Proposed Lidl Store

Belmont Road, Hereford

Flood Risk Assessment & Drainage Strategy

January 2023

Waterco

Assessment | Modelling | Design

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01	11/03/2022	First issue
02	14/03/2022	Second issue-Updated Sequential Test
03	27/01/2023	Third issue – Updated with hydraulic modelling results and updated site layout

This report will remain valid for a period of twelve months (from the date of last issue) after which the source data should be reviewed in order to reassess the findings and conclusions on the basis of latest available information.

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Introduction

Waterco has been commissioned to undertake a Flood Risk Assessment and Drainage Strategy in relation to a proposed Lidl Store and drive through restaurant at the Three Counties Hotel site, Belmont Road, Hereford, HR2 7BP.

The purpose of this report is to outline the potential flood risk to the site, the impact of the proposed development on flood risk elsewhere, and the proposed measures which could be incorporated to mitigate the identified risk. This report has been prepared in accordance with the guidance contained in the National Planning Policy Framework (NPPF) and the National Planning Practice Guidance (NPPG): Flood Risk and Coastal Change.

Herefordshire Council as Lead Local Flood Authority (LLFA) is a statutory consultee for major planning applications in relation to surface water drainage, requiring that all planning applications are accompanied by a Sustainable Drainage Strategy. The aim of the Sustainable Drainage Strategy is to identify water management measures, including Sustainable Drainage Systems (SuDS), to provide surface water runoff reduction and treatment.

Existing Conditions

The site covers an area of 1.668 hectares (ha) and is located at National Grid Reference (NGR): 349689, 238591. A location plan and an aerial image are included in Appendix A.

Online mapping (including Google Maps / Google Streetview imagery, accessed January 2023) shows that the site comprises the Three Counties Hotel with associated chalet buildings, landscaping, ornamental pond and car parking.

The site is bordered by residential dwellings to the north, Glastonbury Close, residential dwellings and a wooded area to the east, Belmont Road to the south and Newton Brook with residential dwellings beyond to the west. Access to the site is provided from Belmont Road.

The existing impermeable area covers approximately 10,053m^2 or 60% of the total site area.

Local Topography

Topographical data is included on the Existing Site Plan included in Appendix B. The Existing Site Plan shows that the site slopes from 58.67 metres Above Ordnance Datum (m AOD) in the south-west to 54.76m AOD in the north-east.

Topographic levels to m AOD have also been derived from a 1m resolution Environment Agency (EA) composite 'Light Detecting and Ranging' (LiDAR) Digital Terrain Model (DTM). A LiDAR Plan is included in Appendix C. The LiDAR levels correspond with those shown on the Existing Site Plan.

Ground Conditions

Published Geology

The British Geological Survey (BGS) online mapping (1:50,000 scale) indicates that the western extent of the site is underlain by superficial Devensian Glaciofluvial Sheet Deposits generally comprising sand and gravel. The eastern extent of the site is underlain by Alluvium comprising clay, silt, sand and gravel. The superficial deposits are identified as being underlain by the Raglan Mudstone Formation consisting of interbedded siltstone and mudstone.

The geological mapping is available at a scale of 1:50,000 and as such may not be accurate on a site-specific basis.

According to the EA's Aquifer Designation data, obtained from MAGIC's online mapping [accessed March 2022], the Devensian Glaciofluvial Sheet Deposits and Alluvium are classified as Secondary A Aquifers. Secondary A Aquifers are '*permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers'.* The underlying Raglan Mudstone Formation is also described as a Secondary A Aquifer.

The EA's 'Source Protection Zones' data, obtained from MAGIC's online mapping [accessed March 2022], indicates that the site is not located within a Groundwater Source Protection Zone.

The Cranfield University 'Soilscapes' map [accessed March 2022] indicates that the site is underlain by *'freely draining slightly acidic loamy soils'.*

Ground Investigations

A Phase 2 Ground Investigation Report has been carried out by Remada Ltd in February 2022 (report reference: 923.02.01).

The ground investigations comprised the drilling of 10no. window sample holes (WS1 – WS10), execution of 4no. plate bearing tests, 4no. CBR (California Bearing Ratio) tests and 3no. soakage tests. An 'Existing Layout & Exploratory Holes Plan' is included in Appendix D. The window sample holes were advanced to between 1m below ground level (m.bgl) and 4m.bgl.

Made Ground was encountered across the site ranging in depth between 0.12m.bgl and 0.8m.bgl. The Made Ground was found to be underlain by superficial deposits which are reflective of the published geology, comprising sandy gravelly silty clay and clayey sandy gravel. Stiff purplish brown clay was encountered below 1.62m.bgl at WS8.

Groundwater was noted between 2.0m.bgl and 3.0m.bgl in 5no. window sample boreholes.

The three soakaway test pits (SA1 – SA3) were advanced to 1.3metres below ground level (m.bgl) and 1.5m.bgl. No infiltration rate was calculated for test pits SA2 and SA3 due to poor infiltration. Testing was repeated 3 times within test pit SA1, with rapid infiltration experienced. The infiltration rate varied from 1.36 x 10^{-4} m/s to 1.60 x 10^{-4} m/s.

The rapid infiltration experienced in SA1 (located at a relative high point within the site) is likely associated with sands and gravels deposited in the historical river channel of Newton Brook, which is further discussed under the 'Hydrology' section in this report.

Local Drainage

Public Sewers

Public sewer records have been obtained from Dwr Cymru Welsh Water (DCWW) and are included in Appendix E. The DCWW sewer records show that there is a 150mm public foul sewer within the northern extent of the site. The 150mm public foul sewer flows west within the site, then north to Glastonbury Close. A 375mm public combined sewer is located in Belmont Road south of the site and flows east. Public foul and surface water sewers are located east of the site in Glastonbury Close flowing north.

As shown on the DCWW 'Water Main Plan' (Appendix E), a 500mm diameter water main is shown to cross the site from north to south.

Existing Site Drainage

As shown on the Existing Site Plan (Appendix B), foul flows currently drain to the public foul sewer in the northern extent of the site. Manhole SO49387617 on the foul sewer in the northern extent of the site has an identified cover level of 55.16m AOD and an invert level of 52.96m AOD.

As shown on the Existing Site plan (Appendix B), surface water flows from buildings and parking areas within the site are collected by a piped drainage system and flow to a chamber in the north-eastern corner of the site. From this chamber, it is assumed that flows either discharge into the 100mm public surface water sewer in Glastonbury Close, or to Newton Brook located approximately 25m east of the site. Based on the 450mm diameter of the piped outlet from the surface water chamber on site, it is likely that discharge is made to Newton Brook. The existing surface water chamber in the north-eastern extent of the site has an identified cover level of 54.75m AOD and an invert level of 53.68m AOD.

A CCTV drainage survey has been undertaken in January 2022, with the CCTV survey report included in Appendix F. The CCTV survey was unable to determine the route of the 450mm surface water drain beyond the site due to high levels of silt within the chamber.

The Existing Site Plan identifies additional surface water features within the site which are not part of the sites surface water drainage system. A 350mm pipe links Newton Brook west of the site to the existing ornamental pond on site. The pipe diameter increases to 900mm between the pond and a chamber immediately upstream of the pond. The chamber upstream of the pond contains a sluice gate or similar flow control device.

The pond outlet comprises a 600mm pipe and discharges to Newton Brook immediately east of the site. A separate 600mm piped inflow to Newton Brook is noted immediately east of the site. A sluice gate and flow control orifice were recorded at the pond outlet during a site visit.

Hydrology

Newton Brook is recorded on Ordnance Survey mapping as being located west and east of the site. Historical

mapping and information received from the LLFA (Appendix G) as part of the planning pre-application enquiry shows that Newton Brook historically flowed east through the southern extent of the site (see Figure 1).

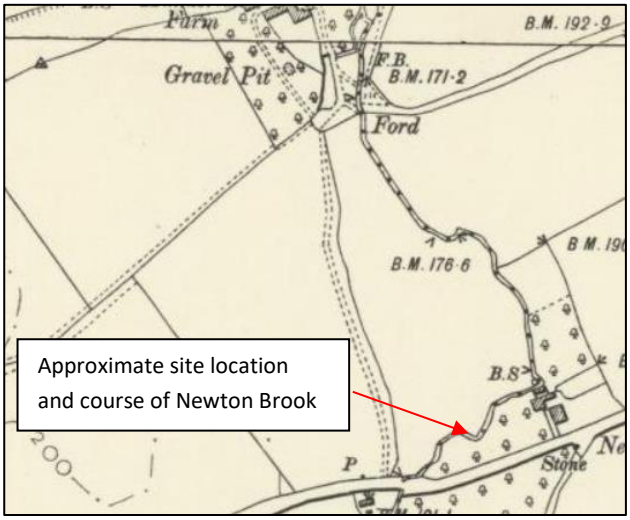


Figure 1 – Historical Map (source: LLFA Correspondence, date of map unknown).

During the 1970's the course of Newton Brook was altered with the watercourse being culverted through the site and a pond excavated when the hotel was constructed. When the residential development surrounding the site was constructed, an overflow channel was incorporated as an open channel which runs north immediately west of the site. The overflow channel now conveys Newton Brook. As discussed above, a 350mm pipe links Newton Brook west of the site to the existing ornamental pond on site with an outfall from the pond discharging to the original channel of Newton Brook east of the site.

The LLFA correspondence (Appendix G) states that the 350mm pipe 'will not convey much flow and is prone to blockages'. The current arrangement of Newton Brook is shown in Figure 2. Further details of the pond inlet and outlet are shown on the Existing Site Plan (Appendix B).

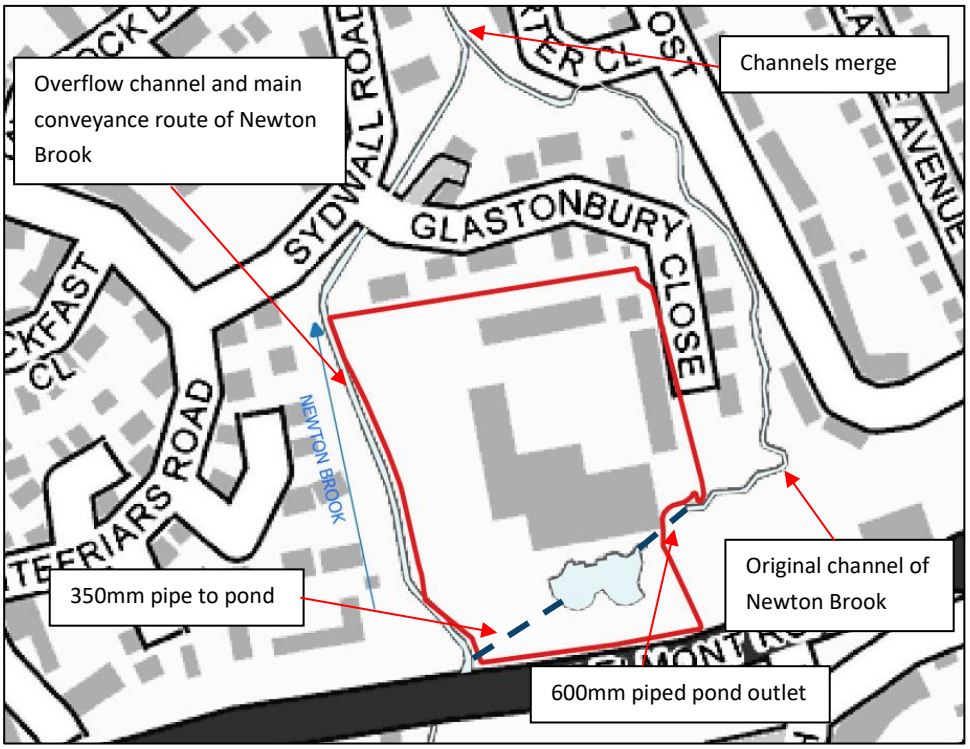


Figure 2 – Newton Brook Channel Arrangement

Development Proposals

The proposed development is for a Lidl food store with associated car parking and landscaping. A proposed development plan is included in Appendix H.

The proposed development will include hardstanding in the form of buildings, car parking areas and the site access. Hardstanding will comprise approximately 5,578m^2 or 33.4% of the total site area. The remaining site area will comprise permeable soft landscaping.

The hardstanding area has been measured from a dwg. version of the proposed site plan (reference: 2768-P4404 Rev B).

Flood Zone Classification and Policy Context

The EA 'Flood Map for Planning', included in Appendix I, shows that the site is located within Flood Zone 1 - an area outside of the extreme flood extent, considered to have a less than 0.1% annual probability of flooding from rivers or the sea.

In accordance with Annex 3 of the NPPF, commercial developments are considered to be 'less vulnerable'. Table 2 of the NPPG: Flood Risk and Coastal Change, states that 'less vulnerable' development is considered appropriate within Flood Zones 1. However, the site is identified at surface water flood risk on the EA 'Flood Risk from Surface Water' map (Appendix I). The flood risk identified by the EA surface water flood risk map

appears to be derived from Newton Brook immediately west of the site. A quantitative assessment of the flood risk from Newton Brook is provided in this report.

This report details the flood risk to the site and the mitigation measures which could be carried out to ensure that the development will be safe for its lifetime.

Local Policy

The Herefordshire Local Plan Core Strategy 2011-2031 (adopted October 2015) contains the following policies relating to flood risk and drainage:

Policy SD3 – Sustainable water management and water resources

Measures for sustainable water management will be required to be an integral element of new development in order to reduce flood risk; to avoid an adverse impact on water quantity; to protect and enhance groundwater resources and to provide opportunities to enhance biodiversity, health and recreation. This will be achieved by ensuring that:

1. *development proposals are located in accordance with the Sequential Test and Exception Tests (where appropriate) and have regard to the Strategic Flood Risk Assessment (SFRA) 2009 for Herefordshire;*

2. *development is designed to be safe, taking into account the lifetime of the development and the need to adapt to climate change by setting appropriate floor levels, providing safe pedestrian and vehicular access, where appropriate, implementing a flood evacuation management plan and avoiding areas identified as being subject to Rapid Inundation from a breach of a Flood Defence;*

3. *where flooding is identified as an issue, new development should reduce flood risk through the inclusion of flood storage compensation measures, or provide similar betterment to enhance the local flood risk regime;*

4. *development will not result in the loss of open watercourse and culverts should be opened up where possible to improve drainage and flood flows. Proposals involving the creation of new culverts (unless essential to the provision of access) will not be permitted;*

5. *development includes appropriate sustainable drainage systems (SuDS) to manage surface water appropriate to the hydrological setting of the site. Development should not result in an increase in runoff and should aim to achieve a reduction in the existing runoff rate and volumes, where possible;*

6. *water conservation and efficiency measures are included in all new developments, specifically:*

   • residential development should achieve Housing - Optional Technical Standards - Water efficiency standards. At the time of adoption the published water efficiency standards were 110 litres/person/day; or

   • non-residential developments in excess of 1,000 m2 gross floorspace to achieve the equivalent of

BREEAM 3 credits for water consumption as a minimum;

7. *the separation of foul and surface water on new developments is maximised;*
8. *development proposals do not lead to deterioration of EU Water Framework Directive water body status;*
9. *development should not cause an unacceptable risk to the availability or quality of water resources; and*
10. *in particular, proposals do not adversely affect water quality, either directly through unacceptable pollution of surface water or groundwater, or indirectly through overloading of Wastewater Treatment Works.*

Development proposals should help to conserve and enhance watercourses and riverside habitats, where necessary through management and mitigation measures for the improvement and/or enhancement of water quality and habitat of the aquatic environment. Proposals which are specifically aimed at the sustainable management of the water environment will in particular be encouraged, including where they are required to support business needs such as for agriculture. Innovative measures such as water harvesting, winter water storage and active land use management will also be supported. In all instances it should be demonstrated that there will be no significant adverse landscape, biodiversity or visual impact.

Policy SD4 - Wastewater treatment and river water quality

Development should not undermine the achievement of water quality targets for rivers within the county, in particular through the treatment of wastewater.

In the first instance developments should seek to connect to the existing mains wastewater infrastructure network.

Local guidance documents including the Herefordshire Council Sustainable Drainage Systems (SuDS) Handbook (June 2018), the Herefordshire Strategic Flood Risk Assessment (SFRA) Level 1 (April 2019) and the Herefordshire Preliminary Flood Risk Assessment (PFRA) (May 2011 and it's 2017 addendum) have been reviewed and inform this report.

Consultation

A developer enquiry was submitted to DCWW in December 2022. A response is included in Appendix E. DCWW have stated:

… This site is crossed by a public sewer and watermain with their approximate position being marked on the attached Statutory Public Sewer Record and Public Watermain Record. In accordance with the Water Industry Act 1991, Dwr Cymru Welsh Water requires access to its apparatus at all times in order to carry out maintenance and repairs. However, having regard to the site plan (Drawing No. F400 Rev. A), it appears the

proposed development would be situated within the protection zone of the 500mm public water main measured 4.5 metres either side of the centreline. Our strong recommendation is that your site layout is amended to take into account the location of the assets crossing the site and should be referred to in any master-planning exercises or site layout plans submitted as part of any subsequent planning application.

In the first instance, it is recommended that you carry out a survey to ascertain the location of this water main and establish its relationship to the proposed development. Further information regarding Asset Protection is provided in the attached Advice & Guidance note….

We have considered the impact of foul flows generated by the proposed development and concluded that flows can be accommodated within the public sewerage system. We advise that the flows should be connected to the foul only sewer between manholes SO49387617 and SO49386616 located within the site boundary to the north. We advise that an adequate grease trap shall be fitted in accordance with details that have been submitted to and approved in writing by the local planning authority. Thereafter the grease trap shall be maintained so as to prevent grease entering the public sewerage system.

Correspondence from the LLFA (Appendix G) has been received as part of the planning pre-application process with the response dated 6th December 2021. The LLFA correspondence is referenced throughout this report.

Sources of Flooding and Probability

Fluvial

The nearest watercourse is Newton Brook which is located immediately west of the site within a re-aligned channel. The original channel of Newton Brook is located immediately east of the site. A 350mm pipe links Newton Brook west of the site to an ornamental pond on site with an outfall from the pond (600mm diameter) discharging to the original channel of Newton Brook east of the site.

Both channels of Newton Brook flow north and merge approximately 100m north of the site. Newton Brook discharges to the River Wye approximately 420m north of the site.

The EA 'Historic Flood Map' (Appendix I) indicates that the site has not been affected by previous flood events. The SFRA and PFRA contain no records of fluvial flooding affecting the site.

Flood Risk from Newton Brook

Hydraulic modelling for Newton Brook is not available from the EA. Therefore, Waterco have constructed a new integrated 1D/2D (1 dimensional / 2 dimensional) hydraulic model of Newton Brook to quantify the associated flood risk to the site.

Full details of the hydraulic model build are provided in the Waterco Hydraulic Modelling Report (document reference 14388-HMR-01) dated January 2023. The hydraulic model parameters have been agreed with the LLFA. The model considers flood risk to the site as existing (with existing site levels) and as proposed (with proposed site levels). A plan showing the proposed modelled site levels is included in Appendix H. Modelled

outputs including flood depth, water level, velocity and hazard mapping are included as Appendix J. Flood depth difference mapping is also provided as Appendix J and shows any differences in flood depths within and beyond the site as a result of the proposed development.

As shown on the modelled outputs and in Figure 3, under normal conditions, the site is shown to be flood free during all events up to and including the 1% Annual Exceedance Probability (AEP) plus 37% climate change event. The site is also flood free during the 0.1% AEP event.

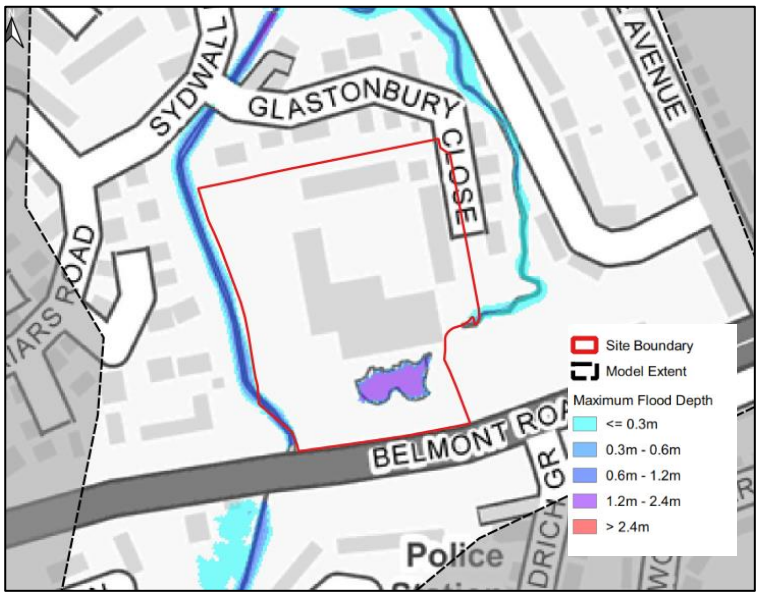


Figure 3 – 1% AEP plus 37% CC – Flood Depths

Consideration has been given to the blockage of 2no. structures along Newton Brook in the vicinity of the site during the 1% AEP plus 37% CC event. A 67% blockage has been applied to the Belmont Road culvert immediately south-west of the site. A 67% blockage has also been applied to a culvert beneath Glastonbury Close approximately 40m north of the site.

Belmont Road Culvert

As shown in Figure 4, when accounting for a 67% blockage of the Belmont Road culvert corresponding with a 1% AEP plus 37% CC event, the site is estimated to flood. Flood waters are shown to back up behind the culvert before spilling onto Belmont Road and onto the site. Flood waters flow north-east through the site and are generally shallow in depth (less than 300mm).

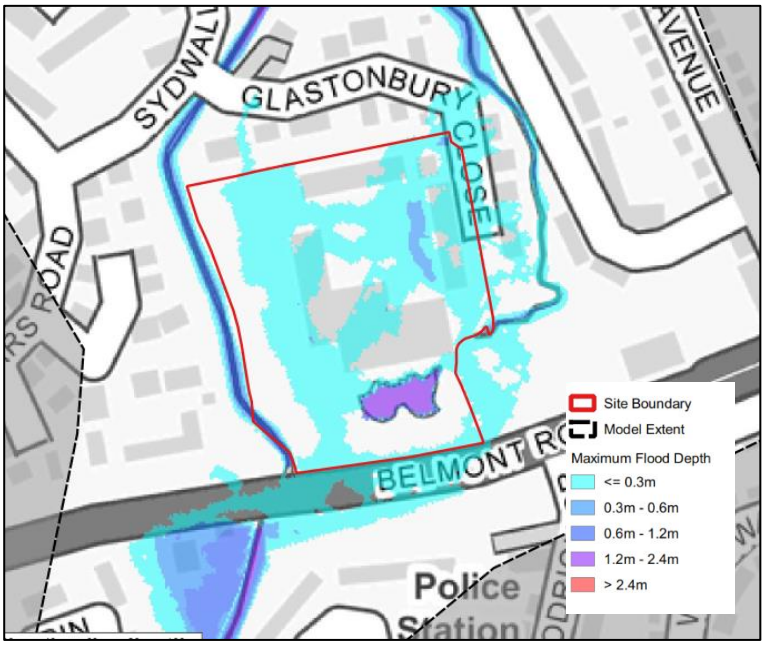


Figure 4 – 67% Belmont Road Culvert Blockage - 1% AEP plus 37% CC – Flood Depths (Existing)

As shown in Figure 5, with the proposed site layout and levels considered, the proposed Lidl store is shown to be flood free during the 1% AEP plus 37% CC blockage event. Shallow depth flooding less than 300mm is estimated to car parking and landscaped areas.

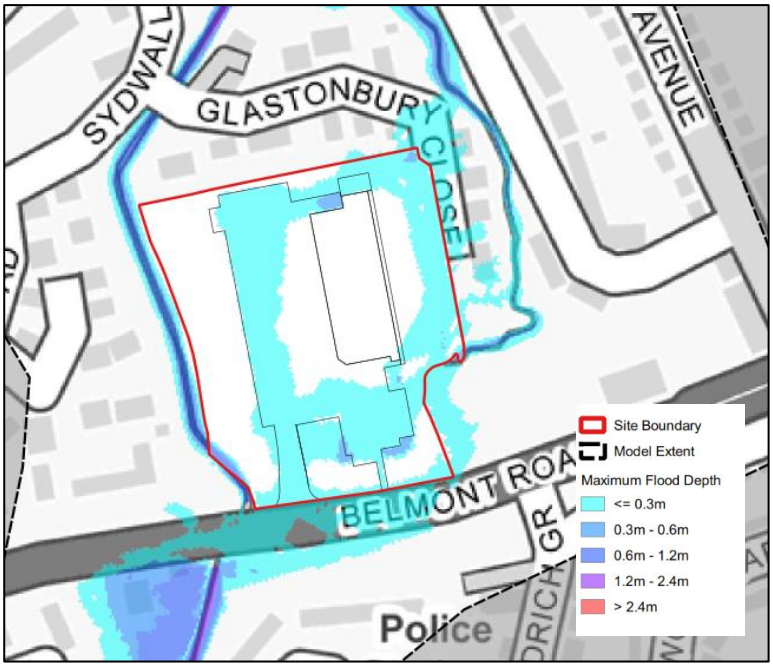


Figure 5 – 67% Belmont Road Culvert Blockage - 1% AEP plus 37% CC – Flood Depths (Proposed)

Glastonbury Close Culvert

As shown on the modelled outputs (Appendix J), the site is flood free from a 67% blockage of the Glastonbury Close culvert coinciding with the 1% AEP plus 37% CC event.

Flood Risk from the River Wye

The site is located within Flood Zone 1 on the EA 'Flood Map for Planning' and is outside of the Flood Zone 2 and 3 extents associated with the River Wye. A review of LiDAR data for the wider area indicates that the site is located a minimum of 4m above the River Wye. The minimum site level is approximately 1.5m above the Flood Zone 2 (0.1% annual probability) extent associated with the River Wye. Flood risk from the River Wye has been accounted for within the hydraulic modelling of Newton Brook. The water level at the downstream boundary of the Newton Brook model has been set at 51.773m AOD corresponding to the 20% AEP event maximum water level of the River Wye.

It can therefore be concluded that the risk of flooding from the River Wye is very low.

Tidal

The site is situated at a minimum of 54.76m AOD and is significantly above sea level. Therefore, there is a very low risk from tidal flooding.

Surface Water

Surface water flooding occurs when rainwater does not drain away through the normal drainage system or soak into the ground. It is usually associated with high intensity rainfall events but can also occur with lower intensity rainfall or melting snow where the ground is saturated, frozen or developed, resulting in overland flow and ponding in depressions in topography. Surface water flooding can occur anywhere without warning. However, flow paths can be determined by consideration of contours and relative levels.

The EA 'Flood Risk from Surface Water' map (Appendix I) shows that the site access and parking areas are at risk of surface water flooding. As discussed above, the flood risk is generally derived from Newton Brook (considered in the fluvial flooding section).

There are no records of surface water flooding affecting the site. Any potential surface water flooding arising at or near to the site would be directed north-east, away from the site, following the local topography.

It can therefore be concluded that the risk of surface water flooding is very low.

Sewer

Flooding from sewers can occur when a sewer is overwhelmed by heavy rainfall, becomes blocked, is damaged, or is of inadequate capacity. Flooding is mostly applicable to combined and surface water sewers.

The DCWW sewer plan (Appendix E) identifies a 150mm public foul sewer within the northern extent of the site. There is also a 375mm public combined sewer in Belmont Road south of the site.

The SFRA 'Historical Flood Records in South-West Hereford' map, included as Appendix K, indicates that there

are no records of sewer flooding affecting the site.

Any potential flooding arising from the 375mm public combined sewer in Belmont Road would be directed east, away from the site, following the topography of the road. Any potential flooding arising from the 150mm public foul sewer in the northern extent of the site would be directed north-east, away from the site, following the local topography. An exceedance event of the public foul sewer in the northern extent of the site is considered unlikely given the limited number of properties served by the sewer.

It can therefore be concluded that the risk of sewer flooding is very low.

Groundwater

Groundwater flooding occurs when water levels underneath the ground rise above normal levels. Prolonged heavy rainfall soaks into the ground and can cause the ground to become saturated. This results in rising groundwater levels which leads to flooding above ground.

The SFRA and PFRA contain no records of groundwater flooding at or near to the site. Groundwater was identified at depths greater than 2m.bgl during the intrusive ground investigation.

There are no records of groundwater flooding affecting the site. It can therefore be concluded that the risk of groundwater flooding is low.

Artificial Sources

There are no canals within the vicinity of the site. The EA 'Flood Risk from Reservoirs' map (Appendix I) shows that the site is not at risk of flooding from reservoirs. It can therefore be concluded that the risk of flooding from artificial sources is very low.

Summary of Potential Flooding

It can be concluded that fluvial flooding from Newton Brook in the event of a 67% blockage of the Belmont Road culvert coinciding with the 1% AEP plus 37% CC event is the main potential source of flood risk to the site. Under normal conditions (no blockage) the site is flood free during all events up to and including the 0.1% AEP fluvial event.

Mitigation

The finished floor level of the proposed Lidl store will be set at 57m AOD. The store is shown to be flood free during a 67% blockage of the Belmont Road culvert coinciding with the 1% AEP plus 37% CC event.

As part of the development, the existing pond in the southern extent of the site will be removed. The existing 350mm pipe from the re-aligned channel of Newton Brook west of the site to the pond will be retained and extended as to connect to the original channel of Newton Brook east of the site. This will ensure the linkage between the channels of Newton Brook is retained. Due to site levels, fall of the existing pipe and parking requirements, it is not considered possible to 'daylight' the overflow pipe.

Impact on Flood Risk Elsewhere

The impact of the proposed development on flood risk elsewhere has been quantified through preparing flood depth difference mapping, which show any water level variations within the floodplain. The site is only estimated to flood during the 67% blockage of the Belmont Road culvert coinciding with the 1% AEP plus 37% CC event. As shown on the flood depth difference mapping (Appendix J), during this event, the proposed development does not result in an increase in flood depths to third party land (roads, buildings, gardens). A slight reduction in flood risk is shown to Belmont Road south of the site.

Sequential Test

Paragraph 162 of the NPPF states that: *"The aim of the sequential test is to steer new development to areas with the lowest risk of flooding from any source. Development should not be allocated or permitted if there are reasonably available sites appropriate for the proposed development in areas with a lower risk of flooding. The strategic flood risk assessment will provide the basis for applying this test. The sequential approach should be used in areas known to be at risk now or in the future from any form of flooding."*

The site is considered to be at low risk of flooding and sequentially viable for the following reasons:

- The site is only estimated to flood during a 67% blockage of the Belmont Road culvert coinciding with the 1% AEP plus 37% CC event. Flood depths are generally shallow (less than 300mm) and the proposed store is flood free. The site is flood free during all fluvial flood events up to and including the 0.1% AEP event under normal conditions (no blockage).

- The risk of a 67% blockage to the Belmont Road culvert is very low. The culvert has recently been upgraded and is of a large capacity.

- The site is situated at a minimum of 54.76m AOD and is significantly above sea level. Therefore, there is a very low risk from tidal flooding.

The site is currently occupied by a hotel which comprises ground floor sleeping accommodation. A hotel is classified as 'more vulnerable' development in accordance with Annex 3 of the NPPF. The proposed Lidl store is classified as 'less vulnerable' development and will decrease the flood risk vulnerability classification of the site.

The development will therefore replace an existing 'more vulnerable' hotel, make use of a brownfield site within a built-up urban area and will manage flood risk (during a blockage event) ensuring no increase in flood risk elsewhere. It is therefore considered that the Sequential Test is passed.

Surface Water Management

The site is currently occupied by the existing Three Counties Hotel. Surface water runoff currently drains to a surface water chamber in the north-eastern extent of the site and to Newton Brook beyond.

The proposed development will introduce approximately 5,578m² of hardstanding in the form of the Lidl store and car parking.

To comply with the Non-Statutory Technical Standards for SuDS and LLFA requirements (see correspondence in Appendix G), the rate of surface water discharge should be restricted to the greenfield runoff rate.

Greenfield runoff rates have been estimated using the Revitalised Flood Hydrograph Model (ReFH2) method. A summary of the greenfield runoff rates for a range of events is provided as Appendix L. The existing 1 in 1 year greenfield runoff rate for the 1.668ha development site is 4.6 l/s.

A discharge rate of 4.6 l/s is proposed for this site and will provide betterment over the existing brownfield runoff rates.

Attenuation Storage

In order to achieve a discharge rate of 4.6 l/s, attenuation storage will be required. An attenuation storage estimate is included in Appendix M. An estimated storage volume of 450m³ will be required to accommodate the 1 in 100 year plus 45% Climate Change (CC) event. The storage estimate is based on storage within a tank or pond structure, an impermeable drainage area of 5,578m², a design head of 1m and hydro-brake flow control.

The attenuation storage estimate is provided for indicative purposes only and should be verified at the detailed design stage.

Attenuation storage will be provided within an underground attenuation tank. Sufficient space for an underground tank is provided beneath the proposed car park.

Discharge Method

Paragraph 056 of the NPPG: Flood Risk and Coastal Change sets out the following hierarchy of drainage options: into the ground (infiltration); to a surface water body; to a surface water sewer, highway drain or another drainage system; to a combined sewer.

Infiltration

The first consideration for the disposal of surface water is infiltration (soakaways and permeable surfaces). As described above, the site is underlain by superficial Devensian Glaciofluvial Sheet Deposits and Alluvium deposits which are underlain by the Raglan Mudstone Formation.

Three soakaway test pits (SA1 – SA3) have been advanced to depths of between 1.3m.bgl and 1.5m.bgl. No infiltration rate was calculated for test pit SA2 and SA3 due to poor infiltration. Testing was repeated 3 times within test pit SA1, with rapid infiltration experienced. The infiltration rate varied from 1.36 x 10^{-4} m/s to 1.60 x 10^{-4} m/s.

The rapid infiltration experienced in SA1 is likely associated with sands and gravels deposited in the historical river channel of Newton Brook. Test pit SA1 is located within a relative high point on site.

Intrusive ground investigations identified groundwater between 2.0m.bgl and 3.0m.bgl in 5no. window sample boreholes.

Based on the cohesive ground conditions witnessed across the majority of the site and presence of groundwater, infiltration drainage techniques are not considered a viable option for the site.

Watercourse

As infiltration techniques are not suitable, a connection to watercourse is the next consideration.

The nearest watercourse is Newton Brook which is located immediately west and east of the site. Based on existing site levels, a direct connection to Newton Brook from the lower eastern extent of the site would require a pumped solution.

To avoid a pumped solution for surface water drainage it is proposed to discharge to Newton Brook via the existing surface water drainage system. Discharge will be made to the existing surface water chamber in the lower north-eastern extent of the site (final chamber on the existing system).

The CCTV survey (Appendix F) showed that the 450mm pipe emanating from the final surface water chamber on site was silted. As such, the pipe will likely need to be cleared of silt prior to making a connection from the proposed drainage system.

The existing surface water chamber in the north-eastern extent of the site has an identified cover level of 54.75m AOD and an invert level of 53.68m AOD. As such, a gravity connection can be achieved. Discharge will be made at a limited discharge rate of 4.6 l/s.

Concept Surface Water Drainage Scheme

Surface water runoff will be discharged to the existing surface water chamber in the north-eastern extent of the site which in turn discharges to Newton Brook. Discharge will be made at the 1 in 1 year greenfield runoff rate of 4.6 l/s.

Surface water runoff up to the 1 in 100 year plus 45% climate change allowance event will be attenuated on site. A total attenuation volume of 450m^3 will be required to achieve the discharge rate and will be provided in the form of an attenuation tank located beneath the proposed car park.

A Concept Surface Water Drainage Sketch is included in Appendix N.

The proposed surface water drainage scheme will ensure no increase in runoff over the lifetime of the development and will create betterment over the existing situation.

Exceedance Event

Storage will be provided for the 1 in 100 year plus 45% CC event. Storm events in excess of the 1 in 100 year plus 45% CC event should be permitted to produce temporary shallow depth flooding within the car park and

landscaped areas. Finished floor levels will be set above surrounding ground levels with the car park sloping away from the building, ensuring exceedance flooding will not affect the building.

Surface Water Treatment

In accordance with the CIRIA C753 publication 'The SuDS Manual' (2015), 'other roofs' applicable to commercial roofs have a 'low' pollution hazard level, with non-residential car parks with frequent change classified as having a 'medium' pollution hazard level. Table 1 shows the pollution hazard indices for each land use.

