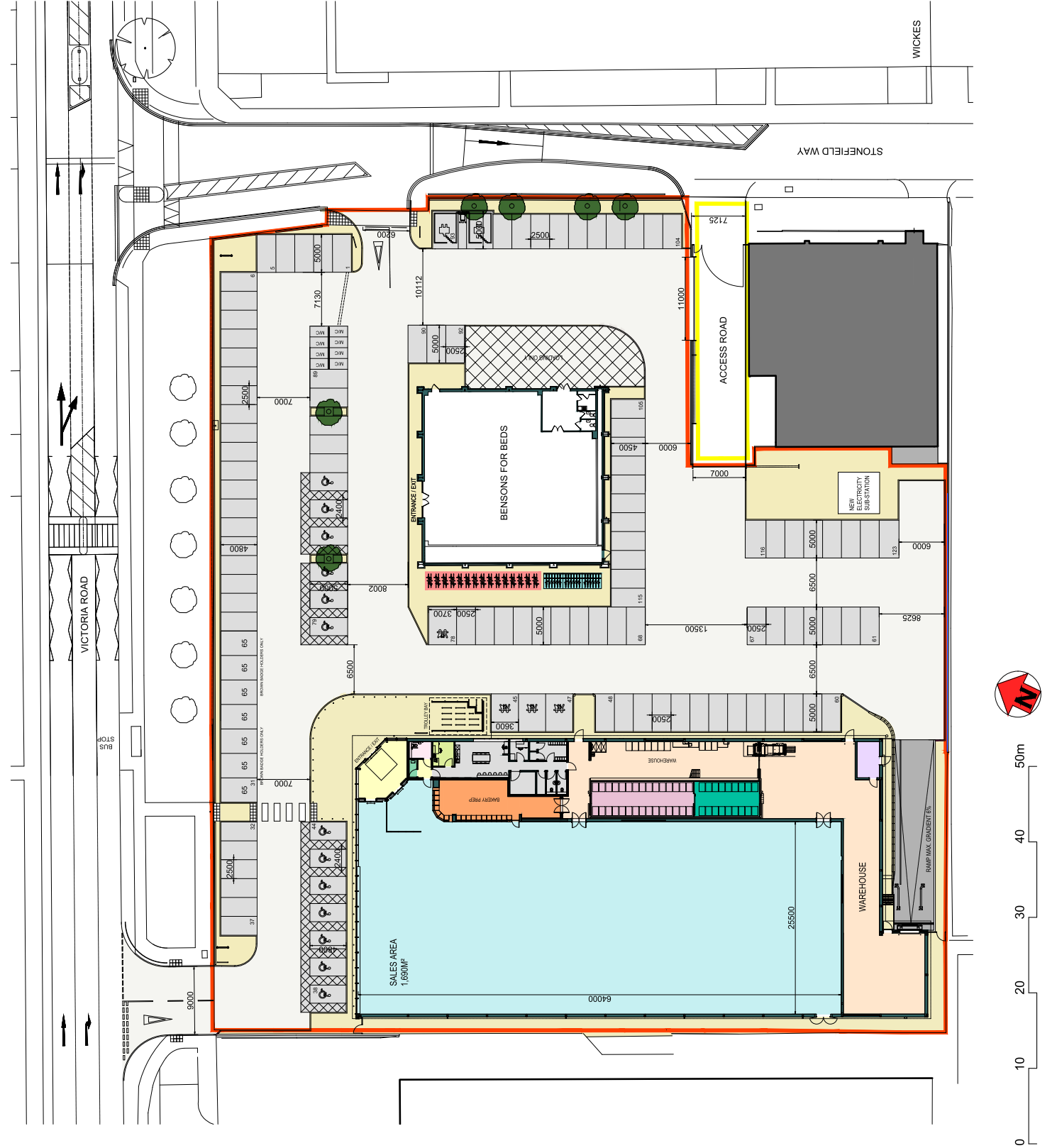
Status

Issued For

Preliminary



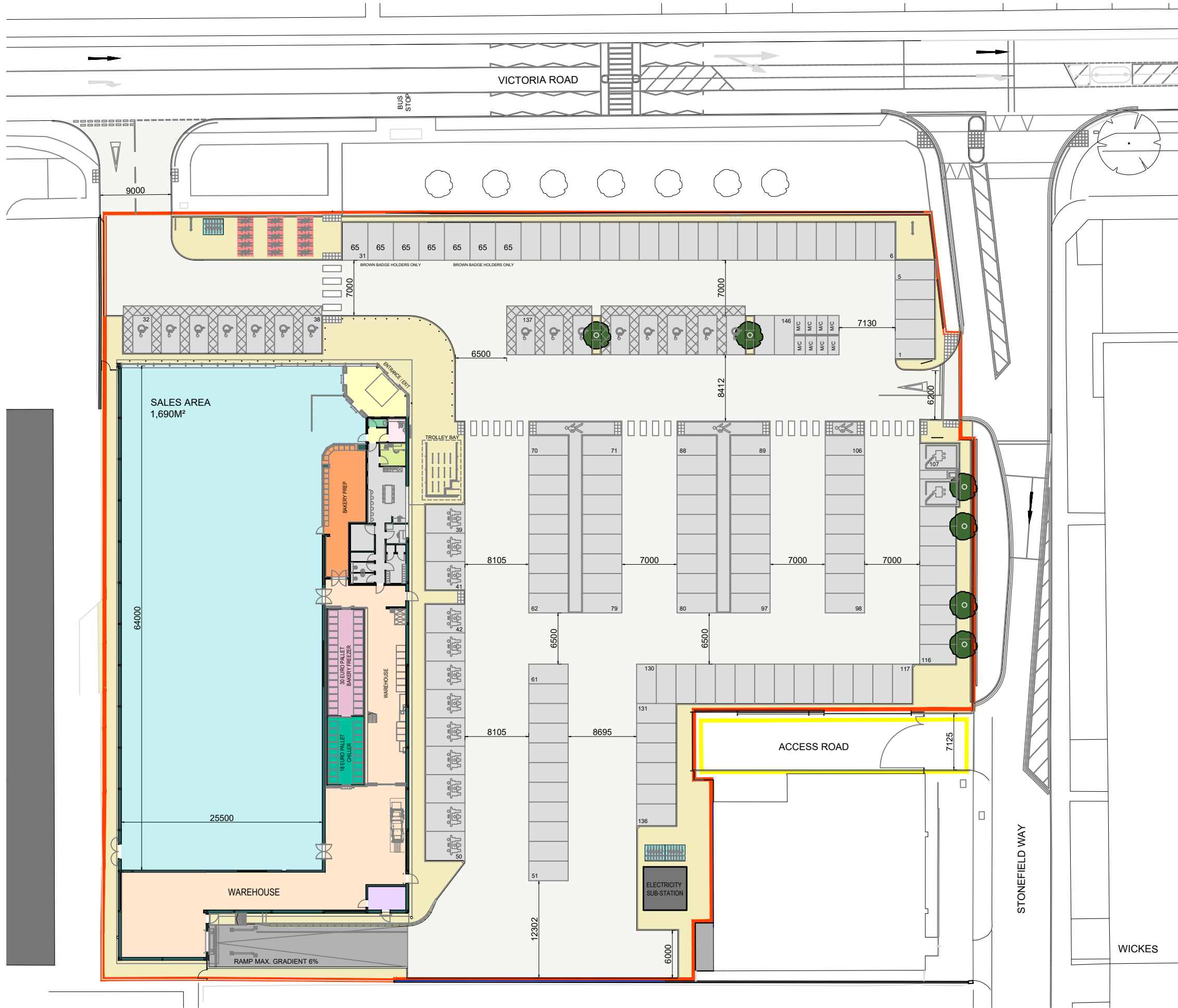
The Old Steelyard, Poplar Lane
Sproughton, Ipswich, IP8 3HL
t 01473 689532
klh@klharchitects.com
www.klharchitects.com





APPENDIX C

Proposed Site Plan



NO DIMENSIONS TO BE SCALED FROM THIS DRAWING

Rev Date Reference Drawn / Chk'd

P07 2020/04/08 DIMENSIONS REVISED. 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	110
Disabled	15
Brown Badge	7
Parent & child	12
EVCP Active Terra S3 CJG charging station	2
TOTAL	146 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 Proposed

Drawing Ref.

