



**LIDL GREAT BRITAIN LTD
PURBROOK WAY
HAVANT**

**FLOOD RISK ASSESSMENT &
DRAINAGE STRATEGY**

APRIL 2024



the journey is the reward

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HAVANT**

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DRAINAGE STRATEGY**

APRIL 2024

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**Lidl Great Britain Ltd
Purbrook Way
Havant
Flood Risk Assessment & Drainage Strategy**

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1 Introduction

- 1.1 Mayer Brown Ltd (MBL) has been commissioned by Lidl Great Britain Limited (Lidl GB) to undertake a Flood Risk Assessment (FRA) and Drainage Strategy in support of a planning application for a proposed new store located at Purbrook Way in Havant.
- 1.2 According to the Landmark Flood Risk Information (Appendix C), the approx. 1.27 hectare site is in a low risk Flood Zone 1.
- 1.3 As outlined in the NPPF, for development proposals on sites comprising one hectare or more in area in a Flood Zone 1, the FRA should consider i) the vulnerability of flooding from sources other than river and sea flooding, ii) the potential to increase flood risk elsewhere through the addition of hard surfaces and iii) the effect of the new development on surface water runoff.
- 1.4 This FRA considers the impact of the proposed development in addition to the common ways in which flooding can occur. The conditions currently existing in the location of the site are described, together with the methods used to identify and assess potential impacts caused by the development proposals. The mitigation measures proposed have been identified to avoid and/or reduce the impacts caused by the development proposals.
- 1.5 This FRA and drainage strategy has been compiled in accordance with the “National Planning Policy Framework (NPPF)” published by Communities and Local Government in February 2019, “Technical Guidance to the National Planning Policy Framework” and ‘CIRIA C624: Development and Flood Risk Guidance’.

Planning Background

- 1.6 A similar scheme, also proposed by Lidl GB, was granted planning permission on 2nd December 2022, under Havant Borough Council planning reference APP/20/01221, for the “*Erection of retail foodstore with associated car parking, access, landscaping and engineering works*”.
- 1.7 MBL also produced the FRA and drainage strategy that accompanied this approved development. There is single planning condition 11 in the decision notice that relates to flood risk and drainage as set put below:

Condition 11

The drainage system shall be constructed in accordance with the Flood Risk Assessment & Drainage Strategy ref: A/LIDLHAVANT.10. Surface water

discharge to the surface water sewer shall be limited to 3.0 l/s, unless otherwise agreed in writing by the Local Planning Authority. Any revised details submitted for approval must include a technical summary highlighting any changes, updated detailed drainage drawings and detailed drainage calculations.

Reason: Without the provision of an appropriate surface water connection point the development cannot be appropriately mitigated and having due regard to policies and proposals CS16 and DM10 of the Havant Borough Local Plan (Core Strategy) 2011 and the National Planning Policy Framework.

- 1.8 The main change for the new layout is a different building footprint and amended shape of car park to suit the new footprint. Apart from this the proposed layout for the new submission is largely similar to the approved layout and, as such, will not require amendments to the drainage strategy.

BREEAM Assessment

- 1.9 The proposed new store aims to achieve a rating of Very Good under the BREEAM UK Construction 2018 02 guidance.
- 1.10 POL 03 within the BREEAM assessment specifically relates to Flood and Surface Water Management and the credits achieved are summarised below:
- Flood Resilience (Two credits, Low flood risk) – A site specific Flood Risk Assessment (this document) confirms the development is in a flood zone that is defined as having a low annual probability of flooding. This FRA also takes all current and future sources of flooding into consideration. **2 Credits**
 - Surface Water Run-off - Rate (One credit) – For Greenfield sites, drainage measures are specified so that the peak rate of run-off from the development is not greater than it was for the pre-development site. The peak rate of the surface water run-off from the new store will not exceed QBAR Greenfield rates. A maintenance and management plan has been produced, and a 40% allowance has been made for climate change. **1 Credit**
 - Surface Water Run-off – Volume (One credit)
 - o Flooding of property will not occur in the event of local drainage system failure (caused either by extreme rainfall or a lack of maintenance).

And

- o Drainage design measures are specified so that the post-development peak rate of run-off is reduced to the limiting discharge, where the limiting discharge is defined as the mean annual flow rate (Q_{bar}). **1 Credit**
 - Minimising Watercourse Pollution (One credit) – There is no discharge from the developed site for rainfall up to 5mm. Infiltration drainage is not possible on the Development so the proposed drainage network will discharge all surface water run-off from off-site and, as such, the criteria for not discharging the first 5mm of rainfall from the cannot be met. **0 credits**
- 1.11 The report shows that out of a possible 5 credits available, **4 credits** can be achieved with the overall BREEAM rating of the Development.

2 Site Location and Description

Site Location

- 2.1 The application site is located in the northwest of Havant with the A3(M) running approximately 50m to the west, Purbrook Way to the south and a B&Q store to the east, refer to figure 2.1 and Appendix A for the Site Location Plan.
- 2.2 The site falls under the administrative boundary of Havant Borough Council. The postcode is PO9 3QJ and the approximate co-ordinates to the centre are E469412, N107772.
- 2.3 The area surrounding the application site is predominantly commercial and quasi-retail in its nature with a large B&Q warehouse located to the immediate east.



Figure 3.1: Site Location

Topography

- 2.4 The site covers a total area of approximately 1.27 hectares and is undeveloped greenfield land.
- 2.5 An updated topographical survey was undertaken in December 2023 by EDI Surveys Ltd and can be seen in Appendix B. This survey was undertaken following the site

clearance of overgrown scrub and trees around the periphery. The levels fall from north west to south east with ground levels ranging between 42.90m AOD and 36.20m AOD.

Geology

- 2.6 A Phase 2 Ground investigation report was produced by Remada Ltd in October 2020 following their intrusive site investigation works carried out in August 2020. The relevant extracts are contained in Appendix M of this report.
- 2.7 Published geological maps indicate that the site is directly underlain by London Clay of thickness 77m to 120m, which is designated as unproductive strata.
- 2.8 The site has not been previously developed but its present-day topography and historic maps indicate that is formed of a spoil heap of surplus soils. The source of spoil heap (made ground) is not known but may be due to construction of either the B&Q store or adjacent roads (Purbrook Way and/or A3(M)). This is confirmed by the made ground observed at all exploratory locations as firm to stiff orange/brown grey slightly gravelly clay to a maximum depth of 5.0m.

Existing Drainage

- 2.9 The Southern Water sewer records in Appendix D show that there are no public sewers in the vicinity of the site.
- 2.10 As explained above, there is a large existing B&Q Warehouse immediately to the east. The topographic survey identified that there are existing surface and foul water sewers that drain the B&Q access road to the west and the western part of the existing warehouse.

3 Proposed Layout

- 3.1 The proposed development is for a new Lidl supermarket with associated parking and access road. Access to the site will be via the B&Q access road off Purbrook Way. Refer to Figure 3.1 and Appendix E for the Proposed Layout.



Figure 3.1: Proposed Layout

- 3.2 As shown in Figure 3.1, a large proportion of the Development will be impermeable hardstanding area with soft landscaping situated around the perimeter. The total amount of impermeable area to be positively drained is 0.79ha.
- 3.3 The development is in a low risk Flood Zone 1 area, so the proposed store and car park levels are dictated by boundary and engineering constraints as opposed to predicted fluvial or tidal levels.

4 Flood Risk and Mitigation Measures

4.1 In theory there are five principal types/sources of flooding that could affect the proposed development. These are outlined below with proposed mitigation measures described where necessary. The relevant sections and mitigation measures have come about through a review of the PUSH Strategic Flood Risk Assessment (PUSH SFRA), the EA flood Maps for Planning, the Government based website service relevant flood risk extracts from the Landmark site specific Flood and Environmental Report.

4.2 The Partnership for Urban South Hampshire (PUSH) is a partnership of Hampshire County Council; Isle of Wight, Portsmouth and Southampton, plus the district authorities of: Eastleigh, East Hampshire, Fareham, Gosport, **Havant**, New Forest, Test Valley and Winchester.

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

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

River and Tidal Flood Risk

4.4 In order to view the Environment Agency’s “Flood Maps for Planning” one is directed via the EA website to the similarly titled Government webpage titled “Flood map for Planning”.

4.5 According to the downloaded flood map in Appendix C the application boundary is situated entirely in a low risk Flood Zone 1. This means that it has an annual probability of <0.1% of experiencing flooding from fluvial or tidal sources.

4.6 The Landmark flood information in Appendix C did not identify any features relating to potential river and/or coastal flooding within 500 metres of the application boundary.

4.7 The PUSH interactive web map also matches the Landmark and EA flood maps and do not identify any features relating to potential river and/or coastal flooding within 500 metres of the application boundary.

4.8 With the above in mind there are no fluvial or tidal mitigation measures required so it will not be addressed further in this addendum FRA.

Ground Water Flood Risk

- 4.9 The Landmark flood information (Appendix C) and SFRA confirm the site is at a low risk of flooding from groundwater.
- 4.10 The PUSH interactive web map shows Development is in an area with low bedrock permeability and does not identify any recorded groundwater flooding incidents within 500 metres of the application boundary.
- 4.11 This means that there are no groundwater mitigation measures required so it will not be addressed further in this FRA.

Surface Water Flood Risk

- 4.12 The most up to date surface water flood maps are also obtained via the Government website, with the webpage titled “Check your long term flood risk”. According to the webpage the service uses computer models to assess an area’s long term risk from:
- rivers and the sea
 - surface water
 - reservoirs
- 4.13 According to the downloaded surface water flood map in Appendix F there is small area of surface water flooding in the southwest corner of the application boundary, located within the underpass beneath the slip road off the roundabout on Purbrook Way. The classification of flood risk can be split relatively evenly between low and medium risk. The medium risk area is at risk of flooding between a 1 in 100 year and a 1 in 30 year rainfall event.
- 4.14 The Landmark flood information in Appendix C also identifies the same area for surface water flooding within the application boundary. The area identified is at risk of flooding in a 1 in 75 year rainfall event.
- 4.15 The PUSH interactive web map matches the Landmark and EA flood maps and identifies a small area of medium surface water flood risk at the underpass. See figure 4.1 below.

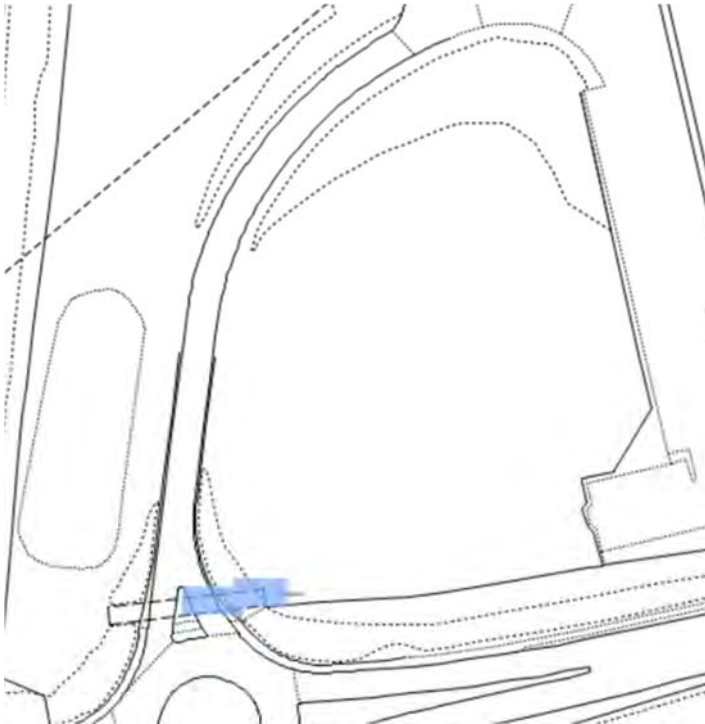


Figure 4.1: PUSH Medium Surface Water Flood Risk

Surface Water Flood Risk Mitigation

- 4.16 The surface water flooding is contained in a localised area within or immediately adjacent the entrance to the underpass. Upon review of the topographic survey (Appendix B) the underpass is located at the bottom of an embankment at circa 38.5m AOD, which is considerably lower than Purbrook Way immediately to the south at 42.3m AOD (over 3.3 metres difference) and the application site immediately to the north with levels up to 42.7m AOD (ranges up to 4.2 metres difference).
- 4.17 The existing underpass and embankments will remain upon completion of the Development. The southern boundary of the proposed car park will be no lower than 41.55m AOD and the new store finished floor level will be 41.95m. Refer the proposed levels and site sections (Appendix F) that show the significant level differences. In particular section H-H positioned where the medium risk surface water flooding is located.
- 4.18 With above in mind, it is not possible for the medium risk surface water flooding at the underpass to impact the Development because it occurs approximately 3.0 metres beneath the lowest point in the proposed car park.
- 4.19 The Development will not alter ground levels where the medium surface water flooding occurs within the underpass so floodwater will not be displaced and moved elsewhere to impact surrounding properties.

4.20 In summary, there is a very small area of medium surface water flood risk within the application boundary but it does not pose a flood risk to the Development. Plus the proposed store and car park levels are dictated by boundary and engineering constraints and not the flood risks,

4.21 With all the above in mind there are no specific mitigation measures required to overcome the medium risk surface water flooding identified within the application boundary. This also accords with principles of the previous approved scheme as described in the introduction.

Infrastructure Failure

4.22 The Landmark flood information in Appendix C also identifies other sources of flood risks that do not affect the Development, including from:

- Historic Flood Events
- Flood Water Storage Areas
- Flood Defences

4.23 The PUSH interactive web map identifies Southern Water observed flooding incidents and the nearest incident is located over 1 Km to the east.

4.24 The Government webpage titled “Check your long term flood risk” (see paragraph 4.12 above) also identifies the potential flood risk posed by the failure of local reservoirs or large bodies of stored water. According to the flood map the nearest flood risk is located approximately 1 Km to the west of the site.

4.25 With the above in mind, the Development is at a low risk of flooding from infrastructure failure so there are no specific mitigation measures required.

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

Table 4.1: Flood Risk Summary

5 Proposed Surface Water Drainage

Existing Surface Water Drainage

- 5.1 The Southern Water sewer records in Appendix D show that there are no public sewers in the vicinity of the site.
- 5.2 There is a large existing B&Q Warehouse immediately to the east. The topographic survey identified that there are existing surface and foul water sewers that drain the B&Q access road to the west and the western part of the existing warehouse.
- 5.3 Lidl GB have purchased the Site from “GHM Jackson 1972 Children’s Settlement Trust” who will retain the B&Q warehouse, access road and associated drainage. Within the Transfer the Seller is also granting the right to Lidl GB to install or connect into the existing service apparatus. Refer to the confirmation letter in Appendix N. (The definition of Services includes water, foul water and surface water, and the definition of Service Apparatus includes sewers, drains, channels, pipes, water courses, gutters and ducts).

Infiltration & Underlying Geology

- 5.4 Published geological maps indicate that the site is directly underlain by London Clay of thickness 77m to 120m, which is designated as unproductive strata.
- 5.5 The site has not been previously developed but its present-day topography and historic maps indicate that is formed of a spoil heap of surplus soils. The source of spoil heap (made ground) is not known but may be due to construction of either the B&Q store or adjacent roads (Purbrook Way and/or A3(M)). This is confirmed by the made ground observed at all exploratory locations as firm to stiff orange/brown grey slightly gravelly clay to a maximum depth of 5.0m. (Refer to Appendix L)
- 5.6 Clay is impermeable and it is therefore considered that infiltration drainage is not suitable at the development site.

Sustainable Drainage (SuDS) and Drainage Hierarchy

- 5.7 Hampshire County Council as the Lead Local Flood Authority (LLFA) are predominantly concerned about the quantity, rate and quality of surface water run-off leaving the Development. It is proposed that surface water leaving the development should not exceed the existing greenfield QBAR rate of flow.
- 5.8 Sustainable Urban Drainage Systems (SUDS) are a range of techniques that aim to mimic the way rainfall drains in natural systems and so reduces the hydraulic and hydrological impact on the local area and downstream catchments. There are a number

of options available to impose surface water restrictions on proposed development plots such as oversized sewers, below ground storage tanks, attenuation ponds and basins, swales, permeable paving, or infiltration systems.

5.9 To determine the most sustainable method of surface water disposal the hierarchy from approved document part H was used, see below:

- **An adequate soakaway or some other adequate infiltration system** – Infiltration drainage is not possible at the application site as it is underlain by London Clay Formation.
- **A Watercourse** – There are no watercourses in close vicinity of the site, refer to Appendix A.
- **A Sewer** – There are no public surface water sewers in the vicinity, but there is a the private 150mm diameter surface water in the B&Q access road immediately to the north of the site.