Table 1 – Pollution Hazard Indices

Land Use	Pollution Hazard Level	Total Suspended Solids (TSS)	Metals	Hydrocarbons
Other Roofs (commercial)	Low	0.3	0.2	0.05
Non-residential car parking with frequent change (retail), all roads except trunk roads / motorways	Medium	0.7	0.6	0.7

Table extract taken from the CIRIA C753 publication 'The SuDS Manual' – Table 26.2

* Indices values range from 0-1.

To ensure sufficient treatment is provided to surface water runoff, a suitably sized separator / proprietary treatment system will be installed.

Maintenance

Maintenance of drainage features such as an attenuation tank will be the responsibility of the site owner. Maintenance of the surface water drainage system can be arranged through appointment of a site management company.

A maintenance schedule for an attenuation tank is included in Appendix O. Maintenance of the separator will be as per the manufacturer's guidance.

Foul Drainage

Foul flows from the existing hotel currently drain to a 150mm public foul sewer in the northern extent of the site (manhole reference SO49387617). Correspondence from DCWW (Appendix E) states:

'We have considered the impact of foul flows generated by the proposed development and concluded that

flows can be accommodated within the public sewerage system. We advise that the flows should be connected to the foul only sewer between manholes SO49387617 and SO49386616 located within the site boundary to the north. We advise that an adequate grease trap shall be fitted in accordance with details that have been submitted to and approved in writing by the local planning authority. Thereafter the grease trap shall be maintained so as to prevent grease entering the public sewerage system.'

A connection will therefore be made to Manhole SO49387617 in the northern extent of the site which has an identified cover level of 55.16m AOD and an invert level of 52.96m AOD. A gravity connection can be achieved.

Other Considerations

Correspondence from DCWW (Appendix E) states '*… This site is crossed by a public sewer and watermain with their approximate position being marked on the attached Statutory Public Sewer Record and Public Watermain Record. In accordance with the Water Industry Act 1991, Dwr Cymru Welsh Water requires access to its apparatus at all times in order to carry out maintenance and repairs. However, having regard to the site plan (Drawing No. F400 Rev. A), it appears the proposed development would be situated within the protection zone of the 500mm public water main measured 4.5 metres either side of the centreline. Our strong recommendation is that your site layout is amended to take into account the location of the assets crossing the site and should be referred to in any master-planning exercises or site layout plans submitted as part of any subsequent planning application.*

In the first instance, it is recommended that you carry out a survey to ascertain the location of this water main and establish its relationship to the proposed development.'

The site layout provides a 9m easement from the public water main (measured 4.5m either side of the centreline).

Conclusions

The proposal is for is for a Lidl food store with associated car parking and landscaping.

Flood Risk

The site is located within Flood Zone 1 on the Environment Agency (EA) 'Flood Map for Planning' – an area considered to have the lowest probability of fluvial and tidal flooding. The site is shown to be located outside of the extreme 0.1% annual probability flood extent. However, EA surface water flood mapping indicates that the site is at risk of flooding from Newton Brook which flows north immediately west of the site.

Waterco have undertaken a detailed hydraulic modelling study of Newton Brook. Under normal conditions the site is shown to be flood free during all flood events of Newton Brook up to and including the 1% AEP plus 37% CC event and the 0.1% AEP event.

When accounting for a 67% blockage of Belmont Road culvert (immediately south-west of the site) corresponding with the 1% AEP plus 37% CC event, the site is estimated to flood. Flood waters are shown to back up behind the culvert before spilling onto Belmont Road and onto the site. Flood waters flow north-east through the site and are generally shallow in depth (less than 300mm).

The finished floor level of the proposed Lidl store will be set at 57m AOD. The store is shown to be flood free during a 67% blockage of the Belmont Road culvert coinciding with the 1% AEP plus 37% CC event.

The impact of the proposed development on flood risk elsewhere has been quantified through preparing flood depth difference mapping, which show any water level variations within the floodplain. The proposed development does not result in an increase in flood depths to third party land (roads, buildings, gardens). A slight reduction in flood risk is shown to Belmont Road south of the site during the culvert blockage event.

As part of the development, the existing pond in the southern extent of the site will be removed. The existing 350mm pipe from the re-aligned channel of Newton Brook west of the site to the pond will be retained and extended as to connect to the original channel of Newton Brook east of the site. This will ensure the linkage between the channels of Newton Brook is retained. Due to site levels, fall of the existing pipe and parking requirements, it is not considered possible to 'daylight' the overflow pipe.

Drainage

The proposed development will include impermeable drainage area in the form of new buildings and car parking. To comply with national standards and LLFA requirements, flow control will be used and attenuation provided on site to accommodate storm events up to and including the 1 in 100 year plus 45% climate change event.

All methods of surface water discharge have been assessed. Surface water discharge will be made to an existing surface water chamber in the north-eastern extent of the site which in turn discharges to Newton Brook. Discharge will be made at the 1 in 1 year greenfield runoff rate of 4.6 l/s. A gravity connection can be achieved.

Attenuation can be provided in the form of a below ground attenuation tank located beneath the car park.

DCWW have confirmed that foul flows can continue to discharge to the 150mm public foul sewer in the northern extent of the site. A gravity connection can be achieved.

A Concept Designer's Risk Assessment (cDRA) has been prepared to inform future designers of any identified hazards associated with the scheme. The cDRA has been included in Appendix P.

Recommendations

1. Submit this Flood Risk Assessment and Drainage Strategy to the Planning Authority in support of the Planning Application.

2. Verify the attenuation volumes included in this report when undertaking detailed drainage design.

3. Retain the 350mm pipe from Newton Brook to the west and extend it so that it outfalls to the original channel of Newton Brook to the east.

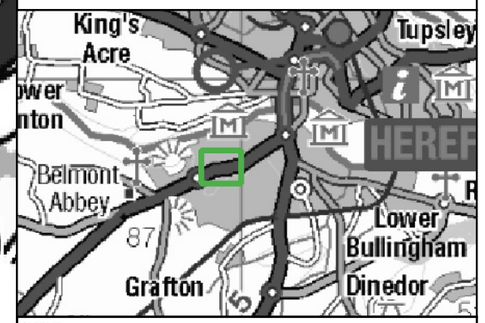
4. Clear silt from the 450mm private surface water drain (emanating from the final chamber on the sites surface water drainage system) in the north-eastern extent prior to making a connection.

Appendix A Location Plan & Aerial Image

Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

- Site Boundary
- Water Bodies
- Watercourses



CLIENT:
Lidl UK GmbH

waterco
www.waterco.co.uk

SCHEME:
Belmont Road, Hereford

PLOT TITLE:
Location Plan

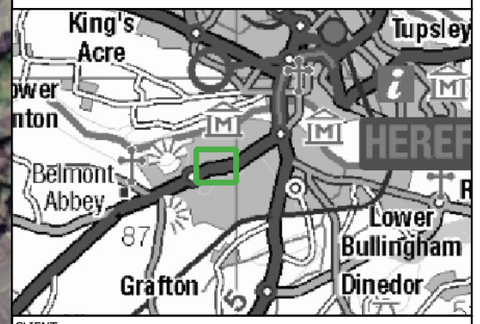
PLOT STATUS:			DATE:
FINAL			06-01-2022
DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
IH	JJ	AW	1:2000

PLOT NAME:	REVISION:
14388_Location_Plan	-

Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

Site Boundary



CLIENT:
Lidl UK GmbH

www.waterco.co.uk

SCHEME:
Belmont Road, Hereford

PLOT TITLE:
Aerial Plan

PLOT STATUS:	DATE:
FINAL	06-01-2022

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
IH	JJ	AW	1:2000

PLOT NAME:	REVISION:
14388_Aerial_Plan	-

Appendix B Existing Site Plan

DO NOT SCALE!
ALL DIMENSIONS SHOULD BE CHECKED ON SITE BEFORE WORK COMMENCES

N

0m 5m 10m 15m 20m 25m 30m

Rev.	Date	Description	Drawn

htcarchitects
York Place Studio
8 Britannia Street
Leeds
LS1 2DZ
T:(0113) 244 3457
W: www.htcarchitects.co.uk
E: info@htcarchitects.co.uk

client
Lidl GB Ltd.

project
Three Counties –
Belmont Road, Hereford

drawing title
Existing Site Plan

date	November 2021				
status	Planning				
scale	1:500 @ A3				
drawn	DS	checked	LS		
job no.	2768	dwg no.	P409	rev.	/

Appendix C LiDAR Plan

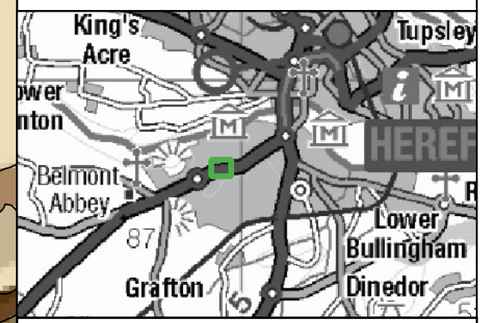
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

- Site Boundary
- Site Levels (m AOD)

Ground Elevations (m AOD)

- <= 55.0
- 55.0 - 56.0
- 56.0 - 57.0
- 57.0 - 58.0
- > 58.0



CLIENT:	Lidl UK GmbH
	www.waterco.co.uk
SCHEME:	Belmont Road, Hereford
PLOT TITLE:	LiDAR Plan
PLOT STATUS: FINAL	DATE: 06-01-2022
DRAWN: IH / CHECKED: JJ / APPROVED: AW / PLOT SCALE AT A3: 1:1000	
PLOT NAME: 14388_LiDAR_Plan	REVISION: -

Appendix D Existing Layout & Exploratory Hole Plan

Legend

- WS1 — Window Sample (inc' gas monitoring)
- WS1 — Window Sample
- CBR1 — CBR Test
- PBT1 — Plate Bearing Test
- TP/SA — Trial Pit &/or Soakaway Test

Notes

Project Title
Hereford, Three Counties Hotel

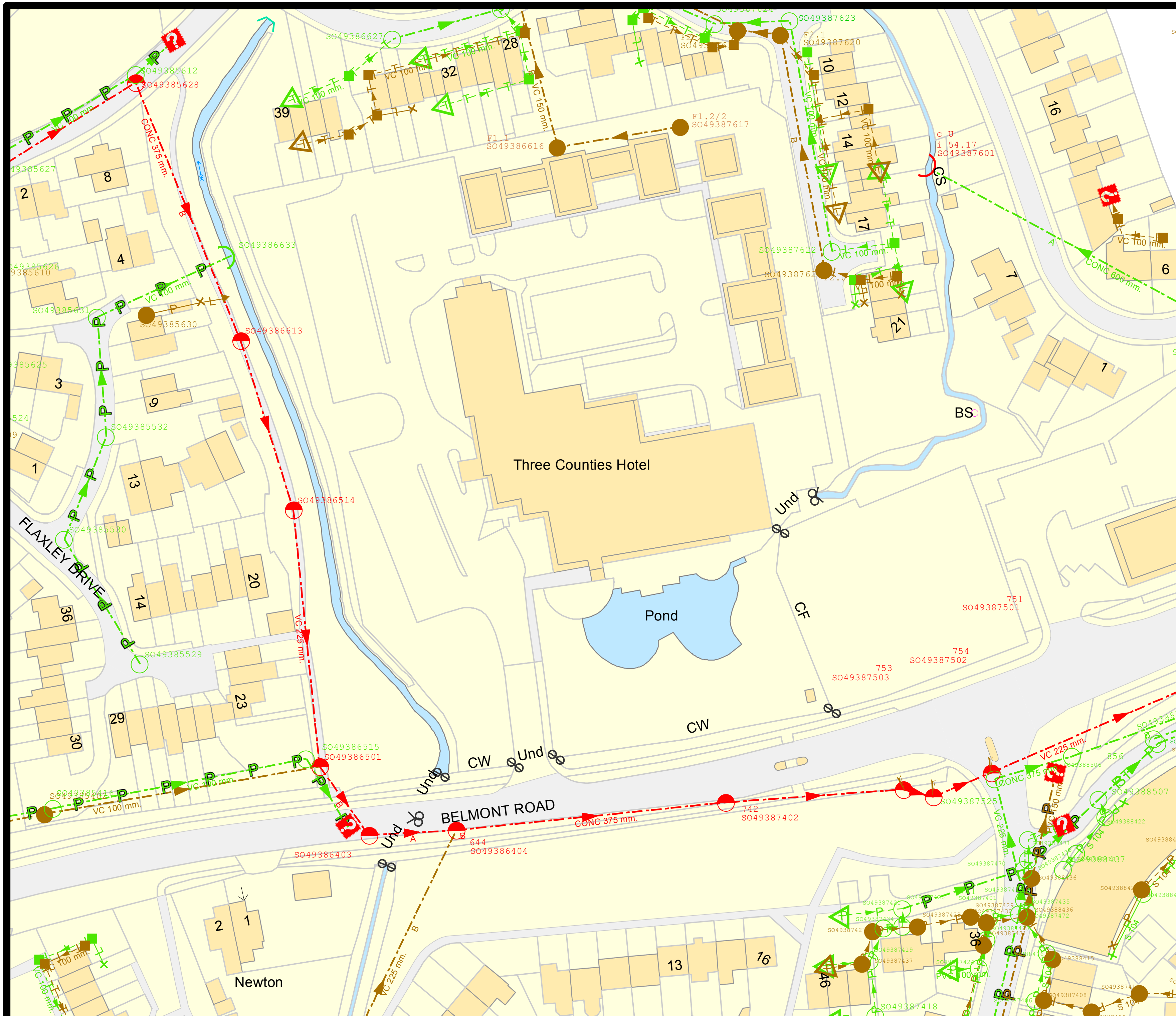
Drawing Title
Figure 2: Existing Layout & Exploratory Holes

Client
Lidl Great Britain Ltd

Scale	Drawn	Size
as shown	DW	A4
Date	Job No.	Drawing /Rev No.
11.01.22	923.02	01

Remada

Appendix E DCWW Plans & Correspondence



Dŵr Cymru Welsh Water

PPA0006301 Public Sewer Record

N
W E
S

LEGEND(Representative of most common features)

Waste network:

Foul chamber	Outfall
Surface water chamber	Lamphole
Combined chamber	Storm Overflow
Combined sewer overflow	Rising main
Special purpose chamber	Gravity sewer
Treatment works	Private sewer
Pumping station	S 104 Private sewer subject to Sect. 104 adoption agreement
	Private Sewer Transfer
	Lateral Drain
	Inspection Chamber

NB: Sewer symbol colour indicates the type.

RED - Combined
GREEN - Surface Water
BROWN - Foul
Purple - Former S24 sewers (for indicative purposes only)

Notes:

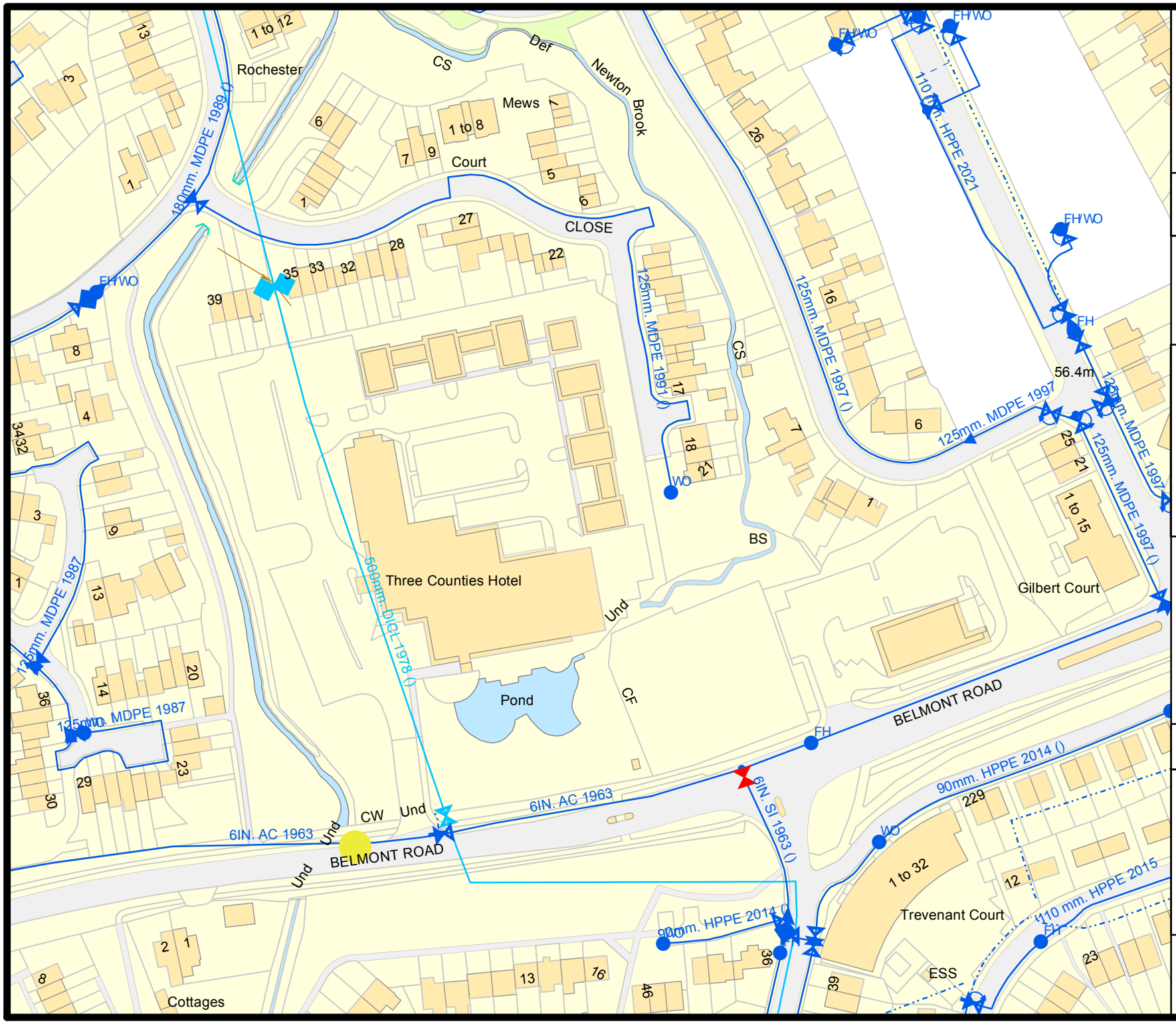
Whilst every reasonable effort has been taken to correctly record the pipe material of DCWW assets, there is a possibility that in some cases pipe material (other than Asbestos Cement or Pitch Fibre) may be found to be asbestos cement (AC) or Pitch Fibre (PF) . It is therefore advisable that the possible presence of AC or PF pipes be anticipated and considered as part of any risk assessment prior to excavation

Dŵr Cymru Cyfyngedig ('the Company') gives this information as to the position of its underground apparatus by way of general guidance only and on the strict understanding that it is based on the best information available and no warranty as to its correctness is relied upon in the event of excavations or other works made in the vicinity of the company's apparatus. The onus of locating apparatus before carrying out any excavations rests entirely on you. The information which is supplied by the Company, is done so in accordance with statutory requirements of sections 198 and 199 of the Water Industry Act 1991 which is based upon the best Information available and, in particular, but without prejudice to the generality of the foregoing, it should be noted that the records that are available to the Company may not disclose the existence of a water main, service pipe, sewer, lateral drain or disposal main and any associated apparatus laid before 1 September 1989, or, if they do, the particulars thereof including their position underground may not be accurate. It must be understood that the furnishing of this information is entirely without prejudice to the provision of the New Roads and Street Works Act 1991 and the Company's right to be compensated for any damage to its apparatus.

Service pipes are not generally shown but their presence should be anticipated.

EXACT LOCATIONS OF ALL APPARATUS TO BE DETERMINED ON SITE.

Map Ref:	349696,238569
Map scale:	1:1200
Printed by:	Jeremy Hackman
Printed on:	07 Dec 2021



Dŵr Cymru
Welsh Water

PPA0006301 Water Main Plan

N
W E
S

LEGEND

Clean network:

- Sluice valve
- Pressure reducing valve
- Meter
- Bulk meter
- Hydrant
- Cap end
- Air valve
- Stop tap
- Water Treatment Works
- Water Pumping Station
- Existing main
- Non-operational main
- Raw Water

NB: Water main symbol colour indicates the type.

LIGHT BLUE - Trunk
DARK BLUE - Distribution
YELLOW - Raw Water

Notes:

Whilst every reasonable effort has been taken to correctly record the pipe material of DCWW assets, there is a possibility that in some cases pipe material (other than Asbestos Cement or Pitch Fibre) may be found to be asbestos cement (AC) or Pitch Fibre (PF) . It is therefore advisable that the possible presence of AC or PF pipes be anticipated and considered as part of any risk assessment prior to excavation

EXACT LOCATIONS OF ALL APPARATUS TO BE DETERMINED ON SITE.

Map Ref:	349734,238600
Map scale:	1:1500
Printed by:	Jeremy Hackman
Printed on:	07 Dec 2021

Dŵr Cymru
Welsh Water

Developer Services
PO Box 3146
Cardiff
CF30 0EH

Tel: +44 (0)800 917 2652
Fax: +44 (0)2920 740472
E.mail: developer.services@dwrcymru.com

Gwasanaethau Datblygu
Blwch Post 3146
Caerdydd
CF30 0EH

Ffôn: +44 (0)800 917 2652
Ffacs: +44 (0)2920 740472
E.bost: developer.services@dwrcymru.com

Miss Jordan Jones
Waterco Consultants
Lon Parcwr Business Park
Ruthin
Denbighshire
LL15 1NJ

Date: 10/12/2021
Our Ref: PPA0006301

Dear Miss Jones,

Grid Ref: 349689 238591
Site Address: Belmont Rd Hereford
Development: New food store (Class E), coffee take-away unit (Class E) and car parking

I refer to your pre-planning enquiry received relating to the above site, seeking our views on the capacity of our network of assets and infrastructure to accommodate your proposed development. Having reviewed the details submitted I can provide the following comments which should be taken into account within any future planning application for the development.

Firstly, we note that the proposal relates to a new food store at Belmont Road and acknowledge that the site comprises of a potential windfall development with no allocated status in the Local Plan (LP). Accordingly, whilst it does not appear an assessment has been previously undertaken of the public sewerage and watermains systems, we offer the following comments as part of our appraisal of this development.

Public Sewerage Network

The proposed development site is located in the immediate vicinity of a separate sewerage system, comprising combined, foul and surface water public sewers, which drains to Eign Wastewater Treatment Works (WwTW).

This site is crossed by a public sewer and watermain with their approximate position being marked on the attached Statutory Public Sewer Record and Public Watermain Record. In accordance with the Water Industry Act 1991, Dwr Cymru Welsh Water requires access to its apparatus at all times in order to carry out maintenance and repairs. However, having regard to the site plan (Drawing No. F400 Rev. A), it appears the proposed development would be situated within the protection zone of the 500mm public watermain measured 4.5 metres either side of the centreline. Our strong recommendation is that your

site layout is amended to take into account the location of the assets crossing the site and should be referred to in any master-planning exercises or site layout plans submitted as part of any subsequent planning application.

In the first instance, it is recommended that you carry out a survey to ascertain the location of this watermain and establish its relationship to the proposed development. Further information regarding Asset Protection is provided in the attached Advice & Guidance note.

Please also be advised that some public sewers and lateral drains may not be recorded on our maps of public sewers because they were originally privately owned and were transferred into public ownership by nature of the Water Industry (Schemes for Adoption of Private Sewers) Regulations 2011. The presence of such assets may affect the proposal. In order to assist you may contact Dwr Cymru Welsh Water on 0800 085 3968 to establish the location and status of the apparatus in and around your site. Please be mindful that under the Water Industry Act 1991 Dwr Cymru Welsh Water has rights of access to its apparatus at all times.

Foul Water Drainage – Sewerage Network

We have considered the impact of foul flows generated by the proposed development and concluded that flows can be accommodated within the public sewerage system. We advise that the flows should be connected to the foul only sewer between manholes SO49387617 and SO49386616 located within the site boundary to the north. We advise that an adequate grease trap shall be fitted in accordance with details that have been submitted to and approved in writing by the local planning authority. Thereafter the grease trap shall be maintained so as to prevent grease entering the public sewerage system. Should a planning application be submitted for this development we will seek to control these points of communication via appropriate planning conditions and therefore recommend that any drainage layout or strategy submitted as part of your application takes this into account.

You may need to apply to Dwr Cymru Welsh Water for any connection to the public sewer under Section 106 of the Water industry Act 1991. However, if the connection to the public sewer network is either via a lateral drain (i.e. a drain which extends beyond the connecting property boundary) or via a new sewer (i.e. serves more than one property), it is now a mandatory requirement to first enter into a Section 104 Adoption Agreement (Water Industry Act 1991). The design of the sewers and lateral drains must also conform to the Welsh Ministers Standards for Foul Sewers and Lateral Drains, and conform with the publication "Sewers for Adoption"- 7th Edition. Further information can be obtained via the Developer Services pages of www.dwrcymru.com.

With respect to the disposal of surface water flows from the proposed development, the developer is required to explore and fully exhaust all surface water drainage options outlined under Sections 3.2 and 3.4 of Part H of the publication 'Building Regulations 2000. Disposal should be made through the hierarchical approach, preferring infiltration and, where infiltration is not possible, disposal to watercourses in liaison with the Land Drainage Authority, Natural England and/or the Environment Agency. Discharge of surface water to the public sewer is only to be made as a last resort. In addition, please note that no highway or land drainage run-off will be permitted to discharge directly or indirectly into the public sewerage system.

Foul Water Drainage – Sewerage Treatment

No problems are envisaged with the Waste Water Treatment Works for the treatment of domestic discharges from this site.

Please note that the Environment Agency have recently released Planning Advice relating to increased phosphate levels in several river Special Areas of Conservation (SAC). Applications for new development in these areas need to consider the requirements set out in the planning advice and should form part of the local planning authority's decision making when determining planning applications. The flows from this development would eventually drain to Eign Wastewater Treatment Works which has a phosphate consent.

Potable Water Supply

A water supply can be made available to service this proposed development. Initial indications are that a connection can be made from the 6 inch AC diameter watermain in 349664, 238500 location. The cost of providing new on-site watermains can be calculated upon the receipt of detailed site layout plans which should be sent to the above address.

I trust the above information is helpful and will assist you in forming water and drainage strategies that should accompany any future planning application. I also attach copies of our water and sewer extract plans for the area, and a copy of our Planning Guidance Note which provides further information on our approach to the planning process, making connections to our systems and ensuring any existing public assets or infrastructure located within new development sites are protected.

Please note that our response is based on the information provided in your enquiry and should the information change we reserve the right to make a new representation. Should you have any queries or wish to discuss any aspect of our response please do not hesitate to contact our dedicated team of planning officers, either on 0800 917 2652 or via email at **developer.services@dwrcymru.com**

Please quote our reference number in all communications and correspondence.

Yours faithfully,

[redacted]

Owain George
Planning Liaison Manager
Developer Services

<u>Please Note</u> that demands upon the water and sewerage systems change continually; consequently the information given above should be regarded as reliable for a maximum period of 12 months from the date of this letter.

PPA0006301

CONDITIONS FOR DEVELOPMENT NEAR WATER MAINS

Location: **Belmont Rd Hereford**
Date: 7.12.2021

The development of the site with our water main located as shown on the attached plan will involve certain conditions which must be strictly adhered to. These are:-

1. No structure is to be sited within a minimum distance of 4.5 meters from the centre line main, 9 meters in total. The pipeline must therefore be located and marked up accurately at an early stage so that the Developer or others understand clearly the limits to which they are confined with respect to the Company's apparatus. Arrangements can be made for Company staff to trace and peg out such water mains on request of the Developer.

2. Adequate precautions are to be taken to ensure the protection of the water main during the course of site development.

3. If heavy earthmoving machinery is to be employed, then the routes to be used in moving plant around the site should be clearly indicated. Suitable ramps or other protection will need to be provided to protect the water main from heavy plant.

4. The water main is to be kept free from all temporary buildings, building material and spoil heaps etc.

5. The existing ground cover on the water main should not be increased or decreased.

6. All chambers, covers, marker posts etc. are to be preserved in their present position.

7. Access to the Company's apparatus must be maintained at all times for inspection and maintenance purposes and must not be restricted in any way as a result of the development.

8. No work is to be carried out before this Company has approved the final plans and sections.

These are general conditions only and where appropriate, will be applied in conjunction with specific terms and conditions provided with our quotation and other associated documentation relating to this development.

Appendix F CCTV Survey Report

EMP Drainage Ltd

CCTV Drainage Survey

Job No: **4293**

Client:

Lidl GB Ltd

Date: 25/01/2022

Site Location:

Belmont Road, Hereford, HR2 7BP

EMP Drainage ltd
25 High Street, Sproughton
Tel. 01473 748704
info@empdrainage.co.uk

Project

Project Name:	Project_LIDL_HEREFORD
Project Description:	WinCan Import in Miraculix Standard
Project Number:	4293
Project Status:	On Site
Project Date:	17/01/2022

EMP Drainage ltd
25 High Street, Sproughton
Tel. 01473 748704
info@empdrainage.co.uk

Table of Contents

Project Name	Project Number	Project Date
Project_LIDL_HEREFORD	4293	17/01/2022

EMP Drainage ltd
25 High Street, Sproughton
Tel. 01473 748704
info@empdrainage.co.uk

Project Information

Project Name	Project Number	Project Date
Project_LIDL_HEREFORD	4293	17/01/2022

Client

Company: Lidl GB Limited
Contact: Sian Thomas
Department: Property Secretary
Street: Waterton Industrial Estate, Off Cowbridge Road
Town or City: Bridgend
Post Code: CF31 3PH
Phone: [redacted]
Email:

Site

Company: Lidl GB Limited
Description: Belmont Road Site
Contact: Sian Thomas
Department: Property Secretary
Street: Belmont Road
Town or City: Hereford
Post Code: HR2 7BP
Phone: [redacted]
Email:

Contractor

Company: EMP Drainage ltd
Contact: Michael Wood
Street: 25 High Street
Town or City: Sproughton
County: Suffolk
Post Code: IP8 3AF
Phone: 01473 748704
Mobile: [redacted]
Email: info@empdrainage.co.uk

EMP Drainage ltd
25 High Street, Sproughton
Tel. 01473 748704
info@empdrainage.co.uk

Project Information

Project Name	Project Number	Project Date
Project_LIDL_HEREFORD	4293	17/01/2022

Project Notes

We recently attended onsite to carry out a CCTV drainage survey to the surface water main lines as per the marked-up plan provided by the client.

SW1 DOWNSTREAM TO DITCH - Survey was abandoned due to high levels of silt within the water level.

POND OUTFALL DOWNSTREAM TO DITCH - CCTV was completed. (Pictures attached)

Due to access restrictions CCTV was not possible from the line serving newton brook.

SW3 DOWNSTREAM - CCTV was not possible due to heavy silt and high-water level. (Pictures attached)

To complete the survey to the areas affected by high water level and high levels of silt large combi and tanker units will be required to complete cleaning works.

CCTV was not possible from SW2 upstream to Newton Brook due to high water level and access to SW2, 3-man team required to attempt positioning camera at the head of Newton Brook.

SW3 downstream - outfall pipe could not be located within the downstream ditch / water course. Advise combi unit is required to clear silt and attempt additional CCTV.

Please see report and plan for manhole locations, direction of flow, pipe sizes, depths, and structural condition.

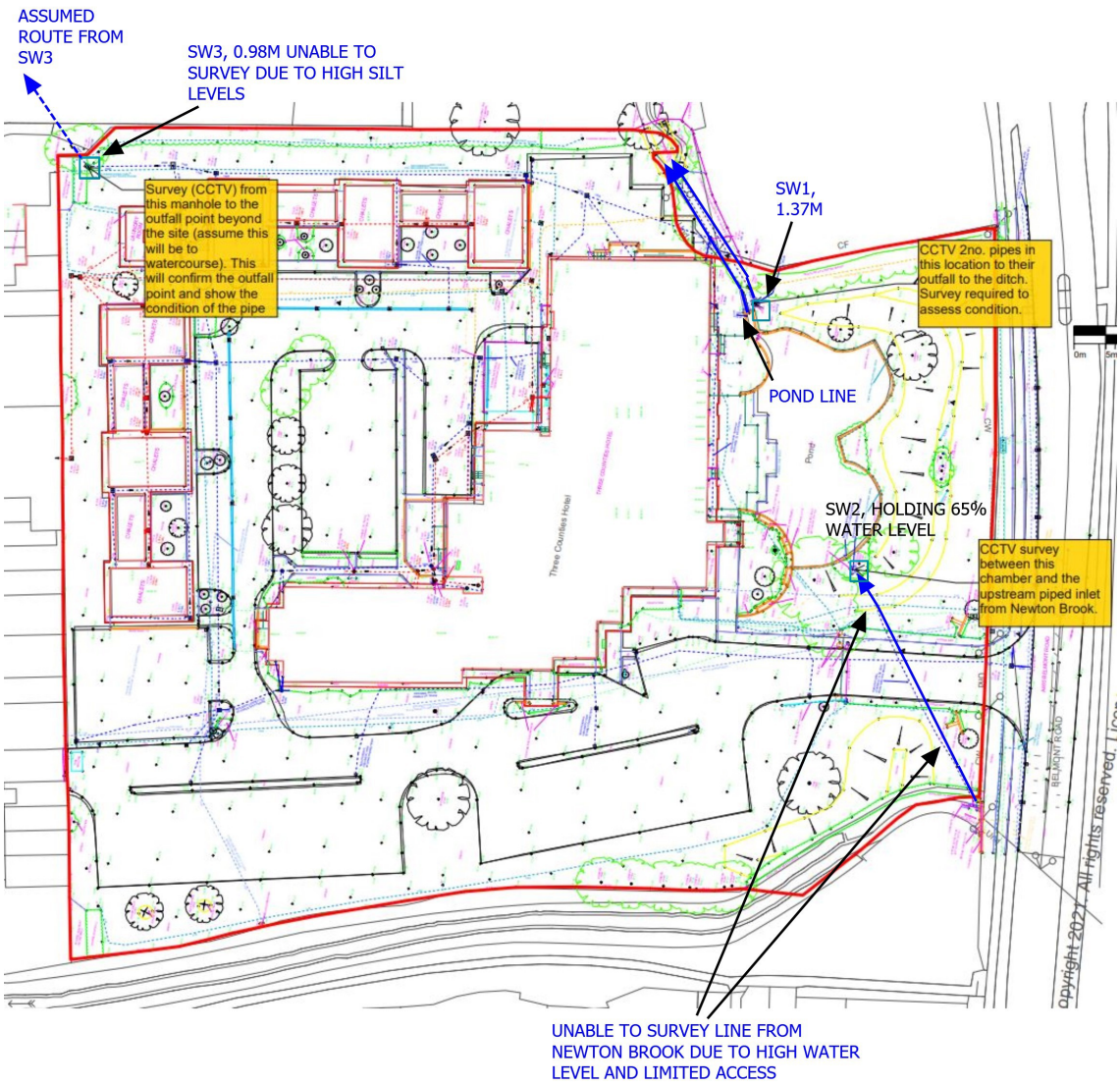
Please note quotation for cleaning works and additional CCTV can be provided upon request.