4908-0101

Revision

P07

Scale - unless otherwise stated

1:500

Status

S0

Issued For

Preliminary

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Sproughton, Ipswich, IP8 3HL
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APPENDIX D

Thames Water Sewer Records

Asset location search



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

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 search provides 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

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

Asset location search



Property Searches

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



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

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.



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

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.

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
	Combined Sewer
	Culverted Watercourse
	Surface Water Sewer
	Gully
	Proposed
	Abandoned Sewer

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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).

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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

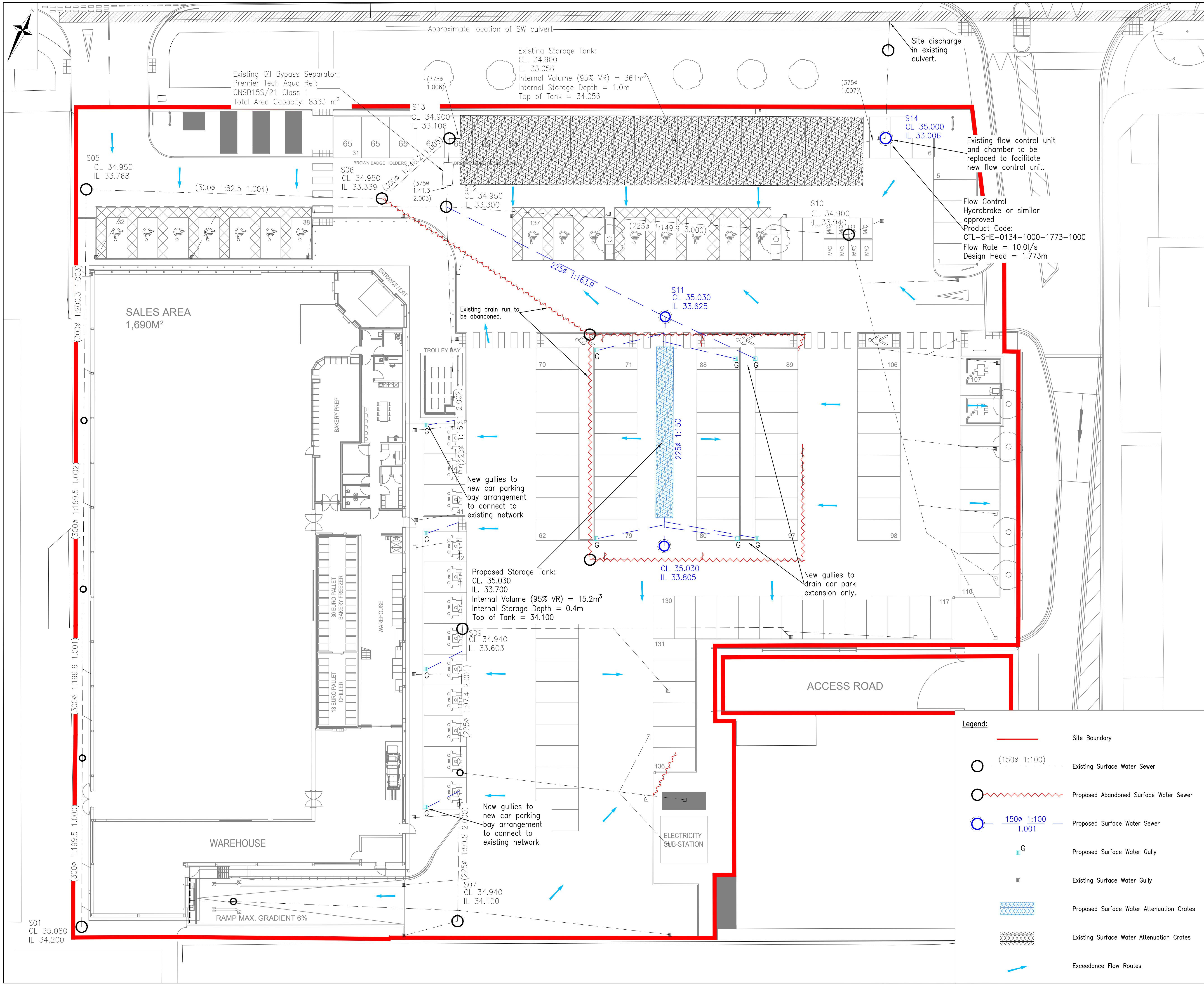
Credit Card	BACS Payment	Telephone Banking	Cheque
Call 0845 070 9148 quoting your invoice number starting CBA or ADS / OSS	Account number 90478703 Sort code 60-00-01 A remittance advice must be sent to: Thames Water Utilities Ltd., PO Box 3189, Slough SL1 4WW. or email ps.billing@thameswater. co.uk	By 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