5.10 With the above in mind the proposed surface water outfall location will discharge at a restricted rate into the existing B&Q surface water sewer network in the verge of the private main access road (This is not a public highway drain and is the nearest place to make the proposed connection). The proposed drainage strategy shows the proposed connection point and is contained in Appendix G. Lidl GB have secured the rights to make this connection as part of their agreement to purchase the site, see paragraph 5.3 of this report.

Proposed Discharge Rates and Calculations

5.11 The existing greenfield rates from the 0.79 hectare of impermeable area have been calculated using microdrainage, see below (for full calculations refer to Appendix F):

- Q1 years: 2.6l/s
- Q30 years: 6.8l/s
- Q100 years: 9.6l/s
- **QBAR: 3.0l/s**

5.12 The proposed peak discharge from the completed development into the existing drainage network will be restricted to the existing QBAR rate of **3 litres / second** using a hydrobrake and tank system.

5.13 The proposed surface water network has been modelled in Micro Drainage (Appendix H), which shows the surface water network will not flood for up to and including the critical 1in100yr+40% climate change storm event.

- 5.14 In order to restrict the run-off to 3 litres / second a total volume of approximately 660m³ will be required for the critical 1in100yr+40% climate change event.

Proposed Surface Water Disposal

- 5.15 It is proposed to discharge surface water run-off into the existing B&Q drainage network to the north, refer to Appendix G for the proposed drainage strategy.
- Water from the roof of the building will drain via a piped network directly into the proposed new attenuation tank.
 - The car park will drain via a gully system and through a petrol interceptor, to provide treatment, before discharging into the proposed new attenuation tank.
- 5.16 A hydro-brake chamber (Appendix I) will be located just downstream of the attenuation tank that will restrict the discharge to a peak rate of 3 litres / second prior to discharging off site, with excess water backing up into the attenuation tank provided.
- 5.17 The proposed attenuation tank will be a proprietary crate system chosen by the Main Contractor based on availability and price. (A typical product is the Geolight system manufactured and supplied by SDS limited as shown in Appendix H).

Surface Water Treatment

- 5.18 A petrol interceptor will be included in the surface water drainage network, which will remove any oil, silts and sediments present in the water from the car park and circulation areas prior to discharging into the sewer.

Adoption and Maintenance

- 5.19 The proposed surface water network will remain in private ownership. This should enable tight control over the operation and maintenance of the drainage/SuDS systems on site. A site specific SuDs Maintenance and Management Plan is contained in Appendix K.

Design Criteria

- 5.20 The positive drainage will be designed in accordance with Sewers for Adoption, and BS EN 752 – Drain and sewer systems outside buildings and the Building Regulations - part H (2015).
- 5.21 The surface water network design and rate of surface water runoff would be based on the Modified Rational method and designed in accordance with the Wallingford Procedure. To carry out the design of the networks, a number of Global Variables are used. These Global Variables/parameters are related to the location of the site in the UK and have been obtained from Maps for “design and analysis of urban storm drainage – Wallingford procedure”. These are as follows;

- Region = England & Wales
- $M(5-60) = 19.50\text{mm}$
- Ration (r) = 0.35

5.22 The positive surface water system would be designed such that:

- The pipes remain unsurcharged during the 1 in 2 year design storm;
- The system should not flood during the worst case 1 in 30 year storm with a free outfall;
- The surface water run-off from the proposed development would be contained on site for up to and including the worst case 1 in 100 year storm event, plus an additional 40% for climate change;
- The pipe velocities are such that self-cleansing is achieved at lesser more moderate storm intensities :-
 - o Pipe roughness (k_s) = 0.6
 - o Minimum pipe velocity at full flow = 1.00m/s
 - o Percentage Impermeable areas:
 - Buildings = 100%
 - Roads = 100%
 - Parking = 100%
 - Soft Landscaping = 0%

6 Proposed Foul Drainage

Existing Foul Drainage

- 6.1 The Southern Water sewer records in Appendix D show that there are no public sewers in the vicinity of the site.
- 6.2 There is a large existing B&Q Warehouse immediately to the east. The topographic survey has recorded the existing surface and foul water sewers that drain the B&Q access road to the west and the western part of the existing warehouse.

Proposed Foul Drainage

- 6.3 All sewers will fall on a gravity basis (no pumps required) to the proposed connection point to the B&Q existing drainage network as shown on the drainage strategy drawing in Appendix G.
- 6.4 Lidl GB have secured the rights to make this connection as part of their agreement to purchase the site, see paragraph 5.3 of this report.

Proposed Foul Flow

- 6.5 The application is for a new Lidl supermarket where the foul flows from the welfare facilities and other connections associated with a supermarket (chiller, freezer, bakery etc) are anticipated to be minimal and, as such, the downstream receiving foul network will have sufficient capacity.

7 Conclusion

7.1 The development is in a low risk Flood Zone 1 area so the proposed levels will be dictated by boundary and engineering constraints as opposed to a predicted fluvial or tidal flood level.

7.2 The development is also at low risk from flooding from the following sources: Groundwater and Infrastructure Failure (see Table 7.1):

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

Table 7.1: Flood Risk Summary

7.3 The surface water run-off from the Development will discharge via a network of pipes and gullies into the existing B&Q drainage network to the north at a peak discharge rate of **3 litres / second**. Lidl GB have secured the rights to make this connection as part of their agreement to purchase the site.

7.4 The SuDS features will ensure excess water will be safely contained within the site boundary up to and including the 1 in 100 year event plus 40% climate change.

7.5 The proposed foul sewers serving the development will connect to the existing B&Q network to the north. Lidl GB have secured the rights to make this connection as part of their agreement to purchase the site.

7.6 Surface water treatment will be provided using a petrol interceptor.

7.7 This report aims to achieve a rating of Very Good under the BREEAM UK Construction 2018 02 guidance. POL 03 relates to Flood and Surface Water management out of a possible 5 credits available, 4 credits have been met which assists with the overall BREEAM rating of the Development.

7.8 Having completed this Flood Risk Assessment and Drainage Strategy, the conclusion is that the proposed new Lidl supermarket at Purbrook Way, Havant is not at risk of flooding and can be safely constructed without flooding itself and will not increase the risk of flooding to downstream/surrounding properties.

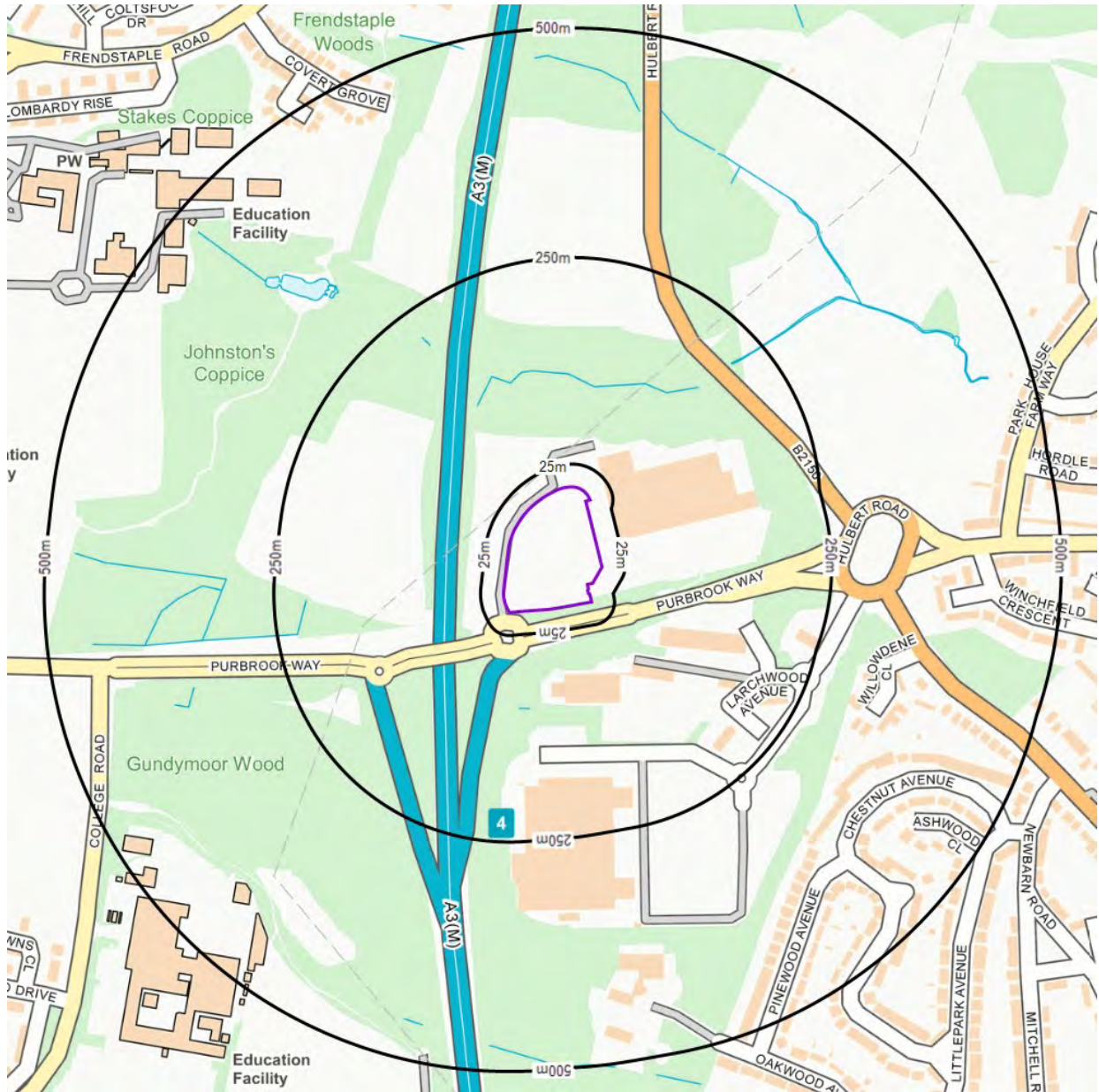
APPENDIX A: Site Location

Property Location



Location Plan

The map below shows the location of the property.

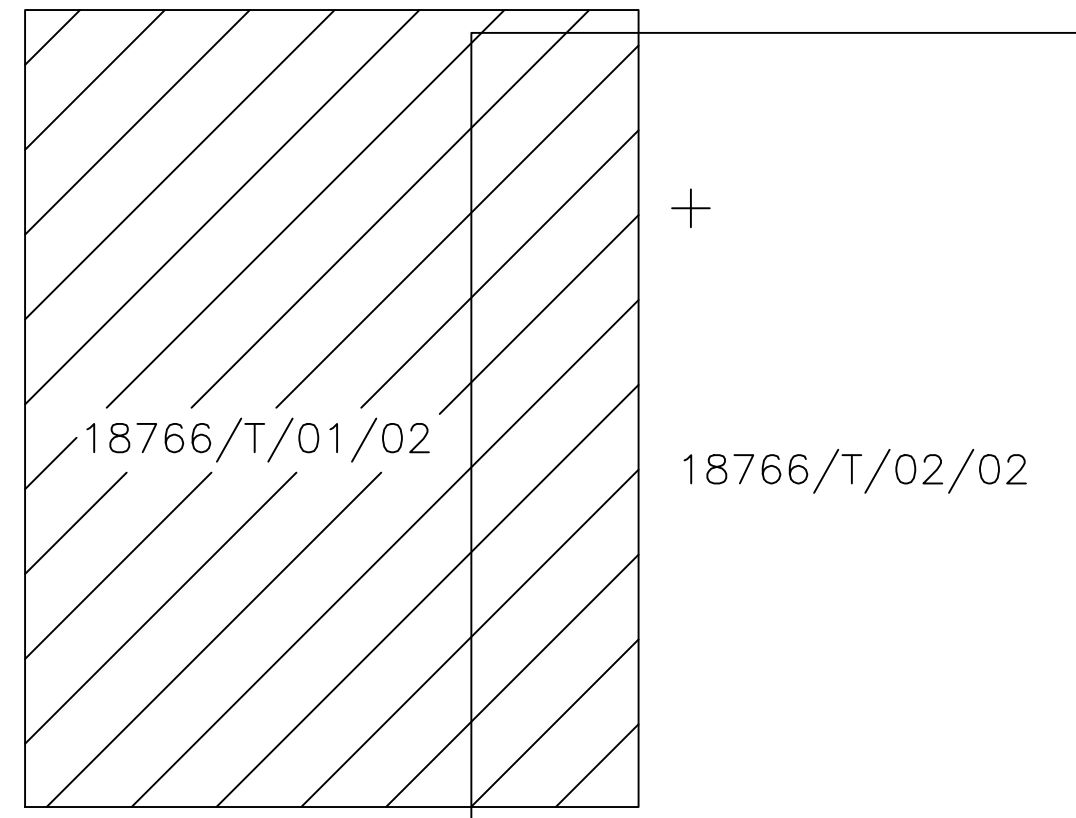
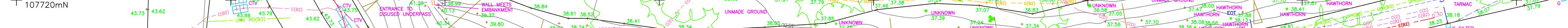
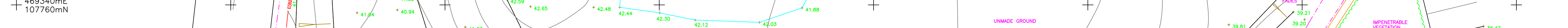
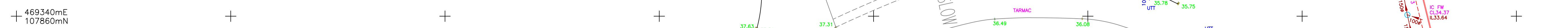
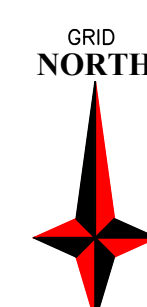


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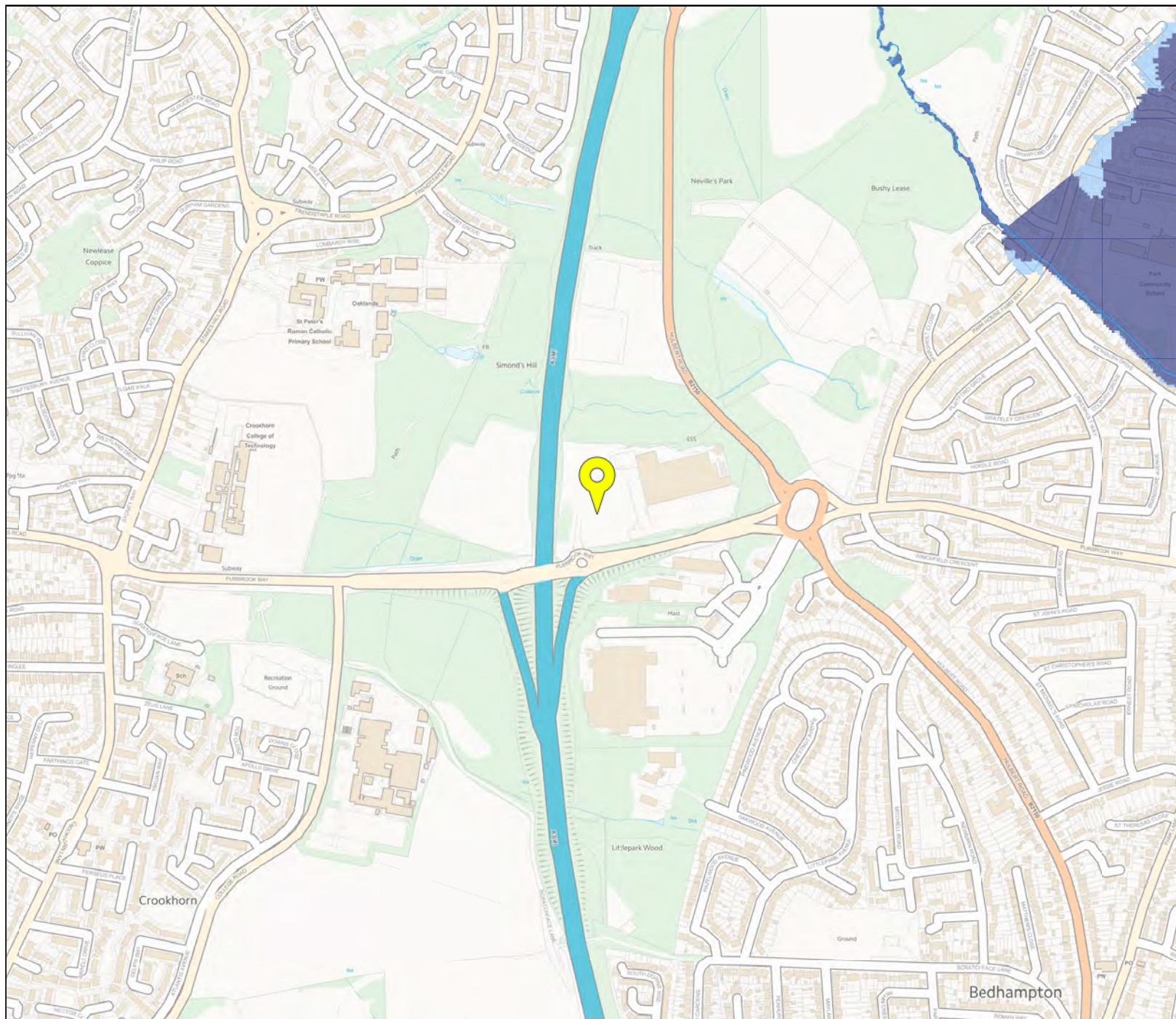
◇ Site

○ Search Radii

APPENDIX B: Topographic Survey

[illegible]

APPENDIX C: Flood Risk Information



Flood map for planning

Your reference

Lidl Havant

Location (easting/northing)

469394/107780

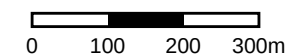
Scale

1:10000

Created

18 Nov 2020 18:24

-  Selected point
-  Flood zone 3
-  Flood zone 3: areas benefitting from flood defences
-  Flood zone 2
-  Flood zone 1
-  Flood defence
-  Main river
-  Flood storage area



SURFACE WATER FLOOD MAP
(July 2021)
Lidl, Havant



Havant Borough Council, Post code: PO9 3QJ Co-ords: E469394, N107780

Risk of Flooding from Surface Water

Surface water flooding happens when rainwater does not drain away through the normal drainage systems or soak into the ground, but lies on or flows over the ground instead.