EMP Drainage ltd
25 High Street, Sproughton
Tel. 01473 748704
info@empdrainage.co.uk

Project Information

Project Name	Project Number	Project Date
Project_LIDL_HEREFORD	4293	17/01/2022

Project Drawing, Page 'Project_LIDL_HEREFORD'



EMP Drainage ltd
25 High Street, Sproughton
Tel. 01473 748704
info@empdrainage.co.uk

Project Pictures

Project Name	Project Number	Project Date
Project_LIDL_HEREFORD	4293	17/01/2022

OVERHEAD SITE VIEW

SITE ENTRANCE

SW1,1.37M HEAVY FLOW FROM OFFSITE

SW2 UPSTREAM HOLDING HIGH WATER LEVEL

SW3, 0.98M HOLDING HIGH WATER LEVEL AND HEAVILY SILTED

GATE VALVE FOR POND

EMP Drainage ltd
25 High Street, Sproughton
Tel. 01473 748704
info@empdrainage.co.uk

Project Pictures

Project Name	Project Number	Project Date
Project_LIDL_HEREFORD	4293	17/01/2022

OUTFALL PIPES HOLDING 50% WATER LEVEL DUE TO DITCH WATER LEVEL

PIPE INLET FROM NEWTON BROOK, HOLDING HIGH WATER LEVEL WITH NO ACCESS

OUTLET BEHIND BUSH FROM SW2

SW1 OUTFALL AND LOCATION OF POND OUTFALL

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Tel. 01473 748704
info@empdrainage.co.uk

Section Profile

Project Name	Project Number	Project Date
Project_LIDL_HEREFORD	4293	17/01/2022

Circular, 600 mm

Item No.	Upstream Node	Downstream Node	Date	Road	Material	Total Length	Inspected Length
1	SW1	OUTFALL	11/01/2022	BELMONT ROAD	Polypropylene	5.20 m	5.20 m
2	POND OUTFALL	OUTFALL DITCH	11/01/2022	BELMONT ROAD	Polypropylene	25.10 m	25.10 m

Total: 2 Inspections x Circular 600 mm = 30.30 m Total Length and 30.30 m Inspected Length

Total: 2 Inspections = 30.30 m Total Length and 30.30 m Inspected Length

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Section Summary

Project Name	Project Number	Project Date
Project_LIDL_HEREFORD	4293	17/01/2022

Number of sections	2
Total length of sections	30.30 m
Total length of inspected sections	30.30 m
Total length of abandoned inspections	0.00 m
Number of abandoned inspections	1
Number of section inspection photos	11
Number of section inspection videos	2
Number of section inspection scans	0
Number of section inclination measurements	0

PLR:	SW1X	**Upstream Node:**	SW1
Inspection Direction:	Downstream	**Downstream Node:**	OUTFALL
Inspected Length:	5.20 m	**Dia/Height:**	600 mm
Total Length:	5.20 m	**Material:**	Polypropylene

No.	m+	Code	Observation
1	0.00	MH	Start node, manhole, reference: SW1
2	0.00	WL	Water level, 25% of the vertical dimension
3	4.40	WL	Water level, 50% of the vertical dimension
4	5.20	DES	Settled deposits, fine, 30% cross-sectional area loss
5	5.20	SA	Survey abandoned

PLR:	POND OUTFALLX	**Upstream Node:**	POND OUTFALL
Inspection Direction:	Downstream	**Downstream Node:**	OUTFALL DITCH
Inspected Length:	25.10 m	**Dia/Height:**	600 mm
Total Length:	25.10 m	**Material:**	Polypropylene

No.	m+	Code	Observation
1	0.00	OF	Start node, outfall, reference: POND OUTFALL
2	0.00	WL	Water level, 5% of the vertical dimension
3	1.90	WL	Water level, 25% of the vertical dimension
4	7.80	WL	Water level, 60% of the vertical dimension
5	9.40	CUW	Loss of vision, camera under water
6	25.10	OFF	Finish node, outfall, reference: OUTFALL DITCH

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Section Inspection - 11/01/2022 - SW1X

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
1	1	11/01/22	10:28	Not Specified	Rain	Yes	SW1X

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
MICHAEL WOOD	LN20 PXO	Main Line Crawler	Not Specified	Private Drain	Not Specified

Town or Village:	Hereford	**Inspection Direction:**	Downstream	**Upstream Node:**	SW1
Road:	Belmont Road	**Inspected Length:**	5.20 m	**Upstream Pipe Depth:**	1.370 m
Location:	Property or buildings	**Total Length:**	5.20 m	**Downstream Node:**	OUTFALL
Surface Type:	Grass	**Joint Length:**		**Downstream Pipe Depth:**	0.000 m

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	600 mm
Flow Control:	No flow control	**Material:**	Polypropylene
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Routine inspection	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:50

Depth: 1.37 m

SW1

Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	MH	Start node, manhole, reference: SW1	00:00:04	2022_01_11-10_31_01_019.jpg	
0.00	WL	Water level, 25% of the vertical dimension	00:00:09	2022_01_11-10_31_19_194.jpg	
4.40	WL	Water level, 50% of the vertical dimension	00:02:03	2022_01_11-10_35_09_735.jpg	
5.20	DES	Settled deposits, fine, 30% cross-sectional area loss	00:03:51	2022_01_11-10_37_02_677.jpg	4
5.20	SA	Survey abandoned: UNABLE TO PASS OVER DEBRIS ON BOTTOM OF PIPEWORK	00:03:55	2022_01_11-10_37_26_595.jpg	

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	1	5.0	1.0	5.0	4.0

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Section Pictures - 11/01/2022 - SW1X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
1	Downstream	SW1X		

2022_01_11-10_31_01_019.jpg, 00:00:04, 0.00 m
Start node, manhole, reference: SW1

2022_01_11-10_31_19_194.jpg, 00:00:09, 0.00 m
Water level, 25% of the vertical dimension

2022_01_11-10_35_09_735.jpg, 00:02:03, 4.40 m
Water level, 50% of the vertical dimension

2022_01_11-10_37_02_677.jpg, 00:03:51, 5.20 m
Settled deposits, fine, 30% cross-sectional area loss

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Section Pictures - 11/01/2022 - SW1X

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
1	Downstream	SW1X		

2022_01_11-10_37_26_595.jpg, 00:03:55, 5.20 m
Survey abandoned, UNABLE TO PASS OVER DEBRIS ON BOTTOM OF PIPEWORK

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Section Inspection - 11/01/2022 - POND OUTFALLX

Item No.	Insp. No.	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
2	2	11/01/22	10:53	Not Specified	No Rain Or Snow	No	POND OUTFALLX

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
MICHAEL WOOD	LN20 PXO	Main Line Crawler	Not Specified	Private Drain	Not Specified

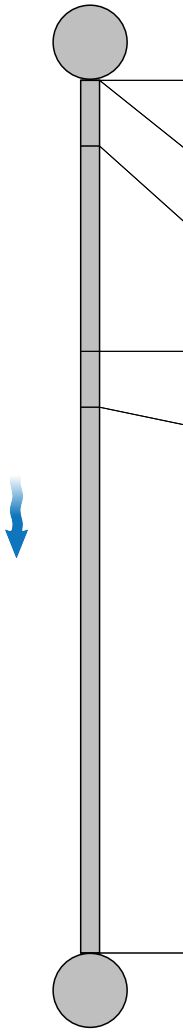
Town or Village:	Hereford	**Inspection Direction:**	Downstream	**Upstream Node:**	POND OUTFALL
Road:	Belmont Road	**Inspected Length:**	25.10 m	**Upstream Pipe Depth:**	0.000 m
Location:	Property or buildings	**Total Length:**	25.10 m	**Downstream Node:**	OUTFALL DITCH
Surface Type:	Grass	**Joint Length:**		**Downstream Pipe Depth:**	0.000 m

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:	Gravity drain/sewer	**Dia/Height:**	600 mm
Flow Control:	No flow control	**Material:**	Polypropylene
Year Constructed:	Not Specified	**Lining Type:**	No Lining
Inspection Purpose:	Routine inspection	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:217

Depth: 0.00 m
POND OUTFALL



OUTFALL DITCH
Depth: 0.00 m

Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	OF	Start node, outfall, reference: POND OUTFALL	00:00:04	2022_01_11-10_58_22_980.jpg	
0.00	WL	Water level, 5% of the vertical dimension	00:00:07	2022_01_11-10_58_39_896.jpg	
1.90	WL	Water level, 25% of the vertical dimension	00:00:45	2022_01_11-10_59_23_064.jpg	
7.80	WL	Water level, 60% of the vertical dimension	00:02:42	2022_01_11-11_01_26_009.jpg	
9.40	CUW	Loss of vision, camera under water	00:03:12	2022_01_11-11_02_02_020.jpg	
25.10	OFF	Finish node, outfall, reference: OUTFALL DITCH	00:07:09	2022_01_11-11_06_11_106.jpg	

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

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Section Pictures - 11/01/2022 - POND OUTFALLX

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
2	Downstream	POND OUTFALLX		

2022_01_11-10_58_22_980.jpg, 00:00:04, 0.00 m
Start node, outfall, reference: POND OUTFALL

2022_01_11-10_58_39_896.jpg, 00:00:07, 0.00 m
Water level, 5% of the vertical dimension

2022_01_11-10_59_23_064.jpg, 00:00:45, 1.90 m
Water level, 25% of the vertical dimension

2022_01_11-11_01_26_009.jpg, 00:02:42, 7.80 m
Water level, 60% of the vertical dimension

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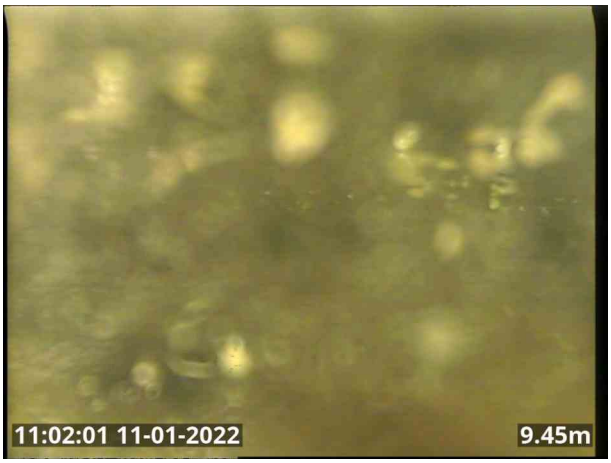
Section Pictures - 11/01/2022 - POND OUTFALLX

Item No.	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
2	Downstream	POND OUTFALLX		



2022_01_11-11_02_02_020.jpg, 00:03:12, 9.40 m
Loss of vision, camera under water

2022_01_11-11_06_11_106.jpg, 00:07:09, 25.10 m
Finish node, outfall, reference: OUTFALL DITCH

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Terms and conditions

Thank you for choosing to use EMP Drainage Ltd to carry out your drainage investigation works.

The results and views carried in this report are those of the engineer(s) appointed to carry out the investigation and are considered relevant on the day of the survey. Drain and sewer performance is known to alter over time, so liability cannot be accepted for differences between the recorded data and the actual data at a time after this report was generated.

This survey has been created in accordance with the Manual of Sewer Condition Classification (4th Ed, WRc, 2004), the Sewer Rehabilitation Manual (WRc) and BS EN13508:2.

If a DVD has been supplied with this report, please not that it can only be used in a Windows based PC. Please browse the DVD and navigate to the PDF folder to find project-based documents such as drawings, engineer's site notes and survey specifications amongst others.

CCTV subsidence investigations do not account for the water tightness of the pipes and are merely a visual inspection of inside of the drains. CCTV drainage engineers are generally not qualified to comment on the causes of subsidence, and can only suggest required remedial actions for the pipes, and not the affected buildings.

Subsidence is a building structural failure, which can occur for many reasons. Although drainage failures can contribute to subsidence problems, other causes should always be investigated as part of a considered approach. In order to eliminate drains from suspicion, EMP Drainage Ltd suggests that all pipes within at least 10m of the subsidence area be pressure tested over and above a CCTV inspection, and remedial suggestions considered based on the findings.

Unless otherwise specified in an associated task order (or similar), the data gathered in this report may not be suitable for use as a pre-lining investigation. EMP Drainage LTD are happy to carry out such surveys, but this must be agreed prior to the commencement of the works, and a the client must specify the data they wish to capture and the acceptable tolerances..

Domestic structural condition grading guide according to The Drain Repair Book (WRc, 3rd Ed, 2011):

Grade A: Structurally sound with no leakage evident. Slight cracks/defects permitted. Acceptable structural condition.

Grade B: Cracks and/or fractures observed but pipe provides sufficient arching support. Some leakage may be evidnet. Consideration should be given to rehabilitation solutions.

Grade C: Structurally unsound with insufficient arching support. Total collapse/blockage likely in the future. Urgent consideration should be given to rehabilitation solutions.

The clock reference system is used to indicate where observations are being made, relative to the absolute position of the invert (bottom) of the pipe. That is to say that the soffit (top) of the pipe is at 12 o'clock, the invert of the pipe is at 6 o'clock, the right hand edge is at 3 o'clock and the left hand edge is at 9 o'clock. Where observations are made between points of the clock face, they are done so in a clockwise direction i.e. from 3 to 9 o'clock is the bottom half of the pipe.

Unless stated otherwise, all invert depths are measured at the downstream end of the inspection chamber or manhole, vertically from the bottom of the channel to the top of the manhole cover.

The 'master' copy of the recording for this report will be kept at EMP Drainage Ltd for a period of 12 months from the date of the survey, and further copies may be available to purchase on request. After this time, the master copy may be destroyed.

Any quotations for remedial works included with this report will remain valid for a minimum period of 3 calendar months from the date of the survey.

Clay pipes (sometimes called salt-glazed or vitrified clay) are the traditional type of drain pipe and are found at

properties of all ages, but particularly pre-1960s. Older clay ware piping systems typically used socket and spigot joints that were caulked with lime mortar to provide a rigid string of drains. These older systems are commonly found to be cracked and broken due to the inflexibility of the joints coupled with slight ground movements, and have never had any degree of built in design-flex.

Old cast iron pipes are susceptible to considerable erosion during service, poor hydraulic performance due to rough internal surfaces and poorly constructed connections to clay or other pipe materials.

Modern versions of vitrified clay pipes and uPVC (plastic) pipes are jointed with polymeric flexible couplings, which allow the pipes in the ground to adapt to slight ground movements without breaking. The modern joints are just as susceptible to leakage and root intrusion as their older counterparts, often as a result of poor installation, overloading, excessive ground movement or direct damage.

The jointing systems of all below ground pipes are always constructed around the outside of the pipes, so are not usually visible on CCTV recordings. Hence, a detailed knowledge of past and present drainage construction techniques is usually used to draw conclusions about the integrity of the pipe joints, from the conditions observed on their inside surfaces.

Root intrusion into drains is very common, but only usually occurs where there is an existing defect such as a crack, fracture or hole in the pipe. Roots from trees and shrubs have the sole purpose in life to seek out water and nutrients. When they find entry into a drain or sewer, they often fill the available space to make best use of the available water, and this can lead to some considerable blockages if left unchecked.

Drains with root intrusion can often be permanently repaired without the need for excavation, or any need to remove the offending tree or shrub.

It is an offence under Section 111 of the 1991 Water Industry Act (also Section 46 of the 1968 Sewerage Act 1968 in Scotland) to allow anything to enter the public sewerage network that might impede the flow of sewage, or is difficult to process at the local waste water treatment plant. This not only applies to solid objects such as gravel, bricks etc, but also particularly to FOGs (Fats, Oils and Greases).

During the 1940s, 50s and 60s, there was a large scale use of Pitch Fibre pipes in the UK construction industry. These pipes are often found to be delaminated, blistered and deformed, due to the way in which they deteriorate under ground pressure and in the damp conditions
found in drains.

If cleaning is required by means of High Pressure Water Jetting to complete a report or is requested by the client EMP Drainage Ltd will make every effort to ensure the pipe is left with flow. Certain pipe materials only allow us to High Pressure Water Jet at low preasures meaning long drain runs can be hard to fully clean. Root cutting, de-scaling, fat/grease or large amounts of stone are not included in general cleaning works these will be marked in the report.

EMP Drainage Ltd will not clear ditches or overgrown waste land to locate hidden mh,s or drain runs this responsibility is the clients, drain runs or hidden mh"s will be marked on the plan but will not be to scale.

Appendix G LLFA Correspondence

SITE:	Three Counties Hotel, Belmont, Hereford, Herefordshire HR2 7BP
TYPE:	Pre-application Advice
DESCRIPTION:	Major Pre-App Advice - Demolition of hotel and erection of Lidl foodstore and Class E food and drink units.
APPLICATION NO:	214401
GRID REFERENCE:	OS 349683, 238587
APPLICANT:	Lidl Great Britain Limited
AGENT:	Peter Waldren

Our knowledge of the development proposals has been obtained from the following sources:

- Pre-planning application advice request;
- Site Location Plan (Ref: F405 Rev A);
- Proposed Site Plan (Ref: F402 Rev D);
- Request for Pre-Application Advice Letter.

Site Location

Figure 1: Environment Agency Flood Map for Planning (Rivers and Sea), December 2021

Overview of the Proposal

The Applicant proposes the demolition of hotel and erection of Lidl foodstore and Class E food and drink units. The site covers an area of approx. 1.71ha. Newton Brook, an ordinary watercourse, flows along the western site boundary. There is a tributary of the Newton Brook which flows to the east of the site and also connects to an existing pond onsite. The topography of the site gently slopes down from the south to the north by approx. 2m.

Flood Risk

Fluvial Flood Risk

Review of the Environment Agency's Flood Map for Planning (Figure 1) indicates that the site is located within the low probability Flood Zone 1.

Although the proposed development is located within Flood Zone 1, as it is more than 1ha, in accordance with Environment Agency standing advice, the planning application will need to be supported by a Flood Risk Assessment (FRA) undertaken in accordance with National Planning Policy Framework (NPPF) and its supporting Planning Practice Guidance. This is summarised in Table 1:

Table 1: Scenarios requiring a FRA

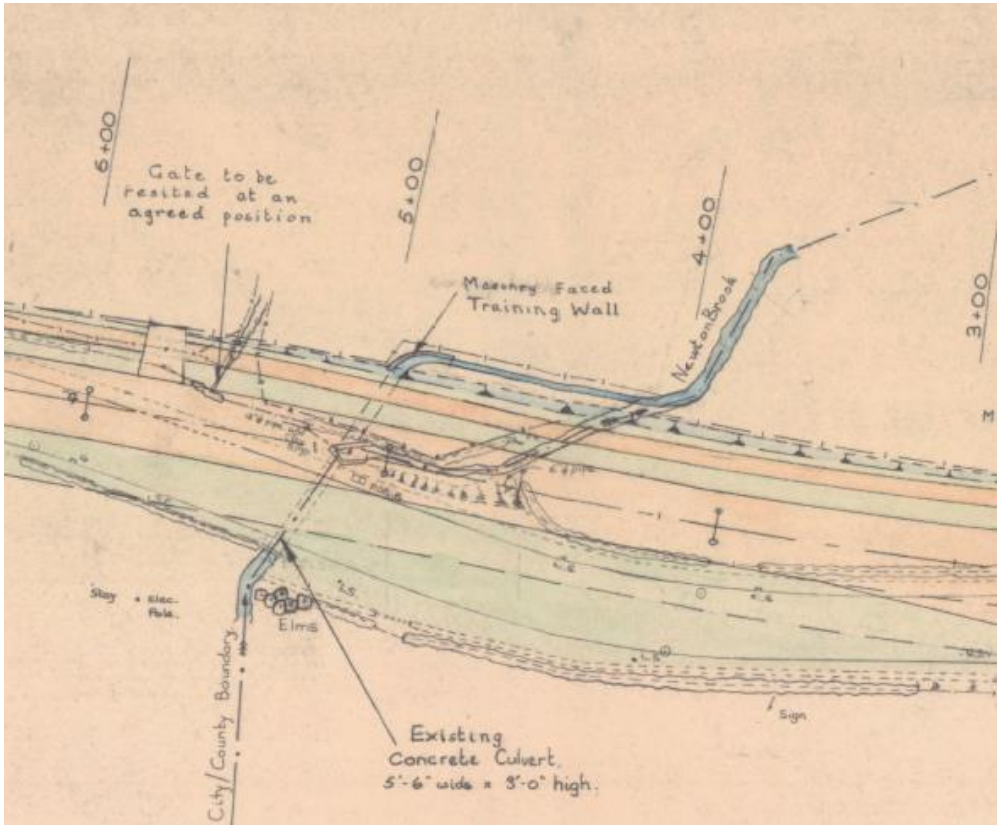
	Within Flood Zone 3	**Within Flood Zone 2**	**Within Flood Zone 1**
Site area less than 1ha	FRA required	FRA required	FRA not required*
Site area greater than 1ha	FRA required	FRA required	FRA required

**except for changes of use to a more vulnerable class, or where they could be affected by other sources of flooding*

The EA Flood Map for Planning does not consider watercourses with small catchments and therefore although the site is identified as located in Flood Zone 1 on the EA mapping, there is a known issue of flooding both onsite and within close proximity to the site from Newton Brook.

Newton Brook watercourse is complex in the immediate site area and is also influenced by high River Wye levels. As can be seen from the historic mapping, the Newton Brook used to cross below the A465 at the same location but followed a route through the hotel grounds.

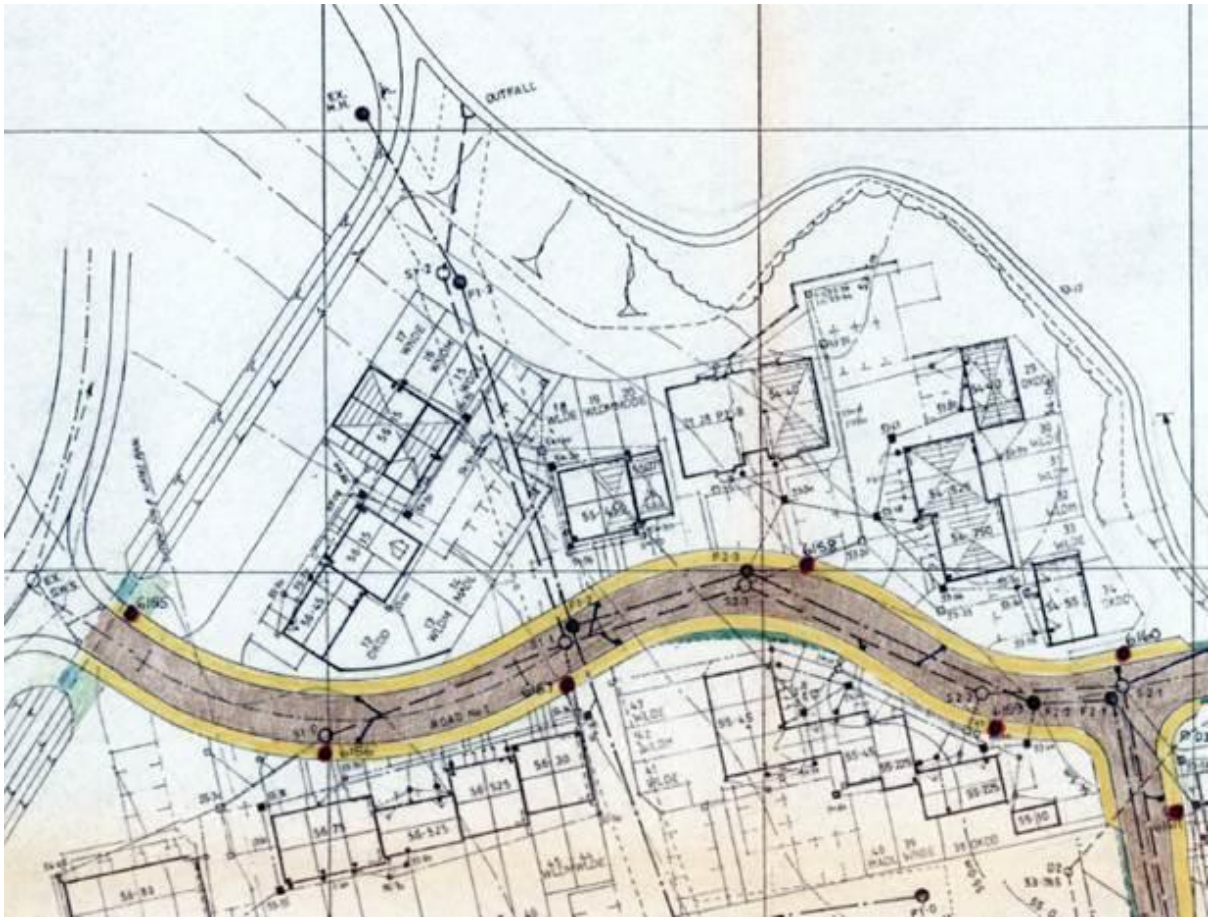
The road was straightened during 1970's and the channel was altered. The hotel was built after this and it appears that a pond was excavated. Newton Brook was culverted through the hotel grounds, with an overflow into the pond and then out of the pond to an eastern channel.



When the Belmont Estate was built, an overflow channel was incorporated into the development, on the western side of the hotel. This does not follow the lowest profile of the land. At the downstream end of the channel a series of steps was built. Residents regard this watercourse to be the Newton Brook.

The culverted section through the hotel has an inlet pipe of approx. 375mm dia. This will not convey much flow and is prone to blockages. It appears that the culvert through the hotel grounds has a larger size, based on our inspection of an intermediate manhole.

As the overflow channel was designed so that water cascades at the outfall, some section of the 'overflow' watercourse may not been excavated at a steep gradient. It is possible that for this reason the Newton Brook has less capacity than the historic channel did.

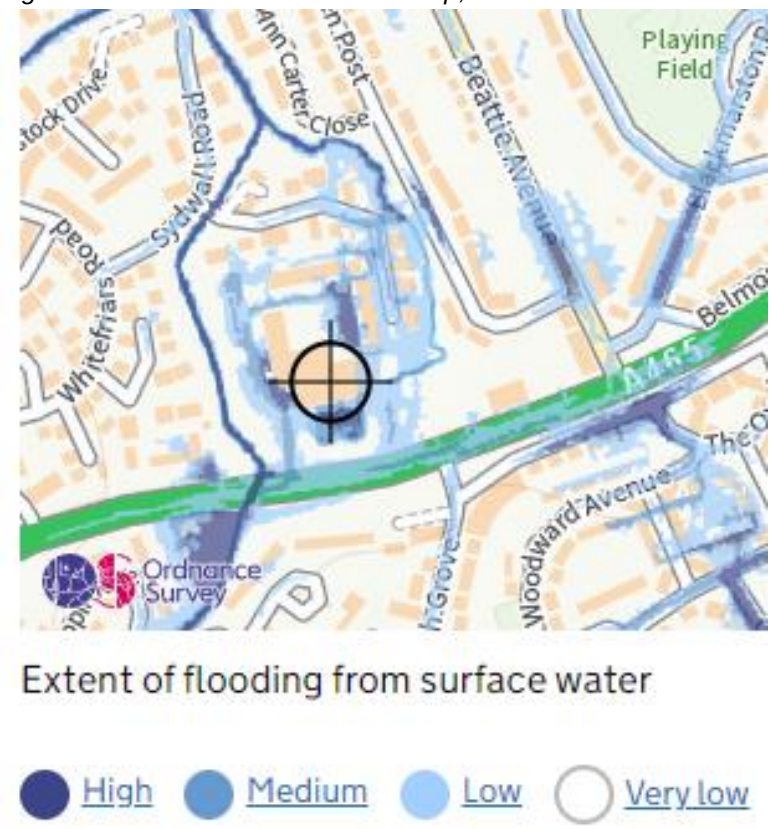


The potential risk from this watercourse should be considered in the design of the development. In the absence of mapped data, the Applicant will be required to undertake hydraulic modelling to consider the adverse impact of Newton Brook to the proposed development. As part of the development, there is the potential opportunity to provide a betterment and lessen flood risk both onsite and within the immediate surrounding area. Opening up the culvert system onsite and reinstating the eastern channel as a formal overflow channel should both be considered within the modelling study.

Surface Water Flood Risk

Review of the EA's Risk of Flooding from Surface Water map indicates that the site is located within an area at risk of surface water flooding. The site is indicated to have areas of low to high surface water flood risk associated with runoff from the adjacent highway and the neighbouring Newton Brook watercourse/existing pond. **This surface water flood risk should be assessed in detail within the FRA** and the appropriate mitigation measures, such as raising Finished Floor Levels considered.

Figure 2: EA Surface Water Flood Map, December 2021



Other Considerations and Sources of Flood Risk

Local residents may identify other local sources of flood risk within the vicinity of the site, commonly associated with culvert blockages, sewer blockages or unmapped drainage ditches.

Review of the EA's Groundwater map indicates that the site is not located within a designated Source Protection Zone or Principal Aquifer.

Surface Water Drainage

We note proposals for a Flood Risk Assessment and Drainage Strategy to be submitted with the planning application.

The Applicant should provide a surface water drainage strategy showing how surface water from the proposed development will be managed. The strategy must demonstrate that there is no increased risk of flooding to the site or downstream of the site as a result of development between the 1 in 1 year event and up to the 1 in 100 year event and allowing for the potential effects of climate change. Where possible, betterment over existing conditions should be promoted. Note that in February 2016 the EA updated their advice on the potential effects of climate change and that a range of allowances should be considered to understand the implications: https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances.

All new drainage systems for new and redeveloped sites must, as far as practicable, meet the Non-Statutory Technical Standards for Sustainable Drainage Systems and will require approval from the Lead Local Flood Authority (Herefordshire Council).

In accordance with the NPPF, Non-Statutory Technical Standards for Sustainable Drainage Systems and Policy SD3 of the Core Strategy, the drainage strategy should incorporate the use of Sustainable Drainage (SUDS) where possible. The approach promotes the use of infiltration features in the first instance. If drainage cannot be achieved solely through infiltration due to site conditions or contamination risks, the preferred options are (in order of preference): (i) a controlled discharge to a local watercourse, or (ii) a controlled discharge into the public sewer network (depending on availability and capacity). The rate and volume of discharge should be restricted to the pre-development Greenfield values as far as practicable. Reference should be made to The SUDS Manual (CIRIA C753, 2015) for guidance on calculating runoff rates and volumes. The assessment of pre and post-development runoff rates should consider a range of storm durations to determine those which are critical for the site and receiving watercourse or sewer and demonstrate sufficient storage has been provided. Allowances for climate change would not typically be included in the calculation of existing discharge rates.

The Cranfield University Soilscapes Map identifies the soils within the proposed development area to be freely draining thus the use of infiltration techniques may be a viable option for managing surface water. On-site testing undertaken in accordance with BRE365 should be undertaken to determine whether infiltration techniques are a viable option. Where site conditions and groundwater levels permit, the use of combined attenuation and infiltration features are promoted to provide treatment and reduce runoff during smaller rainfall events.

It should be noted that soakaways should be designed for a minimum 1 in 30 year design standard, be located a minimum of 5m from building foundations, that the base of soakaways and unlined storage/conveyance features should be a minimum of 1m above groundwater levels, and must have a half drain time of no greater than 24 hours.

For any proposed outfall to an adjacent watercourse, the Applicant must consider the risk of water backing up and/or not being able to discharge during periods of high river levels in the receiving watercourses. Discharge of surface water to an ordinary watercourse will require Ordinary Watercourse Consent from Herefordshire Council prior to construction.

The drainage system should be designed to ensure no flooding from the drainage system (which can include on-the-ground conveyance features) in all events up to the 1 in 30 year event. The Applicant must consider the management of surface water during extreme events that overwhelm the surface water drainage system (including temporary surcharging of gullies) and/or occur as a result of blockage. Surface water should either be managed within the site boundary or directed to an area of low vulnerability. Guidance for managing extreme events can be found within CIRIA C635: Designing for exceedance in urban drainage: Good practice.

Consideration should also be given to the control of potential pollution of ground or surface waters from wash down, vehicles and other potentially contaminating sources. Evidence of adequate separation and/or treatment of polluted water should be provided to ensure no risk of pollution is introduced to groundwater or watercourses both locally and downstream of the site, especially from proposed parking and vehicular areas. SUDS treatment of surface water is considered preferential for a development of this size.

The Applicant must confirm the proposed adoption and maintenance arrangements for the surface water drainage system.

Foul Water Drainage

We understand from the development proposals that the development would reduce the foul flows from the existing site area, which would also reduce phosphate output.

As there is a foul public sewer within 30m of the proposed development site, it is assumed that the existing connection onto the foul public sewer will be retained as part of the development. The Applicant should contact the relevant public sewerage authority, to confirm the connection.

In accordance with Policy SD4 of the Core Strategy, the Applicant should provide a foul water drainage strategy showing how it will be managed. Foul water drainage must be separated from the surface water drainage. The Applicant should provide evidence that contaminated water will not get into the surface water drainage system, nearby watercourse and ponds.