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APPENDIX E

Proposed 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 P07 dated 08.04.20.
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.

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
Rev.	Date	Amendment	Drawn	Chkd.	Appd.

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Client

LIDL

LIDL GmbBH

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	1:200	Orig Size	A1	Dimensions	m

Project No.
890564

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

Drawn No.	890564	Rev.	P02			
Project	Orig.	Vol./Sys.	Lev./Loc.	Type	Role	Draw No.

Scale 1:200

0 2 4 6 8 10m



APPENDIX F

Surface Water Design 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)	0.200
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)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
1	0.053	5.00	35.080	1050	512119.517	185505.393	0.880
2	0.074	5.00	35.040	1050	512110.907	185523.169	0.939
3	0.078	5.00	35.000	1050	512102.316	185540.969	0.998
4			35.000	1050	512093.721	185558.746	1.097
5	0.061	5.00	34.900	1050	512082.072	185583.149	1.132
6			34.950	1050	512114.304	185597.725	1.611
7	0.045	5.00	34.940	1050	512159.426	185525.649	0.840
8	0.057	5.00	34.940	1050	512152.063	185541.378	1.014
9	0.105	5.00	34.940	1050	512144.908	185556.632	1.337
10	0.135	5.00	34.900	1050	512165.253	185617.942	0.960
11	0.071	5.00	35.030	1050	512150.184	185599.871	1.405
12	0.188	5.00	34.780	1350	512121.499	185600.171	1.480
13			34.850	1350	512118.317	185607.520	1.744
14			35.000	1500	512164.180	185629.983	1.994
14_OUT			34.925	1350	512159.928	185639.364	1.988
Tank			35.000		512141.262	185617.152	1.944

Links (Input)

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	5.33	53.2
1.001	2	3	19.765	0.600	34.101	34.002	0.099	199.6	300	5.66	51.8
1.002	3	4	19.746	0.600	34.002	33.903	0.099	199.5	300	5.99	50.4
1.003	4	5	27.041	0.600	33.903	33.768	0.135	200.3	300	6.44	48.7
1.004	5	6	35.375	0.600	33.768	33.339	0.429	82.5	300	7.02	46.7
1.005	6	13	10.585	0.600	33.339	33.296	0.043	246.2	300	7.20	46.1
2.000	7	8	17.367	0.600	34.100	33.926	0.174	99.8	225	5.29	53.4
2.001	8	9	16.849	0.600	33.926	33.753	0.173	97.4	225	5.57	52.1
2.002	9	12	49.433	0.600	33.603	33.300	0.303	163.1	375	6.39	48.9
3.000	10	12	47.225	0.600	33.940	33.625	0.315	149.9	225	5.79	51.2
4.000	11	12	28.687	0.600	33.625	33.450	0.175	163.9	225	5.29	53.4
2.003	12	13	8.008	0.600	33.300	33.106	0.194	41.3	375	6.47	48.6
1.006	13	Tank	1.300	0.600	33.106	33.056	0.050	26.0	375	8.05	43.5
1.007	Tank	14	2.600	0.600	33.056	33.006	0.050	52.0	375	8.49	42.3
1.008	14	14_OUT	10.300	0.600	33.006	32.937	0.069	149.3	375	8.22	43.0