The shading on the map shows the risk of flooding from surface water in this particular area.

There are four different kinds of area shown on the Flood Map. They can be described as follows:

-  High Risk Area – Each year this area has a greater than 1in30 (3.3%) chance of flooding from surface water:
-  Medium Risk Area – Each year this area has between a 1in100 and a 1in30 (1%-3.3%) chance of experiencing flooding from Surface Water:
-  Low Risk Area – Each year this area has a between a 1in1000 and 1in100 (0.1%-1%) chance of experiencing flooding from Surface Water.
-  Very Low Risk Area – Each year this area has a less than 1in1000 (0.1%) chance of experiencing flooding from Surface Water.



Section 2a: River and Coastal Flooding

No features relating to potential river and/or coastal flooding have been identified within 500m of the property. Please see the Front Page and the Professional Opinion and Recommendations section for our overall risk opinion, further information and next steps guidance.

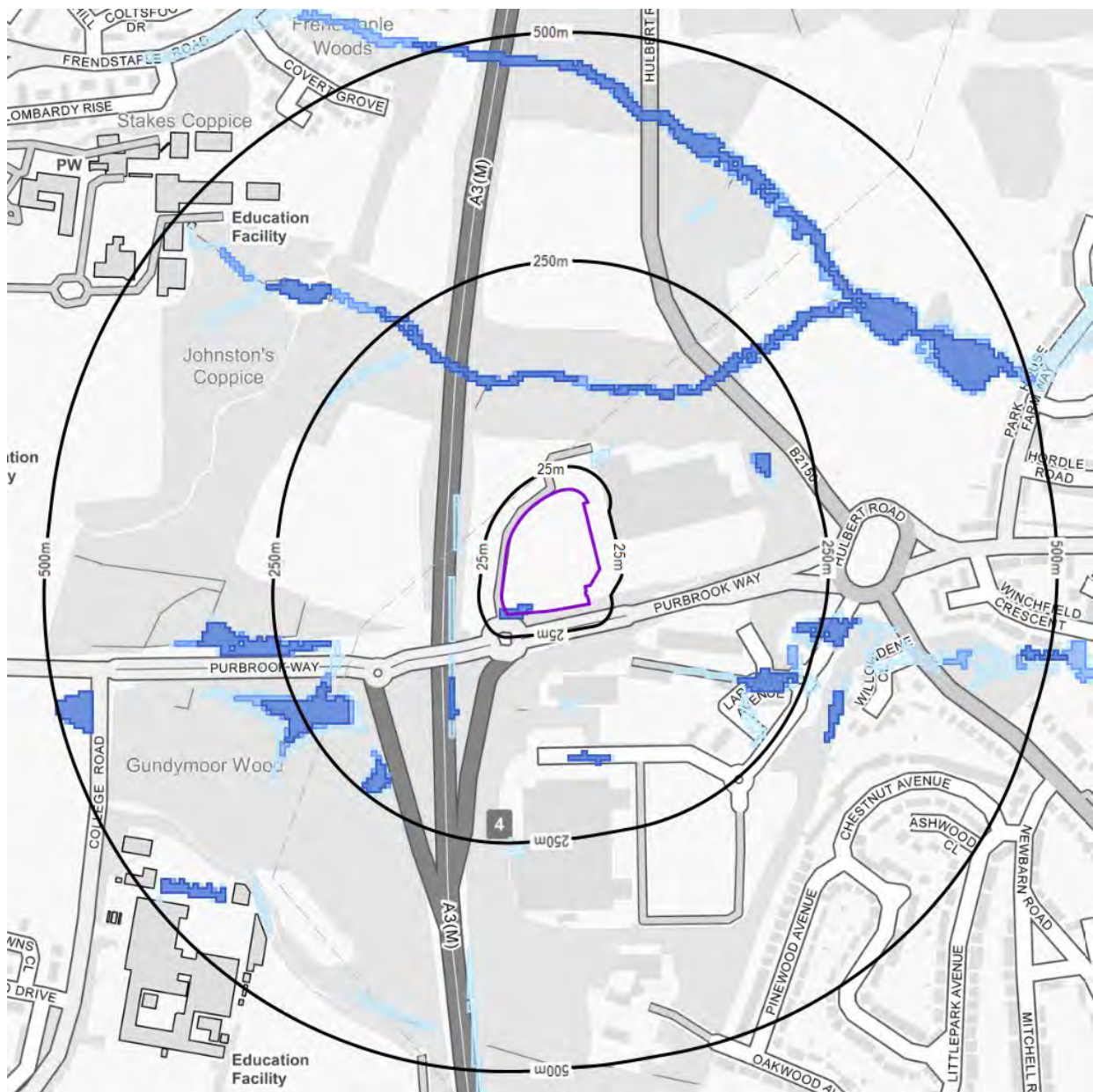
Details	Distance	Bearing	Contact
Risk of Flooding From Rivers and Sea (RoFRS) No features identified for this property.			
Flooding From Rivers or Sea Without Defences (Flood Zone 3) No features identified for this property.			
Extreme Flooding From Rivers or Sea Without Defences (Flood Zone 2) No features identified for this property.			
Area Benefiting from Defences No features identified for this property.			
Flood Defences No features identified for this property.			

Flood



Section 2b: Surface Water Flooding

The map below shows the location of surface water flood risks within 500m of the property, with further details in the tables that follow. Please see the Front Page and the Professional Opinion and Recommendations section for our overall risk opinion, further information and next steps guidance.



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- Surface Water - 1 in 75 year return
- Surface Water - 1 in 200 year return
- Surface Water - 1 in 1000 year return



Section 2b: Surface Water Flooding

The table below provides details of potential surface water flooding identified within 500m of the property. Please see the Front Page and the Professional Opinion and Recommendations section for our overall risk opinion, further information and next steps guidance.

Details	Distance	Bearing	Contact
Surface Water Flooding Return Period: 1 in 75			
Depth of flood water: Greater than 0.3m and Less than or equal to 1.0m Data Provider: JBA Risk Management Limited	On Site	SW	1
Depth of flood water: Greater than 0.1m and Less than or equal to 0.3m Data Provider: JBA Risk Management Limited	On Site	SW	1
Depth of flood water: Greater than 1.0m Data Provider: JBA Risk Management Limited	129m	N	1
Depth of flood water: Equal to 0.1m Data Provider: JBA Risk Management Limited	282m	E	1
Surface Water Flooding Return Period: 1 in 200			
Depth of flood water: Greater than 0.3m and Less than or equal to 1.0m Data Provider: JBA Risk Management Limited	On Site	SW	1
Depth of flood water: Greater than 0.1m and Less than or equal to 0.3m Data Provider: JBA Risk Management Limited	On Site	S	1
Depth of flood water: Greater than 1.0m Data Provider: JBA Risk Management Limited	128m	N	1
Surface Water Flooding Return Period: 1 in 1000			
Depth of flood water: Greater than 0.3m and Less than or equal to 1.0m Data Provider: JBA Risk Management Limited	On Site	SW	1
Depth of flood water: Greater than 0.1m and Less than or equal to 0.3m Data Provider: JBA Risk Management Limited	On Site	SW	1
Depth of flood water: Greater than 1.0m Data Provider: JBA Risk Management Limited	126m	N	1
Depth of flood water: Equal to 0.1m Data Provider: JBA Risk Management Limited	153m	SE	1

Flood data provided by JBA Risk Management Limited. © Copyright JBA Risk Management Limited 2008-2020

What does this mean?

Surface Water Flooding Return Period: 1 in 75

This area is at risk of flooding in a 1:75 year rainfall event (an event that has a 1 in 75 chance of happening in any given year). It is expected that in this event a large amount of rainfall would overwhelm the drainage systems or be unable to soak away into the ground immediately, and would therefore gather at the areas shown on the map. The depth information above will help you understand how severe any resulting flood might be. If your property/site is within this area we would recommend you consider further investigations to clarify the impact of any flooding.

Flood

Surface Water Flooding Return Period: 1 in 200

This area is at risk of flooding in a 1:200 year rainfall event (an event that has a 1 in 200 chance of happening in any given year). It is expected that in this event a large amount of rainfall would overwhelm the drainage systems or be unable to soak away into the ground immediately, and would therefore gather at the areas shown on the map. The depth information above will help you understand how severe any resulting flood might be. If the predicted flood levels at your property/site are deep (over 1m) we would recommend you consider further investigations to clarify the impact of any flooding.

Surface Water Flooding Return Period: 1 in 1000

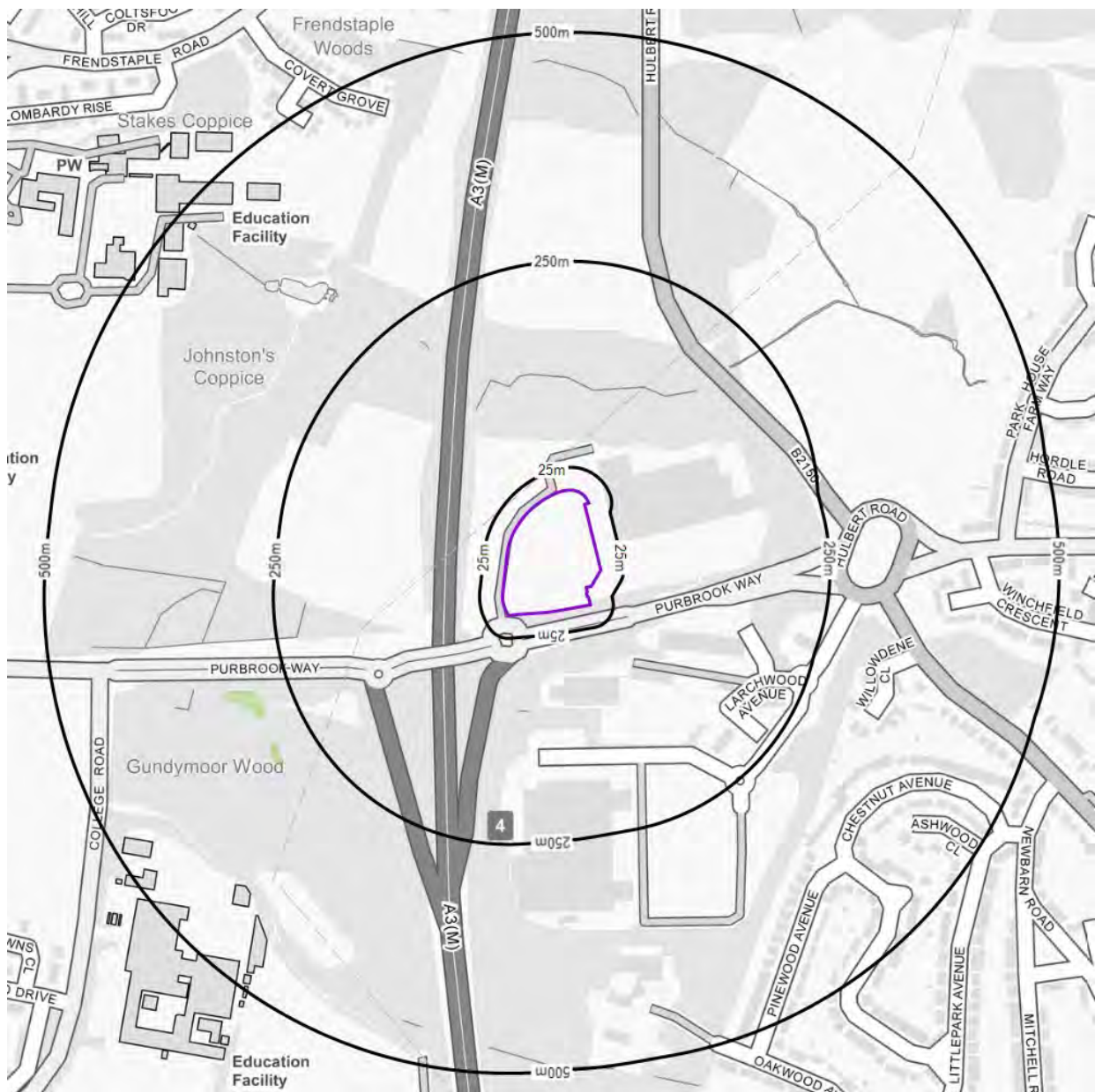
This area is at risk of flooding in a 1:1000 year rainfall event (an event that has a 1 in 1000 chance of happening in any given year). It is expected that in this event a large amount of rainfall would overwhelm the drainage systems or be unable to soak away into the ground immediately, and would therefore gather at the areas shown on the map. The depth information above will help you understand how severe any resulting flood might be. If the predicted flood levels at your property/site are deep (over 1m) we would recommend you consider further investigations to clarify the impact of any flooding.

Flood



Section 2c: Groundwater Flooding

The map below shows the location of groundwater flood risks within 500m of the property, with further details in the tables that follow. Please see the Front Page and the Professional Opinion and Recommendations section for our overall risk opinion, further information and next steps guidance.



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-  Groundwater Flood Risk - High Risk
-  Groundwater Flood Risk - Moderate Risk
-  Groundwater Flood Risk - Low Risk



Section 2c Groundwater Flooding

The table below provides details of potential groundwater flooding identified within 500m of the property. Please see the Front Page and the Professional Opinion and Recommendations section for our overall risk opinion, further information and next steps guidance.

Details	Distance	Bearing	Contact
Groundwater Flooding			
Risk: Low Data Provider: GeoSmart Information Ltd	286m	SW	1

What does this mean?

Groundwater Flooding

This area is considered to be at risk of groundwater flooding in a 1:100 year event. This means that in this type of rainfall event it is predicted that damage to property or harm to other sensitive receptors at, or near, this location could occur. Flooding may result in damage to property, road or rail closures and, in exceptional cases, may pose a risk to life. Further consideration of the local level of risk and mitigation, by a suitably qualified professional, is recommended.

Flood



Section 2d: Other Flooding

The map below shows the location of other flood risks within 500m of the property, with further details in the tables that follow. Please see the Front Page and the Professional Opinion and Recommendations section for our overall risk opinion, further information and next steps guidance.



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- | | |
|--|--|
|  Historic Flood Events |  OS Mastermap Water Network |
|  Flood Water Storage Areas |  Flood Defences |
|  OS VectorMap District - Water Features |  Areas Benefiting from Flood Defences |



Section 2d: Other Flooding

The table below provides details of potential other flooding identified within 500m of the property. Please see the Front Page and the Professional Opinion and Recommendations section for our overall risk opinion, further information and next steps guidance.