Appendix H Proposed Development Plan

DO NOT SCALE!
ALL DIMENSIONS SHOULD BE CHECKED ON SITE BEFORE WORK COMMENCES

TO BE READ IN CONJUNCTION WITH DRAWING FROM CORUN ASSOCIATES LTD
JOB NO: 22-00767 - DRAWING NO: 05 - REVISION: D

Area: 16,683 m2
4.122 ac
In line with Topographic Survey

GROUND DEPRESSION
TO CHANNEL WATER
(TO EAST AND NORTH)

ECO STORE
SALES AREA = 1,251msq

118 CAR PARKING SPACES (LIDL ONLY)
(Including 10 P+C, 8 Dis and 2 EVC)

+0m RETAINING WALL

+0.4m RETAINING WALL

+0.6m RETAINING WALL

NEWTON BROOK

NEWTON BROOK

BELMONT ROAD

KEY	COLOUR	AREA
SALES AREA		1,251 sqm
WAREHOUSE AREA		427sqm
ANCILLARY AREA		217 sqm
GIA		1895 sqm
GEA (INC. CANOPY)		2140 sqm
GEA (EXC. CANOPY)		1984 sqm

Rev.	Date	Description	Drawn
B.	04.01.23	Updated with highways drawing	NG
A.	14.10.22	Updated with highways drawing	LS

htcarchitects
York Place Studio
8 Britannia Street
Leeds
LS1 2DZ
T:(0113) 244 3457
W: www.htcarchitects.co.uk
E: info@htcarchitects.co.uk

client
Lidl GB

project
Three Counties –
Belmont Road, Hereford

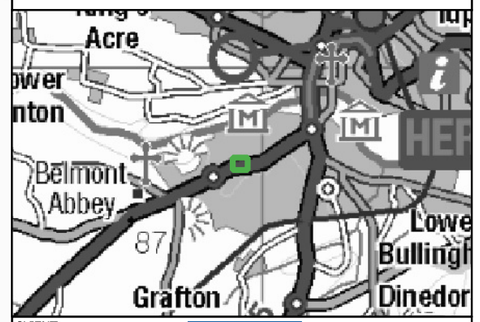
drawing title
Proposed Site Plan

date September 2022
status Planning
scale 1:500 @ A3
drawn NG checked LS
job no. 2768 dwg no. P4404 rev. B

Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

- Site Boundary
- Proposed Development Layout
- Modelled Site Levels (m AOD)



CLIENT:

www.waterco.co.uk

SCHEME:

Belmont Road, Hereford

PLOT TITLE:

Modelled Development Levels Plan

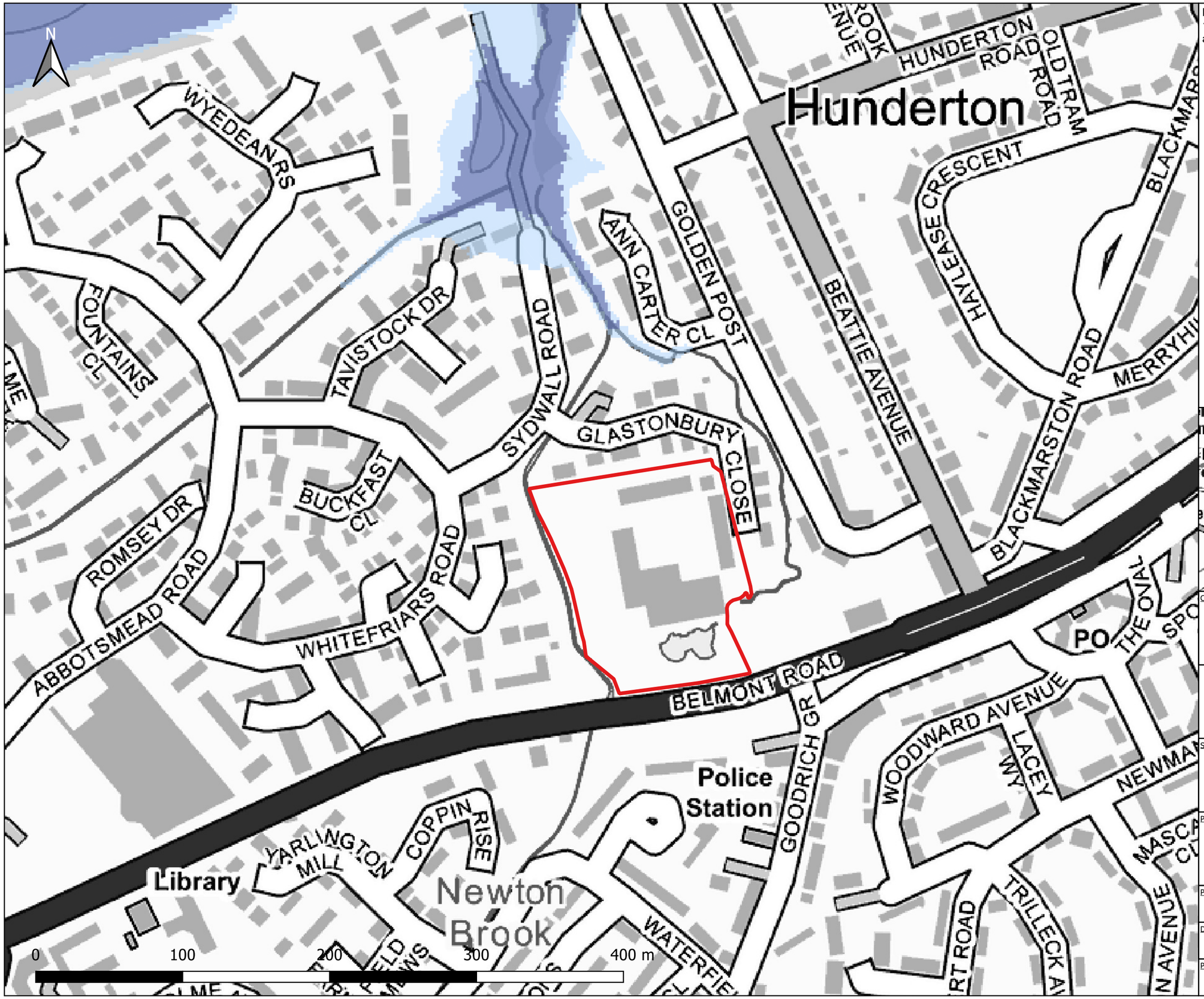
PLOT STATUS:	DATE:
FINAL	25-01-2023

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
MH	AR	MW	1:700

PLOT NAME:	REVISION:
14388-Modelled_Development_Levels	-

0 25 50 m

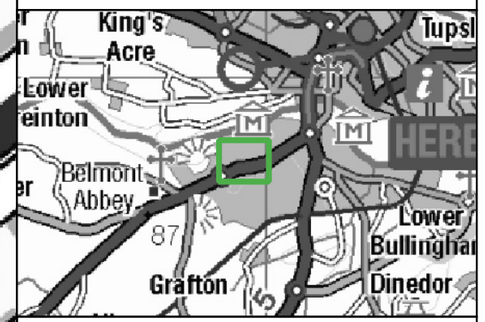
Appendix I Environment Agency Flood Maps



Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

- Site Boundary
- Main Rivers
- Spatial Flood Defences
- Flood Storage Areas
- Areas Benefitting from Defences
- Flood Zone 1
- Flood Zone 2
- Flood Zone 3



CLIENT:
Lidl UK GmbH

www.waterco.co.uk

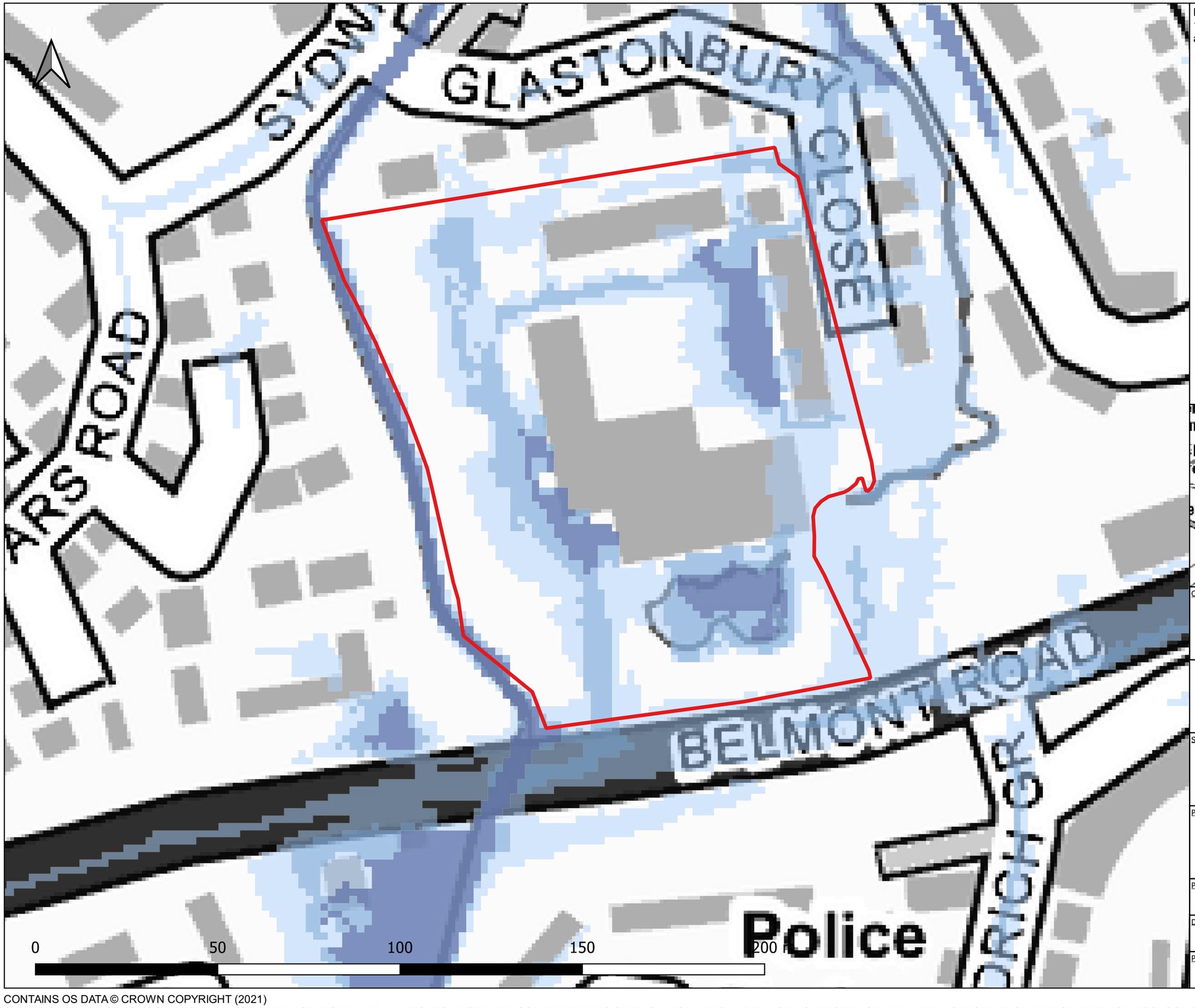
SCHEME:
Belmont Road, Hereford

PLOT TITLE:
EA Flood Map for Planning
Data accessed January 2022

PLOT STATUS:	DATE:
FINAL	06-01-2022

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
IH	JJ	AW	1:2500

PLOT NAME:	REVISION:
14388_EA_FMP	-



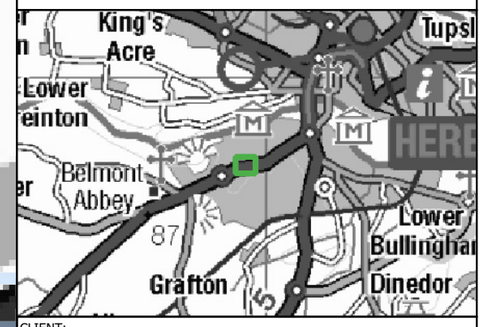
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

- Site Boundary

Flood Risk from Surface Water

- 1 in 30 Flood Extent
- 1 in 100 Flood Extent
- 1 in 1000 Flood Extent



CLIENT:
Lidl UK GmbH

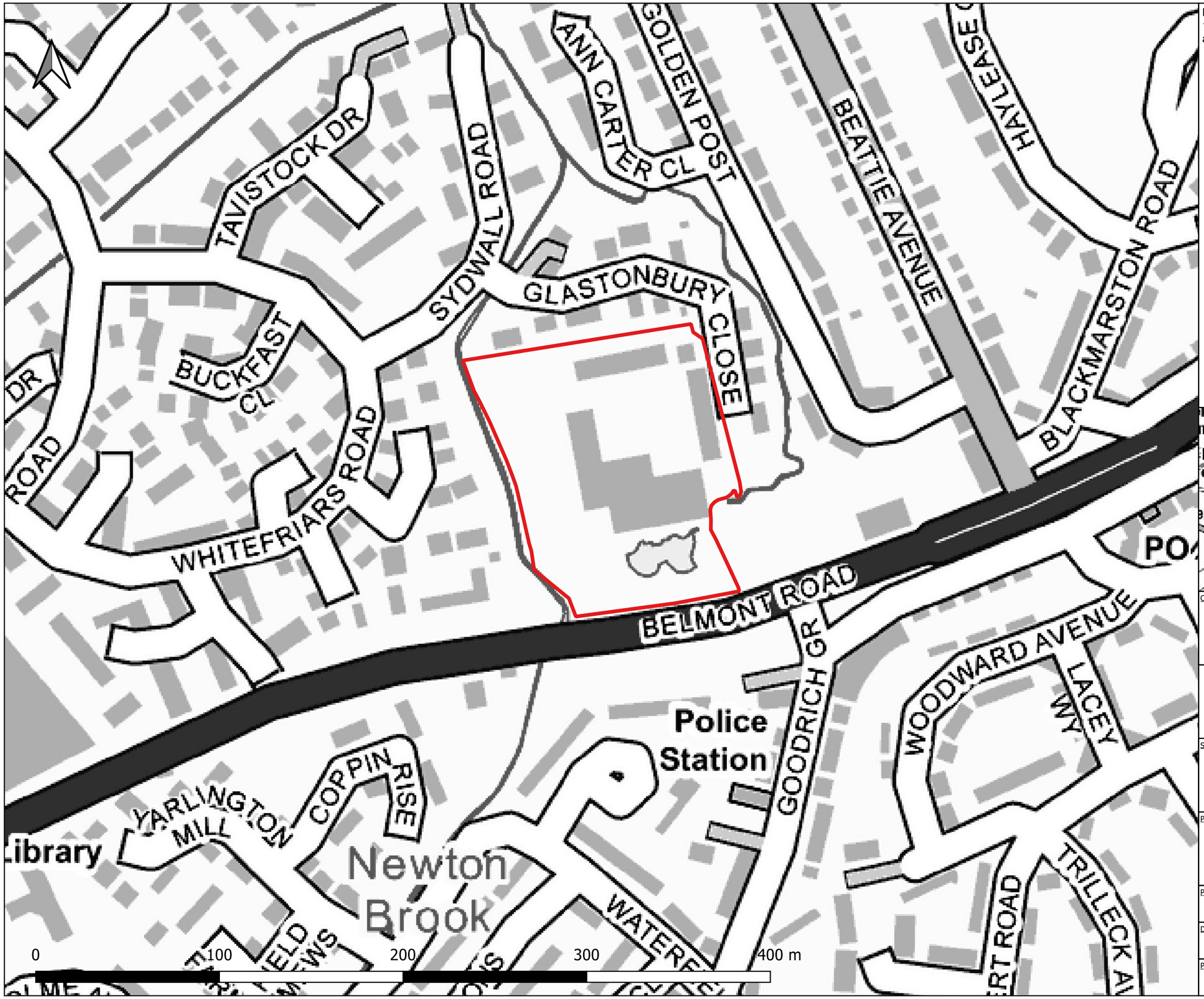
www.waterco.co.uk

SCHEME:
Belmont Road, Hereford

PLOT TITLE:
EA Flood Risk from Surface Water
Data accessed January 2022

PLOT STATUS:			DATE:
FINAL			06-01-2022
DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
IH	JJ	AW	1:1000

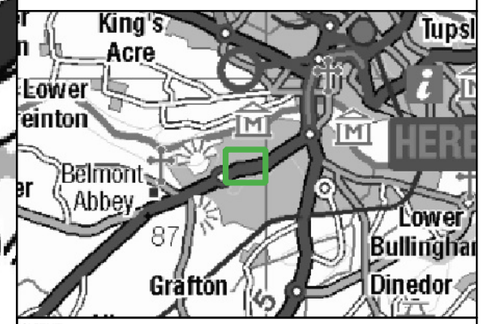
PLOT NAME:	REVISION:
14388_EA_Flood_Risk_from_Surface_Water	-



Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

- Site Boundary
- Flood Risk from Reservoirs



CLIENT:
Lidl UK GmbH

waterco
www.waterco.co.uk

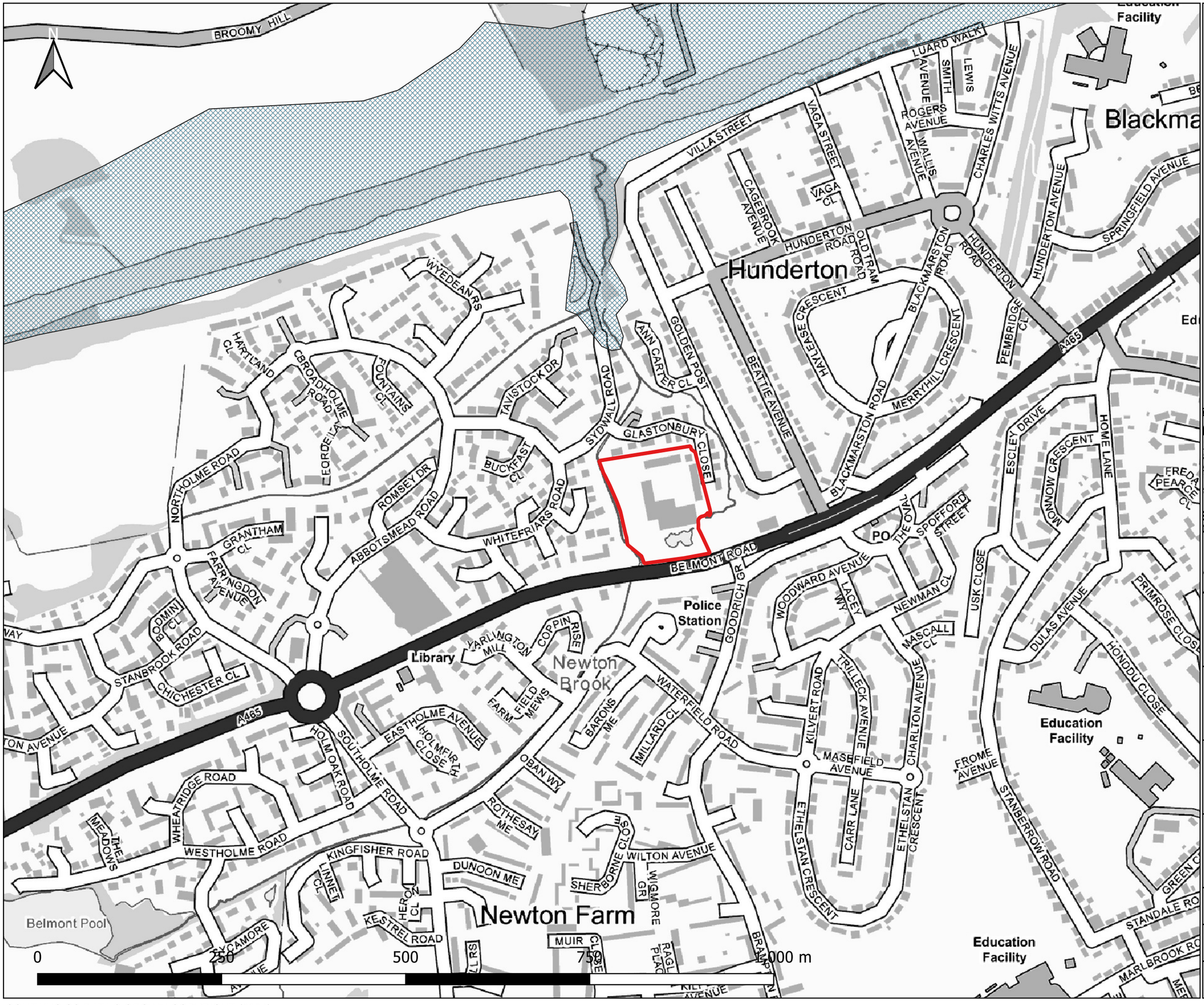
SCHEME:
Belmont Road, Hereford

PLOT TITLE:
EA Flood Risk from Reservoirs
Data accessed January 2022

PLOT STATUS:	DATE:
FINAL	06-01-2022

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
IH	JJ	AW	1:2000

PLOT NAME:	REVISION:
14388_EA_Flood_Risk_from_Reservoirs	-



Notes:

1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

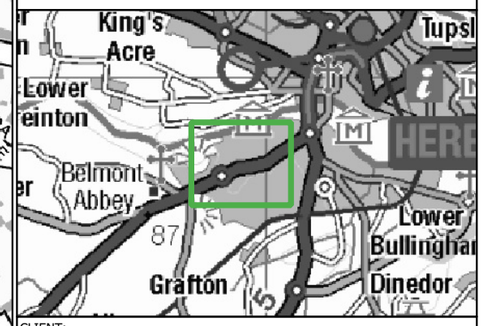
2) The Historic Flood Map is a GIS layer showing the maximum extent of individual Recorded Flood Outlines from river, the sea and groundwater springs that meet a set criteria. It shows areas of land that have previously been subject to flooding in England. This excludes flooding from surface water, except in areas where it is impossible to determine whether the source is fluvial or surface water but the dominant source is fluvial.

3) If an area is not covered by the Historic Flood Map it does not mean that the area has never flooded, only that the EA do not currently have records of flooding in this area that meet the criteria for inclusion.

4) The Historic Flood Map takes into account the presence of defences, structures, and other infrastructure where they existed at the time of flooding. It will include flood extents that may have been affected by overtopping, breaches or blockages.

LEGEND

- Site Boundary
- Historic Flood Map



CLIENT:

Lidl UK GmbH

www.waterco.co.uk

SCHEME:

Belmont Road, Hereford

PLOT TITLE:

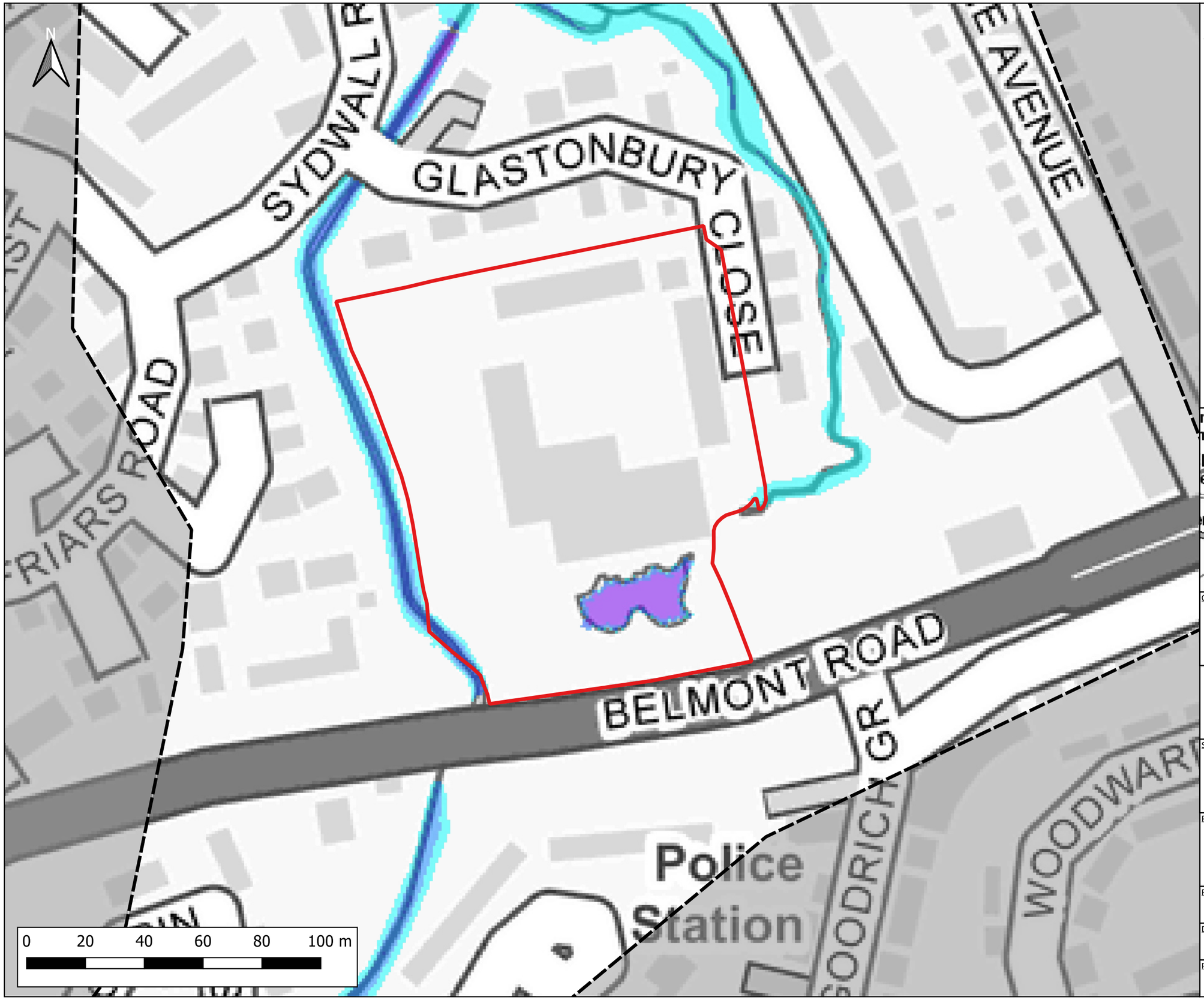
EA Historic Flood Risk
Data accessed January 2022

PLOT STATUS:			DATE:
FINAL			06-01-2022
DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
IH	JJ	AW	1:5000

PLOT NAME: 14388_EA_Historic_Flood_Risk

REVISION: -

Appendix J Modelled Output Mapping



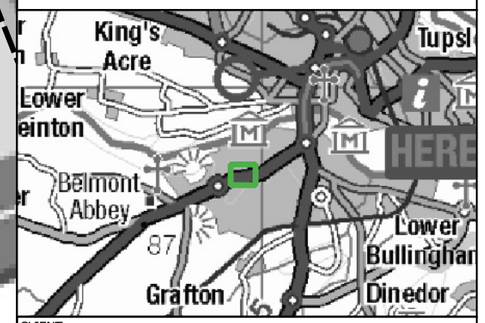
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

- Site Boundary
- Model Extent

Maximum Flood Depth

- <= 0.3m
- 0.3m - 0.6m
- 0.6m - 1.2m
- 1.2m - 2.4m
- > 2.4m



CLIENT:

LIDL

waterco
www.waterco.co.uk

SCHEME:
Belmont Road, Hereford

PLOT TITLE:
Maximum Flood Depth
5% AEP Fluvial Event
Existing Scenario (EXG)

PLOT STATUS:	DATE:
FINAL	27-01-2023

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
IH	AR	MW	1:1200

PLOT NAME:	REVISION:
14388_BEL_Q20_EXG_NC_015_d_Max	-

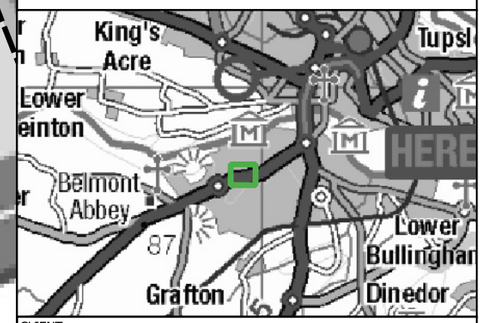
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

- Site Boundary
- Development Layout
- Model Extent

Maximum Flood Depth

- <= 0.3m
- 0.3m - 0.6m
- 0.6m - 1.2m
- 1.2m - 2.4m
- > 2.4m



CLIENT:

LIDL

waterco
www.waterco.co.uk

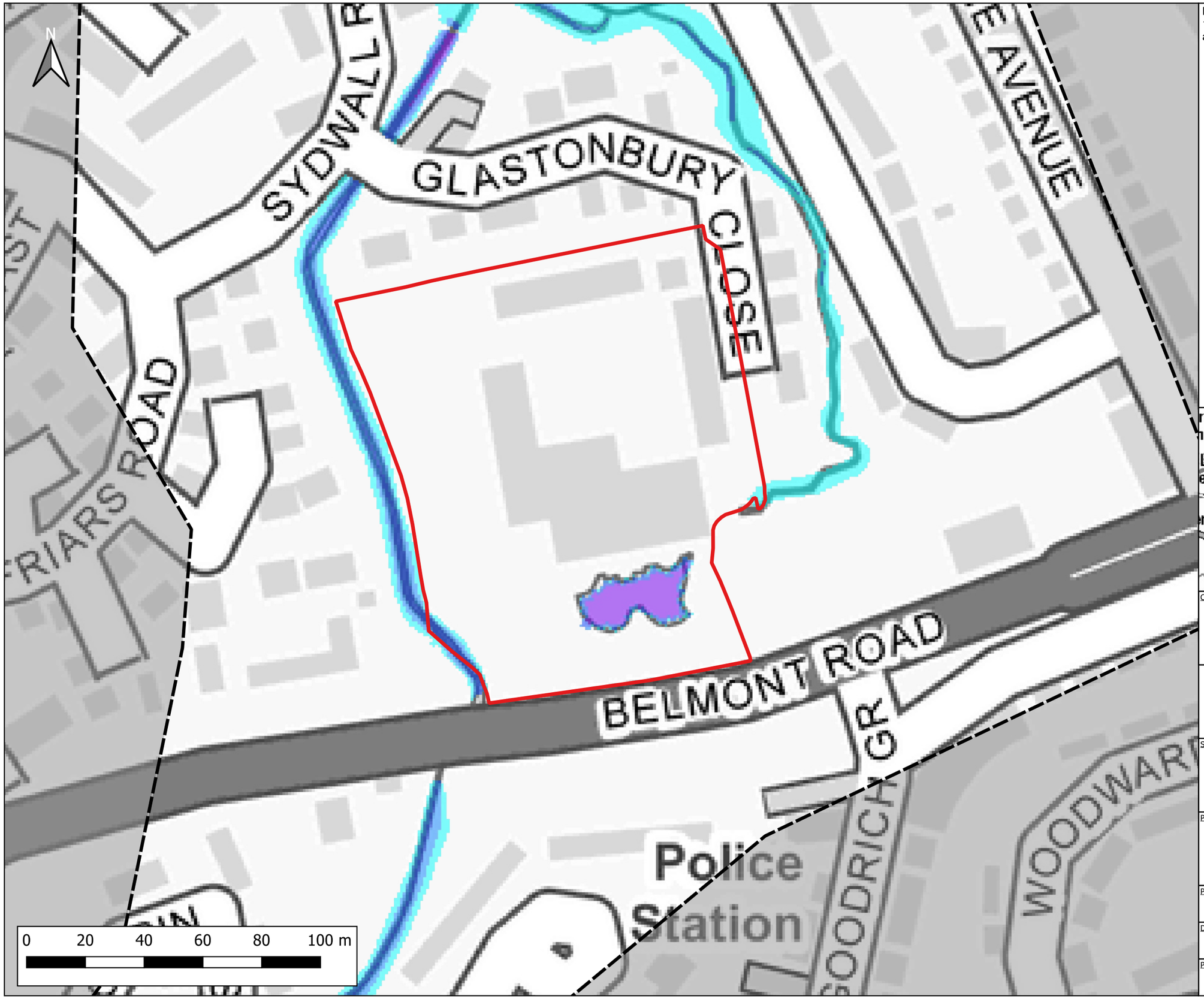
SCHEME:
Belmont Road, Hereford

PLOT TITLE:
Maximum Flood Depth
5% AEP Fluvial Event
Development Scenario (DEV)

PLOT STATUS:	DATE:
FINAL	27-01-2023

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
IH	AR	MW	1:1200

PLOT NAME:	REVISION:
14388_BEL_Q20_DEV_NC_015_d_Max	-



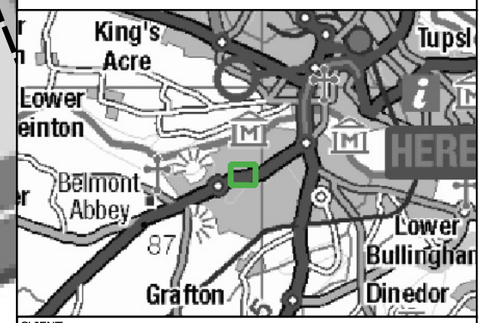
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

- Site Boundary
- Model Extent

Maximum Flood Depth

- <= 0.3m
- 0.3m - 0.6m
- 0.6m - 1.2m
- 1.2m - 2.4m
- > 2.4m



CLIENT:

LIDL

waterco
www.waterco.co.uk

SCHEME:
Belmont Road, Hereford

PLOT TITLE:
Maximum Flood Depth
3.3% AEP Fluvial Event
Existing Scenario (EXG)

PLOT STATUS:	DATE:
FINAL	27-01-2023

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
IH	AR	MW	1:1200

PLOT NAME:	REVISION:
14388_BEL_Q30_EXG_NC_015_d_Max	-

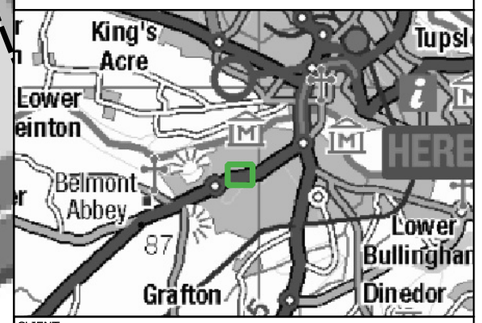
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

- Site Boundary
- Development Layout
- Model Extent

Maximum Flood Depth

- <= 0.3m
- 0.3m - 0.6m
- 0.6m - 1.2m
- 1.2m - 2.4m
- > 2.4m



CLIENT:

LIDL

waterco
www.waterco.co.uk

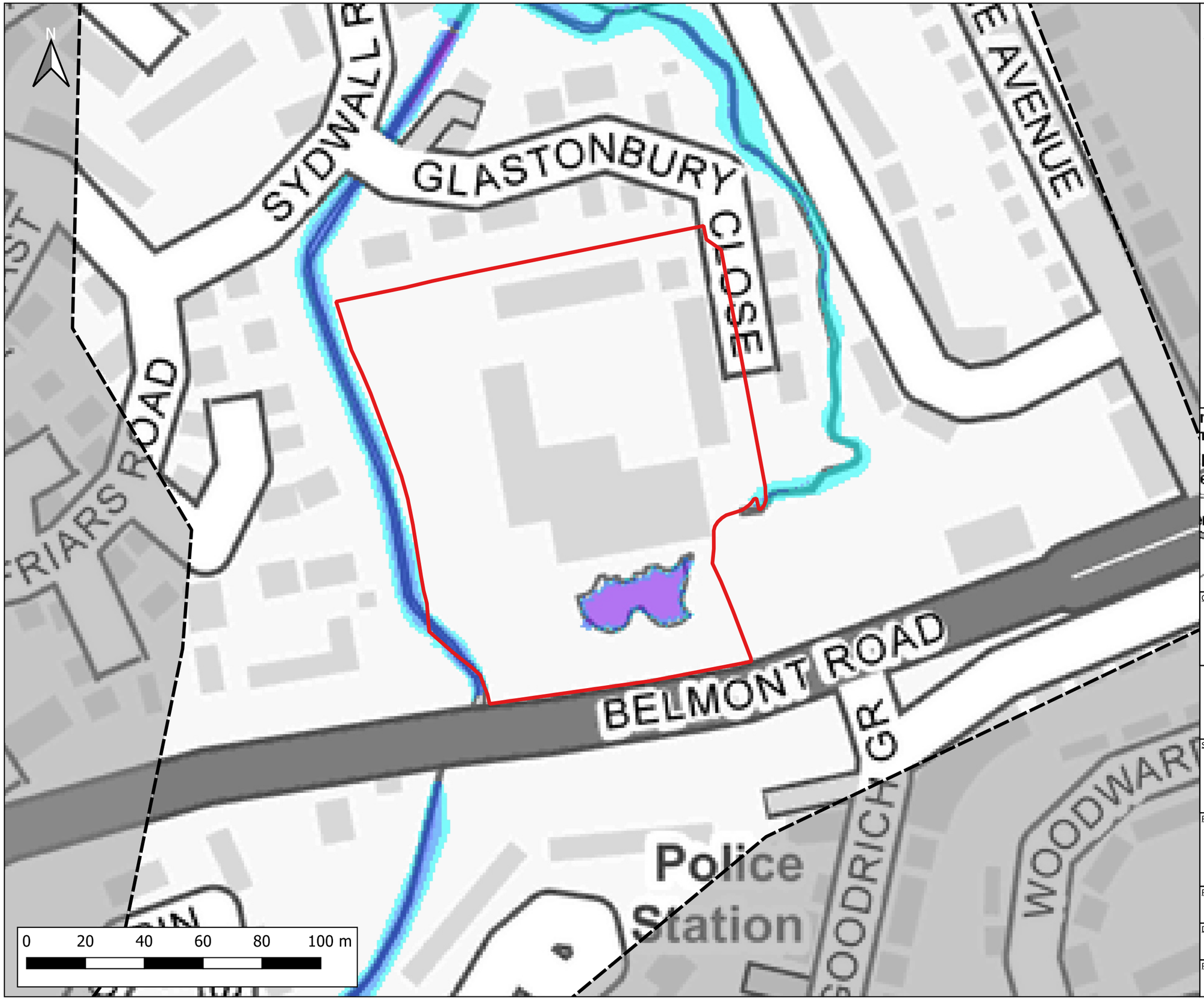
SCHEME:
Belmont Road, Hereford

PLOT TITLE:
Maximum Flood Depth
3.3% AEP Fluvial Event
Development Scenario (DEV)

PLOT STATUS:	DATE:
FINAL	27-01-2023

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
IH	AR	MW	1:1200

PLOT NAME:	REVISION:
14388_BEL_Q30_DEV_NC_015_d_Max	-



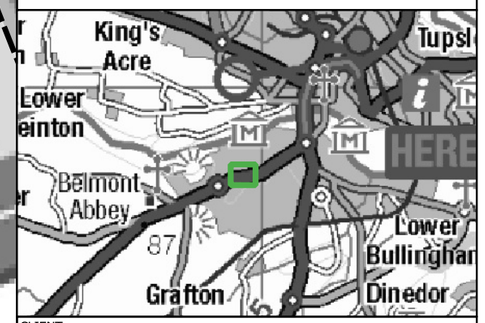
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

- Site Boundary
- Model Extent

Maximum Flood Depth

- <= 0.3m
- 0.3m - 0.6m
- 0.6m - 1.2m
- 1.2m - 2.4m
- > 2.4m



CLIENT:

LIDL

waterco
www.waterco.co.uk

SCHEME:
Belmont Road, Hereford

PLOT TITLE:
Maximum Flood Depth
1% AEP Fluvial Event
Existing Scenario (EXG)

PLOT STATUS:	DATE:
FINAL	27-01-2023

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
IH	AR	MW	1:1200

PLOT NAME:	REVISION:
14388_BEL_Q100_EXG_NC_015_d_Max	-

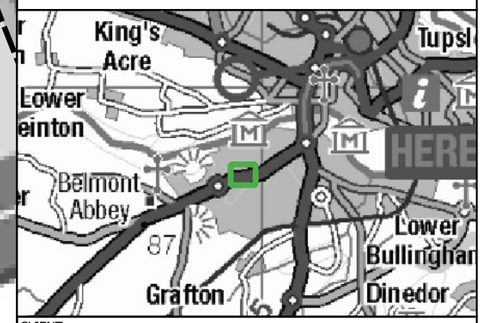
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

- Site Boundary
- Development Layout
- Model Extent

Maximum Flood Depth

- <= 0.3m
- 0.3m - 0.6m
- 0.6m - 1.2m
- 1.2m - 2.4m
- > 2.4m



CLIENT:

LIDL

waterco
www.waterco.co.uk

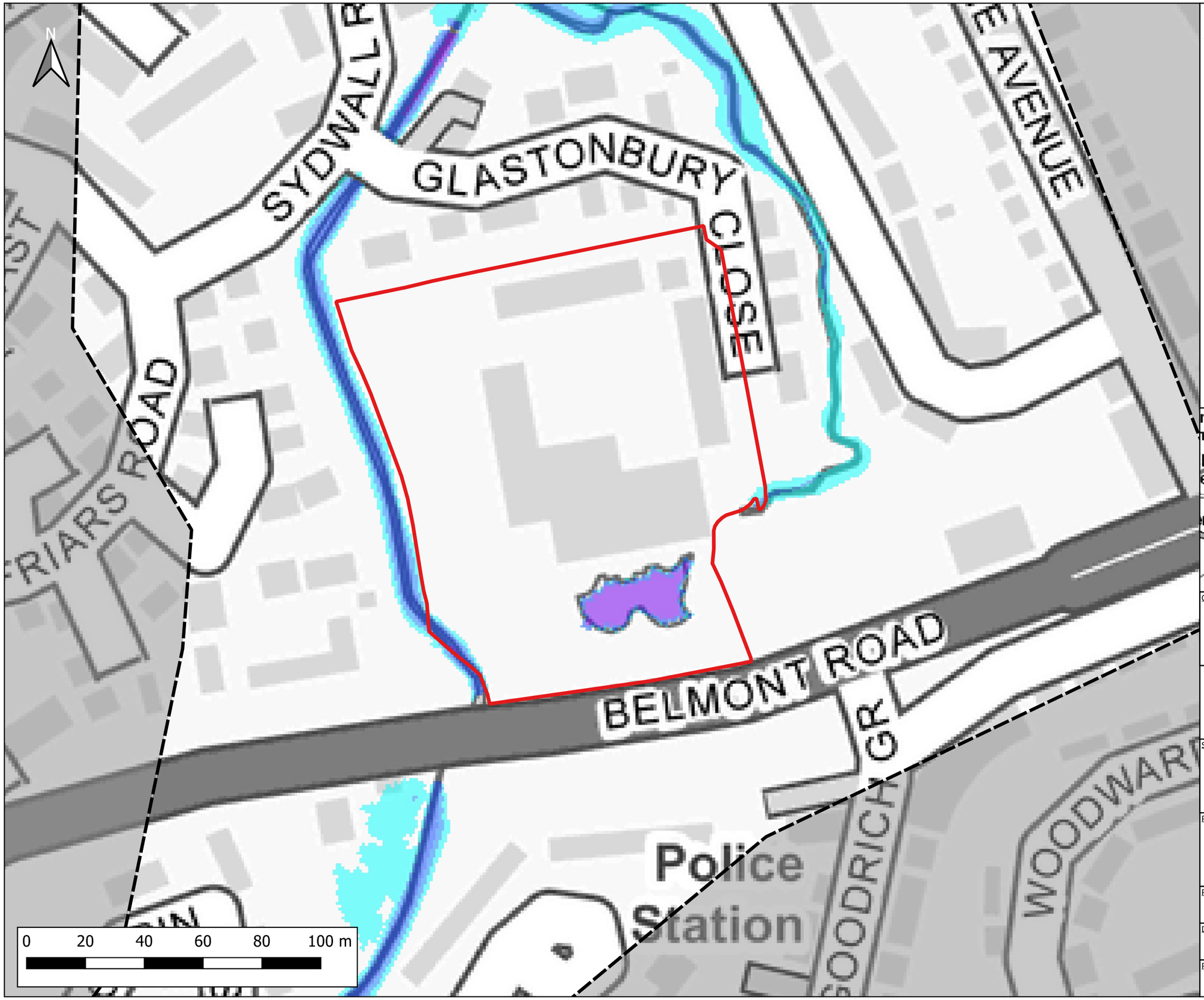
SCHEME:
Belmont Road, Hereford

PLOT TITLE:
Maximum Flood Depth
1% AEP Fluvial Event
Development Scenario (DEV)

PLOT STATUS:	DATE:
FINAL	27-01-2023

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
IH	AR	MW	1:1200

PLOT NAME:	REVISION:
14388_BEL_Q100_DEV_NC_015_d_Max	-



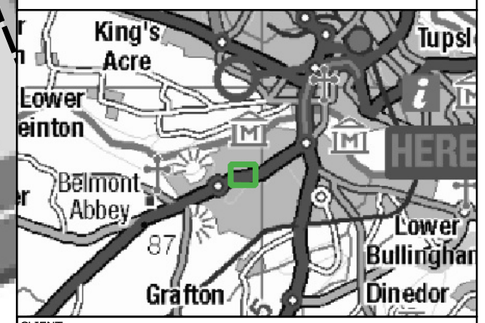
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

- Site Boundary
- Model Extent

Maximum Flood Depth

- <= 0.3m
- 0.3m - 0.6m
- 0.6m - 1.2m
- 1.2m - 2.4m
- > 2.4m



CLIENT:

LIDL

waterco
www.waterco.co.uk

SCHEME:
Belmont Road, Hereford

PLOT TITLE:
Maximum Flood Depth
1% AEP +37% CC Fluvial Event
Existing Scenario (EXG)

PLOT STATUS:	DATE:
FINAL	27-01-2023

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
IH	AR	MW	1:1200

PLOT NAME:	REVISION:
14388_BEL_Q100CC37_EXG_NC_015_d_Max	-

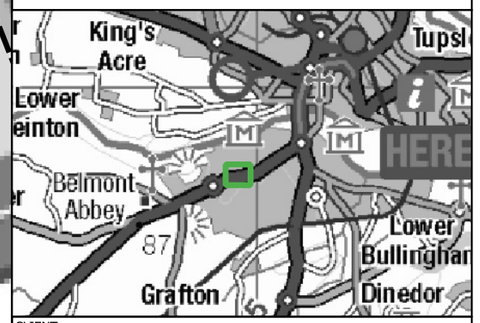
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

- Site Boundary
- Development Layout
- Model Extent

Maximum Flood Depth

- <= 0.3m
- 0.3m - 0.6m
- 0.6m - 1.2m
- 1.2m - 2.4m
- > 2.4m



CLIENT:

LIDL

waterco
www.waterco.co.uk

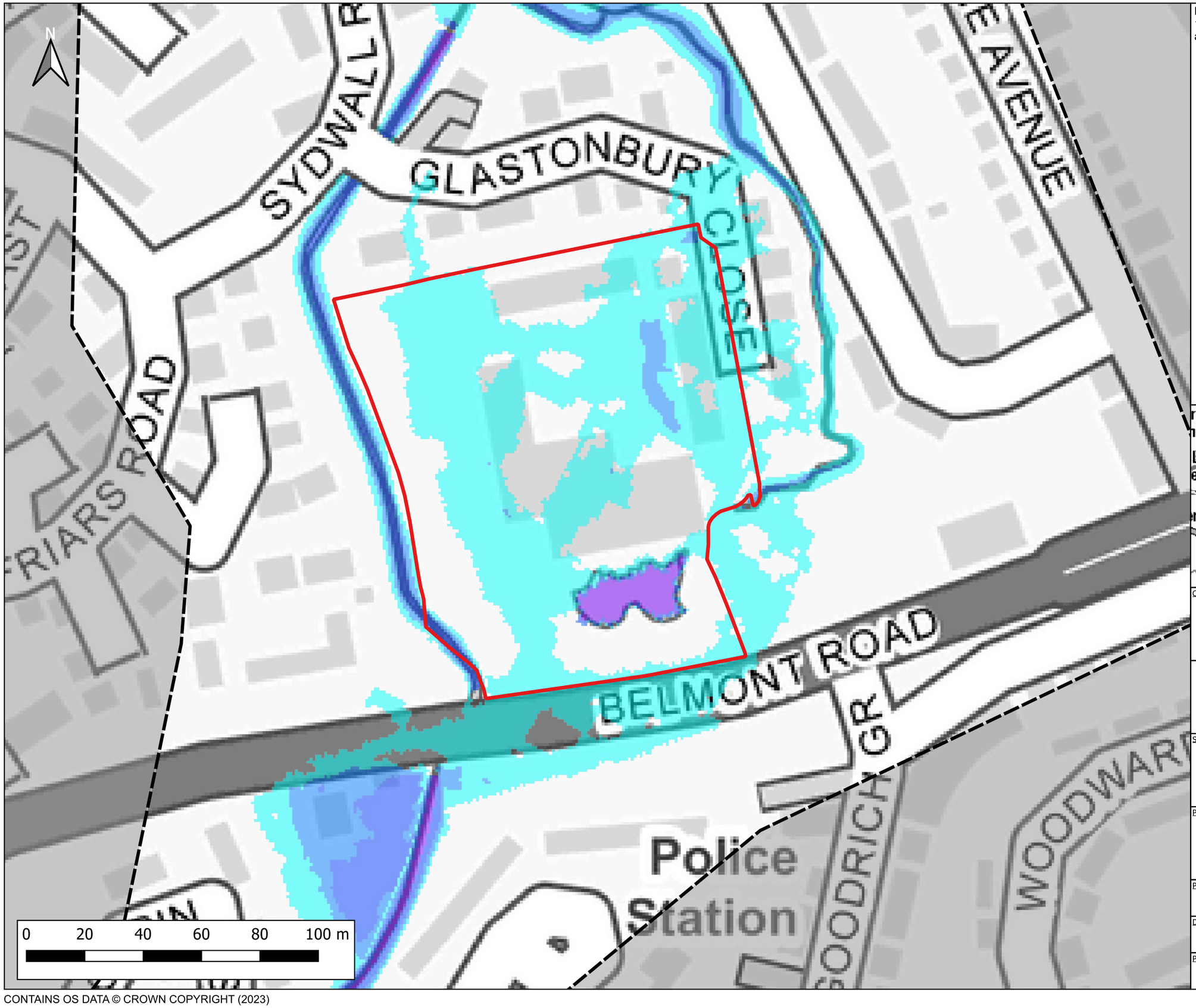
SCHEME:
Belmont Road, Hereford

PLOT TITLE:
Maximum Flood Depth
1% AEP +37% CC Fluvial Event
Development Scenario (DEV)

PLOT STATUS:	DATE:
FINAL	27-01-2023

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
IH	AR	MW	1:1200

PLOT NAME:	REVISION:
14388_BEL_Q100CC37_DEV_NC_015_d_Max	-



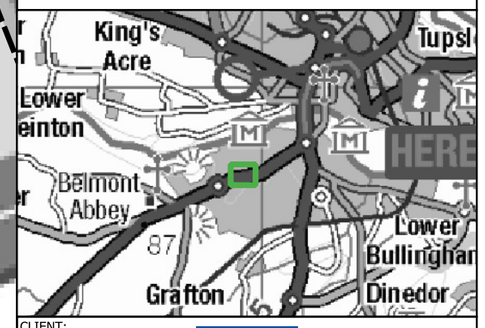
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

- Site Boundary
- Model Extent

Maximum Flood Depth

- <= 0.3m
- 0.3m - 0.6m
- 0.6m - 1.2m
- 1.2m - 2.4m
- > 2.4m



CLIENT:

waterco
www.waterco.co.uk

SCHEME:
Belmont Road, Hereford

PLOT TITLE:
Maximum Flood Depth
1% AEP +37% CC Fluvial Event
Existing Scenario (EXG) 67% Blockage 1 Scenario (BL1)

PLOT STATUS:	DATE:
FINAL	27-01-2023

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
IH	AR	MW	1:1200

PLOT NAME:	REVISION:
14388_BEL_Q100CC37_EXG_BL1_015_d_Max	-

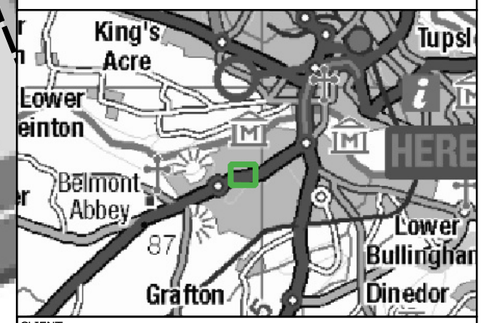
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

- Site Boundary
- Development Layout
- Model Extent

Maximum Flood Depth

- <= 0.3m
- 0.3m - 0.6m
- 0.6m - 1.2m
- 1.2m - 2.4m
- > 2.4m



CLIENT:

LIDL

waterco
www.waterco.co.uk

SCHEME:
Belmont Road, Hereford

PLOT TITLE:
Maximum Flood Depth
1% AEP +37% CC Fluvial Event
Development Scenario (DEV) 67% Blockage 1 Scenario (BL1)

PLOT STATUS:	DATE:
FINAL	27-01-2023

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
IH	AR	MW	1:1200

PLOT NAME:	REVISION:
14388_BEL_Q100CC37_DEV_BL1_015_d_Max	-

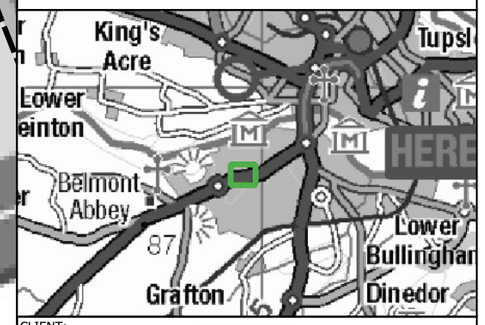
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

- Site Boundary
- Development Layout
- Model Extent

Maximum Flood Depth Difference

- > -100mm
- -50mm to -100mm
- -20mm to -50mm
- No Change (+/- 20mm)
- +20mm to +50mm
- +50mm to +100mm
- > +100mm



CLIENT:

LIDL

waterco
www.waterco.co.uk

SCHEME:

Belmont Road, Hereford

PLOT TITLE:

Maximum Flood Depth Difference
1% AEP +37% CC Fluvial Event
EXG vs DEV 67% Blockage 1 Scenario (BL1)

PLOT STATUS:			DATE:
FINAL			27-01-2023
DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
IH	AR	MW	1:1200

PLOT NAME:	REVISION:
14388_BEL_Q100CC37_EXG-DEV_BL1_015_d-Diff	-

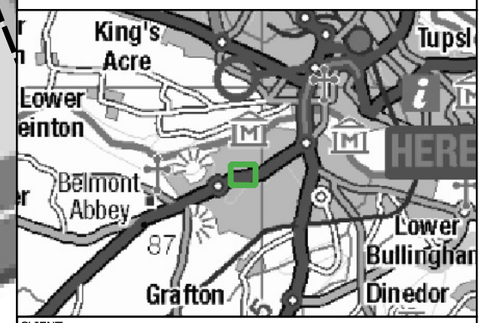
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

- Site Boundary
- Model Extent

Maximum Flood Depth

- <= 0.3m
- 0.3m - 0.6m
- 0.6m - 1.2m
- 1.2m - 2.4m
- > 2.4m



CLIENT:

LIDL

Waterco
www.waterco.co.uk

SCHEME:
Belmont Road, Hereford

PLOT TITLE:
Maximum Flood Depth
1% AEP +37% CC Fluvial Event
Existing Scenario (EXG) 67% Blockage 2 Scenario (BL2)

PLOT STATUS:	DATE:
FINAL	27-01-2023

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
IH	AR	MW	1:1200

PLOT NAME:	REVISION:
14388_BEL_Q100CC37_EXG_BL2_015_d_Max	-

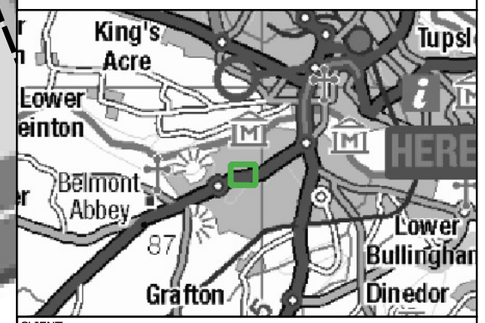
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

- Site Boundary
- Development Layout
- Model Extent

Maximum Flood Depth

- <= 0.3m
- 0.3m - 0.6m
- 0.6m - 1.2m
- 1.2m - 2.4m
- > 2.4m



CLIENT:

LIDL

waterco
www.waterco.co.uk

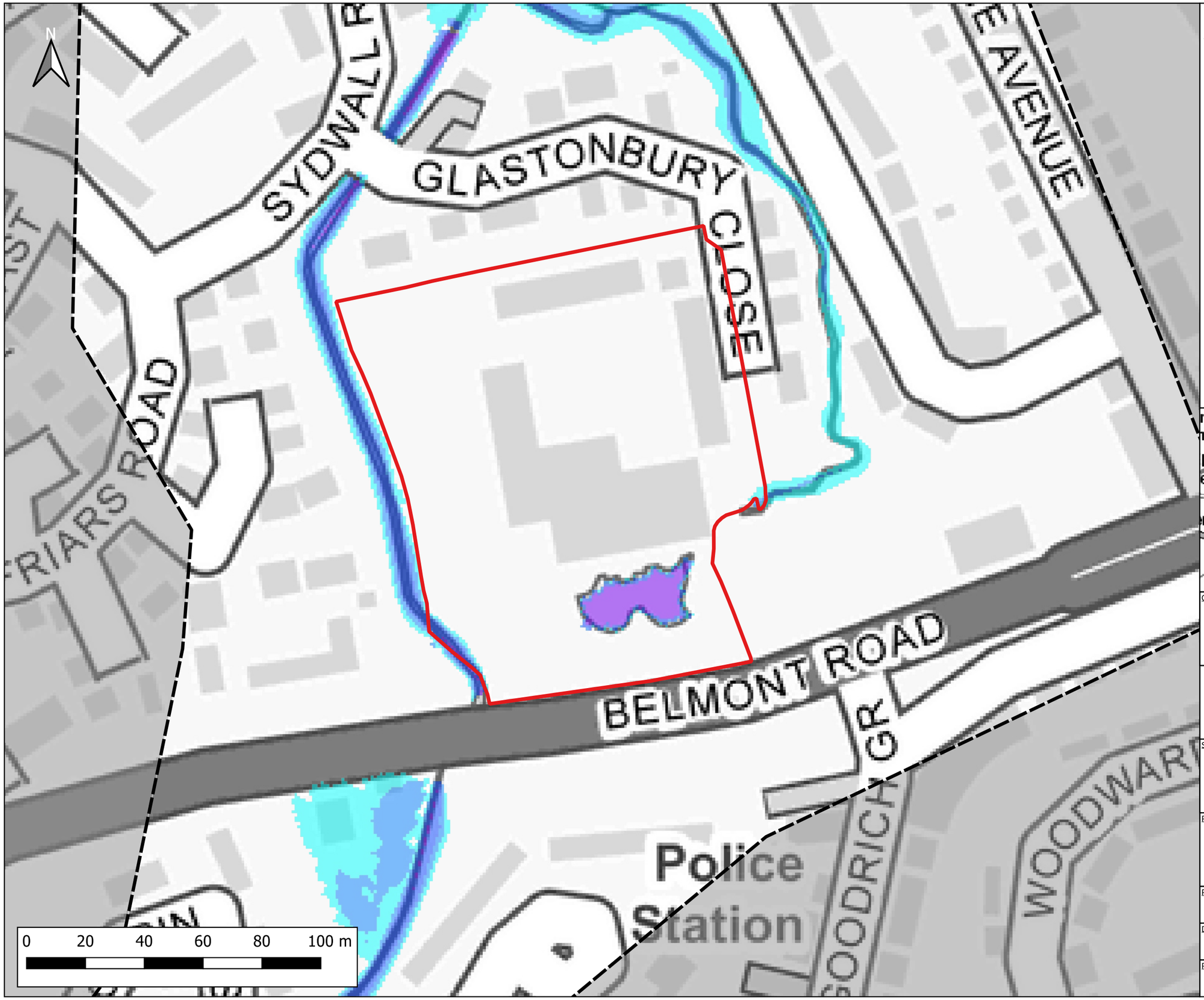
SCHEME:
Belmont Road, Hereford

PLOT TITLE:
Maximum Flood Depth
1% AEP +37% CC Fluvial Event
Development Scenario (DEV) 67% Blockage 2 Scenario (BL2)

PLOT STATUS:	DATE:
FINAL	27-01-2023

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
IH	AR	MW	1:1200

PLOT NAME:	REVISION:
14388_BEL_Q100CC37_DEV_BL2_015_d_Max	-



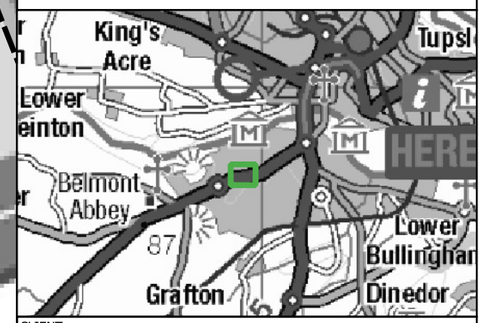
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

- Site Boundary
- Model Extent

Maximum Flood Depth

- <= 0.3m
- 0.3m - 0.6m
- 0.6m - 1.2m
- 1.2m - 2.4m
- > 2.4m



CLIENT:

LIDL

waterco
www.waterco.co.uk

SCHEME:
Belmont Road, Hereford

PLOT TITLE:
Maximum Flood Depth
0.1% AEP Fluvial Event
Existing Scenario (EXG)

PLOT STATUS:	DATE:
FINAL	27-01-2023

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
IH	AR	MW	1:1200

PLOT NAME:	REVISION:
14388_BEL_Q10000_EXG_NC_015_d_Max	-

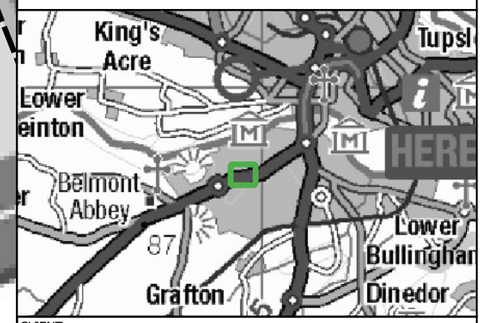
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

- Site Boundary
- Development Layout
- Model Extent

Maximum Flood Depth

- <= 0.3m
- 0.3m - 0.6m
- 0.6m - 1.2m
- 1.2m - 2.4m
- > 2.4m



CLIENT:

LIDL

Waterco
www.waterco.co.uk

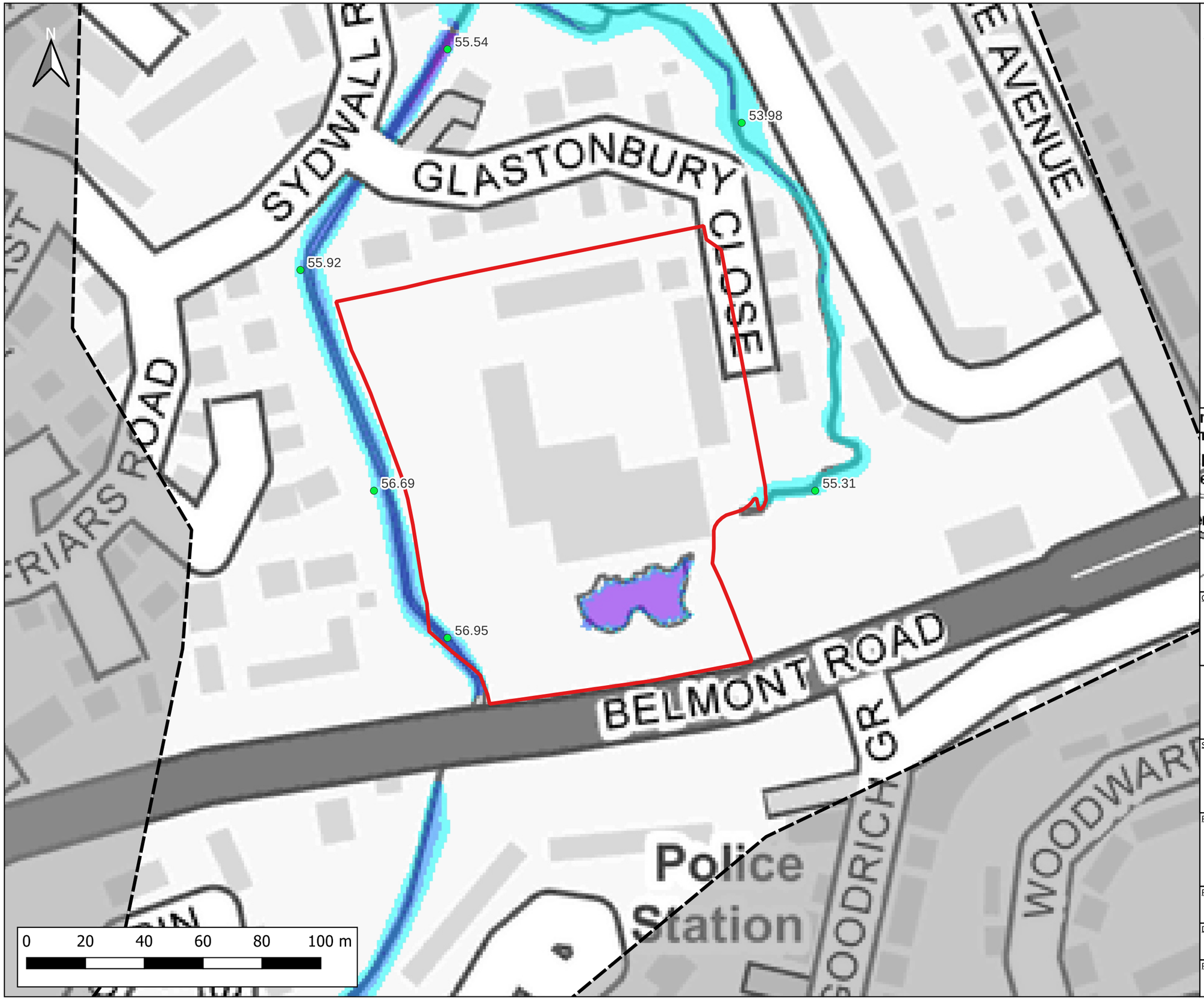
SCHEME:
Belmont Road, Hereford

PLOT TITLE:
Maximum Flood Depth
0.1% AEP Fluvial Event
Development Scenario (DEV)

PLOT STATUS:	DATE:
FINAL	27-01-2023

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
IH	AR	MW	1:1200

PLOT NAME:	REVISION:
14388_BEL_Q10000_DEV_NC_015_d_Max	-



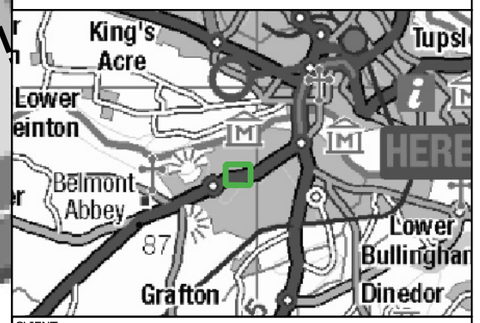
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

- Site Boundary
- Model Extent
- Maximum Water Level (m AOD)

Maximum Flood Depth

- <= 0.3m
- 0.3m - 0.6m
- 0.6m - 1.2m
- 1.2m - 2.4m
- > 2.4m



CLIENT:

LIDL

waterco
www.waterco.co.uk

SCHEME:
Belmont Road, Hereford

PLOT TITLE:
Maximum Flood Water Level
5% AEP Fluvial Event
Existing Scenario (EXG)

PLOT STATUS:	DATE:
FINAL	27-01-2023

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
IH	AR	MW	1:1200

PLOT NAME:	REVISION:
14388_BEL_Q20_EXG_NC_015_h_Max	-

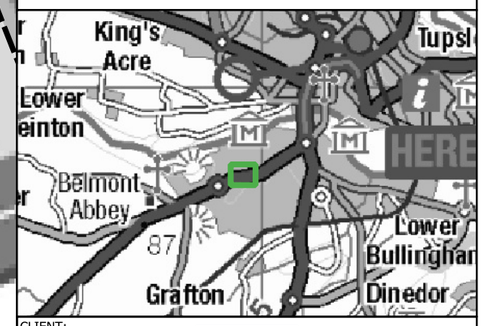
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

- Site Boundary
- Development Layout
- Model Extent
- Maximum Water Level (m AOD)

Maximum Flood Depth

- <= 0.3m
- 0.3m - 0.6m
- 0.6m - 1.2m
- 1.2m - 2.4m
- > 2.4m



CLIENT:

LIDL

waterco
www.waterco.co.uk

SCHEME:

Belmont Road, Hereford

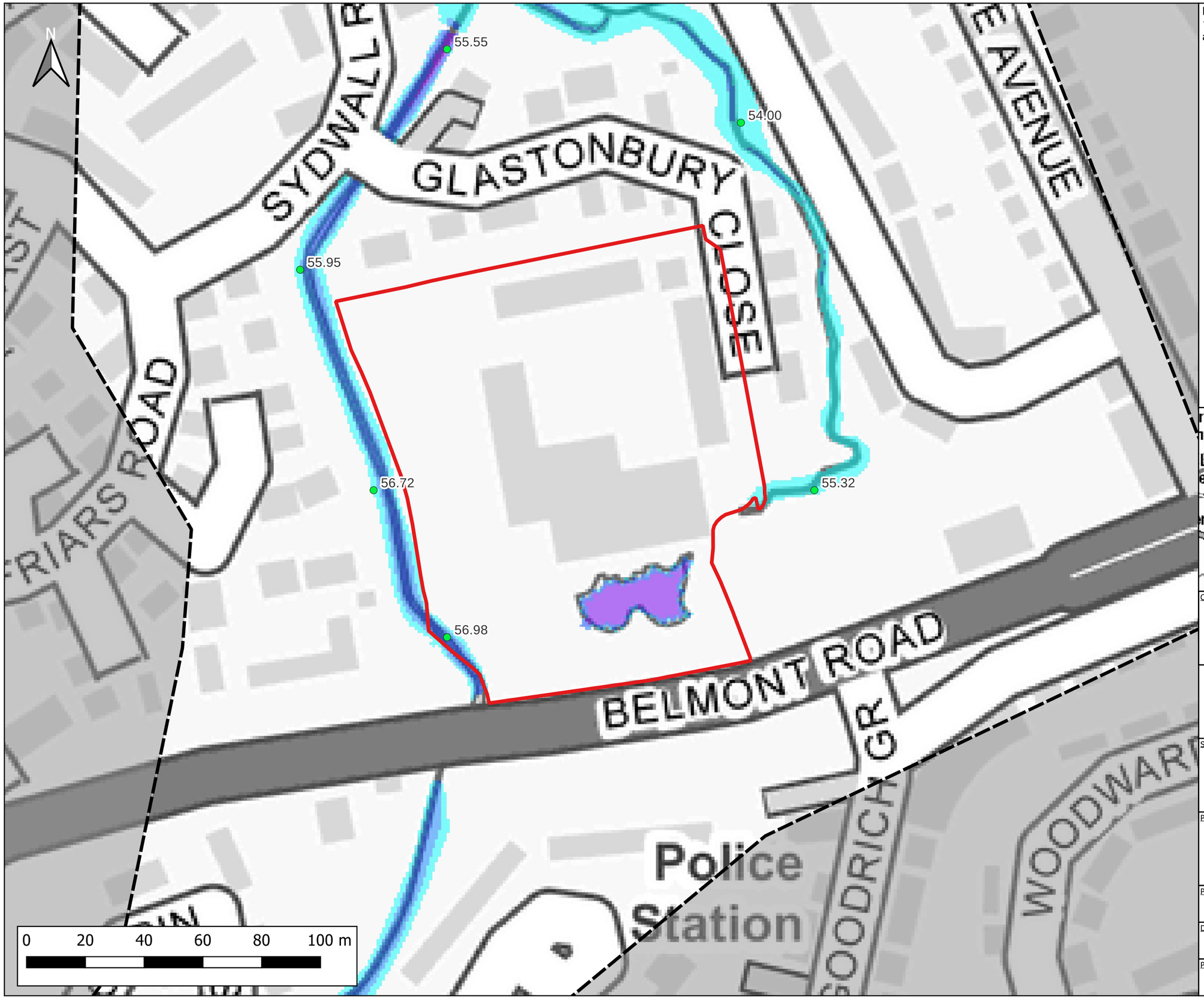
PLOT TITLE:

Maximum Flood Water Level
5% AEP Fluvial Event
Development Scenario (DEV)

PLOT STATUS:	DATE:
FINAL	27-01-2023

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
IH	AR	MW	1:1200

PLOT NAME:	REVISION:
14388_BEL_Q20_DEV_NC_015_h_Max	-



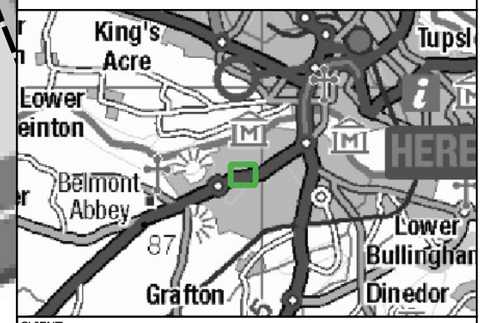
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

- Site Boundary
- Model Extent
- Maximum Water Level (m AOD)

Maximum Flood Depth

- <= 0.3m
- 0.3m - 0.6m
- 0.6m - 1.2m
- 1.2m - 2.4m
- > 2.4m



CLIENT:

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waterco
www.waterco.co.uk

SCHEME:
Belmont Road, Hereford

PLOT TITLE:
Maximum Flood Water Level
3.3% AEP Fluvial Event
Existing Scenario (EXG)

PLOT STATUS:	DATE:
FINAL	27-01-2023

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
IH	AR	MW	1:1200

PLOT NAME:	REVISION:
14388_BEL_Q30_EXG_NC_015_h_Max	-

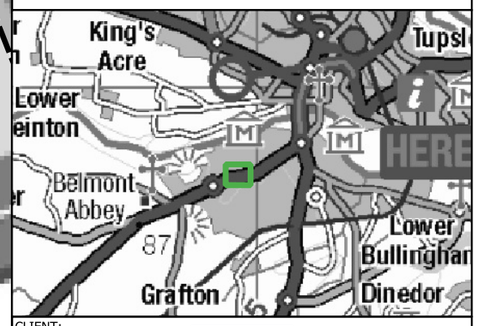
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

- Site Boundary
- Development Layout
- Model Extent
- Maximum Water Level (m AOD)

Maximum Flood Depth

- <= 0.3m
- 0.3m - 0.6m
- 0.6m - 1.2m
- 1.2m - 2.4m
- > 2.4m



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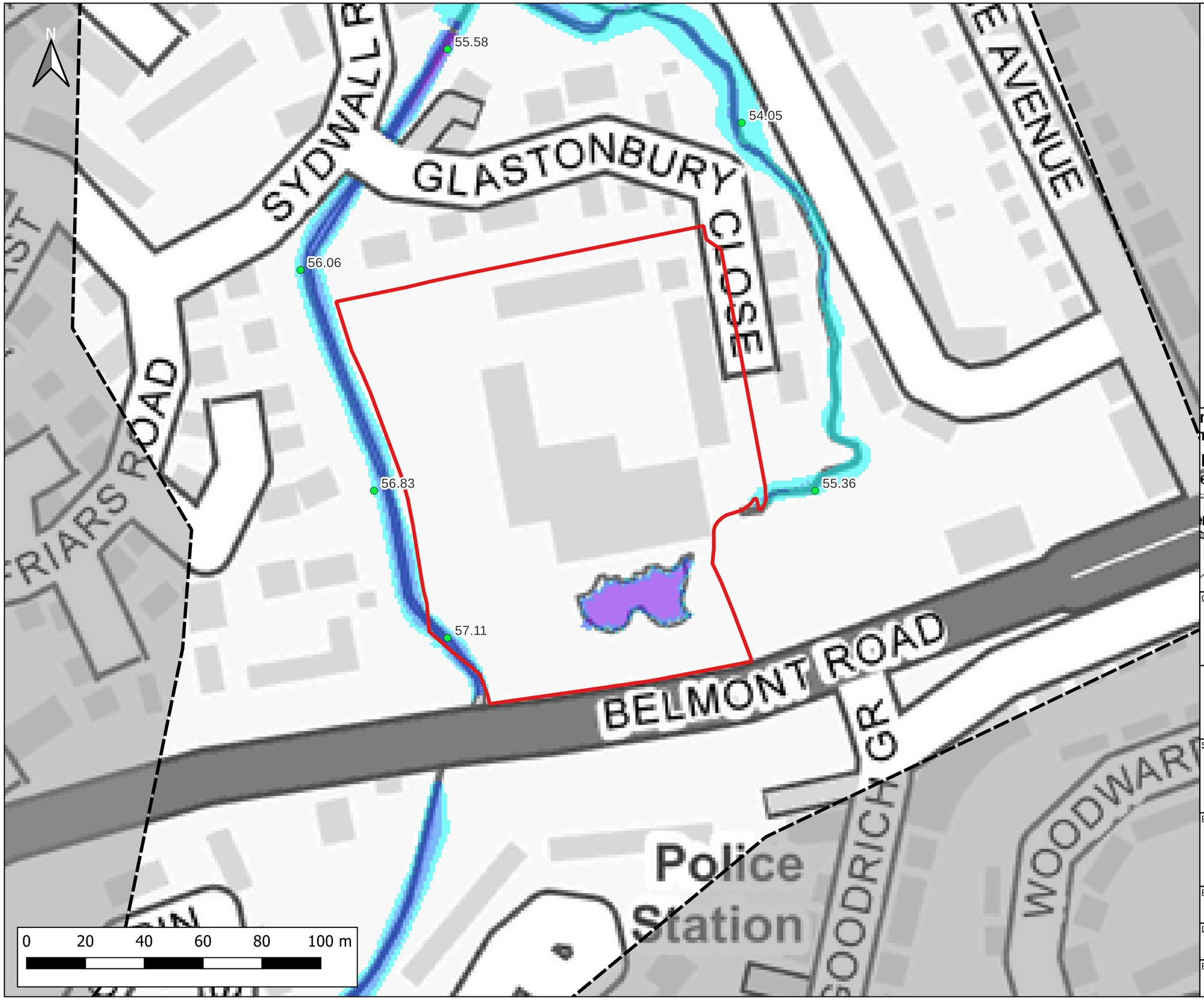
SCHEME:
Belmont Road, Hereford