Simulation Settings

Rainfall Methodology	FSR	Analysis Speed	Detailed
FSR Region	England and Wales	Skip Steady State	x
M5-60 (mm)	20.000	Drain Down Time (mins)	1440
Ratio-R	0.400	Additional Storage (m³/ha)	20.0
Summer CV	0.750	Check Discharge Rate(s)	x
Winter CV	0.840	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 %)
1	0	0	0
30	0	0	0
100	30	0	0

Node 14 Online Hydro –Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	33.006	Product Number	CTL-SHE-0134-1000-1773-1000
Design Depth (m)	1.773	Min Outlet Diameter (m)	0.150
Design Flow (l/s)	10.0	Min Node Diameter (mm)	1500

Node Tank Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	33.056
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	492

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 11 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	33.700
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	244

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	40.0	0.0	0.400	40.0	0.0	0.401	0.0	0.0

Results for 1 year Critical Storm Duration. Lowest mass balance: 99.88%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1	10	34.261	0.061	7.5	0.1270	0.0000	OK
15 minute winter	2	10	34.198	0.097	17.7	0.2371	0.0000	OK
15 minute winter	3	11	34.133	0.131	28.2	0.3183	0.0000	OK
15 minute winter	4	11	34.032	0.129	28.1	0.1115	0.0000	OK
15 minute winter	5	11	33.878	0.110	36.3	0.2148	0.0000	OK
15 minute winter	6	11	33.502	0.163	36.1	0.1409	0.0000	OK
15 minute winter	7	10	34.152	0.052	6.3	0.1012	0.0000	OK
15 minute winter	8	10	34.009	0.083	14.2	0.1645	0.0000	OK
15 minute winter	9	11	33.709	0.106	28.7	0.2588	0.0000	OK
15 minute winter	10	11	34.045	0.105	19.0	0.3865	0.0000	OK
15 minute winter	11	11	33.700	0.075	10.0	0.1745	0.0000	OK
15 minute winter	12	11	33.454	0.154	81.3	0.6110	0.0000	OK
120 minute winter	13	92	33.282	0.176	39.8	0.2514	0.0000	OK
120 minute winter	14	88	33.311	0.305	45.0	0.5390	0.0000	OK
15 minute summer	14_OUT	1	32.937	0.000	8.8	0.0000	0.0000	OK
120 minute winter	Tank	98	33.262	0.206	64.6	74.5264	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	1	1.000	2	7.3	0.494	0.094	0.2968	
15 minute winter	2	1.001	3	17.3	0.708	0.221	0.4860	
15 minute winter	3	1.002	4	28.1	0.962	0.358	0.5769	
15 minute winter	4	1.003	5	28.2	1.076	0.360	0.7086	
15 minute winter	5	1.004	6	36.1	1.157	0.295	1.1063	
15 minute winter	6	1.005	13	35.5	0.978	0.503	0.3843	
15 minute winter	7	2.000	8	6.2	0.623	0.120	0.1752	
15 minute winter	8	2.001	9	13.9	1.095	0.264	0.2146	
15 minute winter	9	2.002	12	28.2	0.832	0.180	1.6843	
15 minute winter	10	3.000	12	18.3	1.024	0.432	0.8441	
15 minute winter	11	4.000	12	9.4	0.825	0.233	0.3276	
15 minute winter	12	2.003	13	81.4	1.921	0.261	0.3450	
120 minute winter	13	1.006	Tank	39.8	2.580	0.101	0.0730	
120 minute winter	14	Hydro—Brake®	14_OUT	9.5				
120 minute winter	Tank	1.007	14	45.0	0.714	0.162	0.2042	