Details	Distance	Bearing	Contact
Flood Water Storage Areas			
No features identified for this property.			
Historic Flood Events			
No features identified for this property.			
OS VectorMap District - Water Features			
Data Provider: Ordnance Survey	212m	NE	6
Data Provider: Ordnance Survey	314m	NW	6
Data Provider: Ordnance Survey	366m	NE	6
OS Mastermap Water Network			
Watercourse Level: onGroundSurface Watercourse Name: Not Supplied Data Provider: Ordnance Survey	106m	S	6
Watercourse Level: onGroundSurface Watercourse Name: Not Supplied Data Provider: Ordnance Survey	112m	N	6
Watercourse Level: Watercourse Name: Not Supplied Data Provider: Ordnance Survey	116m	NW	6
Watercourse Level: onGroundSurface Watercourse Name: Not Supplied Data Provider: Ordnance Survey	122m	NW	6
Watercourse Level: onGroundSurface Watercourse Name: Not Supplied Data Provider: Ordnance Survey	141m	N	6
Watercourse Level: onGroundSurface Watercourse Name: Not Supplied Data Provider: Ordnance Survey	142m	N	6
Watercourse Level: underground Watercourse Name: Not Supplied Data Provider: Ordnance Survey	142m	N	6
Watercourse Level: onGroundSurface Watercourse Name: Not Supplied Data Provider: Ordnance Survey	206m	NW	6
Watercourse Level: onGroundSurface Watercourse Name: Not Supplied Data Provider: Ordnance Survey	215m	W	6
Watercourse Level: onGroundSurface Watercourse Name: Not Supplied Data Provider: Ordnance Survey	218m	NW	6

Flood

Details	Distance	Bearing	Contact
Watercourse Level: onGroundSurface Watercourse Name: Not Supplied Data Provider: Ordnance Survey	228m	W	6
Watercourse Level: onGroundSurface Watercourse Name: Not Supplied Data Provider: Ordnance Survey	302m	W	6
Watercourse Level: onGroundSurface Watercourse Name: Not Supplied Data Provider: Ordnance Survey	307m	W	6
Watercourse Level: onGroundSurface Watercourse Name: Not Supplied Data Provider: Ordnance Survey	307m	W	6
Watercourse Level: onGroundSurface Watercourse Name: Not Supplied Data Provider: Ordnance Survey	314m	NW	6
Watercourse Level: Watercourse Name: Not Supplied Data Provider: Ordnance Survey	332m	W	6
Watercourse Level: onGroundSurface Watercourse Name: Not Supplied Data Provider: Ordnance Survey	332m	W	6
Watercourse Level: onGroundSurface Watercourse Name: Not Supplied Data Provider: Ordnance Survey	332m	NW	6
Watercourse Level: onGroundSurface Watercourse Name: Not Supplied Data Provider: Ordnance Survey	351m	W	6
Watercourse Level: onGroundSurface Watercourse Name: Not Supplied Data Provider: Ordnance Survey	355m	W	6
Watercourse Level: onGroundSurface Watercourse Name: Not Supplied Data Provider: Ordnance Survey	364m	NE	6
Watercourse Level: onGroundSurface Watercourse Name: Not Supplied Data Provider: Ordnance Survey	364m	NE	6
Watercourse Level: onGroundSurface Watercourse Name: Not Supplied Data Provider: Ordnance Survey	367m	NE	6
Watercourse Level: onGroundSurface Watercourse Name: Not Supplied Data Provider: Ordnance Survey	371m	NE	6
Watercourse Level: onGroundSurface Watercourse Name: Not Supplied Data Provider: Ordnance Survey	378m	NW	6
Watercourse Level: onGroundSurface Watercourse Name: Not Supplied Data Provider: Ordnance Survey	390m	NE	6

Flood

Details	Distance	Bearing	Contact
Watercourse Level: onGroundSurface Watercourse Name: Not Supplied Data Provider: Ordnance Survey	392m	NE	6
Watercourse Level: onGroundSurface Watercourse Name: Not Supplied Data Provider: Ordnance Survey	394m	W	6
Watercourse Level: onGroundSurface Watercourse Name: Not Supplied Data Provider: Ordnance Survey	454m	E	6
Watercourse Level: onGroundSurface Watercourse Name: Not Supplied Data Provider: Ordnance Survey	458m	S	6
Watercourse Level: Watercourse Name: Not Supplied Data Provider: Ordnance Survey	461m	S	6
Watercourse Level: Watercourse Name: Not Supplied Data Provider: Ordnance Survey	468m	N	6
Watercourse Level: onGroundSurface Watercourse Name: Not Supplied Data Provider: Ordnance Survey	473m	S	6
Watercourse Level: onGroundSurface Watercourse Name: Not Supplied Data Provider: Ordnance Survey	490m	N	6
Area Benefiting from Defences No features identified for this property.			
Flood Defences No features identified for this property.			

What does this mean?

OS VectorMap District — Water Features / OS Mastermap Water Network

Ordnance Survey Mapping has indicated that there is a water feature such as a river, stream, drain or coastal feature at this location. This may not necessarily pose a risk to the property, but if the water feature transects the property, the property owner may have maintenance responsibilities. Please see Landmark's Overall Flood Risk result to understand the expected impact on the property.

Next Steps

If you would like any further information in respect of the above findings, we recommend that you contact our Customer Services Team on 0844 844 9966 or helpdesk@landmark.co.uk. Further Information is also available in the 'Useful Information' section.

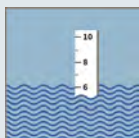
Preparation for a Flood Event

Understanding Flood Risk

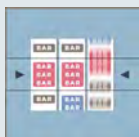
It is important to understand that flooding can happen anywhere, even if the property is not near to a watercourse or the sea. This is because in periods of very heavy rainfall, water can collect in many places where there may be a dip in the ground or a barrier blocking the water's path. Severe rainfall events can also lead to water rising from under the ground as the ground becomes saturated and water is unable to drain away naturally.

The impacts of flooding are not just financial as flooding can also devastate lives, causing both severe disruption at the time as well as continued disturbance through the drying out period in the months that follow. Therefore, it is important to consider any potential flood risk when purchasing a property.

How is the Overall Flood Risk Calculated?



Impact: We consider the expected depths of flooding at your property. Low depths, for example, 10cm, are unlikely to put people at risk but water damage to buildings and contents may be significant without any flood protection. High water depths, for example 1m, may severely threaten the safety of people and may cause extensive damage to buildings. It may be dangerous to keep deep floods out of a building because of the large weight of water pressing against the wall.



Likelihood: Flood risk is based on probability and different approaches to flood protection may be needed depending upon how likely flooding is expected. A common way of expressing how likely a flood event is to occur is 'return period'. For example, a 1:100 year event has a 1% likelihood of occurring in any given year, whereas a 1:200 year event has a 0.5% likelihood of occurring in any given year. The 1:200 event would be expected to result in a greater extent of flooding than the 1:100 event, as it would be more severe, but the likelihood of it occurring is lower.

APPENDIX D: Southern Water Sewer Records

SEWER RECORDS PAGE 1 OF 2

107971



107393

469056

O.S. REF.

SU6907NE

Title: Land at Purbrook Way

Drawn by: dassuta

Scale: 1:2500

Date: 03/02/2020

The positions of pipes shown on this plan are believed to be correct, but Southern Water Services Ltd accept no responsibility in the event of inaccuracy.
The actual positions should be determined on site.

WARNING: BAC pipes are constructed of Bonded Asbestos Cement
WARNING: Unknown (UNK) materials may include Bonded Asbestos Cement

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469996

SEWER RECORDS PAGE 2 OF 2

Node	Cover	Invert	Size	Material	Shape		Node	Cover	Invert	Size	Material	Shape		Node	Cover	Invert	Size	Material	Shape		Node	Cover	Invert	Size	Material	Shape
6501X	26.8	23.47	150	VC	CIRC		8702X	19.25	17.12	225	VC	CIRC														
6502X	27.08	22.82	225	VC	CIRC		8703X	20.01	18.87	225	VC	CIRC														
6550X	27.15	22.96	675	CP	CIRC		8704X	19.2	17.72	225	VC	CIRC														
7402X	31.87	29.66	150	VC	CIRC		8750X	23.18	20.86	375	CP	CIRC														
7403X	32.53	30.64	150	VC	CIRC		8751X	22.05	19.79	225	VC	CIRC														
7404X	34.51	31.81	150	VC	CIRC		8752X	19.79	18.2	225	VC	CIRC														
7405X			UNK	UNK	CIRC		8753X	19.51	17.44	225	VC	CIRC														
7406X			UNK	UNK	CIRC		8754X	19.56	17.93	225	VC	CIRC														
740DX			UNK	UNK	CIRC		8850X	20.87	18.59	675	CP	CIRC														
741DX			UNK	UNK	CIRC		8851X	20.14	18	OTHER	CO	RECT														
742DX			UNK	UNK	CIRC		8852X	20.06	17.1	675	CP	CIRC														
7450X			UNK	UNK	CIRC		9401X	26.97	25.1	225	VC	CIRC														
7451X	32.08	29.37	225	VC	CIRC		9451X	27.34	24.95	225	VC	CIRC														
7452X	35.26	32.46	225	VC	CIRC		9501X			225	VC	CIRC														
7453X	29.58	26.98	225	VC	CIRC		9502X	25.6	21.66	225	VC	CIRC														
7501X	27.09	24.98	150	VC	CIRC		9503X	21.77	19.99	225	VC	CIRC														
7502X	24.85	23.34	225	VC	CIRC		9550X	21.31	20.61	225	CP	CIRC														
7503X	24.66	23.03	225	VC	CIRC		9551X	22.04	21.09	225	VC	CIRC														
7504X			UNK	UNK	CIRC		9552X	22.3	21.39	225	VC	CIRC														
7550X	26.88	24.4	225	VC	CIRC		9553X	24.57	23.04	150	VC	CIRC														
7551X	22.96		450	CP	CIRC		9554X	22.62	21.24	225	VC	CIRC														
7552X	23.01		450	CP	CIRC		9650X	17.84		750	CP	CIRC														
7553X	24.41		300	UNK	CIRC		9651X			UNK	UNK	CIRC														
7601X	25	22.61	225	VC	CIRC		9701X	18.32	16.34	225	VC	CIRC														
7650X	25.39	20.9	675	CP	CIRC		9702X	18.94	16.6	225	VC	CIRC														
7651Y	22.9		450	CP	CIRC	*	9703X	18.49	16.17	225	VC	CIRC														
7651X	22.9	20.41	450	CP	CIRC	*	9704X	17.76	15.83	225	VC	CIRC														
7652X	22.73	20.14	450	CP	CIRC		9705X	18.98	18.03	225	VC	CIRC													*	
7653X	22.02	20.35	225	VC	CIRC		9705Y	18.98	18.03	225	VC	CIRC												*		
7654X	21.95	20.91	150	VC	CIRC		9706X	18.88	16.94	225	VC	CIRC														
7655X	21.72	19.14	525	CP	CIRC		9707X	18.88	16.88	225	VC	CIRC														
7656X	22.19	19.47	525	CP	CIRC		9750X	18.7	17.67	225	VC	CIRC														
7701X	24.7	21.49	225	VC	CIRC		9751X	18.54	16.68	225	VC	CIRC														
7702X	23.02	20.7	225	VC	CIRC		9752X	18.99	18.09	225	VC	CIRC														
7750X	25.62	23.47	375	CP	CIRC		9801X	18.23	16.15	225	VC	CIRC														
7751X	24.72	20.23	675	CP	CIRC		9802X	17.75	15.55	225	VC	CIRC														
7752X	23.75	21.13	375	CP	CIRC		9850X	17.97	15.96	225	VC	CIRC														
7753X	23.74	22.25	225	CP	CIRC	*	9851X	16.7	14.81	225	VC	CIRC														
7753Y	23.74	22.21	225	CP	CIRC	*	9852X	18.09	15.94	225	VC	CIRC														
7754X	23.29	19.12	675	CP	CIRC		9853X	18.54	16.75	225	VC	CIRC														
7851X	26.16	24.76	225	CP	CIRC		9901X	15.75	13.9	225	VC	CIRC														
8401X	31.65	29.42	150	VC	CIRC		9902X	17.2	14.81	225	VC	CIRC														
8402X	29.79	27.51	150	VC	CIRC		9903X	15.29	13.38	225	VC	CIRC														
8403X	28.67	27.32	150	VC	CIRC		9904X			UNK	UNK	CIRC														
8404X	28.83	26.46	225	VC	CIRC		9950X	16.39		300	UNK	CIRC														
8405X	29.95	27.92	150	VC	CIRC		9951X	15.31	13.53	225	VC	CIRC														
8451X	28.52	25.91	225	VC	CIRC																					
8452X	28.54	27.44	150	VC	CIRC																					
8453X	29.53	27.86	150	VC	CIRC																					
8454X	31.71	29.74	150	VC	CIRC																					
8501X	25.96	22.41	225	VC	CIRC																					
8502X	24.52	22.74	225	VC	CIRC																					
8504X			150	VC	CIRC																					
8551X	25.09	23.24	225	VC	CIRC																					
8552X	26.47	24.23	225	VC	CIRC																					
8553X	21.02	20.29	225	CP	CIRC																					
8603X			150	VC	CIRC																					
860DX			150	VC	CIRC																					
8650X	21.49	19.84	375	CP	CIRC																					
8651X	19.48	18.21	750	CP	CIRC																					
8652X	21.43	18.66	600	CP	CIRC																					
8653X	21.26	18.6	525	CP	CIRC																					
8654X	20.51	18.4	600	CP	CIRC																					
8655X	20.8	19.99	225	CP	CIRC																					
8701X	20.02	17.42	225	VC	CIRC																					

LINE STYLES / COLOURS

Brown

Red

Orange

Dark Blue

Purple

Light Blue

Yellow

Green

Foul

Foul Syphon Sewer

Foul Vacuum Main

Foul Rising Main

Combined

Combined Syphon Sewer

Combined Rising Main

Lateral Drain

Building Over Agreement Area

Treated Effluent

Sludge

Sewer Catchment

Section 104 Area

Surface Water

Surface Water Rising Main

Private

Access Shaft

Decommissioned

MATERIALS

AK

BAC

BRC

BRE

CC

CI

CO

CP

CSB

CSU

DI

GRC

GRP

MAR

PE

PF

PP

PVC

RPM

SI

ST

VC

XXX

ZZZ

Alkathene

Bonded Asbestos Cement

Brick (Common)

Brick (Engineering)

Concrete Box Culvert

Cast Iron

Concrete (In-Situ)

Concrete (Pre-Cast)

Concrete Segments (bolted)

Concrete Segments (unbolted)

Ductile Iron

Glass Reinforced Concrete

Glass Reinforced Plastic

Masonry in regular Courses

Masonry in random Courses

Polyethylene

Pitch Fibre

Polypropylene

Polyvinyl Chloride

Reinforced Plastic Matrix

Spun Iron

Steel

Unfilled Clay

Other

Unknown

LEGEND - SEWERS

Manhole (SW)

Manhole (F&C)

Lamp hole (SW)

Lamp hole (F&C)

Pumping Station (SW)

Pumping Station (F&C)

Side entry manhole (SW)

Side entry manhole (F&C)

Blind shaft (SW)

Blind shaft (F&C)

Ejector station (SW)

Ejector station (F&C)

Watertight door (SW)

Watertight door (F&C)

Flushing ch. Min-e (SW)

Flushing ch. Min-e (F&C)

Flushing ch. No-e (SW)

Flushing ch. No-e (F&C)

Demarcation Chamber

Washout (SW)

Washout (F&C)

Rodding Eye (SW)

Rodding Eye (F&C)

Gauging point (SW)

Gauging point (F&C)

Intercept chamber (SW)

Intercept chamber (F&C)

Storm Tank (SW)

Storm Tank (F&C)

Vortex chamber (SW)

Vortex chamber (F&C)

Label ellipse

Dummy/S24 manhole

Outfall

Penstock chamber

Damboards

Storm Overflow

Backdrop manhole

Other (s)

Other

Change in sewer (s)

Change in sewer

Reflex valve

Flap valve

Cascade

Anode

Valve

Closed Valve

Air Valve

Hatch box (SW)

Hatch box (F&C)

Direction arrow

Emptying valve

Catchpit

Soakaway

Inlet

Balancing Pond

Wastewater treatment works

Marine treatment works

Outfall headworks

Vent

Vent column

Tidal storage tank

Blank end

Head of Public Sewer

Micro Pumping Station

SHAPES (S)

A

B

C

E

H

Arched

Barrel

Circular

Egg

Horseshoe

R

S

T

U

X

Rectangular

Square

Trapezoidal

U Shape

Other

NODE REFERENCING SYSTEM

1st digit:

2nd digit:

3rd digit:

4th digit:

hundred metre easting identifier

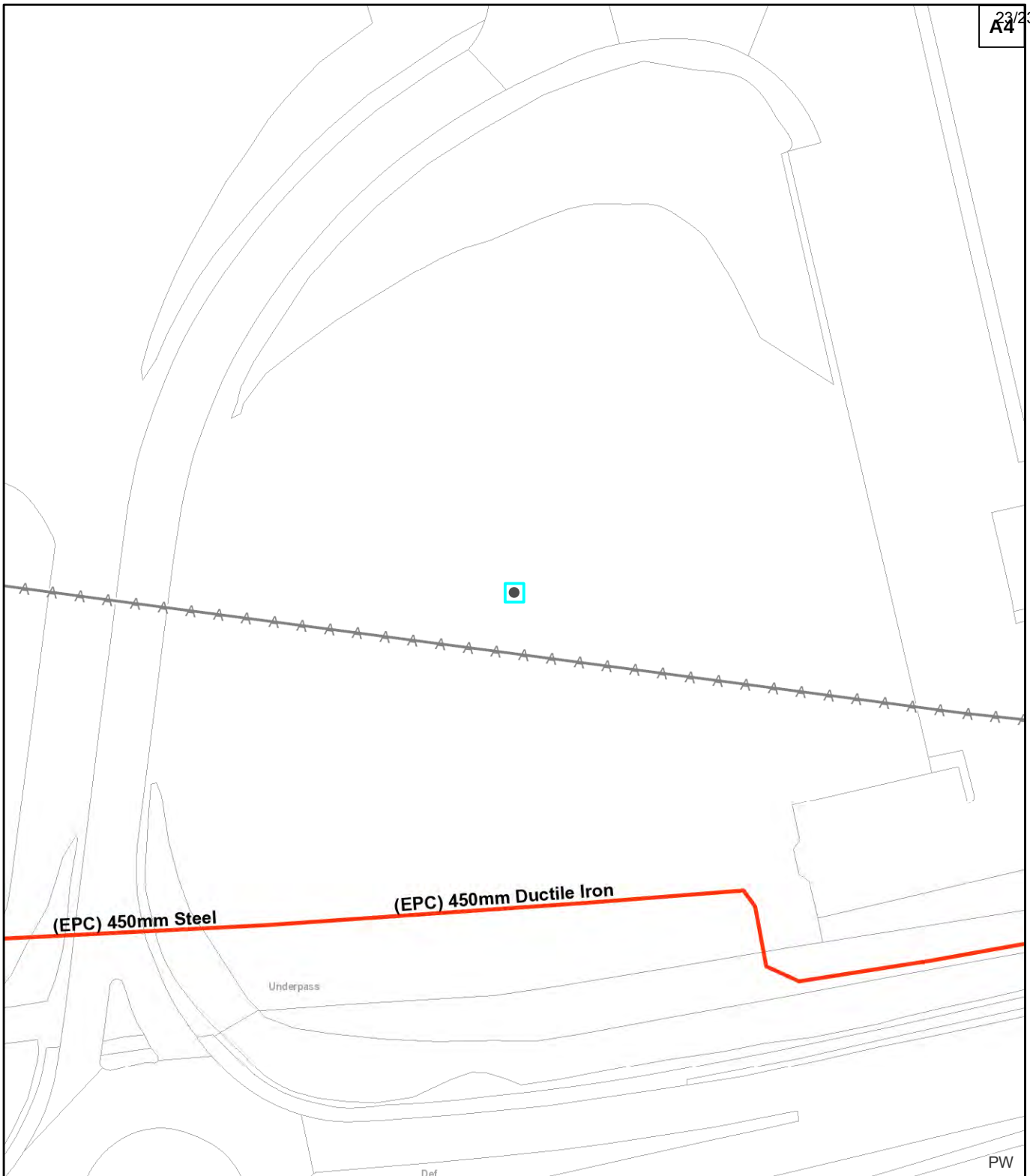
hundred metre northing identifier

sewer type identifier

next sequential node

Drawn by:	dassuta
Title:	Land at Purbrook Way
Date:	03/02/2020





Water Supply	Valves / Fittings	Hydrant
— Distribution Main - - - Fire Main — Trunk Main — Raw Water Main — Communication Pipe — Abandoned Main	- Capped End - StopCock - Butterfly Valve - Pressure Flow Valve	- Reflux Valve - Air Valve - Open Valve - Closed Valve - Company Washout Hydrant(Double) - Company Washout Hydrant(Double) Offset - Company Washout Hydrant(Single) - Company Washout Hydrant(Single) Offset
		- Fire Brigade Hydrant(Double) - Fire Brigade Hydrant(Double) Offset - Fire Brigade Hydrant(Single) - Fire Brigade Hydrant(Single) Offset - Fire Brigade Washout Hydrant

The information supplied is given in good faith as a guide to locating underground apparatus. Its accuracy cannot be guaranteed, nor does it include comprehensive information about the existence or location of service pipes or cables to individual premises. The responsibility for locating and avoiding damage to apparatus on site shall be that of the person proposing to excavate in the street who shall be liable to the apparatus owner and any third party who may be affected in any way for any loss or damage caused by their failure to do so.

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U1490087

OS Ref: SU6804SW

Scale: 1:1,250

Date: 17/01/2020



Registered Office
P.O. BOX NO. 8, West Street, Havant,
Hampshire. PO9 1LG.
Registered in England No. 2536455
Telephone: (023) 9249 9888
Fax: (023) 9245 3632
Website: www.portsmouthwater.co.uk

APPENDIX E: Proposed Layout

See arboricultural information for existing trees to be retained..

Structural Engineer to review requirement for retaining wall, line shown indicatively

Proposed external plant area with screen enclosure around
Tree to be removed

Store loading area, retaining wall with pedestrian guard rail to delivery ramp

3no. vertical staff cycle racks within warehouse

1100mm high handrail to top of retaining wall

Approximate sub station location TBC by Lidl and services Engineer

Service and turning zones and parking subject to tracking by Highway engineers

2no. motorcycle bays

Trees removed

3no. motorcycle bays

Vehicle Barrier

Proposed "Rapid" EV parking and charging stations

Proposed access/egress to suit design standards to Highway Consultants design details.

Proposed location of Lidl Flagpole signage

Assumed boundary line, legals to confirm

Site Layout Plan - Proposed

1: 500

Existing Commercial Unit (B&Q)

Existing commercial unit

2100mm wide footpath

Security fence with access gate to rear of store/plant area. Relevant fire escape ironmongery to be fitted.

Cycle parking as per BBS 23 specification.

Structural Engineer to review requirement for retaining wall, line shown indicatively

Footprint of canopy above

Trolley rails position under canopy

Proposed footway/cycleway

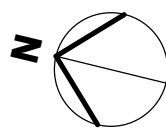
Retaining wall

Highways land shown bounded by blue line. All landscaping works including clearing and re-planting are subject to agreement with Highways.

See arboricultural information for existing trees to be retained..

Structural Engineer to review requirement for retaining wall, line shown indicatively

Amendments to roundabout subject of seperate S278 works

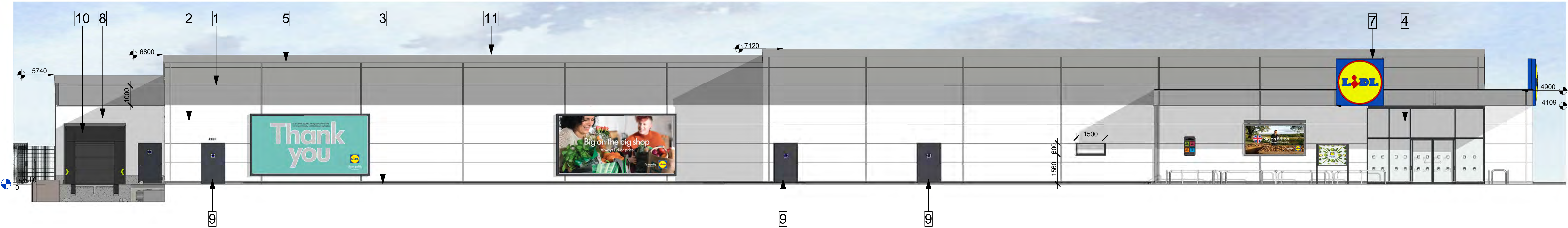


SPACE

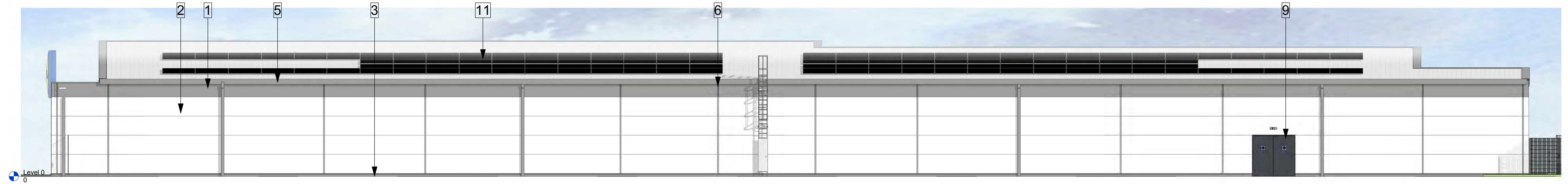
Spaceworks, Benton Park Road, Newcastle upon Tyne, NE7 7LX
T: +44 (0)844 800 6660
www.spaceworksdirect.co.uk

Project Lidl Purbrook Way Havant				
Drawing Title Site Layout Plan - Proposed				
Project No. 08636	Drawing No. XX-XX-DR-A-91001	Status S3	Rev. P06	Scale at A1 As indicated
File Reference: 08636-SPACE-XX-XX-DR-A-91001-S3-P06				
This drawing is Copyright. Check all dimensions on site. Inform originator of any discrepancies. Work to figured dimensions only. See end notes.				

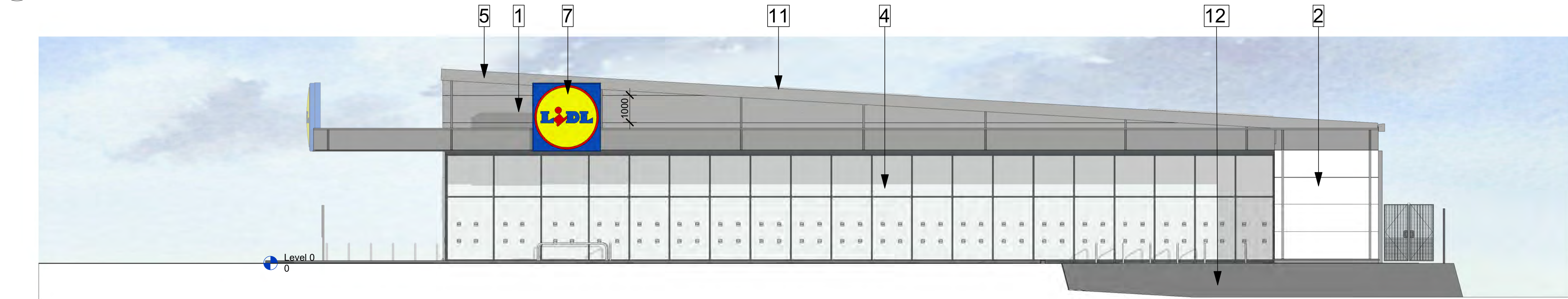
OVERALL	
SITE AREA (Approx.):	
PARKING - LIDL	
Disabled	6
Electric Vehicle Charging	2
Parent & Child	10
Standard	95
TOTAL	113
Motorcycle Bays	5
Indicative Retaining Walls	
S278 Works boundary	
Highways Authority site boundary	
Tarmac (Vehicles)	Concrete cast in-situ
Tarmac (Pedestrians)	Tactile paving
Soft landscaping	
Proposed Trees -	
Trees shown indicatively only at this stage, refer to Landscape Architects planting design for full details.	
BUILDING AREAS - BBS 23 TYPE 1500 STORE	
Sales Area (1516m ²)	
Warehouse Area (452m ²)	
Ancillary Area (217m ²)	
TOTAL GIA:	2185m ²
TOTAL GEA:	2275m ²



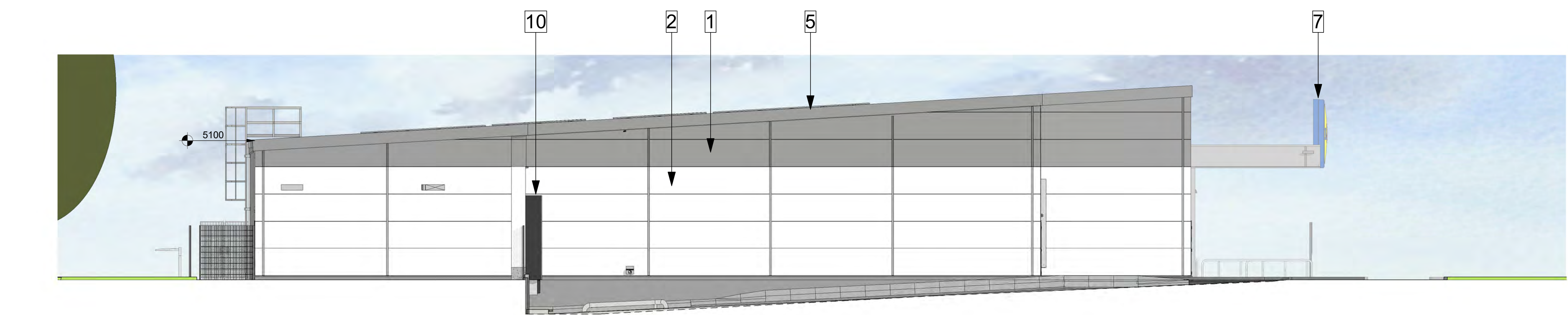
1 West Elevation
1:100



2 East Elevation
1:100



3 South Elevation
1:100



4 North Elevation
1:100

Material Key -

- Aluminium Composite Cladding Panel - RAL 9006 (Silver)
- Aluminium Composite Cladding Panel - RAL 9010 (White)
- Low level render - RAL 7038 (Grey)
- Curtain walling shopfront - double glazed units frame to be RAL 7024 (Dark Grey) with Lidl branded manifestation
- Roof flashings - RAL 9006
- PPC Aluminium/steel flashings & trims & rainwater goods- RAL 9006 (Silver)
- Lidl signage, see signage application.
- Render - RAL 9010 (White)
- PPC Steel Door - RAL 7024 (Dark Grey)
- Servicing dock shelter - RAL 7024 (Dark Grey)
- Photovoltaic Panels
- Retaining Wall

Store Specification

BBS 23

Drawing Purpose

PLANNING

This drawing has been prepared for the sole purpose of forming part of a planning application, and should not be used for any other purpose.



SPACE

Spaceworks, Benton Park Road, Newcastle upon Tyne, NE7 7LX
T: +44 (0)844 800 6660
www.spacearchitects.co.uk

Project
Lid Purbrook Way, Havant

Drawing Title
Proposed Elevations

Project No.	Drawing No.	Status	Rev.	Scale at A1
08636	XX-XX-DR-A-02001	JS	P1	As indicated

File Reference: 08636-SPACE-XX-XX-DR-A-02001-P1

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APPENDIX F: Proposed Levels & Sections



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RED LINE BOUNDARY

NOT FOR CONSTRUCTION

row	statement	checked	data
-----	-----------	---------	------

drawing num

LIDUHAN

LIDUHAN



A0 ORIGINAL

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KEY:

PROPOSED CRIB WALL

EXISTING CRIB WALL

PROPOSED L-WALL

HIGHWAY BOUNDARY

RED LINE BOUNDARY

NOTES:

1. This drawing is not to be scaled.

2. Drawing based on SPACE "Site Layout Plan" drawing reference XX-00-DR-A-91001, revision 5, received on 21/03/2024.

3. This drawing is to be read in conjunction with the following Mayer Brown drawing reference:

- LIDLHAVANT.2/41 - Proposed Levels & Contours
- LIDLHAVANT.2/43 - Proposed Site Sections

FOR INFORMATION

P1

Initial Issue, (IC)

PMA

27/03/2024

rev.