PLOT TITLE:
Maximum Flood Water Level
3.3% AEP Fluvial Event
Development Scenario (DEV)

PLOT STATUS:	DATE:
FINAL	27-01-2023

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
IH	AR	MW	1:1200

PLOT NAME:	REVISION:
14388_BEL_Q30_DEV_NC_015_h_Max	-



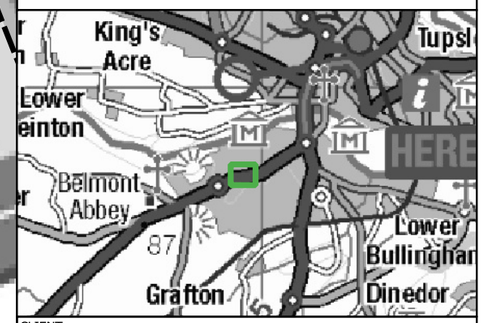
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

- Site Boundary
- Model Extent
- Maximum Water Level (m AOD)

Maximum Flood Depth

- <= 0.3m
- 0.3m - 0.6m
- 0.6m - 1.2m
- 1.2m - 2.4m
- > 2.4m



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SCHEME:
Belmont Road, Hereford

PLOT TITLE:
Maximum Flood Water Level
1% AEP Fluvial Event
Existing Scenario (EXG)

PLOT STATUS:	DATE:
FINAL	27-01-2023

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
IH	AR	MW	1:1200

PLOT NAME:	REVISION:
14388_BEL_Q100_EXG_NC_015_h_Max	-

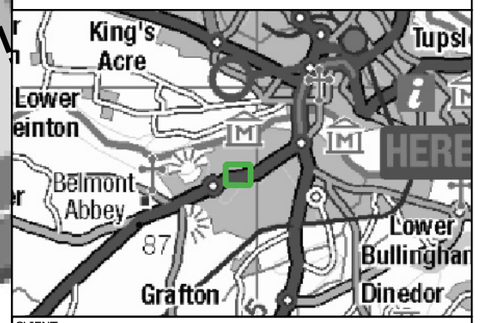
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

- Site Boundary
- Development Layout
- Model Extent
- Maximum Water Level (m AOD)

Maximum Flood Depth

- <= 0.3m
- 0.3m - 0.6m
- 0.6m - 1.2m
- 1.2m - 2.4m
- > 2.4m



CLIENT:

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waterco
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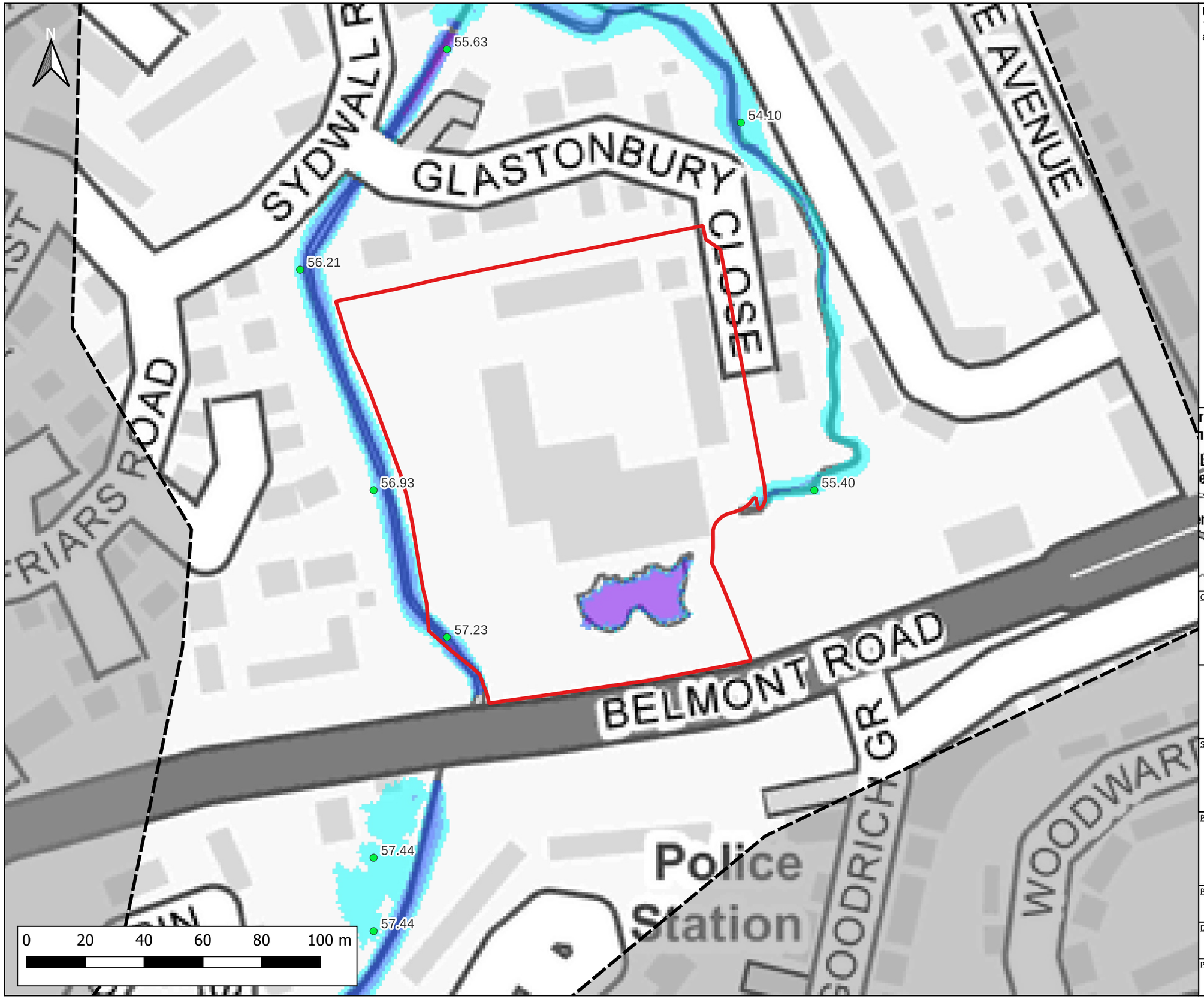
SCHEME:
Belmont Road, Hereford

PLOT TITLE:
Maximum Flood Water Level
1% AEP Fluvial Event
Development Scenario (DEV)

PLOT STATUS:	DATE:
FINAL	27-01-2023

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
IH	AR	MW	1:1200

PLOT NAME:	REVISION:
14388_BEL_Q100_DEV_NC_015_h_Max	-



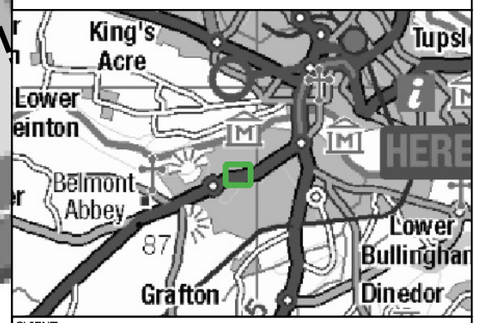
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

- Site Boundary
- Model Extent
- Maximum Water Level (m AOD)

Maximum Flood Depth

- <= 0.3m
- 0.3m - 0.6m
- 0.6m - 1.2m
- 1.2m - 2.4m
- > 2.4m



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waterco
www.waterco.co.uk

SCHEME:
Belmont Road, Hereford

PLOT TITLE:
Maximum Flood Water Level
1% AEP +37% CC Fluvial Event
Existing Scenario (EXG)

PLOT STATUS:	DATE:
FINAL	27-01-2023

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
IH	AR	MW	1:1200

PLOT NAME:	REVISION:
14388_BEL_Q100CC37_EXG_NC_015_h_Max	-

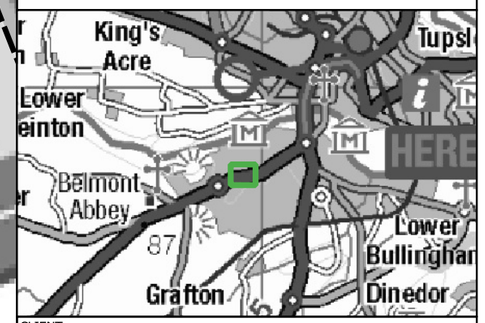
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

- Site Boundary
- Development Layout
- Model Extent
- Maximum Water Level (m AOD)

Maximum Flood Depth

- <= 0.3m
- 0.3m - 0.6m
- 0.6m - 1.2m
- 1.2m - 2.4m
- > 2.4m



CLIENT:

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Waterco
www.waterco.co.uk

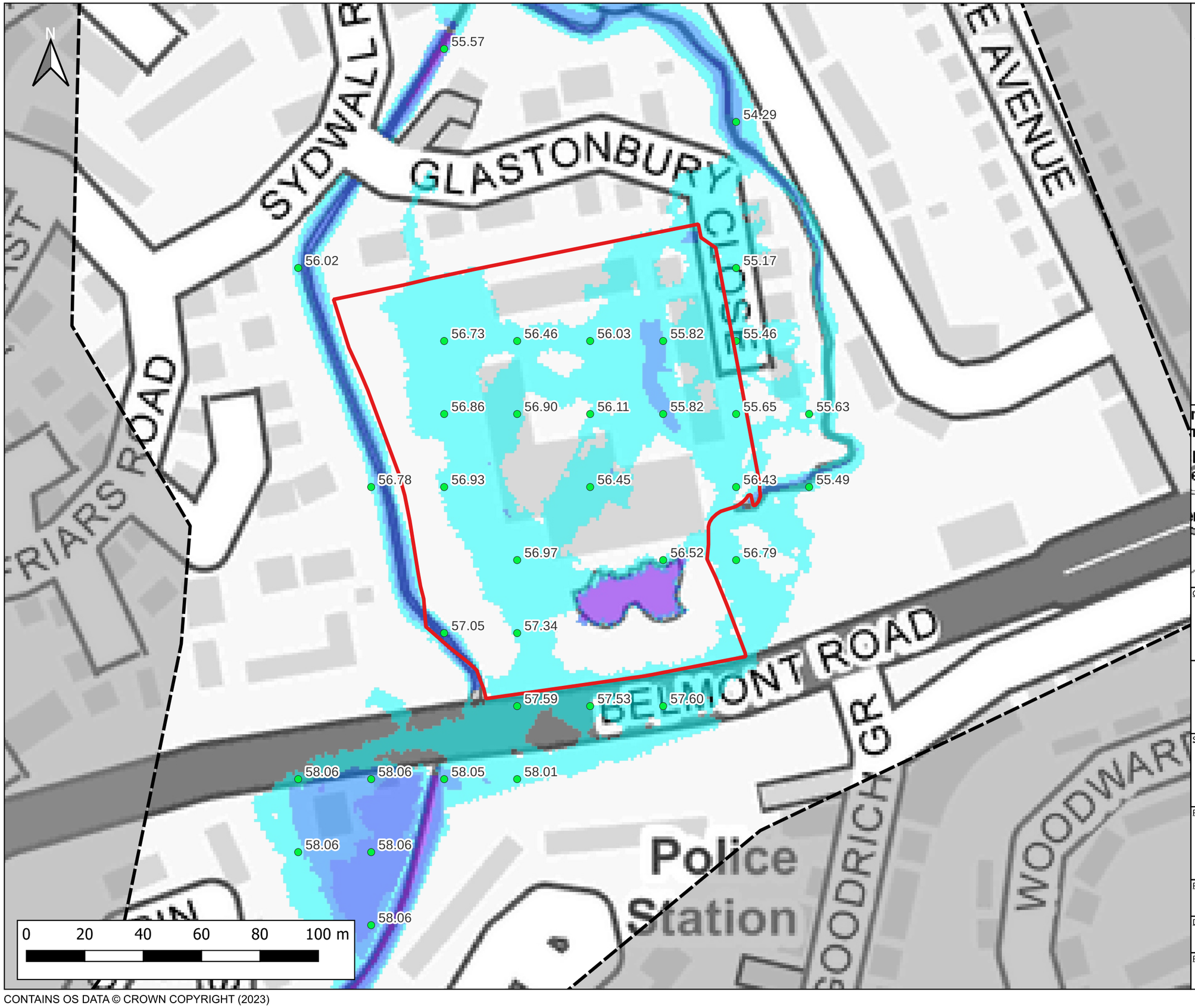
SCHEME:
Belmont Road, Hereford

PLOT TITLE:
Maximum Flood Water Level
1% AEP +37% CC Fluvial Event
Development Scenario (DEV)

PLOT STATUS:	DATE:
FINAL	27-01-2023

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
IH	AR	MW	1:1200

PLOT NAME:	REVISION:
14388_BEL_Q100CC37_DEV_NC_015_h_Max	-



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Notes:
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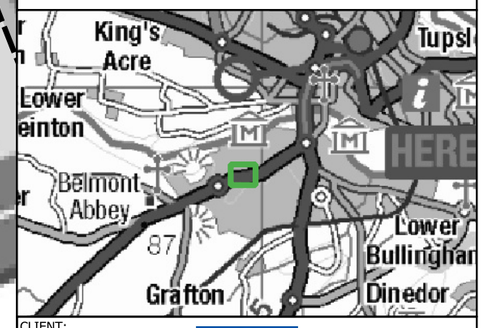
LEGEND

- Site Boundary
- Model Extent
- Maximum Water Level (m AOD)

Maximum Flood Depth

- <= 0.3m
- 0.3m - 0.6m
- 0.6m - 1.2m
- 1.2m - 2.4m
- > 2.4m



CLIENT:

LIDL

waterco
www.waterco.co.uk

SCHEME:
Belmont Road, Hereford

PLOT TITLE:
Maximum Flood Water Level
1% AEP +37% CC Fluvial Event
Existing Scenario (EXG) 67% Blockage 1 Scenario (BL1)

PLOT STATUS:	DATE:
FINAL	27-01-2023

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
IH	AR	MW	1:1200

PLOT NAME:	REVISION:
14388_BEL_Q100CC37_EXG_BL1_015_h_Max	-

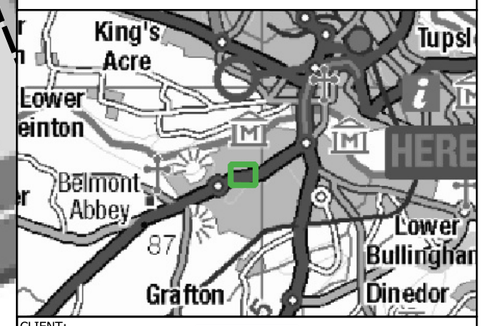
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

- Site Boundary
- Development Layout
- Model Extent
- Maximum Water Level (m AOD)

Maximum Flood Depth

- <= 0.3m
- 0.3m - 0.6m
- 0.6m - 1.2m
- 1.2m - 2.4m
- > 2.4m



CLIENT:

LIDL

waterco
www.waterco.co.uk

SCHEME:
Belmont Road, Hereford

PLOT TITLE:
Maximum Flood Water Level
1% AEP +37% CC Fluvial Event
Development Scenario (DEV) 67% Blockage 1 Scenario (BL1)

PLOT STATUS:	DATE:
FINAL	27-01-2023

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
IH	AR	MW	1:1200

PLOT NAME:	REVISION:
14388_BEL_Q100CC37_DEV_BL1_015_h_Max	-

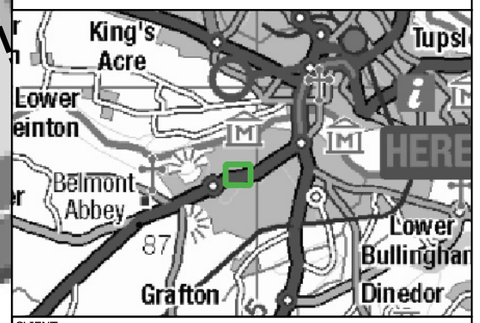
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

- Site Boundary
- Model Extent
- Maximum Water Level (m AOD)

Maximum Flood Depth

- <= 0.3m
- 0.3m - 0.6m
- 0.6m - 1.2m
- 1.2m - 2.4m
- > 2.4m



CLIENT: LIDL

waterco
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SCHEME: Belmont Road, Hereford

PLOT TITLE: Maximum Flood Water Level
1% AEP +37% CC Fluvial Event
Existing Scenario (EXG) 67% Blockage 2
Scenario (BL2)

PLOT STATUS:	DATE:
FINAL	27-01-2023

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
IH	AR	MW	1:1200

PLOT NAME:	REVISION:
14388_BEL_Q100CC37_EXG_BL2_015_h_Max	-

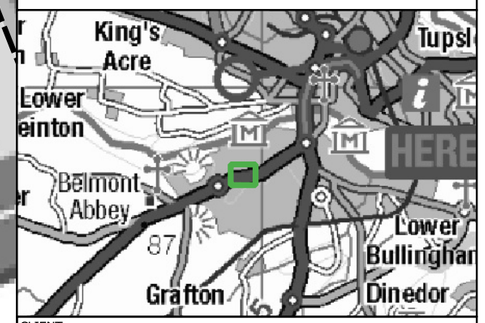
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

- Site Boundary
- Development Layout
- Model Extent
- Maximum Water Level (m AOD)

Maximum Flood Depth

- <= 0.3m
- 0.3m - 0.6m
- 0.6m - 1.2m
- 1.2m - 2.4m
- > 2.4m



CLIENT:

LIDL

waterco
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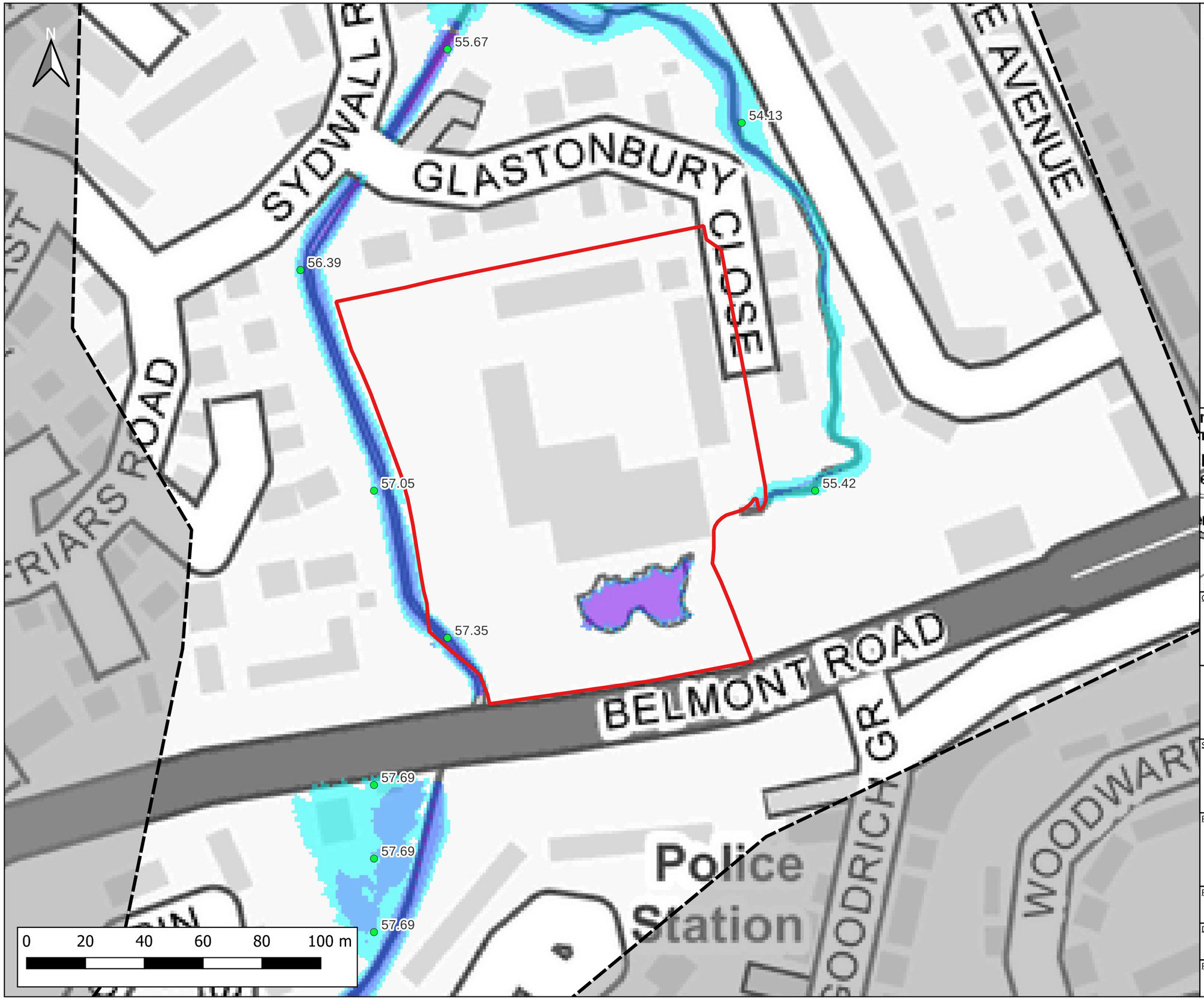
SCHEME:
Belmont Road, Hereford

PLOT TITLE:
Maximum Flood Water Level
1% AEP +37% CC Fluvial Event
Development Scenario (DEV) 67% Blockage 2 Scenario (BL2)

PLOT STATUS:	DATE:
FINAL	27-01-2023

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
IH	AR	MW	1:1200

PLOT NAME:	REVISION:
14388_BEL_Q100CC37_DEV_BL2_015_h_Max	-



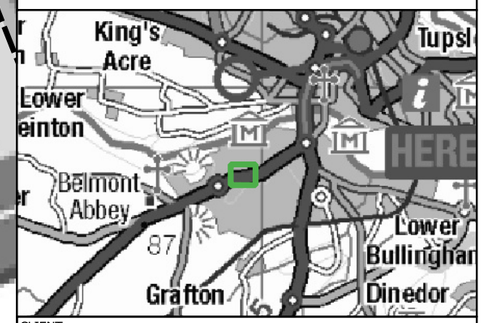
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

- Site Boundary
- Model Extent
- Maximum Water Level (m AOD)

Maximum Flood Depth

- <= 0.3m
- 0.3m - 0.6m
- 0.6m - 1.2m
- 1.2m - 2.4m
- > 2.4m



CLIENT:

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SCHEME:
Belmont Road, Hereford

PLOT TITLE:
Maximum Flood Water Level
0.1% AEP Fluvial Event
Existing Scenario (EXG)

PLOT STATUS:	DATE:
FINAL	27-01-2023

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
IH	AR	MW	1:1200

PLOT NAME:	REVISION:
14388_BEL_Q1000_EXG_NC_015_h_Max	-

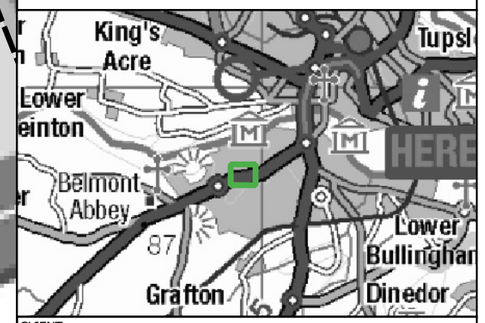
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

- Site Boundary
- Development Layout
- Model Extent
- Maximum Water Level (m AOD)

Maximum Flood Depth

- <= 0.3m
- 0.3m - 0.6m
- 0.6m - 1.2m
- 1.2m - 2.4m
- > 2.4m



CLIENT:

LIDL

waterco
www.waterco.co.uk

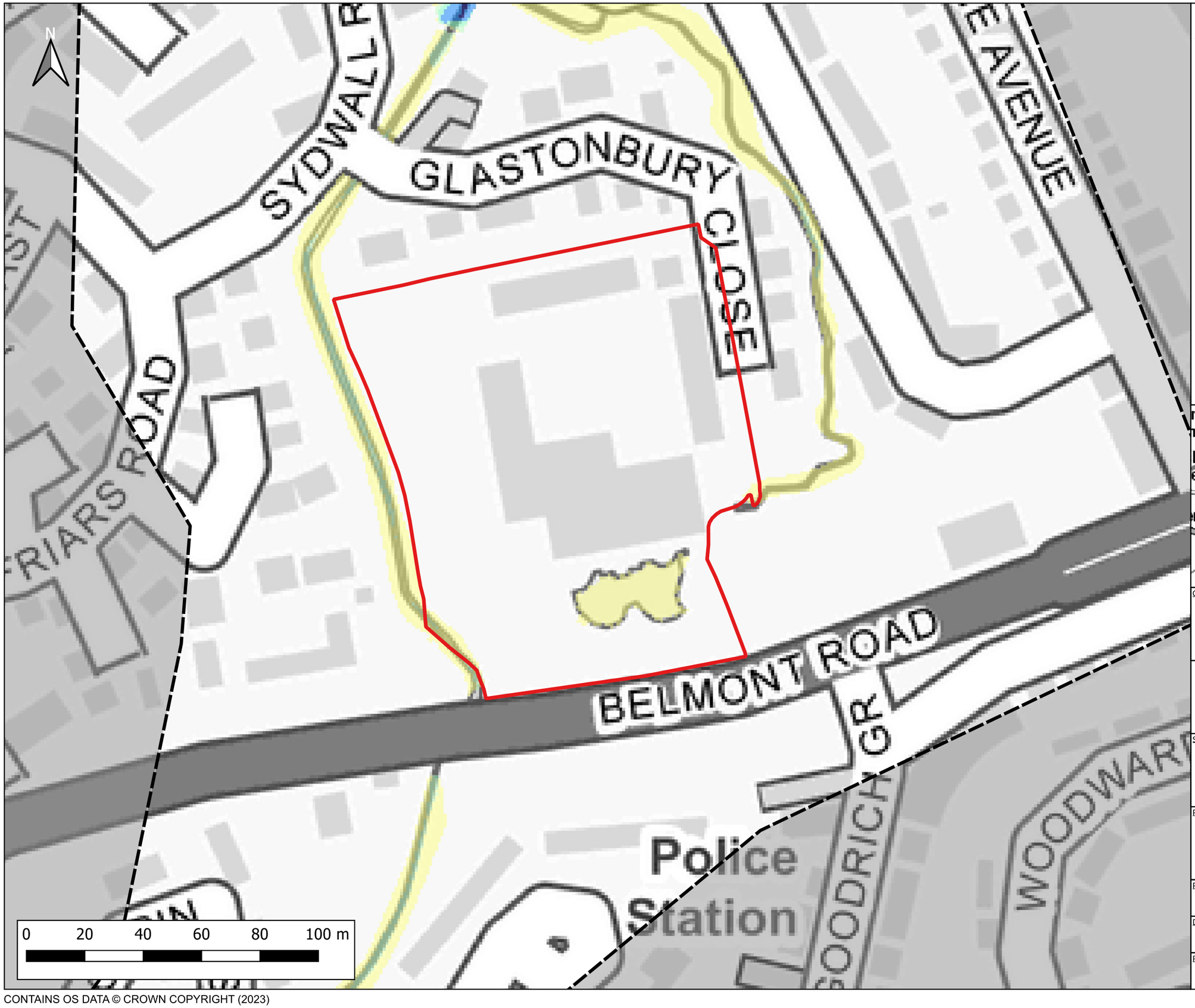
SCHEME:
Belmont Road, Hereford

PLOT TITLE:
Maximum Flood Water Level
0.1% AEP Fluvial Event
Development Scenario (DEV)

PLOT STATUS:	DATE:
FINAL	27-01-2023

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
IH	AR	MW	1:1200

PLOT NAME:	REVISION:
14388_BEL_Q1000_DEV_NC_015_h_Max	-



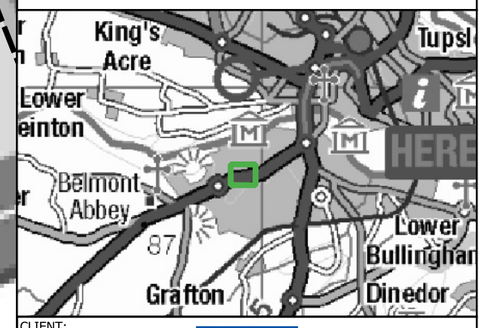
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

- Site Boundary
- Model Extent

Maximum Flood Velocity (m/s)

- 0.0 - 0.3
- 0.3 - 0.6
- 0.6 - 0.9
- 0.9 - 1.2
- > 1.2



CLIENT:

LIDL

waterco
www.waterco.co.uk

SCHEME:
Belmont Road, Hereford

PLOT TITLE:
Maximum Flood Velocity
5% AEP Fluvial Event
Existing Scenario (EXG)

PLOT STATUS:	DATE:
FINAL	27-01-2023

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
IH	AR	MW	1:1200

PLOT NAME:	REVISION:
14388_BEL_Q20_EXG_NC_015_V_Max	-

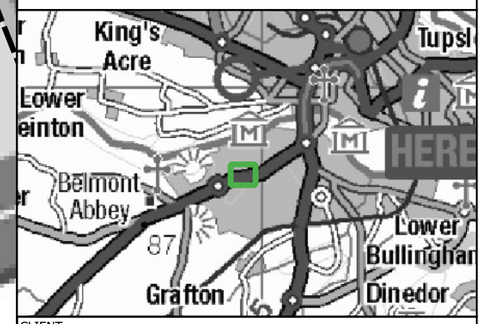
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

- Site Boundary
- Development Layout
- Model Extent

Maximum Flood Velocity (m/s)

- 0.0 - 0.3
- 0.3 - 0.6
- 0.6 - 0.9
- 0.9 - 1.2
- > 1.2



CLIENT:

LIDL

waterco
www.waterco.co.uk

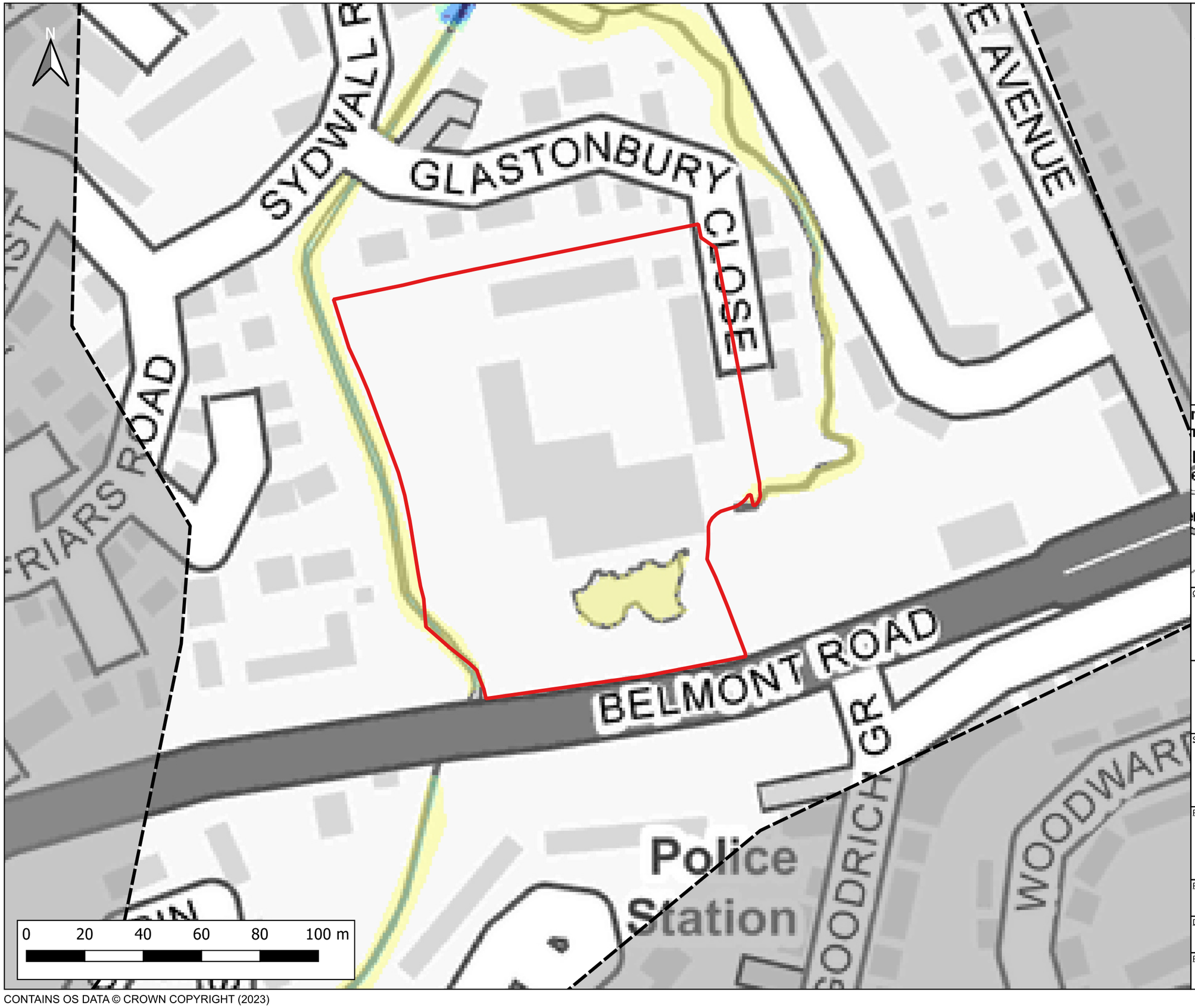
SCHEME:
Belmont Road, Hereford

PLOT TITLE:
Maximum Flood Velocity
5% AEP Fluvial Event
Development Scenario (DEV)

PLOT STATUS:	DATE:
FINAL	27-01-2023

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
IH	AR	MW	1:1200

PLOT NAME:	REVISION:
14388_BEL_Q20_DEV_NC_015_V_Max	-



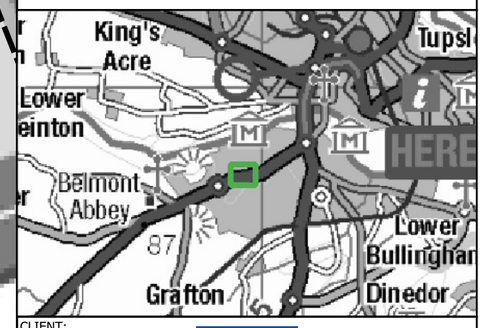
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

- Site Boundary
- Model Extent

Maximum Flood Velocity (m/s)

- 0.0 - 0.3
- 0.3 - 0.6
- 0.6 - 0.9
- 0.9 - 1.2
- > 1.2



CLIENT:

LIDL

waterco
www.waterco.co.uk

SCHEME:
Belmont Road, Hereford

PLOT TITLE:
Maximum Flood Velocity
3.3% AEP Fluvial Event
Existing Scenario (EXG)

PLOT STATUS:	DATE:
FINAL	27-01-2023

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
IH	AR	MW	1:1200

PLOT NAME:	REVISION:
14388_BEL_Q30_EXG_NC_015_V_Max	-

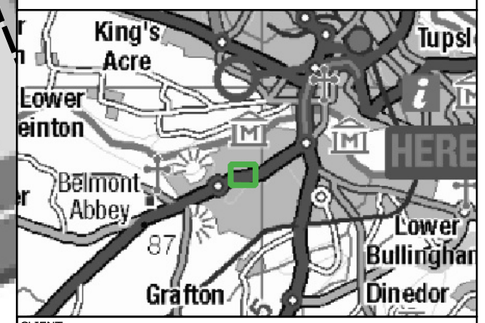
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