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.88%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1	10	34.297	0.097	18.3	0.2005	0.0000	OK
15 minute winter	2	11	34.284	0.183	43.7	0.4463	0.0000	OK
15 minute winter	3	11	34.245	0.243	68.9	0.5901	0.0000	OK
15 minute winter	4	11	34.131	0.228	68.4	0.1971	0.0000	OK
15 minute winter	5	11	33.958	0.190	88.8	0.3690	0.0000	OK
15 minute winter	6	11	33.657	0.318	89.2	0.2751	0.0000	SURCHARGED
15 minute winter	7	10	34.183	0.083	15.6	0.1615	0.0000	OK
15 minute winter	8	10	34.070	0.144	35.1	0.2858	0.0000	OK
15 minute winter	9	10	33.775	0.172	70.7	0.4189	0.0000	OK
15 minute winter	10	11	34.149	0.209	46.7	0.7693	0.0000	OK
15 minute winter	11	12	33.740	0.115	24.6	1.7639	0.0000	OK
180 minute winter	12	176	33.633	0.333	48.0	1.3242	0.0000	OK
180 minute winter	13	176	33.633	0.527	69.2	0.7546	0.0000	SURCHARGED
180 minute winter	14	176	33.633	0.627	41.1	1.1079	0.0000	SURCHARGED
15 minute summer	14_OUT	1	32.937	0.000	9.8	0.0000	0.0000	OK
180 minute winter	Tank	176	33.633	0.577	79.5	208.3629	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	1	1.000	2	18.1	0.579	0.230	0.6336	
15 minute winter	2	1.001	3	42.3	0.799	0.540	1.0481	
15 minute winter	3	1.002	4	68.4	1.153	0.872	1.1697	
15 minute winter	4	1.003	5	68.9	1.332	0.880	1.4107	
15 minute winter	5	1.004	6	89.2	1.409	0.729	2.0766	
15 minute winter	6	1.005	13	89.1	1.317	1.264	0.6828	
15 minute winter	7	2.000	8	15.4	0.769	0.297	0.3483	
15 minute winter	8	2.001	9	34.4	1.358	0.652	0.4277	
15 minute winter	9	2.002	12	69.3	1.007	0.443	3.4617	
15 minute winter	10	3.000	12	44.1	1.231	1.041	1.6946	
15 minute winter	11	4.000	12	20.1	0.994	0.496	0.6557	
180 minute winter	12	2.003	13	48.2	1.244	0.154	0.8563	
180 minute winter	13	1.006	Tank	68.9	2.823	0.175	0.1434	
180 minute winter	14	Hydro—Brake®	14_OUT	10.0				
180 minute winter	Tank	1.007	14	41.1	0.709	0.148	0.2868	