amendment

checked

date

mb

mayer brown

Mayer Brown Limited
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client
LIDL GREAT BRITAIN LIMITED

project
PROPOSED LIDL STORE
PURBROOK WAY, HAVANT

scale
1:200

drawn by
TC

checked by
PMA/SF

date
MARCH 2024

cad file
42.DWG

title
PROPOSED SITE SECTION MARKERS

Mayer Brown Limited jobcode
SF/LIDLHAVANT.2A

submittal
P1

revision

drawing number
LIDLHAVANT.2/42

A1 ORIGINAL

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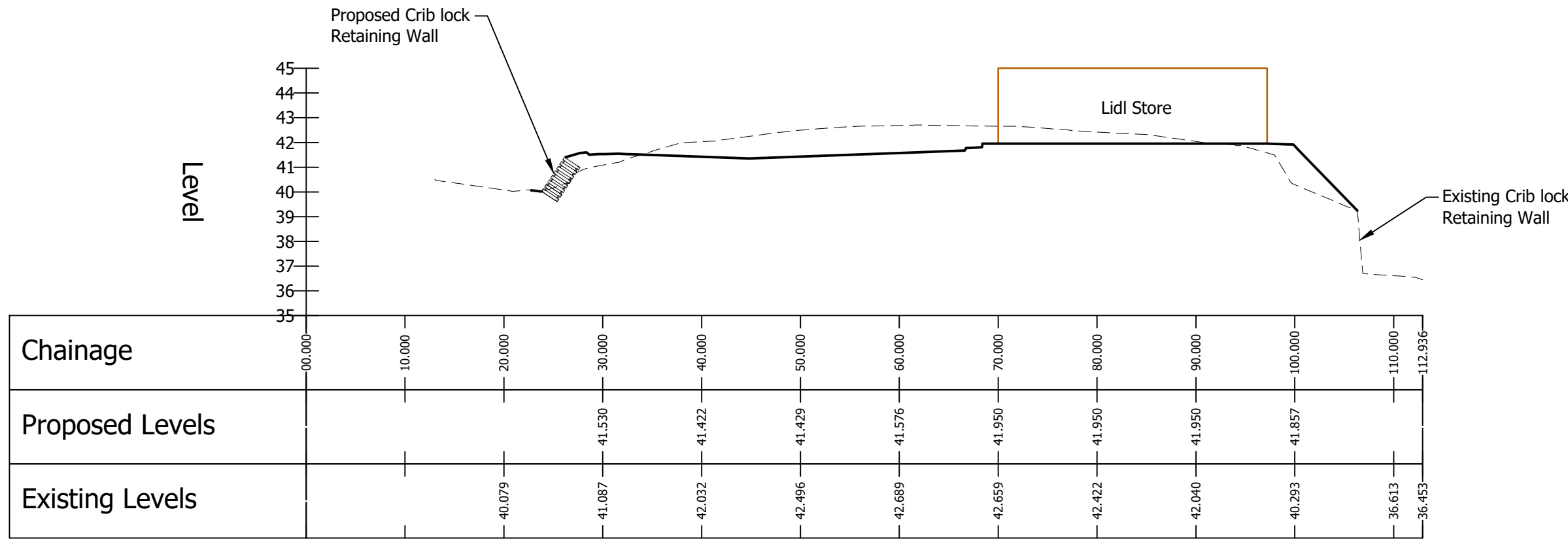
KEY

- PROPOSED FINISHED SURFACE PROFILE
- - - EXISTING GROUND PROFILE

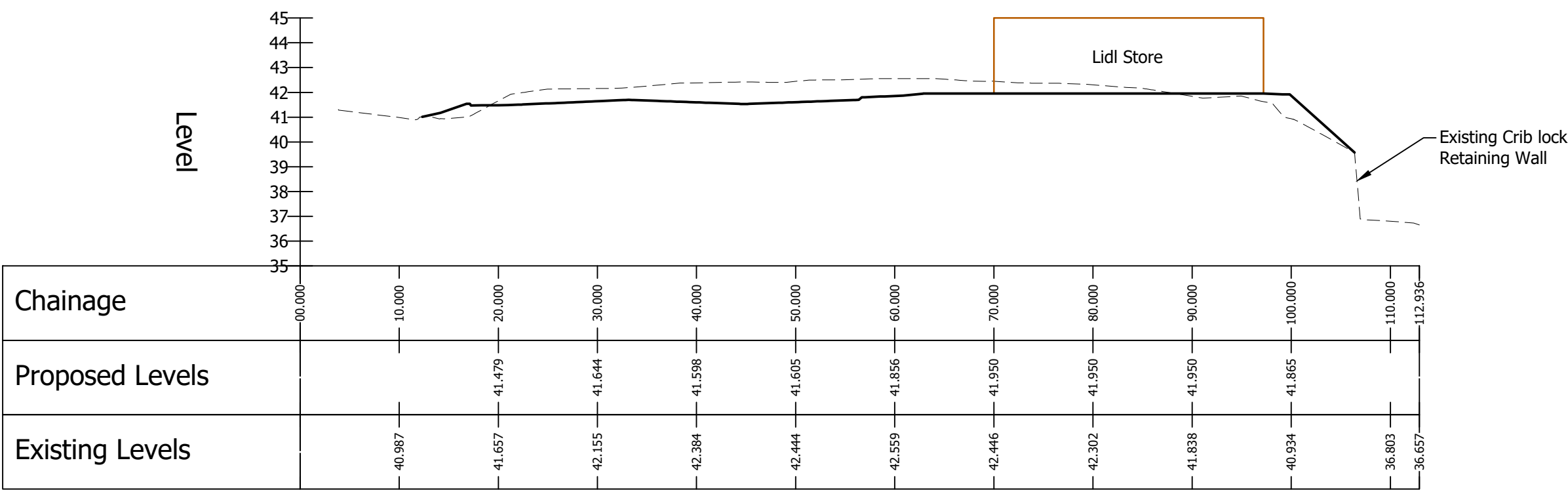
NOTES:

1. This drawing is not to be scaled.
2. This drawing is to be read in conjunction with all other relevant engineering and landscaping drawings. Any discrepancies are to be reported to the engineer immediately for clarification.