- Site Boundary
- Development Layout
- Model Extent

Maximum Flood Velocity (m/s)

- 0.0 - 0.3
- 0.3 - 0.6
- 0.6 - 0.9
- 0.9 - 1.2
- > 1.2



CLIENT:

LIDL

waterco
www.waterco.co.uk

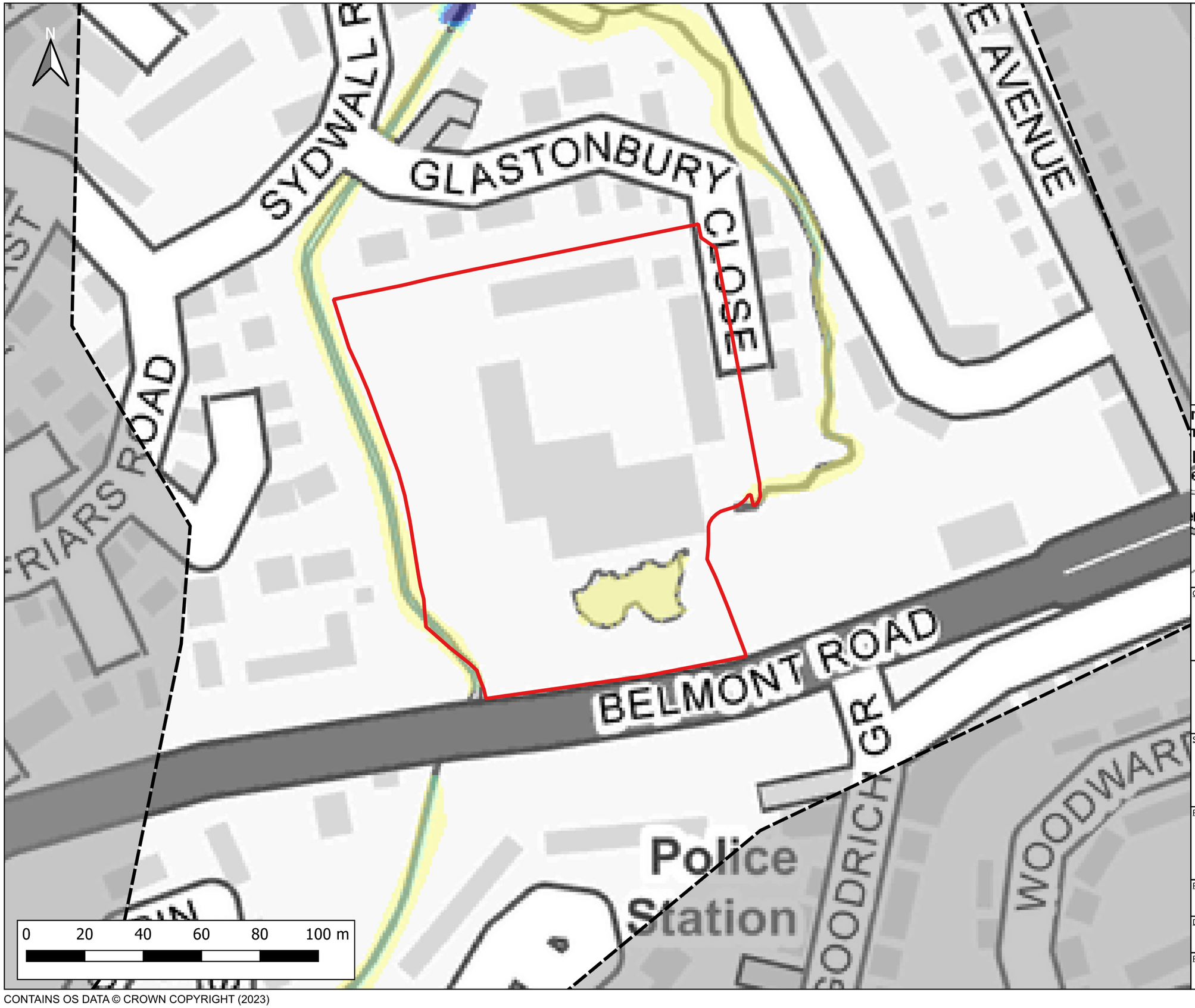
SCHEME:
Belmont Road, Hereford

PLOT TITLE:
Maximum Flood Velocity
3.3% AEP Fluvial Event
Development Scenario (DEV)

PLOT STATUS:	DATE:
FINAL	27-01-2023

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
IH	AR	MW	1:1200

PLOT NAME:	REVISION:
14388_BEL_Q30_DEV_NC_015_V_Max	-



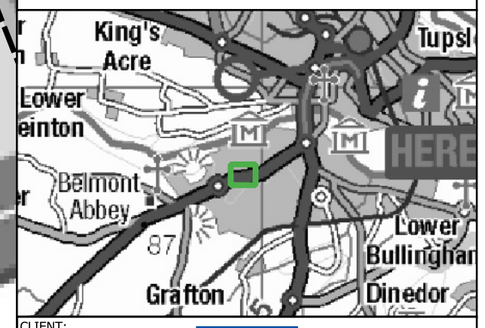
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

- Site Boundary
- Model Extent

Maximum Flood Velocity (m/s)

- 0.0 - 0.3
- 0.3 - 0.6
- 0.6 - 0.9
- 0.9 - 1.2
- > 1.2



CLIENT:

LIDL

waterco
www.waterco.co.uk

SCHEME:
Belmont Road, Hereford

PLOT TITLE:
Maximum Flood Velocity
1% AEP Fluvial Event
Existing Scenario (EXG)

PLOT STATUS:	DATE:
FINAL	27-01-2023

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
IH	AR	MW	1:1200

PLOT NAME:	REVISION:
14388_BEL_Q100_EXG_NC_015_V_Max	-

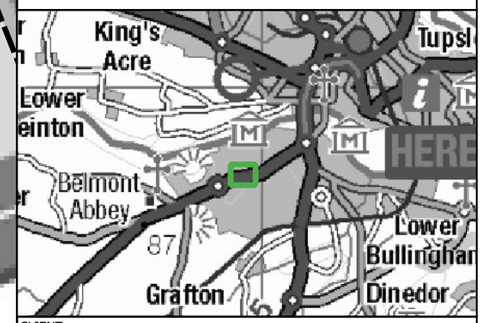
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

- Site Boundary
- Development Layout
- Model Extent

Maximum Flood Velocity (m/s)

- 0.0 - 0.3
- 0.3 - 0.6
- 0.6 - 0.9
- 0.9 - 1.2
- > 1.2



CLIENT:

LIDL

waterco
www.waterco.co.uk

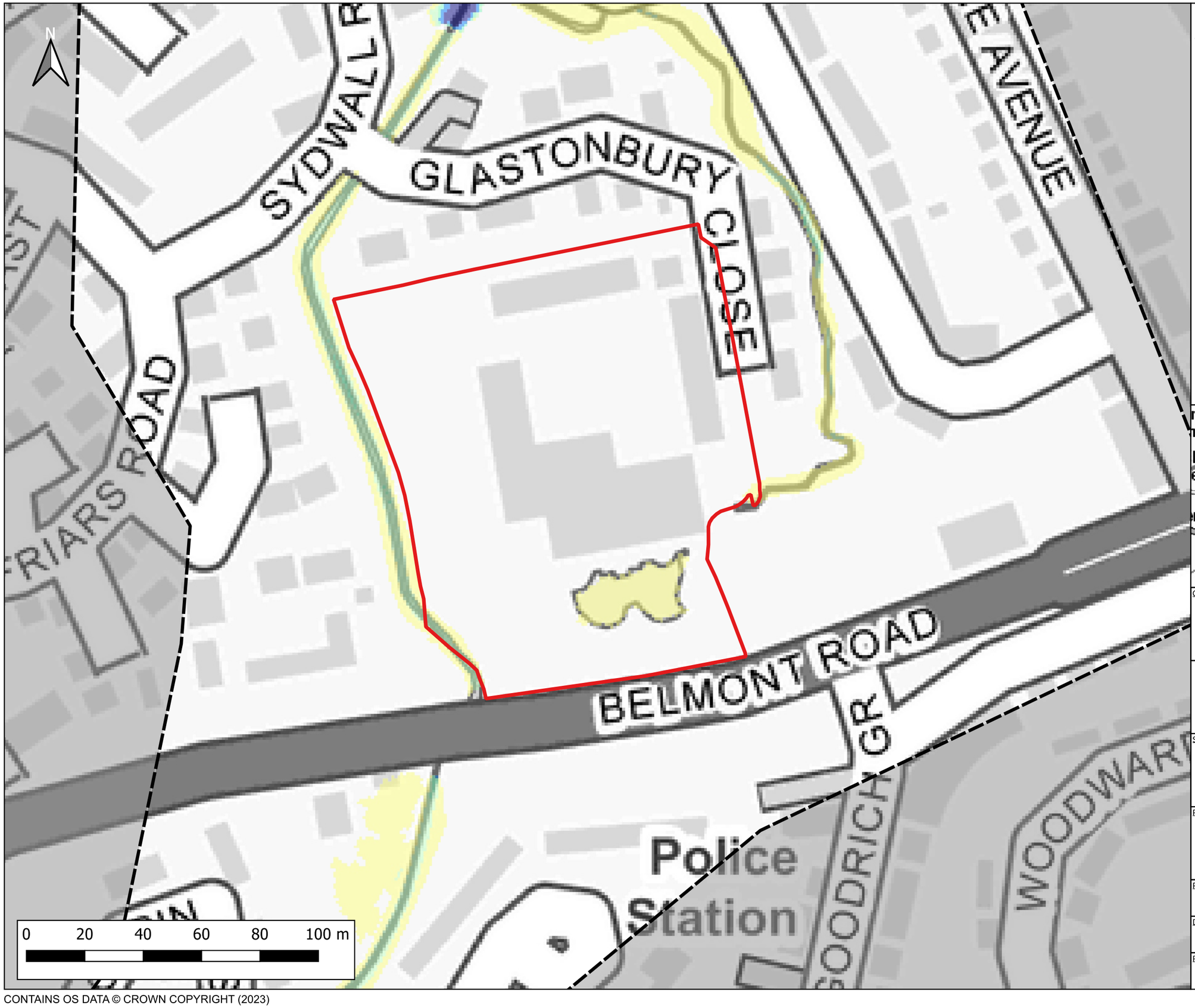
SCHEME:
Belmont Road, Hereford

PLOT TITLE:
Maximum Flood Velocity
1% AEP Fluvial Event
Development Scenario (DEV)

PLOT STATUS:	DATE:
FINAL	27-01-2023

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
IH	AR	MW	1:1200

PLOT NAME:	REVISION:
14388_BEL_Q100_DEV_NC_015_V_Max	-



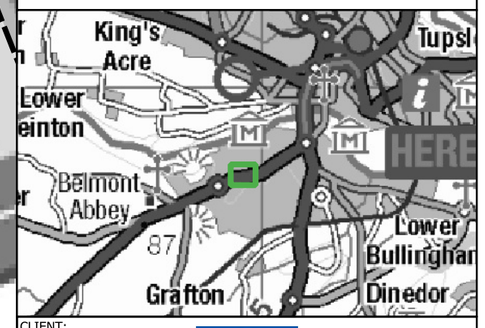
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

- Site Boundary
- Model Extent

Maximum Flood Velocity (m/s)

- 0.0 - 0.3
- 0.3 - 0.6
- 0.6 - 0.9
- 0.9 - 1.2
- > 1.2



CLIENT:

LIDL

waterco
www.waterco.co.uk

SCHEME:
Belmont Road, Hereford

PLOT TITLE:
Maximum Flood Velocity
1% AEP +37% CC Fluvial Event
Existing Scenario (EXG)

PLOT STATUS:	DATE:
FINAL	27-01-2023

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
IH	AR	MW	1:1200

PLOT NAME:	REVISION:
14388_BEL_Q100CC37_EXG_NC_015_V_Max	-

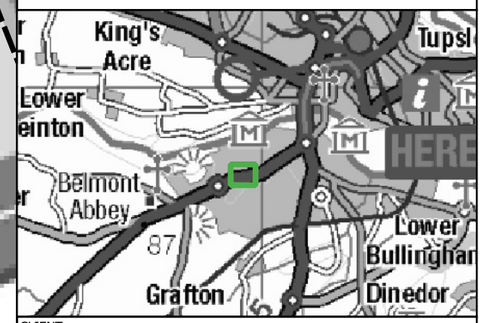
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

- Site Boundary
- Development Layout
- Model Extent

Maximum Flood Velocity (m/s)

- 0.0 - 0.3
- 0.3 - 0.6
- 0.6 - 0.9
- 0.9 - 1.2
- > 1.2



CLIENT: LIDL

waterco
www.waterco.co.uk

SCHEME: Belmont Road, Hereford

PLOT TITLE: Maximum Flood Velocity
1% AEP +37% CC Fluvial Event
Development Scenario (DEV)

PLOT STATUS:	DATE:
FINAL	27-01-2023

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
IH	AR	MW	1:1200

PLOT NAME:	REVISION:
14388_BEL_Q100CC37_DEV_NC_015_V_Max	-

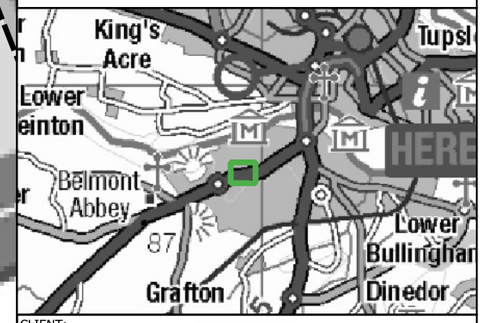
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

- Site Boundary
- Model Extent

Maximum Flood Velocity (m/s)

- 0.0 - 0.3
- 0.3 - 0.6
- 0.6 - 0.9
- 0.9 - 1.2
- > 1.2



CLIENT:

waterco
www.waterco.co.uk

SCHEME:
Belmont Road, Hereford

PLOT TITLE:
Maximum Flood Velocity
1% AEP +37% CC Fluvial Event
Existing Scenario (EXG) 67% Blockage 1 Scenario (BL1)

PLOT STATUS:	DATE:
FINAL	27-01-2023

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
IH	AR	MW	1:1200

PLOT NAME:	REVISION:
14388_BEL_Q100CC37_EXG_BL1_015_V_Max	-

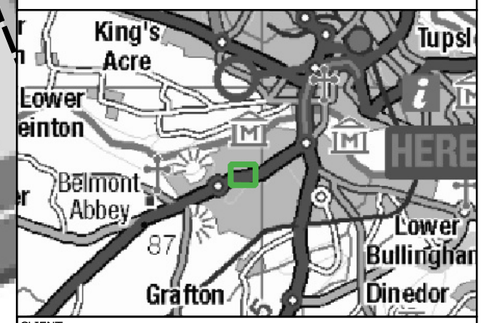
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

- Site Boundary
- Development Layout
- Model Extent

Maximum Flood Velocity (m/s)

- 0.0 - 0.3
- 0.3 - 0.6
- 0.6 - 0.9
- 0.9 - 1.2
- > 1.2



CLIENT:

LIDL

waterco
www.waterco.co.uk

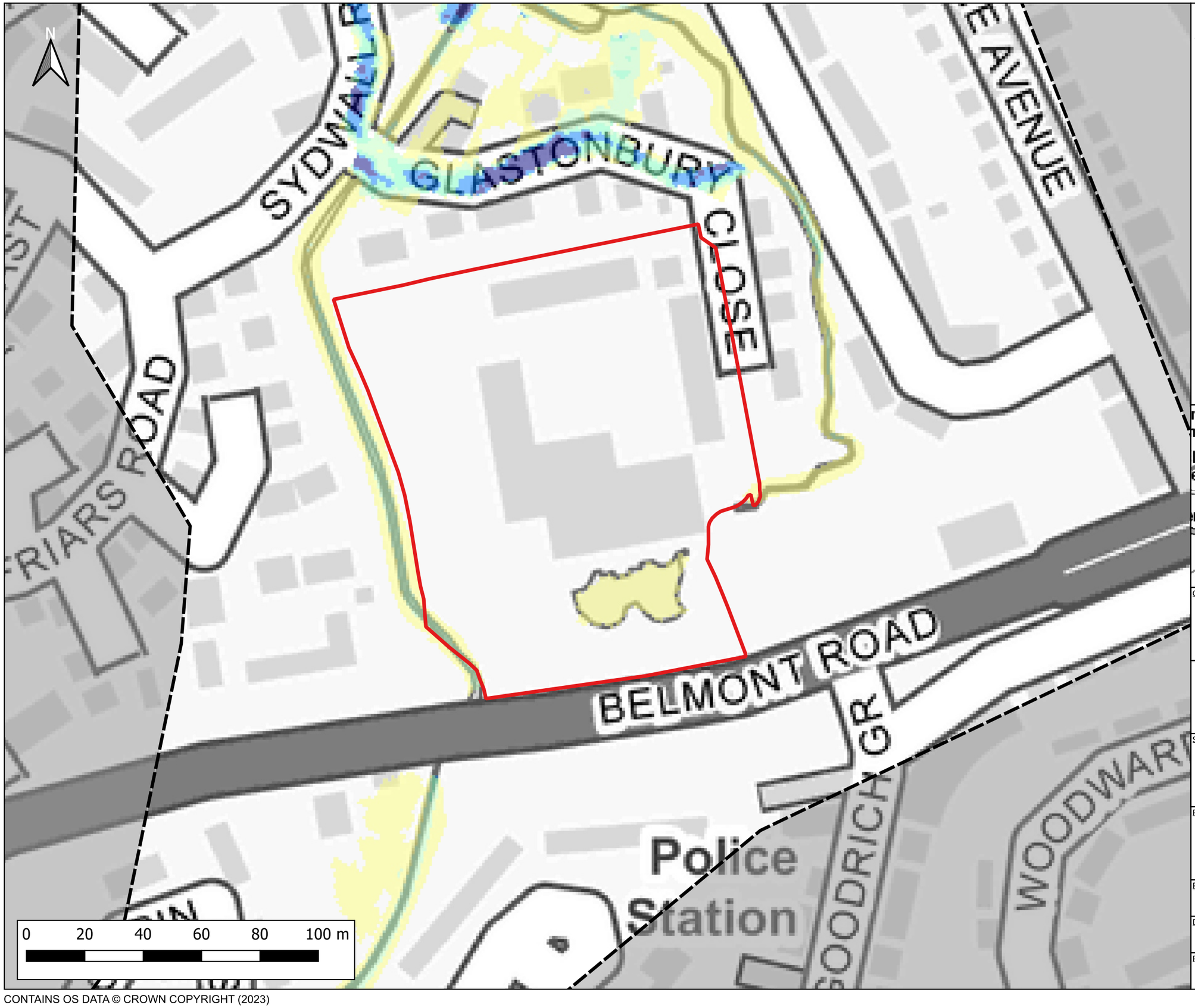
SCHEME:
Belmont Road, Hereford

PLOT TITLE:
Maximum Flood Velocity
1% AEP +37% CC Fluvial Event
Development Scenario (DEV) 67% Blockage 1 Scenario (BL1)

PLOT STATUS:	DATE:
FINAL	27-01-2023

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
IH	AR	MW	1:1200

PLOT NAME:	REVISION:
14388_BEL_Q100CC37_DEV_BL1_015_V_Max	-



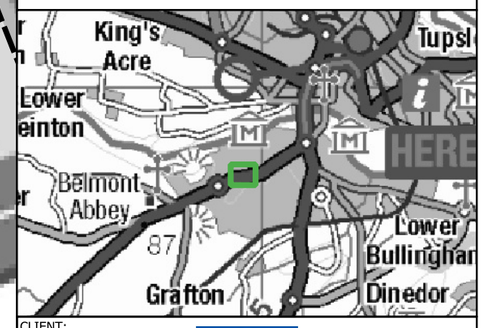
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

- Site Boundary
- Model Extent

Maximum Flood Velocity (m/s)

- 0.0 - 0.3
- 0.3 - 0.6
- 0.6 - 0.9
- 0.9 - 1.2
- > 1.2



CLIENT:

LIDL

waterco
www.waterco.co.uk

SCHEME:
Belmont Road, Hereford

PLOT TITLE:
Maximum Flood Velocity
1% AEP +37% CC Fluvial Event
Existing Scenario (EXG) 67% Blockage 2 Scenario (BL2)

PLOT STATUS:	DATE:
FINAL	27-01-2023

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
IH	AR	MW	1:1200

PLOT NAME:	REVISION:
14388_BEL_Q100CC37_EXG_BL2_015_V_Max	-

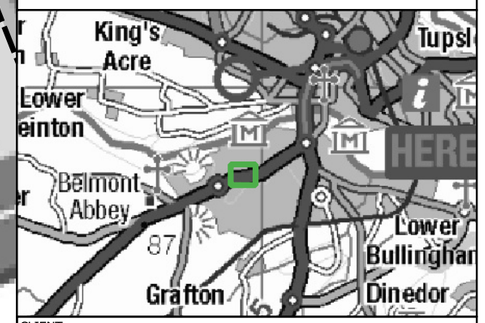
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

- Site Boundary
- Development Layout
- Model Extent

Maximum Flood Velocity (m/s)

- 0.0 - 0.3
- 0.3 - 0.6
- 0.6 - 0.9
- 0.9 - 1.2
- > 1.2



CLIENT:

LIDL

waterco
www.waterco.co.uk

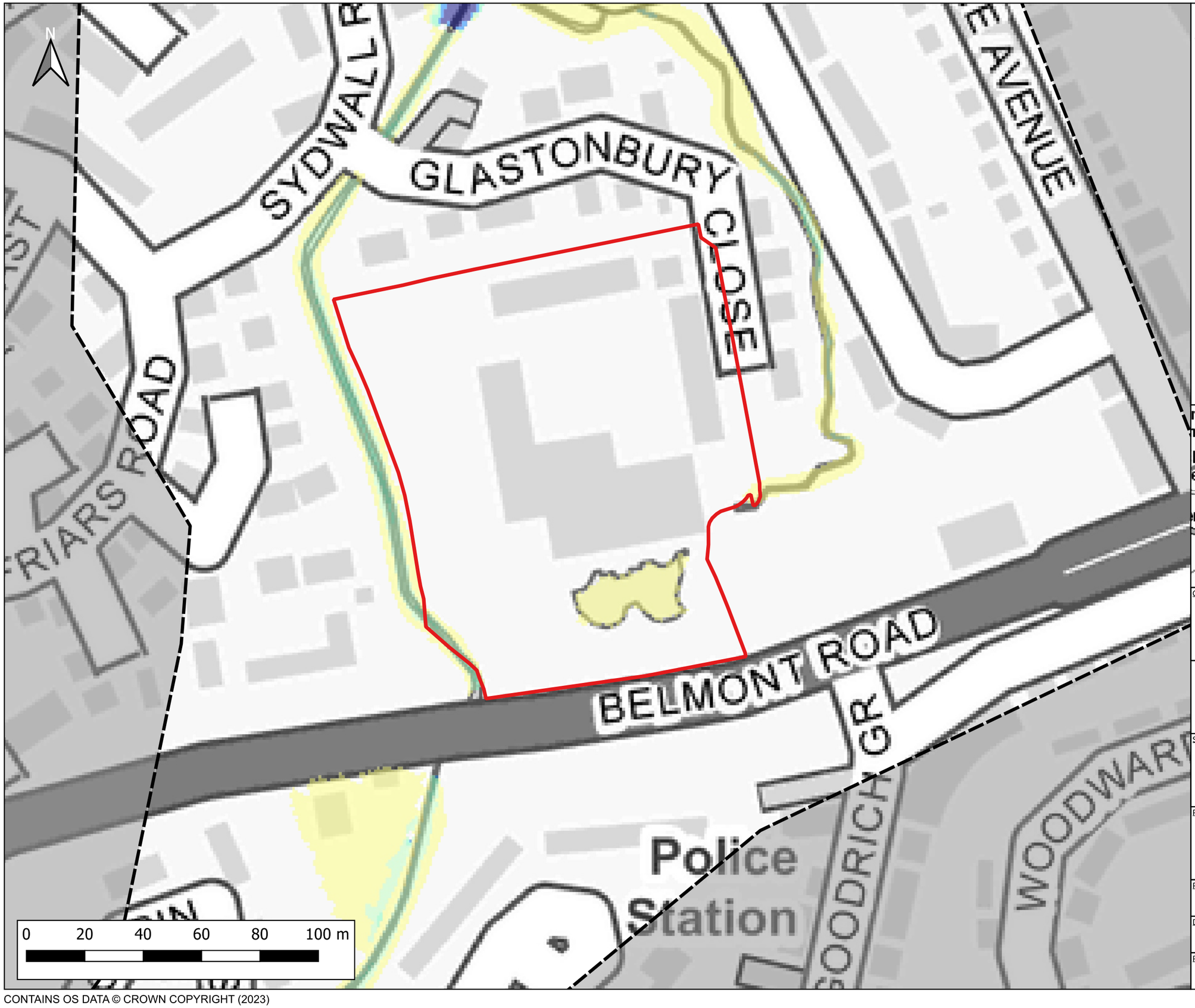
SCHEME:
Belmont Road, Hereford

PLOT TITLE:
Maximum Flood Velocity
1% AEP +37% CC Fluvial Event
Development Scenario (DEV) 67% Blockage 2 Scenario (BL2)

PLOT STATUS:	DATE:
FINAL	27-01-2023

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
IH	AR	MW	1:1200

PLOT NAME:	REVISION:
14388_BEL_Q100CC37_DEV_BL2_015_V_Max	-



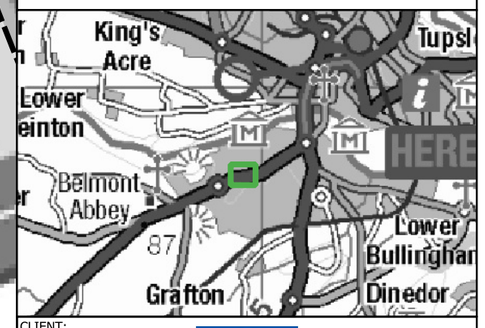
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

- Site Boundary
- Model Extent

Maximum Flood Velocity (m/s)

- 0.0 - 0.3
- 0.3 - 0.6
- 0.6 - 0.9
- 0.9 - 1.2
- > 1.2



CLIENT:

LIDL

waterco
www.waterco.co.uk

SCHEME:
Belmont Road, Hereford

PLOT TITLE:
Maximum Flood Velocity
0.1% AEP Fluvial Event
Existing Scenario (EXG)

PLOT STATUS:	DATE:
FINAL	27-01-2023

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
IH	AR	MW	1:1200

PLOT NAME:	REVISION:
14388_BEL_Q10000_EXG_NC_015_V_Max	-

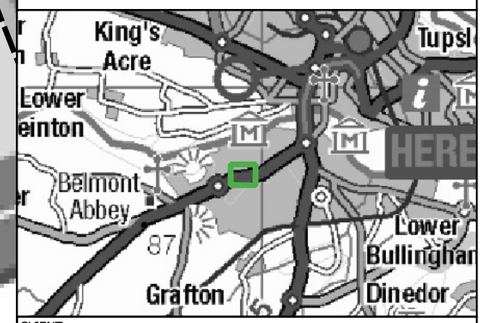
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

- Site Boundary
- Development Layout
- Model Extent

Maximum Flood Velocity (m/s)

- 0.0 - 0.3
- 0.3 - 0.6
- 0.6 - 0.9
- 0.9 - 1.2
- > 1.2



CLIENT: LIDL

waterco
www.waterco.co.uk

SCHEME: Belmont Road, Hereford

PLOT TITLE: Maximum Flood Velocity 0.1% AEP Fluvial Event Development Scenario (DEV)

PLOT STATUS:	DATE:
FINAL	27-01-2023

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
IH	AR	MW	1:1200

PLOT NAME:	REVISION:
14388_BEL_Q10000_DEV_NC_015_V_Max	-

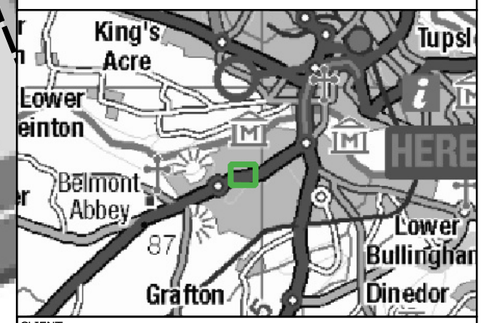
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

- Site Boundary
- Model Extent

Maximum Flood Hazard Rating (FD2320)

- Caution
- Danger for Some
- Danger for Most
- Danger for All



CLIENT:

LIDL

waterco
www.waterco.co.uk

SCHEME:
Belmont Road, Hereford

PLOT TITLE:
Maximum Flood Hazard Rating
5% AEP Fluvial Event
Existing Scenario (EXG)

PLOT STATUS:	DATE:
FINAL	27-01-2023

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
IH	AR	MW	1:1200

PLOT NAME:	REVISION:
14388_BEL_Q20_EXG_NC_015_ZUK2_Max	-

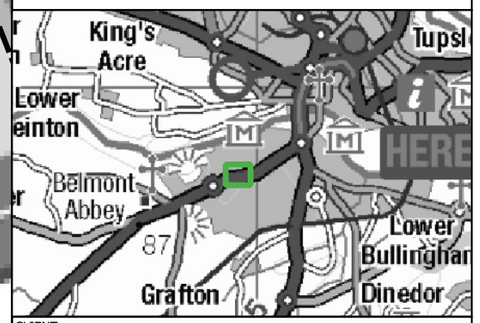
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

- Site Boundary
- Development Layout
- Model Extent

Maximum Flood Hazard Rating (FD2320)

- Caution
- Danger for Some
- Danger for Most
- Danger for All



CLIENT:

LIDL

waterco
www.waterco.co.uk

SCHEME:
Belmont Road, Hereford

PLOT TITLE:
Maximum Flood Hazard Rating
5% AEP Fluvial Event
Development Scenario (DEV)

PLOT STATUS:	DATE:
FINAL	27-01-2023

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
IH	AR	MW	1:1200

PLOT NAME:	REVISION:
14388_BEL_Q20_DEV_NC_015_ZUK2_Max	-

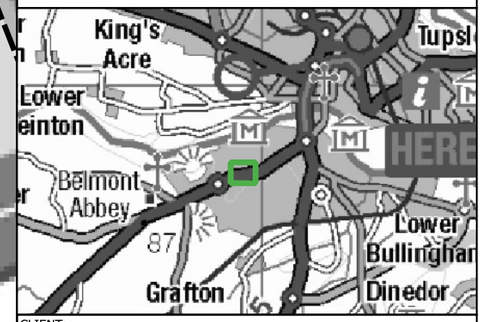
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

- Site Boundary
- Model Extent

Maximum Flood Hazard Rating (FD2320)

- Caution
- Danger for Some
- Danger for Most
- Danger for All



CLIENT:

LIDL

waterco
www.waterco.co.uk

SCHEME:
Belmont Road, Hereford

PLOT TITLE:
Maximum Flood Hazard Rating
3.3% AEP Fluvial Event
Existing Scenario (EXG)

PLOT STATUS:			DATE:
FINAL			27-01-2023
DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
IH	AR	MW	1:1200

PLOT NAME:	REVISION:
14388_BEL_Q30_EXG_NC_015_ZUK2_Max	-

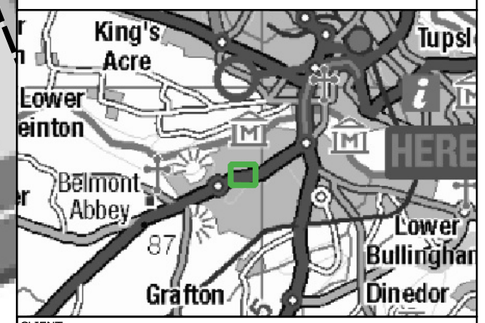
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

- Site Boundary
- Development Layout
- Model Extent

Maximum Flood Hazard Rating (FD2320)

- Caution
- Danger for Some
- Danger for Most
- Danger for All



CLIENT:

LIDL

waterco
www.waterco.co.uk

SCHEME:
Belmont Road, Hereford

PLOT TITLE:
Maximum Flood Hazard Rating
3.3% AEP Fluvial Event
Development Scenario (DEV)

PLOT STATUS:	DATE:
FINAL	27-01-2023

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
IH	AR	MW	1:1200

PLOT NAME:	REVISION:
14388_BEL_Q30_DEV_NC_015_ZUK2_Max	-

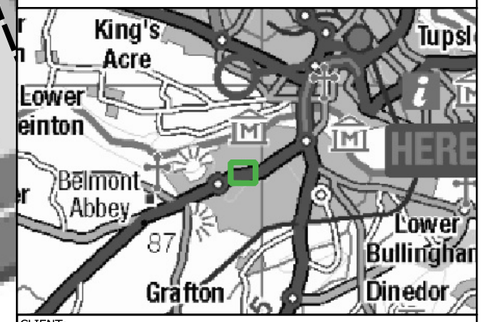
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

- Site Boundary
- Model Extent

Maximum Flood Hazard Rating (FD2320)

- Caution
- Danger for Some
- Danger for Most
- Danger for All



CLIENT: LIDL

waterco
www.waterco.co.uk

SCHEME:
Belmont Road, Hereford

PLOT TITLE:
Maximum Flood Hazard Rating
1% AEP Fluvial Event
Existing Scenario (EXG)

PLOT STATUS:			DATE:
FINAL			27-01-2023
DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
IH	AR	MW	1:1200
PLOT NAME:			REVISION:
14388_BEL_Q100_EXG_NC_015_ZUK2_Max			-

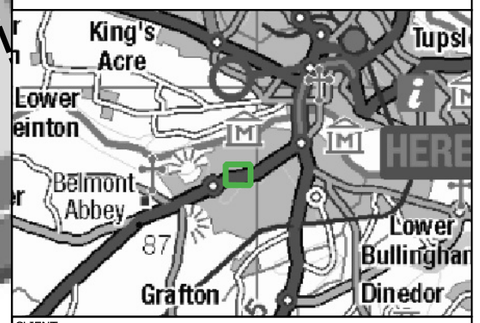
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

- Site Boundary
- Development Layout
- Model Extent

Maximum Flood Hazard Rating (FD2320)

- Caution
- Danger for Some
- Danger for Most
- Danger for All



CLIENT:

LIDL

waterco
www.waterco.co.uk

SCHEME:
Belmont Road, Hereford

PLOT TITLE:
Maximum Flood Hazard Rating
1% AEP Fluvial Event
Development Scenario (DEV)

PLOT STATUS:	DATE:
FINAL	27-01-2023

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
IH	AR	MW	1:1200

PLOT NAME:	REVISION:
14388_BEL_Q100_DEV_NC_015_ZUK2_Max	-

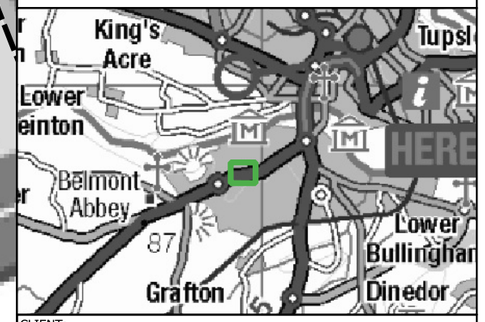
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

- Site Boundary
- Model Extent

Maximum Flood Hazard Rating (FD2320)

- Caution
- Danger for Some
- Danger for Most
- Danger for All



CLIENT:

LIDL

waterco
www.waterco.co.uk

SCHEME:
Belmont Road, Hereford

PLOT TITLE:
Maximum Flood Hazard Rating
1% AEP +37% CC Fluvial Event
Existing Scenario (EXG)

PLOT STATUS:			DATE:
FINAL			27-01-2023
DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
IH	AR	MW	1:1200

PLOT NAME: 14388_BEL_Q100CC37_EXG_NC_015_ZUK2_Max

REVISION: -

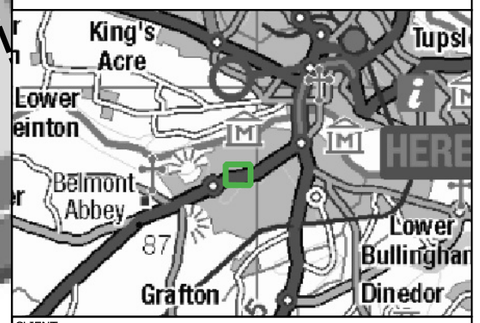
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

- Site Boundary
- Development Layout
- Model Extent

Maximum Flood Hazard Rating (FD2320)