Results for 100 year +30% CC Critical Storm Duration. Lowest mass balance: 99.88%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1	12	34.925	0.725	30.9	1.5011	0.0000	FLOOD RISK
15 minute winter	2	12	34.911	0.810	64.5	1.9780	0.0000	FLOOD RISK
15 minute winter	3	12	34.832	0.830	101.3	2.0154	0.0000	FLOOD RISK
240 minute winter	4	236	34.773	0.870	22.3	0.7535	0.0000	FLOOD RISK
240 minute winter	5	236	34.773	1.005	29.0	1.9545	0.0000	FLOOD RISK
240 minute winter	6	236	34.773	1.434	29.0	1.2418	0.0000	FLOOD RISK
240 minute winter	7	236	34.773	0.673	4.9	1.3039	0.0000	FLOOD RISK
240 minute winter	8	236	34.773	0.847	11.1	1.6856	0.0000	FLOOD RISK
240 minute winter	9	236	34.773	1.170	22.6	2.8508	0.0000	FLOOD RISK
240 minute winter	10	236	34.773	0.833	14.8	3.0649	0.0000	FLOOD RISK
240 minute winter	11	236	34.773	1.148	8.2	17.3930	0.0000	FLOOD RISK
240 minute winter	12	236	34.773	1.473	65.7	5.8501	0.0000	FLOOD RISK
240 minute winter	13	236	34.773	1.667	90.8	2.3850	0.0000	FLOOD RISK
240 minute winter	14	236	34.772	1.766	43.1	3.1212	0.0000	FLOOD RISK
15 minute summer	14_OUT	1	32.937	0.000	10.0	0.0000	0.0000	OK
240 minute winter	Tank	236	34.773	1.717	90.4	361.1805	0.0000	FLOOD RISK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	1	1.000	2	25.3	0.588	0.323	1.3909	
15 minute winter	2	1.001	3	60.4	0.857	0.770	1.3918	
15 minute winter	3	1.002	4	97.1	1.379	1.239	1.3905	
240 minute winter	4	1.003	5	22.3	1.006	0.285	1.9042	
240 minute winter	5	1.004	6	29.0	1.021	0.237	2.4911	
240 minute winter	6	1.005	13	28.2	0.857	0.400	0.7454	
240 minute winter	7	2.000	8	4.9	0.586	0.094	0.6907	
240 minute winter	8	2.001	9	11.1	1.029	0.211	0.6701	
240 minute winter	9	2.002	12	22.6	0.834	0.144	5.4523	
240 minute winter	10	3.000	12	14.8	0.968	0.348	1.8782	
240 minute winter	11	4.000	12	7.8	0.759	0.192	1.1409	
240 minute winter	12	2.003	13	62.6	1.165	0.200	0.8833	
240 minute winter	13	1.006	Tank	90.4	2.931	0.230	0.1434	
240 minute winter	14	Hydro-Brake®	14_OUT	10.0				
240 minute winter	Tank	1.007	14	43.1	0.721	0.155	0.2868	



APPENDIX G

Detailed Maintenance Schedule



LIDL GB

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

Sustainable Drainage System (SuDS) Management Strategy

Project No. 890564



MARCH 2022



RSK GENERAL NOTES

Project No.: 890564

Title: Sustainable Drainage System (SuDS) Management Strategy
Lidl South Ruislip, Victoria Road

Client: LIDL GB

Date: March 2022

Office: Coventry

Status: Final

Author Assif Salim

Technical reviewer Andrew Taylor

Date: 07/03/22

Date: 07/03/22

Project manager Andrew Taylor

Date: 07/03/22

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Where field investigations have been carried out, these have been restricted to a level of detail required to achieve the stated objectives of the work.

This work has been undertaken in accordance with the quality management system of RSK LDE Ltd.

LIDL GB

LIDL South Ruislip

Sustainable Drainage System (SuDS) Management Strategy

Project No. 890564

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1 INTRODUCTION

This management strategy has been prepared by RSK Land and Development Engineering Ltd on behalf of LIDL GB, to satisfy planning condition 7 relating to the full planning consent reference 5039/APP/2020/1339 for the proposed drainage serving the new car park extension

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. 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 make reference 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
- CIRIA Report C768, 'Guidance on the Construction of SuDS', 2017; 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 a the geocellular attenuation tank, drainage channels 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 Geocellular Tank

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 such as catchpits 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
	Inspect silt traps and note rate of sediment accumulation	Monthly in the first year then annually

3.2 An example of operation and maintenance requirements for the existing proprietary treatment system (Bypass Separator)

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.
	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

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
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 system in relation to the design objectives for hydraulic, water quality, biodiversity and visual aspects?								

Inspection Date	Details	Y/ N	Action required	Date completed	Details	Y/ N	Action required	Date completed
Other observations								
Information appended (e.g. photos)								
Continue as current Increase maintenance Decrease maintenance								
Proposed date for next inspection								