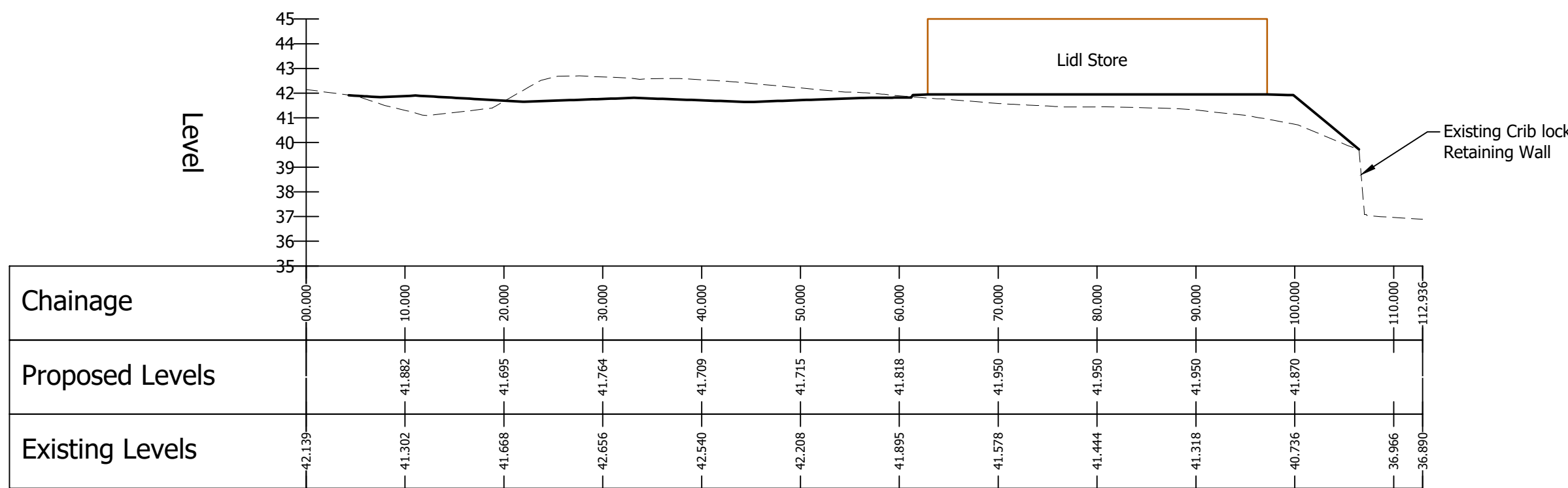
SECTION A-A



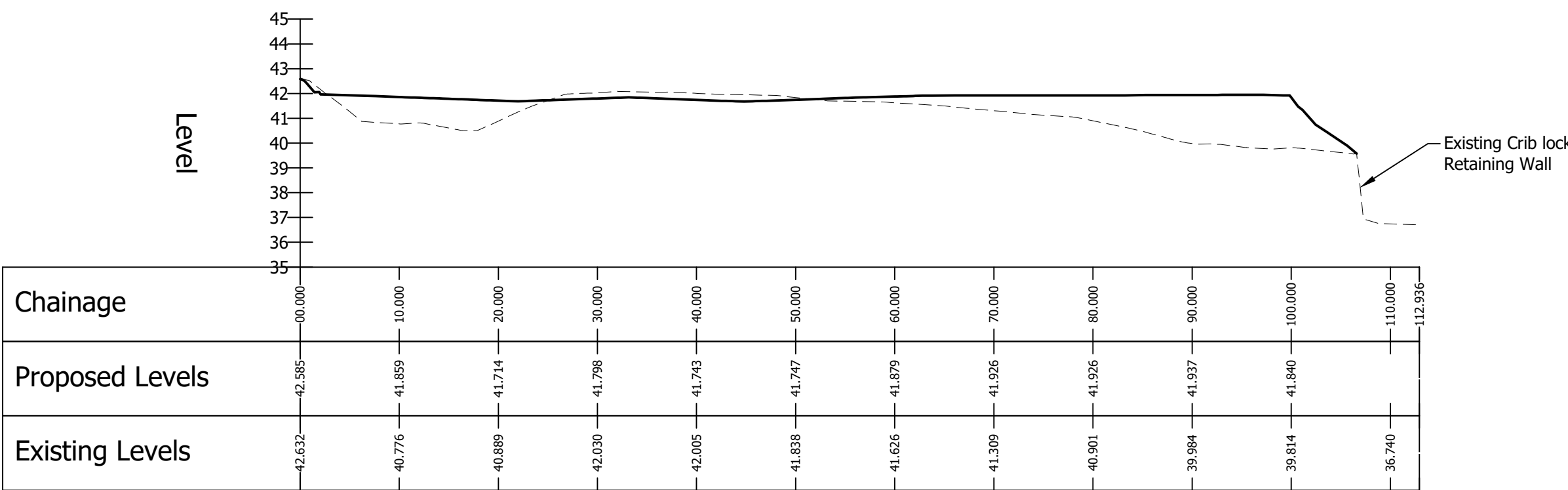
SECTION B-B



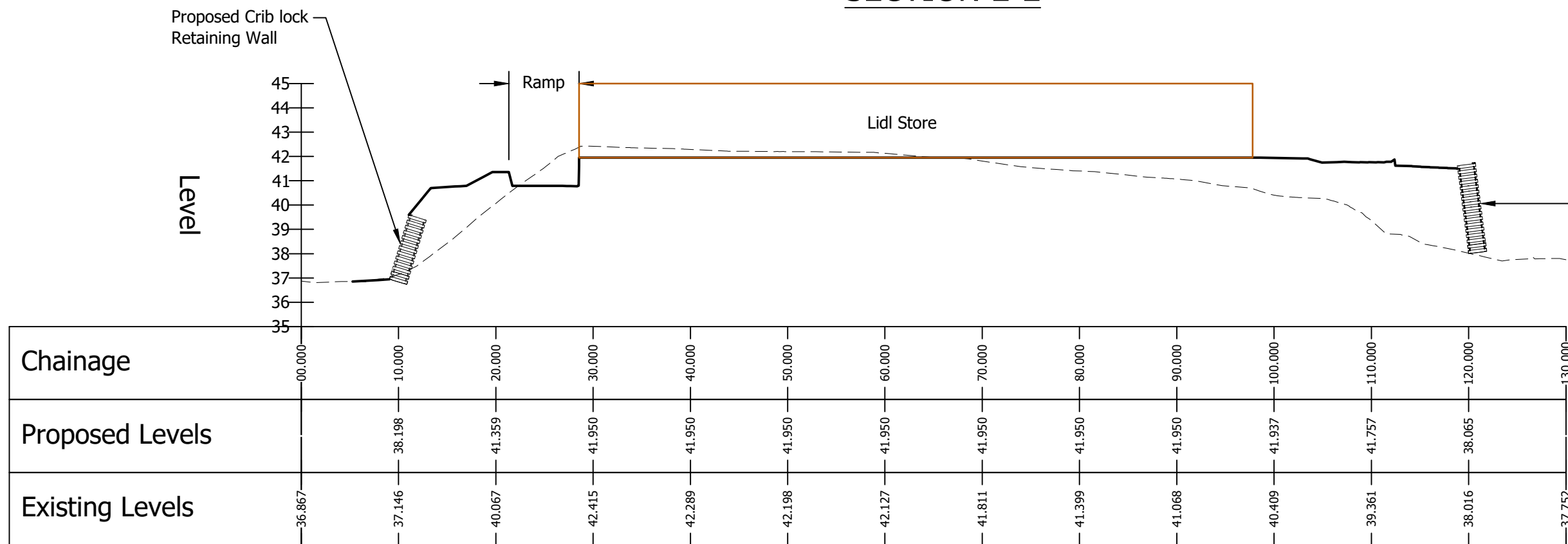
SECTION C-C



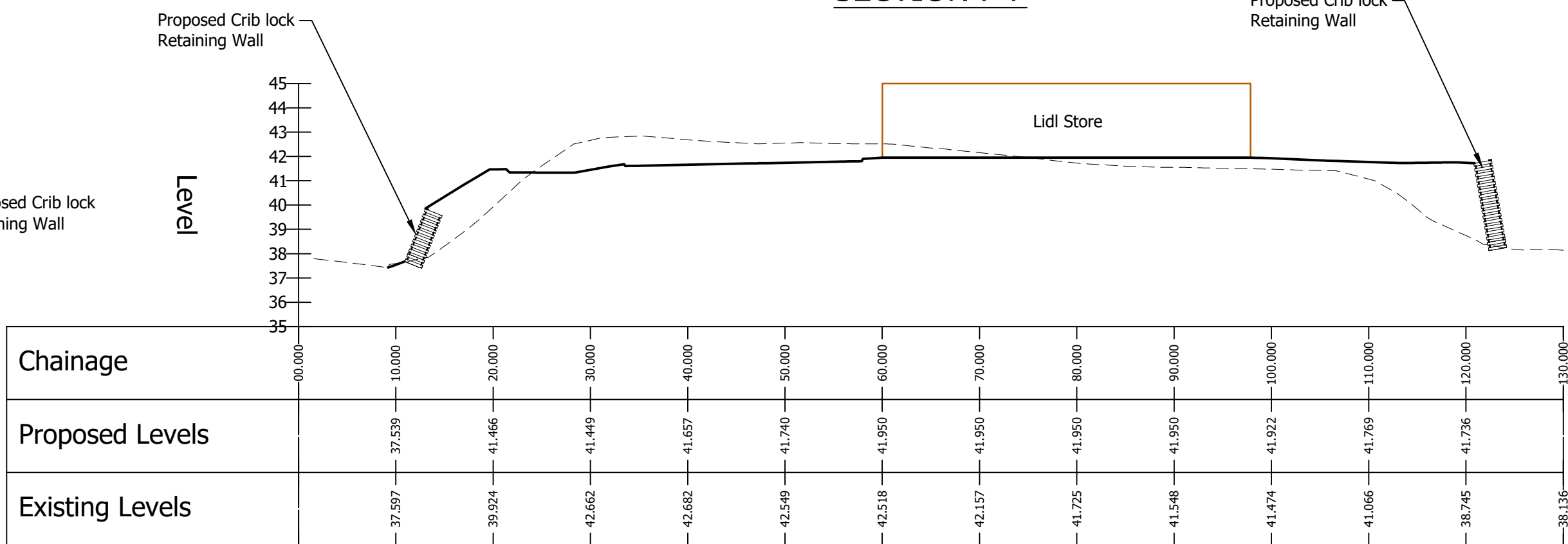
SECTION D-D



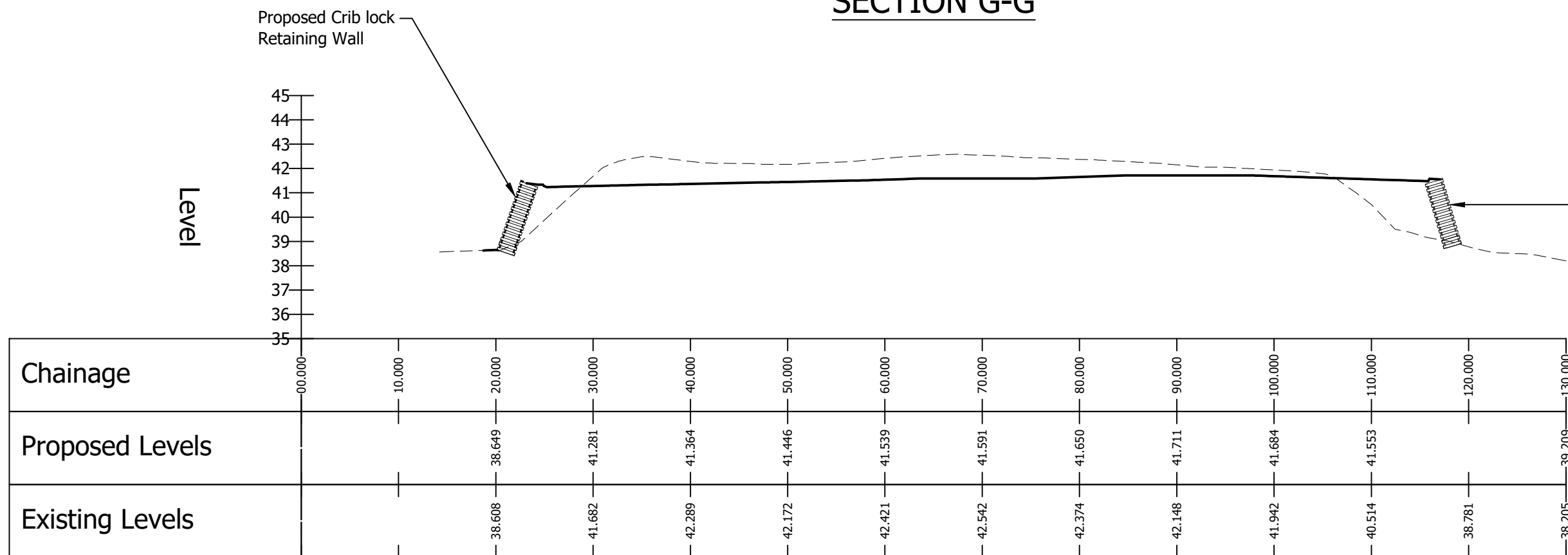
SECTION E-E



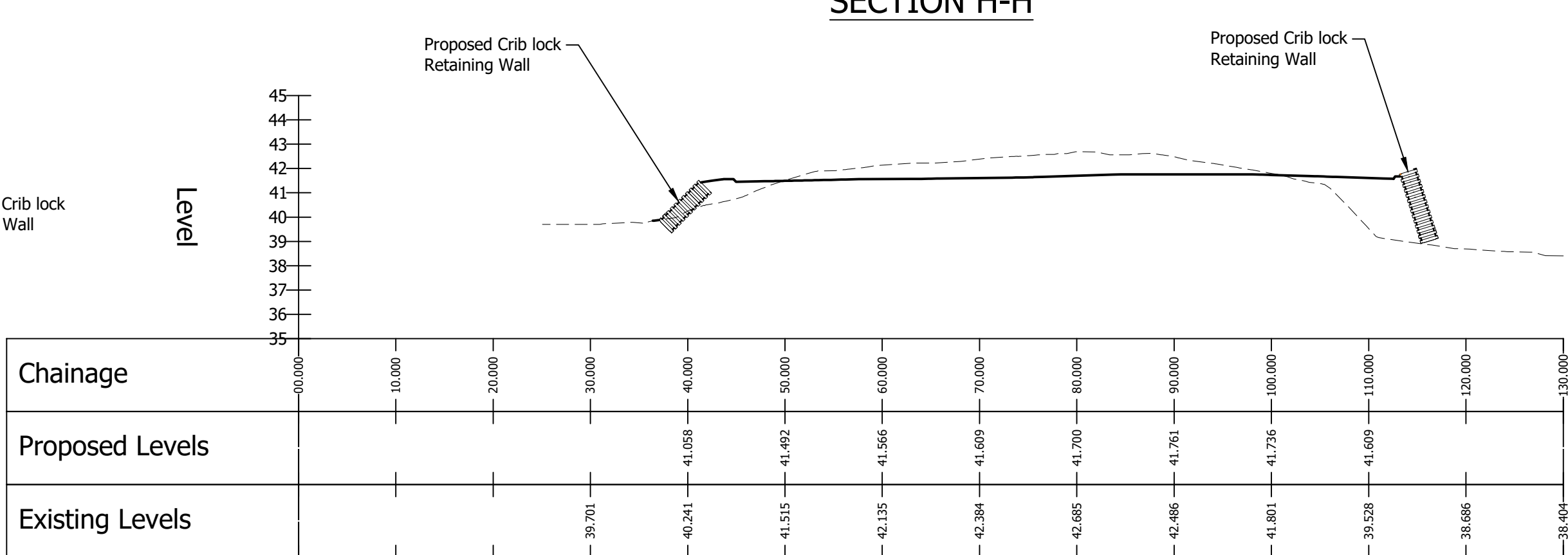
SECTION F-F



SECTION G-G



SECTION H-H



FOR INFORMATION
NOT FOR CONSTRUCTION

P1 Initial Issue. (TC) SF 27/03/2024

rev. amendment checked date



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client
LIDL GREAT BRITAIN LIMITED

project
PROPOSED LIDL STORE
PURBROOK WAY, HAVANT

scale H=1:500, V=1:200 drawn by TC checked by PMA/SF
date MARCH 2024 cad file 43.DWG
title

PROPOSED LEVELS & CONTOURS

Mayer Brown Limited jobcode SF/LIDLHAVANT.2A suitability revision P1
drawing number

LIDLHAVANT.2/43

APPENDIX G: Proposed Drainage General Arrangement



A1 ORIGINAL

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KEY:

PROPOSED SURFACE WATER SEWER AND MANHOLE

PROPOSED SURFACE WATER SEWER AND INSPECTION CHAMBER

PROPOSED HYDROBRAKE

PROPOSED SURFACE WATER LINEAR DRAINAGE CHANNEL

PROPOSED RISING MAIN

PROPOSED PERFORATED PIPE

PROPOSED PETROL INTERCEPTOR

PROPOSED INFILTRATION TANK

PROPOSED RAIN WATER PIPE

PROPOSED GULLY AND GULLY LEAD

PROPOSED FOUL WATER SEWER AND MANHOLE

PROPOSED FOUL WATER INSPECTION CHAMBER

PROPOSED FOUL DRAINAGE RODDING EYE

CONSTRUCTION LINE

PROPOSED SPOT LEVEL

PROPOSED GRADIENT

PROPOSED UNDERBUILD

EXTENT OF TREE PIT FOUNDATION

NOTES:

1. This drawing is not to be scaled.

2. Levels are in metres Above Ordnance Datum (m AOD)

3. Drawing based on SPACE "Site Layout Plan" drawing reference XX-00-DR-A-91001 revision 5, received on 21/03/2024.

4. This drawing is to be read in conjunction with the following Mayer Brown drawing reference:

- LIDLHAVANT.2/42 - Proposed Site Sections

FOR APPROVAL

NOT FOR CONSTRUCTION

P6	Drawing updated following revised SPACE Architect's layout received on 23/02/2024. Key updated. (TC)	SF	28/03/24
P5	Attenuation Tank increased in depth and reduced in footprint to avoid tree pits in car park	SF	26/01/23
P4	Note about outfall into private surface water drain in the main access road amended. (TC)	SF	19/02/21
P3	Microdrainage pipe numbers added to surface water network. Attenuation tank lowered and volume reduced.	SF	15/02/21
P2	Drainage updated to suit One Design proposed level strategy (TC)	SF	23/10/20
P1	Initial Issue. (SF)	SF	28/08/20

rev.	amendment	checked	date

m3

mayer brown

Mayer Brown Limited

Lion House · Oriental Road · Woking · Surrey · GU22 8AR

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client

LIDL UK GmbH

project

HAVANT

scale	drawn by	checked by
1:250	SF	SF

date	cad file
AUGUST 2020	20 - DRAINAGE

title

PROPOSED SURFACE AND FOUL WATER GENERAL ARRANGEMENT DRAWING

Mayer Brown Limited jobcode

suitability

revision

P6

drawing number

SF/LIDLHAVANT.23/20

APPENDIX H: Proposed Calculations

Mayer Brown Ltd		Page 1
Lion House Oriental Road Woking GU22 8AR	Purbrook Way Havant Greenfield Run-off Calculation	
Date 27/08/2020 File	Designed by CG Checked by	
XP Solutions		Source Control 2018.1
<u>ICP SUDS Mean Annual Flood</u> Input Return Period (years) 100 Soil 0.400 Area (ha) 0.790 Urban 0.000 SAAR (mm) 771 Region Number Region 7 Results l/s QBAR Rural 3.0 QBAR Urban 3.0 Q100 years 9.6 Q1 year 2.6 Q30 years 6.8 Q100 years 9.6		
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Mayer Brown Ltd

Lion House

Oriental Road

Woking Surrey GU22 8AR

Date 28/03/2024 15:40

File 240307 ATTENUATION TANK...

LIDL

HAVANT

PURBROOK WAY

Designed by TC

Checked by SF

XP Solutions

Source Control 2020.1

Page 2



Model Details

Storage is Online Cover Level (m) 41.500

Cellular Storage Structure

Invert Level (m)38.650Safety Factor2.0

Infiltration Coefficient Base (m/hr)0.00000Porosity0.95

Infiltration Coefficient Side (m/hr)0.00000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	350.0	350.0	2.001	0.0	530.0
2.000	350.0	530.0			

Hydro-Brake® Optimum Outflow Control

Unit ReferenceMD-SHE-0070-3000-2000-3000

Design Head (m)2.000

Design Flow (l/s)3.0

Flush-Flo™Calculated

ObjectiveMinimise upstream storage

ApplicationSurface

Sump AvailableYes

Diameter (mm)70

Invert Level (m)38.650

Minimum Outlet Pipe Diameter (mm)100

Suggested Manhole Diameter (mm)1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	2.000	3.0
Flush-Flo™	0.310	2.2
Kick-Flo®	0.630	1.8
Mean Flow over Head Range	-	2.3

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	1.8	1.200	2.4	3.000	3.6	7.000	5.4
0.200	2.1	1.400	2.5	3.500	3.9	7.500	5.6
0.300	2.2	1.600	2.7	4.000	4.1	8.000	5.7
0.400	2.2	1.800	2.9	4.500	4.4	8.500	5.9
0.500	2.1	2.000	3.0	5.000	4.6	9.000	6.1
0.600	1.9	2.200	3.1	5.500	4.8	9.500	6.2
0.800	2.0	2.400	3.3	6.000	5.0		
1.000	2.2	2.600	3.4	6.500	5.2		

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Oriental Road
Woking Surrey GU22 8AR

Date 28/03/2024 15:40
File 240307 ATTENUATION TANK...

XP Solutions

LIDL
HAVANT
PURBROOK WAY

Designed by TC
Checked by SF

Source Control 2020.1

Page 1



Summary of Results for 2 year Return Period

Half Drain Time : 743 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
15 min Winter	38.849	0.199	0.0	2.1	2.1	66.1	O K
30 min Winter	38.905	0.255	0.0	2.2	2.2	84.8	O K
60 min Winter	38.966	0.316	0.0	2.2	2.2	105.1	O K
120 min Winter	39.057	0.407	0.0	2.2	2.2	135.3	O K
180 min Winter	39.110	0.460	0.0	2.2	2.2	152.9	O K
240 min Winter	39.145	0.495	0.0	2.2	2.2	164.7	O K
360 min Winter	39.189	0.539	0.0	2.2	2.2	179.3	O K
480 min Winter	39.213	0.563	0.0	2.2	2.2	187.1	O K
600 min Winter	39.225	0.575	0.0	2.2	2.2	191.2	O K
720 min Winter	39.230	0.580	0.0	2.2	2.2	192.8	O K
960 min Winter	39.227	0.577	0.0	2.2	2.2	191.7	O K
1440 min Winter	39.203	0.553	0.0	2.2	2.2	183.8	O K
2160 min Winter	39.158	0.508	0.0	2.2	2.2	168.9	O K
2880 min Winter	39.112	0.462	0.0	2.2	2.2	153.6	O K
4320 min Winter	39.033	0.383	0.0	2.2	2.2	127.3	O K
5760 min Winter	38.971	0.321	0.0	2.2	2.2	106.6	O K
7200 min Winter	38.925	0.275	0.0	2.2	2.2	91.4	O K
8640 min Winter	38.891	0.241	0.0	2.2	2.2	80.0	O K
10080 min Winter	38.865	0.215	0.0	2.1	2.1	71.6	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Winter	35.984	0.0	64.0	19
30 min Winter	23.297	0.0	83.3	33
60 min Winter	14.718	0.0	108.7	62
120 min Winter	9.756	0.0	144.4	120
180 min Winter	7.541	0.0	167.5	180
240 min Winter	6.241	0.0	184.9	238
360 min Winter	4.739	0.0	210.5	354
480 min Winter	3.871	0.0	229.0	468
600 min Winter	3.298	0.0	243.6	580
720 min Winter	2.889	0.0	255.7	690
960 min Winter	2.340	0.0	275.0	896
1440 min Winter	1.730	0.0	300.4	1110
2160 min Winter	1.282	0.0	345.0	1560
2880 min Winter	1.043	0.0	374.3	1992
4320 min Winter	0.794	0.0	426.6	2812
5760 min Winter	0.665	0.0	478.5	3624
7200 min Winter	0.587	0.0	528.2	4328
8640 min Winter	0.536	0.0	578.3	5104
10080 min Winter	0.500	0.0	629.0	5848