- Caution
- Danger for Some
- Danger for Most
- Danger for All



CLIENT:

LIDL

waterco
www.waterco.co.uk

SCHEME:
Belmont Road, Hereford

PLOT TITLE:
Maximum Flood Hazard Rating
1% AEP +37% CC Fluvial Event
Development Scenario (DEV)

PLOT STATUS:	DATE:
FINAL	27-01-2023

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
IH	AR	MW	1:1200

PLOT NAME:	REVISION:
14388_BEL_Q100CC37_DEV_NC_015_ZUK2_Max	-

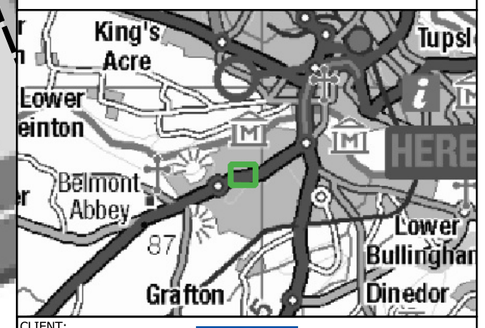
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

- Site Boundary
- Model Extent

Maximum Flood Hazard Rating (FD2320)

- Caution
- Danger for Some
- Danger for Most
- Danger for All



CLIENT:

waterco
www.waterco.co.uk

SCHEME:
Belmont Road, Hereford

PLOT TITLE:
Maximum Flood Hazard Rating
1% AEP +37% CC Fluvial Event
Existing Scenario (EXG) 67% Blockage 1 Scenario (BL1)

PLOT STATUS:	DATE:
FINAL	27-01-2023

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
IH	AR	MW	1:1200

PLOT NAME:	REVISION:
14388_BEL_Q100CC37_EXG_BL1_015_ZUK2_Max	-

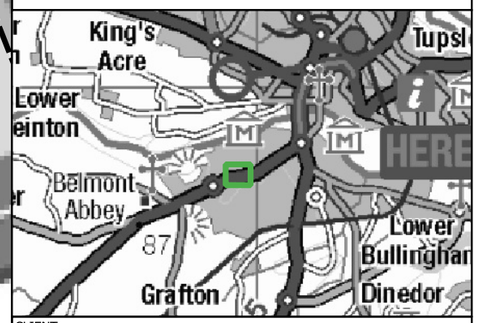
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

- Site Boundary
- Development Layout
- Model Extent

Maximum Flood Hazard Rating (FD2320)

- Caution
- Danger for Some
- Danger for Most
- Danger for All



CLIENT:

LIDL

waterco
www.waterco.co.uk

SCHEME:
Belmont Road, Hereford

PLOT TITLE:
Maximum Flood Hazard Rating
1% AEP +37% CC Fluvial Event
Development Scenario (DEV) 67% Blockage 1 Scenario (BL1)

PLOT STATUS:	DATE:
FINAL	27-01-2023

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
IH	AR	MW	1:1200

PLOT NAME:	REVISION:
14388_BEL_Q100CC37_DEV_BL1_015_ZUK2_Max	-

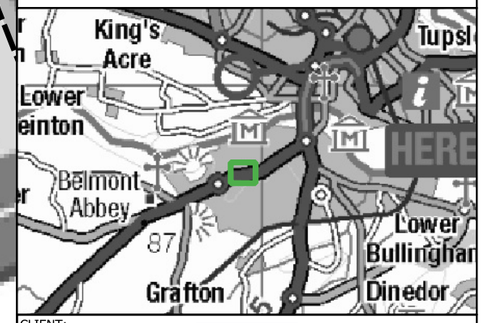
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

- Site Boundary
- Model Extent

Maximum Flood Hazard Rating (FD2320)

- Caution
- Danger for Some
- Danger for Most
- Danger for All



CLIENT:

LIDL

waterco
www.waterco.co.uk

SCHEME:
Belmont Road, Hereford

PLOT TITLE:
Maximum Flood Hazard Rating
1% AEP +37% CC Fluvial Event
Existing Scenario (EXG) 67% Blockage 2 Scenario (BL2)

PLOT STATUS:	DATE:
FINAL	27-01-2023

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
IH	AR	MW	1:1200

PLOT NAME:	REVISION:
14388_BEL_Q100CC37_EXG_BL2_015_ZUK2_Max	-

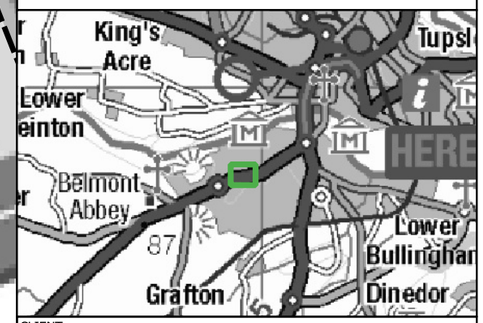
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

- Site Boundary
- Development Layout
- Model Extent

Maximum Flood Hazard Rating (FD2320)

- Caution
- Danger for Some
- Danger for Most
- Danger for All



CLIENT:

LIDL

waterco
www.waterco.co.uk

SCHEME:
Belmont Road, Hereford

PLOT TITLE:
Maximum Flood Hazard Rating
1% AEP +37% CC Fluvial Event
Development Scenario (DEV) 67% Blockage 2 Scenario (BL2)

PLOT STATUS:	DATE:
FINAL	27-01-2023

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
IH	AR	MW	1:1200

PLOT NAME:	REVISION:
14388_BEL_Q100CC37_DEV_BL2_015_ZUK2_Max	-

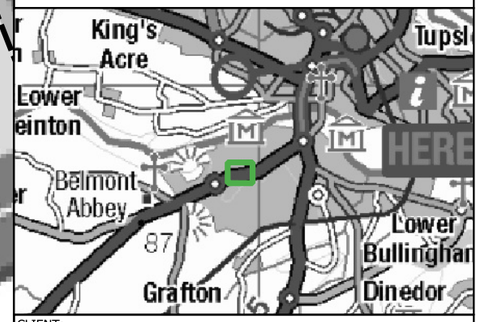
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

- Site Boundary
- Model Extent

Maximum Flood Hazard Rating (FD2320)

- Caution
- Danger for Some
- Danger for Most
- Danger for All



CLIENT: LIDL

waterco
www.waterco.co.uk

SCHEME:
Belmont Road, Hereford

PLOT TITLE:
Maximum Flood Hazard Rating
0.1% AEP Fluvial Event
Existing Scenario (EXG)

PLOT STATUS:	DATE:
FINAL	27-01-2023

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
IH	AR	MW	1:1200

PLOT NAME:	REVISION:
14388_BEL_Q10000_EXG_NC_015_ZUK2_Max	-

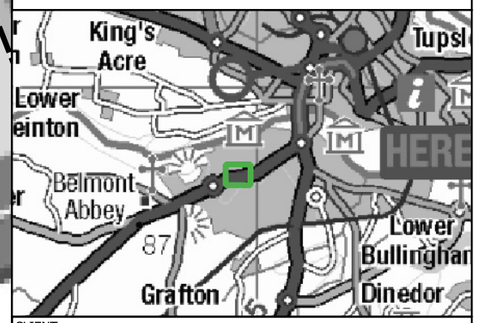
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

- Site Boundary
- Development Layout
- Model Extent

Maximum Flood Hazard Rating (FD2320)

- Caution
- Danger for Some
- Danger for Most
- Danger for All



CLIENT:

LIDL

Waterco
www.waterco.co.uk

SCHEME:
Belmont Road, Hereford

PLOT TITLE:
Maximum Flood Hazard Rating
0.1% AEP Fluvial Event
Development Scenario (DEV)

PLOT STATUS:	DATE:
FINAL	27-01-2023

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
IH	AR	MW	1:1200

PLOT NAME:	REVISION:
14388_BEL_Q10000_DEV_NC_015_ZUK2_Max	-

Appendix K SFRA Map

Main Rivers

EA Recorded Flood Outlines

Herefordshire Council Historic Flood Records:

- 1 - 2
- 3 - 4
- 5 - 8
- 9 - 13
- 14 - 19

Welsh Water Hydraulic Sewer Flood Risk Register:

- 1 - 2
- 3 - 4
- 5 - 7
- 8 - 12
- 13 - 22

Disclaimer: Not all flood incidents have been recorded and this map is based on the available data at the time. Herefordshire Council flood reports are mapped to an anonymous point on or near the street where the event happened.

Entries on the Welsh Water flood register are plotted to the nearest OS grid.

Welsh Water undertake improvements to the network to eliminate the identified risk.

Welsh Water and Herefordshire Council data were updated in December 2018.

DRAWING STATUS: FOR INFORMATION ONLY

wsp
Kings Orchard, 1 Queen St, Bristol, BS2 0HQ
T +44 (0)1179 306200

CLIENT: Balfour Beatty / Herefordshire Council — Working for Herefordshire

SITE/PROJECT: HEREFORDSHIRE LEVEL 1 SFRA

TITLE: MAP 4 OF 4: HISTORICAL FLOOD RECORDS IN SOUTH-WEST HEREFORD

SCALE @ A3:	CHECKED:	APPROVED:
1:10,050	JG	JG

PROJECT NO:	DESIGNED:	DRAWN:	DATE:
70023685	SH	JSdS	25/01/2019

DRAWING No:	REV:
APPENDIX E-6D	P02

Appendix L ReFH2 Greenfield Runoff Rates

DOCUMENT VERIFICATION RECORD	
Project:	Belmont Road, Hereford
Client:	Lidl UK GmbH
Report Title:	Flood Risk Assessment & Drainage Strategy
Date:	March 2022

DOCUMENT REVIEW & APPROVAL	
Author:	Jordan Jones BSc (Hons) MCIWEM
Checker:	Aled Williams BSc (Hons) MCIWEM
Approver:	Nigel Jones BEng (Hons) CEng

ReFH2 RUNOFF RATES*	
Return Period (Years)	**As-rural Peak Flow (l/s)**
1	4.664245
2	5.3118
5	7.500692
10	9.179763
30	12.29721
50	14.09967
75	15.77795
100	17.12254
200	20.91592
1000	31.98243

*Runoff Rates printed from the ReFH Flood Modelling software package

Appendix M MicroDrainage Attenuation Storage Estimate

Summary of Results for 100 year Return Period (+45%)

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
15 min Summer	9.470	0.470	4.6	211.6	O K
30 min Summer	9.621	0.621	4.6	279.5	O K
60 min Summer	9.775	0.775	4.6	348.9	Flood Risk
120 min Summer	9.899	0.899	4.6	404.5	Flood Risk
180 min Summer	9.954	0.954	4.6	429.3	Flood Risk
240 min Summer	9.980	0.980	4.6	441.2	Flood Risk
360 min Summer	9.993	0.993	4.6	446.7	Flood Risk
480 min Summer	9.981	0.981	4.6	441.5	Flood Risk
600 min Summer	9.960	0.960	4.6	431.9	Flood Risk
720 min Summer	9.933	0.933	4.6	420.0	Flood Risk
960 min Summer	9.885	0.885	4.6	398.2	Flood Risk
1440 min Summer	9.807	0.807	4.6	363.2	Flood Risk
2160 min Summer	9.717	0.717	4.6	322.8	Flood Risk
2880 min Summer	9.642	0.642	4.6	288.8	O K
4320 min Summer	9.511	0.511	4.6	230.0	O K
5760 min Summer	9.421	0.421	4.6	189.5	O K
7200 min Summer	9.357	0.357	4.6	160.6	O K
8640 min Summer	9.309	0.309	4.6	138.9	O K
10080 min Summer	9.273	0.273	4.6	122.9	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	155.246	0.0	211.7	26
30 min Summer	102.837	0.0	278.5	41
60 min Summer	64.904	0.0	360.8	70
120 min Summer	38.610	0.0	428.8	130
180 min Summer	28.015	0.0	466.4	188
240 min Summer	22.141	0.0	491.2	248
360 min Summer	15.714	0.0	522.4	366
480 min Summer	12.249	0.0	542.4	484
600 min Summer	10.078	0.0	557.3	602
720 min Summer	8.587	0.0	569.1	704
960 min Summer	6.668	0.0	587.7	806
1440 min Summer	4.678	0.0	612.2	1054
2160 min Summer	3.308	0.0	664.2	1472
2880 min Summer	2.608	0.0	698.2	1880
4320 min Summer	1.903	0.0	763.4	2640
5760 min Summer	1.548	0.0	829.2	3392
7200 min Summer	1.338	0.0	895.7	4112
8640 min Summer	1.199	0.0	963.3	4840
10080 min Summer	1.101	0.0	1030.9	5544

Summary of Results for 100 year Return Period (+45%)

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
15 min Winter	9.470	0.470	4.6	211.7	O K
30 min Winter	9.621	0.621	4.6	279.5	O K
60 min Winter	9.775	0.775	4.6	348.9	Flood Risk
120 min Winter	9.900	0.900	4.6	405.0	Flood Risk
180 min Winter	9.956	0.956	4.6	430.2	Flood Risk
240 min Winter	9.983	0.983	4.6	442.4	Flood Risk
360 min Winter	9.997	0.997	4.6	448.6	Flood Risk
480 min Winter	9.987	0.987	4.6	444.0	Flood Risk
600 min Winter	9.967	0.967	4.6	435.0	Flood Risk
720 min Winter	9.942	0.942	4.6	423.8	Flood Risk
960 min Winter	9.887	0.887	4.6	399.0	Flood Risk
1440 min Winter	9.795	0.795	4.6	357.7	Flood Risk
2160 min Winter	9.674	0.674	4.6	303.4	O K
2880 min Winter	9.550	0.550	4.6	247.4	O K
4320 min Winter	9.374	0.374	4.6	168.2	O K
5760 min Winter	9.260	0.260	4.6	117.1	O K
7200 min Winter	9.191	0.191	4.5	86.2	O K
8640 min Winter	9.150	0.150	4.3	67.5	O K
10080 min Winter	9.125	0.125	4.1	56.3	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Winter	155.246	0.0	211.7	26
30 min Winter	102.837	0.0	278.5	41
60 min Winter	64.904	0.0	360.8	70
120 min Winter	38.610	0.0	428.8	126
180 min Winter	28.015	0.0	466.4	184
240 min Winter	22.141	0.0	491.2	242
360 min Winter	15.714	0.0	522.4	358
480 min Winter	12.249	0.0	542.4	472
600 min Winter	10.078	0.0	557.3	582
720 min Winter	8.587	0.0	569.1	692
960 min Winter	6.668	0.0	587.7	890
1440 min Winter	4.678	0.0	612.9	1104
2160 min Winter	3.308	0.0	664.3	1576
2880 min Winter	2.608	0.0	698.2	1972
4320 min Winter	1.903	0.0	763.5	2728
5760 min Winter	1.548	0.0	829.2	3408
7200 min Winter	1.338	0.0	895.7	4104
8640 min Winter	1.199	0.0	963.1	4752
10080 min Winter	1.101	0.0	1031.2	5344

Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
FEH Rainfall Version	2013
Site Location	GB 349700 238577 SO 49700 38577
Data Type	Point
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	1.000
Cv (Winter)	1.000
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+45

Time Area Diagram

Total Area (ha) 0.558

Time (mins) From:	To:	Area (ha)	Time (mins) From:	To:	Area (ha)	Time (mins) From:	To:	Area (ha)
0	4	0.186	4	8	0.186	8	12	0.186

Model Details

Storage is Online Cover Level (m) 10.000

Tank or Pond Structure

Invert Level (m) 9.000

Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	450.0	1.000	450.0

Hydro-Brake® Optimum Outflow Control

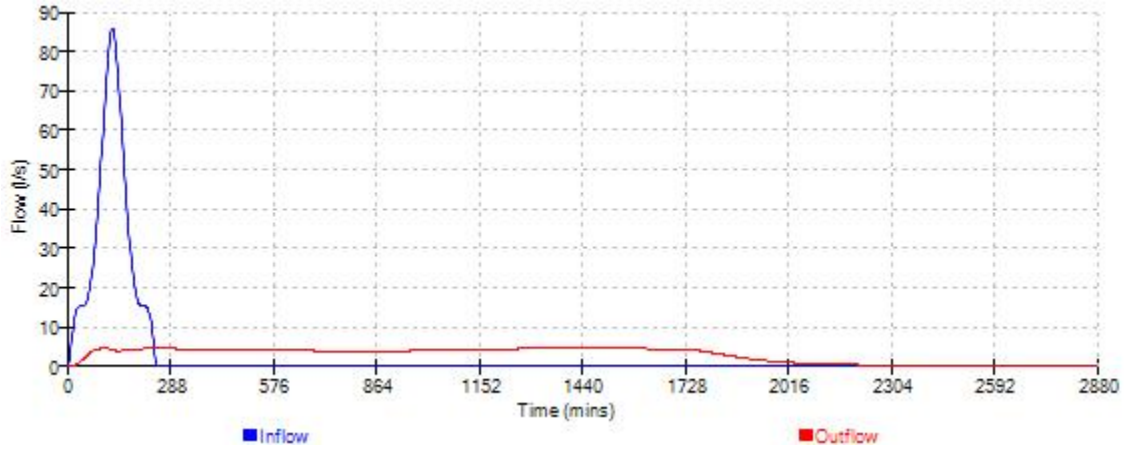
Unit Reference	MD-SHE-0101-4600-1000-4600
Design Head (m)	1.000
Design Flow (l/s)	4.6
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	101
Invert Level (m)	8.995
Minimum Outlet Pipe Diameter (mm)	150
Suggested Manhole Diameter (mm)	1200

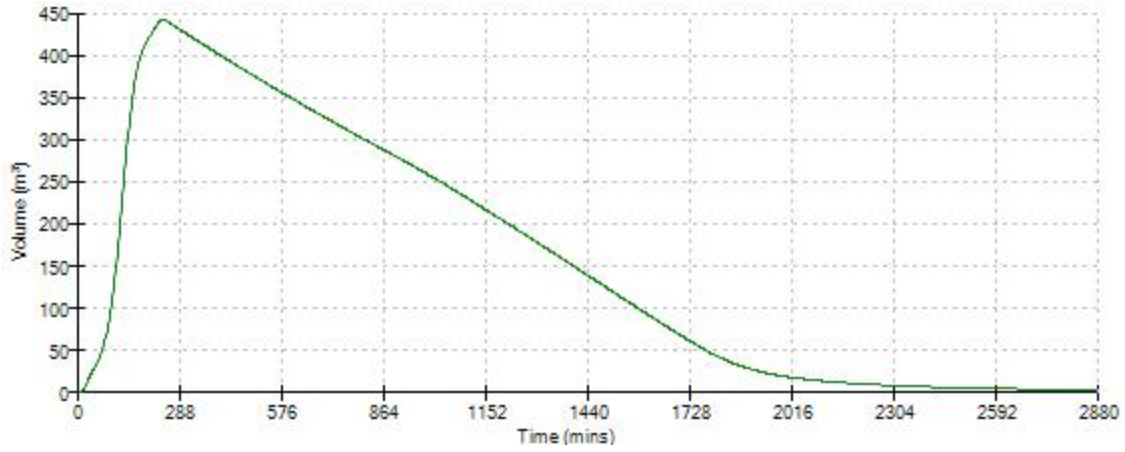
Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.000	4.6
Flush-Flo™	0.293	4.6
Kick-Flo®	0.633	3.7
Mean Flow over Head Range	-	4.0

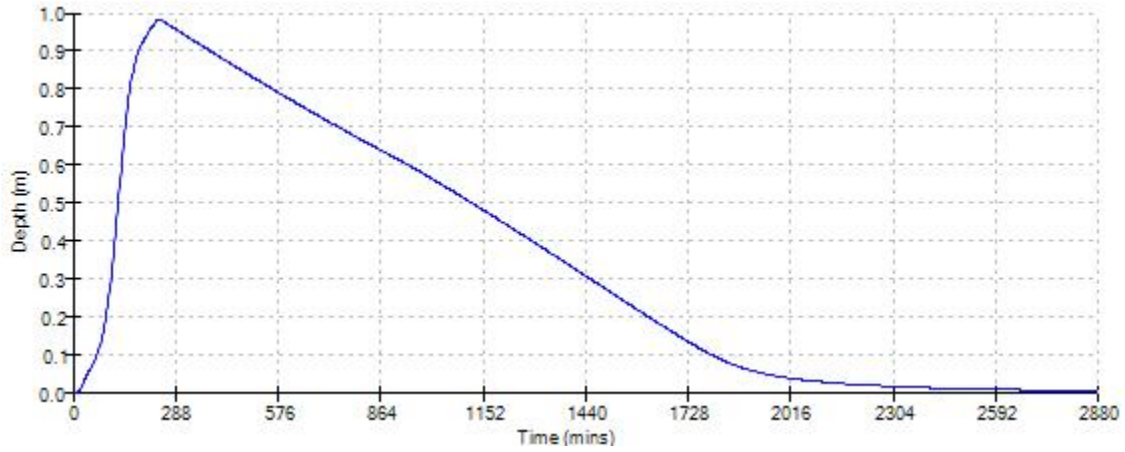
The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	3.4	1.600	5.7	5.000	9.8
0.200	4.5	1.800	6.0	5.500	10.2
0.300	4.6	2.000	6.3	6.000	10.7
0.400	4.5	2.200	6.6	6.500	11.1
0.500	4.4	2.400	6.9	7.000	11.5
0.600	4.0	2.600	7.2	7.500	11.9
0.800	4.1	3.000	7.7	8.000	12.2
1.000	4.6	3.500	8.3	8.500	12.6
1.200	5.0	4.000	8.8	9.000	12.9
1.400	5.4	4.500	9.3	9.500	13.3

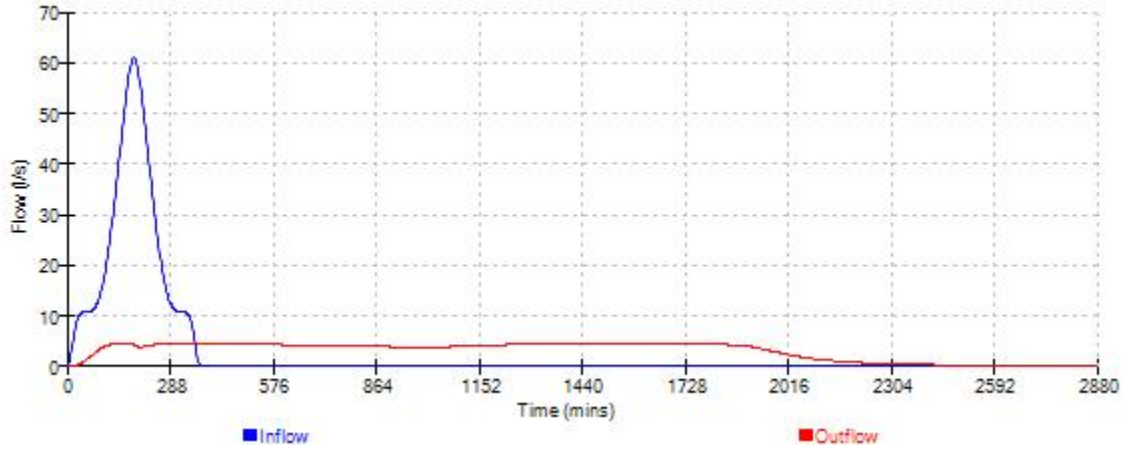
Event: 240 min Winter

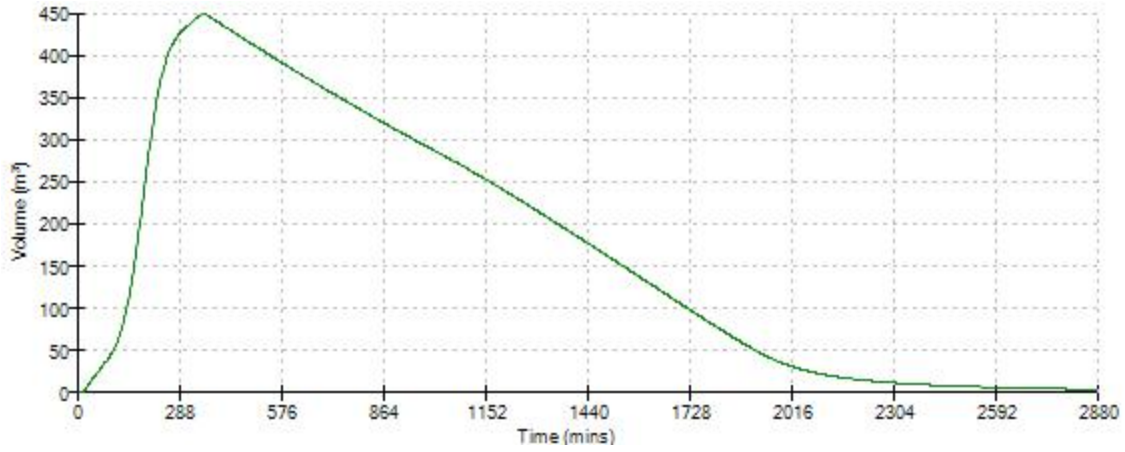


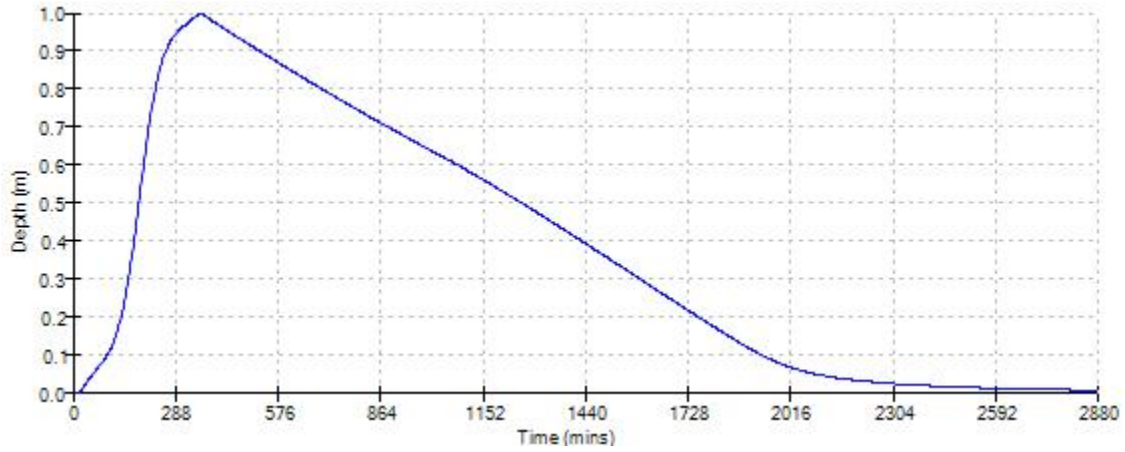




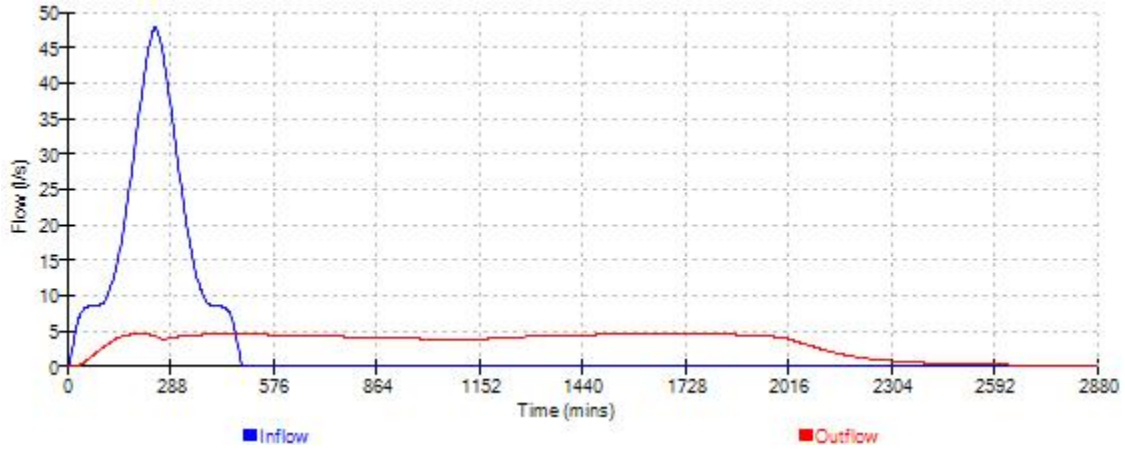
Event: 360 min Winter

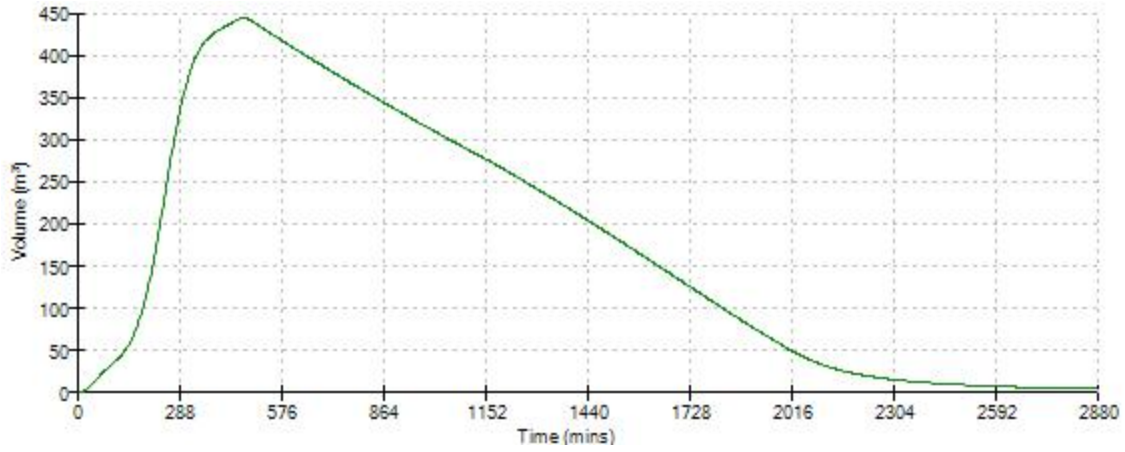


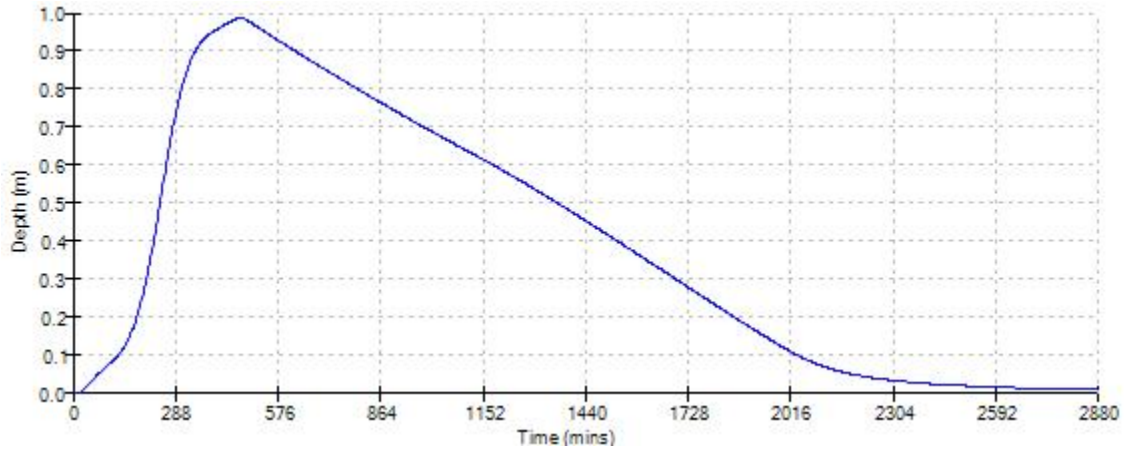




Event: 480 min Winter







Appendix N Concept Drainage Sketch

Discharge to existing chamber (silt removal required)

Area: 16,683 m2
4.122 ac
In line with Topographic Survey

GROUND DEPRESSION
TO CHANNEL WATER
(TO EAST AND NORTH)

350mm Newton Brook overflow pipe retained and lengthened

Hydro-brake chamber restricting flow to 4.6 l/s (1 in 1 year greenfield runoff rate)

118 CAR PARKING SPACES (LIDL ONLY)
(Including 10 P+C, 5 Dis and 2 EVC)

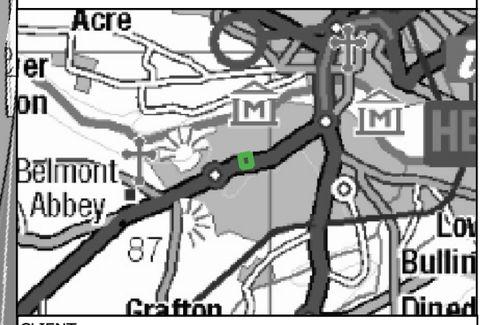
Attenuation tank measuring 43.5m long x 11m wide x 1m deep with a 95% void ratio provides 454.6m3 of storage, sufficient to accommodate the 1 in 100 year plus 45% CC event.

0 10 20 30 40 m

Notes:
1) This sketch has not been subject to formal checks or approvals. Its validity and use must therefore be limited to discussion and information purposes only.
2) This drawing is an ammendment of the 'Proposed Site Plan' by 'htc architects'. This drawing provides a concept only and is not intended for detailed design.

LEGEND

- Site Boundary
- Attenuation Tank
- Overflow Pipe
- Surface Water Drain
- Flow Control Chamber
- Existing Surface Water Inspection Chamber
- Proposed Surface Water Inspection Chamber



CLIENT: Lidl Great Britain Limited

waterco
www.waterco.co.uk

SCHEME: Belmont Road, Hereford

PLOT TITLE: Concept Drainage Sketch

PLOT STATUS:	DATE:
FINAL	27-01-2023

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
AM	AR	MW	1:500

PLOT NAME:	REVISION:
14388_Concept_Drainage_Sketch	-

Appendix O Maintenance Schedule

Operation and Maintenance Requirements for Attenuation Storage Tanks

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

Ref. Table 21.3, CIRIA C753 'The SuDS Manual'

The maintenance requirements detailed above are to be undertaken by the site owner.

Name :

Position :

Date :

Signed on behalf of the site owner :

Appendix P Concept Designers Risk Assessment

CONCEPT DESIGNER'S RISK ASSESSMENT

Project:	Belmont Road, Hereford	**Project No:**	14388
Client:	Lidl UK GmbH		
Report Reference:	14388-FRA & Drainage Strategy-01		

Prepared by:	Jordan Jones	**Date:**	01/03/2022
Checked by:	Aled Williams	**Date:**	04/03/2022
Reviewed by:	Nigel Jones	**Date:**	11/03/2022

Requirement:

The Construction (Design and Management) Regulations 2015 (CDM 2015) place an obligation on the Designer to take all reasonable steps to provide, with the design, sufficient information about the design, construction or maintenance of the structure, to adequately assist the client, other designers and contractors to comply with their duties under CDM. The Designer has undertaken this assessment to identify any extra-ordinary risks, or those that would not be expected on this particular project by an experienced and competent Contractor. The aim is to avoid needless paperwork and bureaucracy and ensure the assessment is project specific, relevant and proportionate to the risk.

DRA Summary

Each of the following risk areas has been considered using the question below. Is a risk present which is considered to be **extra-ordinary or unexpected** in this instance?

If **YES** - A detailed risk assessment is required at design stage
If **UNKNOWN** - Insufficient information has been provided at concept design stage and the risks are unknown. Further consideration must be given at design stage(s)
If **NO** - No further action is required.

Hazard Ref.	Risk Areas	YES, UNKNOWN or NO	Comments
1	Ground Conditions	Unknown	
2	Hazardous Environment	Unknown	
3	Existing Working Environment	Unknown	
4	Existing Services	Yes	Exisiting water main and other burried services on site
5	Proximity to Other Structure(s)	Unknown	
6	Near Waterbody / flood risk	Yes	Newton Brook to west and east of the site
7	Proximity to Other Activities	Unknown	
8	Sequence of Construction	Unknown	
9	Access	Unknown	
10	Interfaces	Unknown	
11	Confined Space Working	Unknown	
12	Maintenance Considerations	Unknown	
13	Working at Height	Unknown	
14	Steep Slopes	Unknown	
15	Demolition / Refurbishment / Repair	Yes	Exisitng hotel and ornamental pond to be removed
16	Welfare	Unknown	
17	Occupational Health	Unknown	
18	Environmental Issues	Unknown	
19	Other Significant Hazards not Identified Above	Unknown	
20	Residual Risk to Future Users	Unknown	