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Mayer Brown Ltd							Page 1																																																																																																																																																																																																																																																																				
Lion House Oriental Road Woking Surrey GU22 8AR			LIDL HAVANT PURBROOK WAY																																																																																																																																																																																																																																																																								
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XP Solutions			Source Control 2020.1																																																																																																																																																																																																																																																																								
Summary of Results for 30 year Return Period Half Drain Time : 1407 minutes. <table><thead><tr><th>Storm Event</th><th>Max Level (m)</th><th>Max Depth (m)</th><th>Max Infiltration (l/s)</th><th>Max Control (l/s)</th><th>Max Σ Outflow (l/s)</th><th>Max Volume (m³)</th><th>Status</th></tr></thead><tbody><tr><td>15 min Winter</td><td>39.087</td><td>0.437</td><td>0.0</td><td>2.2</td><td>2.2</td><td>145.2</td><td>O K</td></tr><tr><td>30 min Winter</td><td>39.223</td><td>0.573</td><td>0.0</td><td>2.2</td><td>2.2</td><td>190.6</td><td>O K</td></tr><tr><td>60 min Winter</td><td>39.367</td><td>0.717</td><td>0.0</td><td>2.2</td><td>2.2</td><td>238.4</td><td>O K</td></tr><tr><td>120 min Winter</td><td>39.486</td><td>0.836</td><td>0.0</td><td>2.2</td><td>2.2</td><td>278.1</td><td>O K</td></tr><tr><td>180 min Winter</td><td>39.556</td><td>0.906</td><td>0.0</td><td>2.2</td><td>2.2</td><td>301.3</td><td>O K</td></tr><tr><td>240 min Winter</td><td>39.604</td><td>0.954</td><td>0.0</td><td>2.2</td><td>2.2</td><td>317.1</td><td>O K</td></tr><tr><td>360 min Winter</td><td>39.664</td><td>1.014</td><td>0.0</td><td>2.2</td><td>2.2</td><td>337.1</td><td>O K</td></tr><tr><td>480 min Winter</td><td>39.699</td><td>1.049</td><td>0.0</td><td>2.2</td><td>2.2</td><td>348.9</td><td>O K</td></tr><tr><td>600 min Winter</td><td>39.720</td><td>1.070</td><td>0.0</td><td>2.2</td><td>2.2</td><td>355.7</td><td>O K</td></tr><tr><td>720 min Winter</td><td>39.731</td><td>1.081</td><td>0.0</td><td>2.3</td><td>2.3</td><td>359.5</td><td>O K</td></tr><tr><td>960 min Winter</td><td>39.735</td><td>1.085</td><td>0.0</td><td>2.3</td><td>2.3</td><td>360.9</td><td>O K</td></tr><tr><td>1440 min Winter</td><td>39.708</td><td>1.058</td><td>0.0</td><td>2.2</td><td>2.2</td><td>351.8</td><td>O K</td></tr><tr><td>2160 min Winter</td><td>39.656</td><td>1.006</td><td>0.0</td><td>2.2</td><td>2.2</td><td>334.6</td><td>O K</td></tr><tr><td>2880 min Winter</td><td>39.613</td><td>0.963</td><td>0.0</td><td>2.2</td><td>2.2</td><td>320.3</td><td>O K</td></tr><tr><td>4320 min Winter</td><td>39.536</td><td>0.886</td><td>0.0</td><td>2.2</td><td>2.2</td><td>294.6</td><td>O K</td></tr><tr><td>5760 min Winter</td><td>39.471</td><td>0.821</td><td>0.0</td><td>2.2</td><td>2.2</td><td>272.9</td><td>O K</td></tr><tr><td>7200 min Winter</td><td>39.418</td><td>0.768</td><td>0.0</td><td>2.2</td><td>2.2</td><td>255.3</td><td>O K</td></tr><tr><td>8640 min Winter</td><td>39.372</td><td>0.722</td><td>0.0</td><td>2.2</td><td>2.2</td><td>240.1</td><td>O K</td></tr><tr><td>10080 min Winter</td><td>39.332</td><td>0.682</td><td>0.0</td><td>2.2</td><td>2.2</td><td>226.8</td><td>O K</td></tr></tbody></table> <table><thead><tr><th>Storm Event</th><th>Rain (mm/hr)</th><th>Flooded Volume (m³)</th><th>Discharge Volume (m³)</th><th>Time-Peak (mins)</th></tr></thead><tbody><tr><td>15 min Winter</td><td>78.265</td><td>0.0</td><td>139.4</td><td>19</td></tr><tr><td>30 min Winter</td><td>51.630</td><td>0.0</td><td>174.2</td><td>33</td></tr><tr><td>60 min Winter</td><td>32.557</td><td>0.0</td><td>240.8</td><td>64</td></tr><tr><td>120 min Winter</td><td>19.322</td><td>0.0</td><td>284.5</td><td>122</td></tr><tr><td>180 min Winter</td><td>14.190</td><td>0.0</td><td>311.3</td><td>180</td></tr><tr><td>240 min Winter</td><td>11.381</td><td>0.0</td><td>329.2</td><td>240</td></tr><tr><td>360 min Winter</td><td>8.320</td><td>0.0</td><td>344.5</td><td>356</td></tr><tr><td>480 min Winter</td><td>6.652</td><td>0.0</td><td>345.6</td><td>472</td></tr><tr><td>600 min Winter</td><td>5.587</td><td>0.0</td><td>344.2</td><td>588</td></tr><tr><td>720 min Winter</td><td>4.841</td><td>0.0</td><td>342.0</td><td>702</td></tr><tr><td>960 min Winter</td><td>3.854</td><td>0.0</td><td>337.0</td><td>926</td></tr><tr><td>1440 min Winter</td><td>2.790</td><td>0.0</td><td>326.8</td><td>1354</td></tr><tr><td>2160 min Winter</td><td>2.030</td><td>0.0</td><td>545.3</td><td>1688</td></tr><tr><td>2880 min Winter</td><td>1.632</td><td>0.0</td><td>582.5</td><td>2160</td></tr><tr><td>4320 min Winter</td><td>1.217</td><td>0.0</td><td>603.0</td><td>3108</td></tr><tr><td>5760 min Winter</td><td>1.003</td><td>0.0</td><td>721.7</td><td>3984</td></tr><tr><td>7200 min Winter</td><td>0.874</td><td>0.0</td><td>786.3</td><td>4904</td></tr><tr><td>8640 min Winter</td><td>0.789</td><td>0.0</td><td>851.0</td><td>5792</td></tr><tr><td>10080 min Winter</td><td>0.729</td><td>0.0</td><td>916.5</td><td>6664</td></tr></tbody></table>								Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status	15 min Winter	39.087	0.437	0.0	2.2	2.2	145.2	O K	30 min Winter	39.223	0.573	0.0	2.2	2.2	190.6	O K	60 min Winter	39.367	0.717	0.0	2.2	2.2	238.4	O K	120 min Winter	39.486	0.836	0.0	2.2	2.2	278.1	O K	180 min Winter	39.556	0.906	0.0	2.2	2.2	301.3	O K	240 min Winter	39.604	0.954	0.0	2.2	2.2	317.1	O K	360 min Winter	39.664	1.014	0.0	2.2	2.2	337.1	O K	480 min Winter	39.699	1.049	0.0	2.2	2.2	348.9	O K	600 min Winter	39.720	1.070	0.0	2.2	2.2	355.7	O K	720 min Winter	39.731	1.081	0.0	2.3	2.3	359.5	O K	960 min Winter	39.735	1.085	0.0	2.3	2.3	360.9	O K	1440 min Winter	39.708	1.058	0.0	2.2	2.2	351.8	O K	2160 min Winter	39.656	1.006	0.0	2.2	2.2	334.6	O K	2880 min Winter	39.613	0.963	0.0	2.2	2.2	320.3	O K	4320 min Winter	39.536	0.886	0.0	2.2	2.2	294.6	O K	5760 min Winter	39.471	0.821	0.0	2.2	2.2	272.9	O K	7200 min Winter	39.418	0.768	0.0	2.2	2.2	255.3	O K	8640 min Winter	39.372	0.722	0.0	2.2	2.2	240.1	O K	10080 min Winter	39.332	0.682	0.0	2.2	2.2	226.8	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)	15 min Winter	78.265	0.0	139.4	19	30 min Winter	51.630	0.0	174.2	33	60 min Winter	32.557	0.0	240.8	64	120 min Winter	19.322	0.0	284.5	122	180 min Winter	14.190	0.0	311.3	180	240 min Winter	11.381	0.0	329.2	240	360 min Winter	8.320	0.0	344.5	356	480 min Winter	6.652	0.0	345.6	472	600 min Winter	5.587	0.0	344.2	588	720 min Winter	4.841	0.0	342.0	702	960 min Winter	3.854	0.0	337.0	926	1440 min Winter	2.790	0.0	326.8	1354	2160 min Winter	2.030	0.0	545.3	1688	2880 min Winter	1.632	0.0	582.5	2160	4320 min Winter	1.217	0.0	603.0	3108	5760 min Winter	1.003	0.0	721.7	3984	7200 min Winter	0.874	0.0	786.3	4904	8640 min Winter	0.789	0.0	851.0	5792	10080 min Winter	0.729	0.0	916.5	6664
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Summary of Results for 100 year Return Period Half Drain Time : 1731 minutes. <table><tr><th>Storm Event</th><th>Max Level (m)</th><th>Max Depth (m)</th><th>Max Infiltration (l/s)</th><th>Max Control (l/s)</th><th>Max Σ Outflow (l/s)</th><th>Max Volume (m³)</th><th>Status</th></tr><tr><td>15 min Winter</td><td>39.198</td><td>0.548</td><td>0.0</td><td>2.2</td><td>2.2</td><td>182.2</td><td>O K</td></tr><tr><td>30 min Winter</td><td>39.377</td><td>0.727</td><td>0.0</td><td>2.2</td><td>2.2</td><td>241.6</td><td>O K</td></tr><tr><td>60 min Winter</td><td>39.568</td><td>0.918</td><td>0.0</td><td>2.2</td><td>2.2</td><td>305.1</td><td>O K</td></tr><tr><td>120 min Winter</td><td>39.702</td><td>1.052</td><td>0.0</td><td>2.2</td><td>2.2</td><td>349.7</td><td>O K</td></tr><tr><td>180 min Winter</td><td>39.782</td><td>1.132</td><td>0.0</td><td>2.3</td><td>2.3</td><td>376.2</td><td>O K</td></tr><tr><td>240 min Winter</td><td>39.837</td><td>1.187</td><td>0.0</td><td>2.4</td><td>2.4</td><td>394.6</td><td>O K</td></tr><tr><td>360 min Winter</td><td>39.908</td><td>1.258</td><td>0.0</td><td>2.4</td><td>2.4</td><td>418.1</td><td>O K</td></tr><tr><td>480 min Winter</td><td>39.949</td><td>1.299</td><td>0.0</td><td>2.5</td><td>2.5</td><td>431.8</td><td>O K</td></tr><tr><td>600 min Winter</td><td>39.974</td><td>1.324</td><td>0.0</td><td>2.5</td><td>2.5</td><td>440.2</td><td>O K</td></tr><tr><td>720 min Winter</td><td>39.989</td><td>1.339</td><td>0.0</td><td>2.5</td><td>2.5</td><td>445.1</td><td>O K</td></tr><tr><td>960 min Winter</td><td>40.001</td><td>1.351</td><td>0.0</td><td>2.5</td><td>2.5</td><td>449.1</td><td>O K</td></tr><tr><td>1440 min Winter</td><td>39.979</td><td>1.329</td><td>0.0</td><td>2.5</td><td>2.5</td><td>442.0</td><td>O K</td></tr><tr><td>2160 min Winter</td><td>39.919</td><td>1.269</td><td>0.0</td><td>2.4</td><td>2.4</td><td>422.0</td><td>O K</td></tr><tr><td>2880 min Winter</td><td>39.872</td><td>1.222</td><td>0.0</td><td>2.4</td><td>2.4</td><td>406.3</td><td>O K</td></tr><tr><td>4320 min Winter</td><td>39.785</td><td>1.135</td><td>0.0</td><td>2.3</td><td>2.3</td><td>377.4</td><td>O K</td></tr><tr><td>5760 min Winter</td><td>39.713</td><td>1.063</td><td>0.0</td><td>2.2</td><td>2.2</td><td>353.4</td><td>O K</td></tr><tr><td>7200 min Winter</td><td>39.657</td><td>1.007</td><td>0.0</td><td>2.2</td><td>2.2</td><td>334.9</td><td>O K</td></tr><tr><td>8640 min Winter</td><td>39.613</td><td>0.963</td><td>0.0</td><td>2.2</td><td>2.2</td><td>320.0</td><td>O K</td></tr><tr><td>10080 min Winter</td><td>39.577</td><td>0.927</td><td>0.0</td><td>2.2</td><td>2.2</td><td>308.2</td><td>O K</td></tr></table> <table><tr><th>Storm Event</th><th>Rain (mm/hr)</th><th>Flooded Volume (m³)</th><th>Discharge Volume (m³)</th><th>Time-Peak (mins)</th></tr><tr><td>15 min Winter</td><td>98.000</td><td>0.0</td><td>169.1</td><td>19</td></tr><tr><td>30 min Winter</td><td>65.200</td><td>0.0</td><td>174.8</td><td>34</td></tr><tr><td>60 min Winter</td><td>41.500</td><td>0.0</td><td>304.4</td><td>64</td></tr><tr><td>120 min Winter</td><td>24.150</td><td>0.0</td><td>344.0</td><td>122</td></tr><tr><td>180 min Winter</td><td>17.581</td><td>0.0</td><td>353.3</td><td>180</td></tr><tr><td>240 min Winter</td><td>14.025</td><td>0.0</td><td>355.3</td><td>240</td></tr><tr><td>360 min Winter</td><td>10.183</td><td>0.0</td><td>356.1</td><td>358</td></tr><tr><td>480 min Winter</td><td>8.099</td><td>0.0</td><td>356.1</td><td>474</td></tr><tr><td>600 min Winter</td><td>6.777</td><td>0.0</td><td>356.1</td><td>590</td></tr><tr><td>720 min Winter</td><td>5.858</td><td>0.0</td><td>356.1</td><td>704</td></tr><tr><td>960 min Winter</td><td>4.658</td><td>0.0</td><td>357.1</td><td>932</td></tr><tr><td>1440 min Winter</td><td>3.363</td><td>0.0</td><td>357.8</td><td>1368</td></tr><tr><td>2160 min Winter</td><td>2.435</td><td>0.0</td><td>651.2</td><td>1732</td></tr><tr><td>2880 min Winter</td><td>1.948</td><td>0.0</td><td>678.3</td><td>2192</td></tr><tr><td>4320 min Winter</td><td>1.439</td><td>0.0</td><td>636.8</td><td>3116</td></tr><tr><td>5760 min Winter</td><td>1.175</td><td>0.0</td><td>845.6</td><td>4040</td></tr><tr><td>7200 min Winter</td><td>1.017</td><td>0.0</td><td>914.4</td><td>4904</td></tr><tr><td>8640 min Winter</td><td>0.912</td><td>0.0</td><td>983.2</td><td>5800</td></tr><tr><td>10080 min Winter</td><td>0.838</td><td>0.0</td><td>1051.9</td><td>6664</td></tr></table>								Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status	15 min Winter	39.198	0.548	0.0	2.2	2.2	182.2	O K	30 min Winter	39.377	0.727	0.0	2.2	2.2	241.6	O K	60 min Winter	39.568	0.918	0.0	2.2	2.2	305.1	O K	120 min Winter	39.702	1.052	0.0	2.2	2.2	349.7	O K	180 min Winter	39.782	1.132	0.0	2.3	2.3	376.2	O K	240 min Winter	39.837	1.187	0.0	2.4	2.4	394.6	O K	360 min Winter	39.908	1.258	0.0	2.4	2.4	418.1	O K	480 min Winter	39.949	1.299	0.0	2.5	2.5	431.8	O K	600 min Winter	39.974	1.324	0.0	2.5	2.5	440.2	O K	720 min Winter	39.989	1.339	0.0	2.5	2.5	445.1	O K	960 min Winter	40.001	1.351	0.0	2.5	2.5	449.1	O K	1440 min Winter	39.979	1.329	0.0	2.5	2.5	442.0	O K	2160 min Winter	39.919	1.269	0.0	2.4	2.4	422.0	O K	2880 min Winter	39.872	1.222	0.0	2.4	2.4	406.3	O K	4320 min Winter	39.785	1.135	0.0	2.3	2.3	377.4	O K	5760 min Winter	39.713	1.063	0.0	2.2	2.2	353.4	O K	7200 min Winter	39.657	1.007	0.0	2.2	2.2	334.9	O K	8640 min Winter	39.613	0.963	0.0	2.2	2.2	320.0	O K	10080 min Winter	39.577	0.927	0.0	2.2	2.2	308.2	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)	15 min Winter	98.000	0.0	169.1	19	30 min Winter	65.200	0.0	174.8	34	60 min Winter	41.500	0.0	304.4	64	120 min Winter	24.150	0.0	344.0	122	180 min Winter	17.581	0.0	353.3	180	240 min Winter	14.025	0.0	355.3	240	360 min Winter	10.183	0.0	356.1	358	480 min Winter	8.099	0.0	356.1	474	600 min Winter	6.777	0.0	356.1	590	720 min Winter	5.858	0.0	356.1	704	960 min Winter	4.658	0.0	357.1	932	1440 min Winter	3.363	0.0	357.8	1368	2160 min Winter	2.435	0.0	651.2	1732	2880 min Winter	1.948	0.0	678.3	2192	4320 min Winter	1.439	0.0	636.8	3116	5760 min Winter	1.175	0.0	845.6	4040	7200 min Winter	1.017	0.0	914.4	4904	8640 min Winter	0.912	0.0	983.2	5800	10080 min Winter	0.838	0.0	1051.9	6664
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status																																																																																																																																																																																																																																																																				
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Designed by TC

Checked by SF

XP Solutions

Source Control 2020.1

Page 1



Summary of Results for 100 year Return Period (+40%)

Half Drain Time : 2144 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
15 min Winter	39.419	0.769	0.0	2.2	2.2	255.7	O K
30 min Winter	39.670	1.020	0.0	2.2	2.2	339.1	O K
60 min Winter	39.940	1.290	0.0	2.4	2.4	428.9	O K
120 min Winter	40.133	1.483	0.0	2.6	2.6	493.0	O K
180 min Winter	40.250	1.600	0.0	2.7	2.7	532.0	O K
240 min Winter	40.333	1.683	0.0	2.8	2.8	559.5	O K
360 min Winter	40.443	1.793	0.0	2.8	2.8	596.1	O K
480 min Winter	40.511	1.861	0.0	2.9	2.9	618.8	O K
600 min Winter	40.557	1.907	0.0	2.9	2.9	634.0	O K
720 min Winter	40.588	1.938	0.0	3.0	3.0	644.4	O K
960 min Winter	40.624	1.974	0.0	3.0	3.0	656.5	O K
1440 min Winter	40.630	1.980	0.0	3.0	3.0	658.4	O K
2160 min Winter	40.579	1.929	0.0	2.9	2.9	641.3	O K
2880 min Winter	40.529	1.879	0.0	2.9	2.9	624.9	O K
4320 min Winter	40.448	1.798	0.0	2.9	2.9	597.9	O K
5760 min Winter	40.382	1.732	0.0	2.8	2.8	575.9	O K
7200 min Winter	40.337	1.687	0.0	2.8	2.8	561.1	O K
8640 min Winter	40.306	1.656	0.0	2.7	2.7	550.6	O K
10080 min Winter	40.286	1.636	0.0	2.7	2.7	543.9	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Winter	137.200	0.0	173.6	19
30 min Winter	91.280	0.0	170.0	34
60 min Winter	58.100	0.0	362.5	64
120 min Winter	33.810	0.0	371.2	122
180 min Winter	24.613	0.0	379.4	182
240 min Winter	19.635	0.0	388.1	240
360 min Winter	14.257	0.0	403.9	358
480 min Winter	11.339	0.0	413.8	476
600 min Winter	9.488	0.0	420.3	590
720 min Winter	8.202	0.0	424.7	708
960 min Winter	6.521	0.0	429.3	934
1440 min Winter	4.708	0.0	427.6	1384
2160 min Winter	3.410	0.0	786.8	1992
2880 min Winter	2.727	0.0	782.2	2252
4320 min Winter	2.014	0.0	769.5	3196
5760 min Winter	1.645	0.0	1183.6	4104
7200 min Winter	1.424	0.0	1279.1	5040
8640 min Winter	1.276	0.0	1366.7	5888
10080 min Winter	1.173	0.0	1346.3	6768

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