

To whom it may concern
Hillingdon Planning Services
3N/04
Civic Centre
High Street
Uxbridge
Middlesex
UB8 1UW

13 May 2021

Dear Sir/Madam,

Re: Uxbridge Industrial Estate - Barton Buildings, UB8 2SN

I refer to our Flood Risk Assessment report, titled '1833-FRA-1', as submitted in connection with Application Ref 74891/APP/2020/1614.

Further to recent design development, a new planning application is due to be submitted in connection with the above consented scheme. This is mainly related to changes associated with combining the proposed two units into a single unit. The updated drawings for submission are listed in the drawing schedule titled '*10773-04.22 Drawing Register 2021_05_12.pdf*'.

This cover note is to confirm that we have reviewed the proposed changes to the consented scheme, and that our enclosed report submitted in connection with 74891/APP/2020/1614, is still valid and applicable to the proposed revised scheme as detailed in drawings included in the aforementioned drawing register.

If you have any queries please do not hesitate to call.

Yours sincerely
For GO Contaminated Land Solutions Ltd.



Eur.Ing. Peter D. George B.Eng., Dip.EM, C.Eng., MICE, MEnvSc, MCMI, FRSPH

FLOOD RISK ASSESSMENT
for
BARTON BUILDINGS
UXBRIDGE INDUSTRIAL ESTATE
for
CYRIL LEONARD LTD



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1 EXECUTIVE SUMMARY

The proposed development comprises an industrial building divided into two units with parking facilities for cars, cycle and bin storage.

The current site use is light industrial and Engineering works

The property is not located in an Environment Agency identified flood zone and no other significant potential sources of flooding have been identified.

The risk assessment has determined that there is a low level of flood risk to the site from groundwater. The other significant sources; rivers, seas, surface water, sewers and reservoirs and artificial sources present a negligible level of risk.

The use of appropriate flood protection measures and water resilient and resistant construction will protect the development in the event of flooding and ensure that the site is safe without increasing flood risk elsewhere.

There are areas immediately adjacent to the site that are unaffected by any source of flooding and it is not anticipated that emergency access and escape routes will be significantly restricted.

Therefore, the proposed development satisfies the requirements of the National Planning Policy Framework and is considered suitable for the proposed residential use.

2 BRIEF

Mr Jonathan Slater of Cyril Leonard Ltd requested a flood risk assessment for a site at Uxbridge Industrial Estate, Barton Building, Arundel Road, Uxbridge UB8 2SN.

The FRA is prepared generally in accordance with the requirements of the National Planning Policy Framework in particular Section 10: Meeting the Challenge of Climate Change Flooding and Coastal Change and the Supporting Technical Guidance; and the Environment Agency Flood Risk Assessment (FRA) Guidance Note 3 for all development in Flood Zones 2 and 3 where standing advice does not apply.

The FRA is required to assess the risk to the site from all significant forms of flooding identified in Annex C of PPS25, including climate change considerations; and to demonstrate that the proposed development will be safe for its lifetime without increasing flood risk elsewhere and where possible will reduce the flood risk overall.

This report is based upon factual data for the site obtained from the sources described in the text, a site visit, preliminary discussions with the local authority and product 4 data obtained from the Environment Agency. The information obtained is not necessarily exhaustive and additional information may be available from other sources.

3 REFERENCE INFORMATION

Reference has been made to the following sources of information during the preparation of this report:

- National Planning Policy Framework – February 2019.
- Technical Guidance to the National Planning Policy - March 2012.
- The Environment Agency – What's in your backyard? Website
- The Defra- Magic Map
- Thames Catchment Flood Management Plan - 2007.
- West London Strategic Flood Risk Assessment - 2018
- L.B. of Hillingdon Preliminary Flood Risk Assessment Report – June 2017.
- L.B. of Hillingdon Surface Water Management Plan -2011

4 SITE VISIT

The site was visited on 26 February 2020. The weather was cloudy and dry. Access was available to all areas of the site, with the exception of the vehicle repair workshop, and a visual inspection was undertaken. A photographic record was made during the visit and this is contained in appendix C.

The client's confidentiality was maintained at all times during discussion with third parties.

5 LOCATION

The site is situated on the western edge of Uxbridge and lies north west of the junction of the Arundel Road and Salisbury Road. Refer to Figure 1.

The National Grid Reference for the approximate site centre is 504700 , 183030.

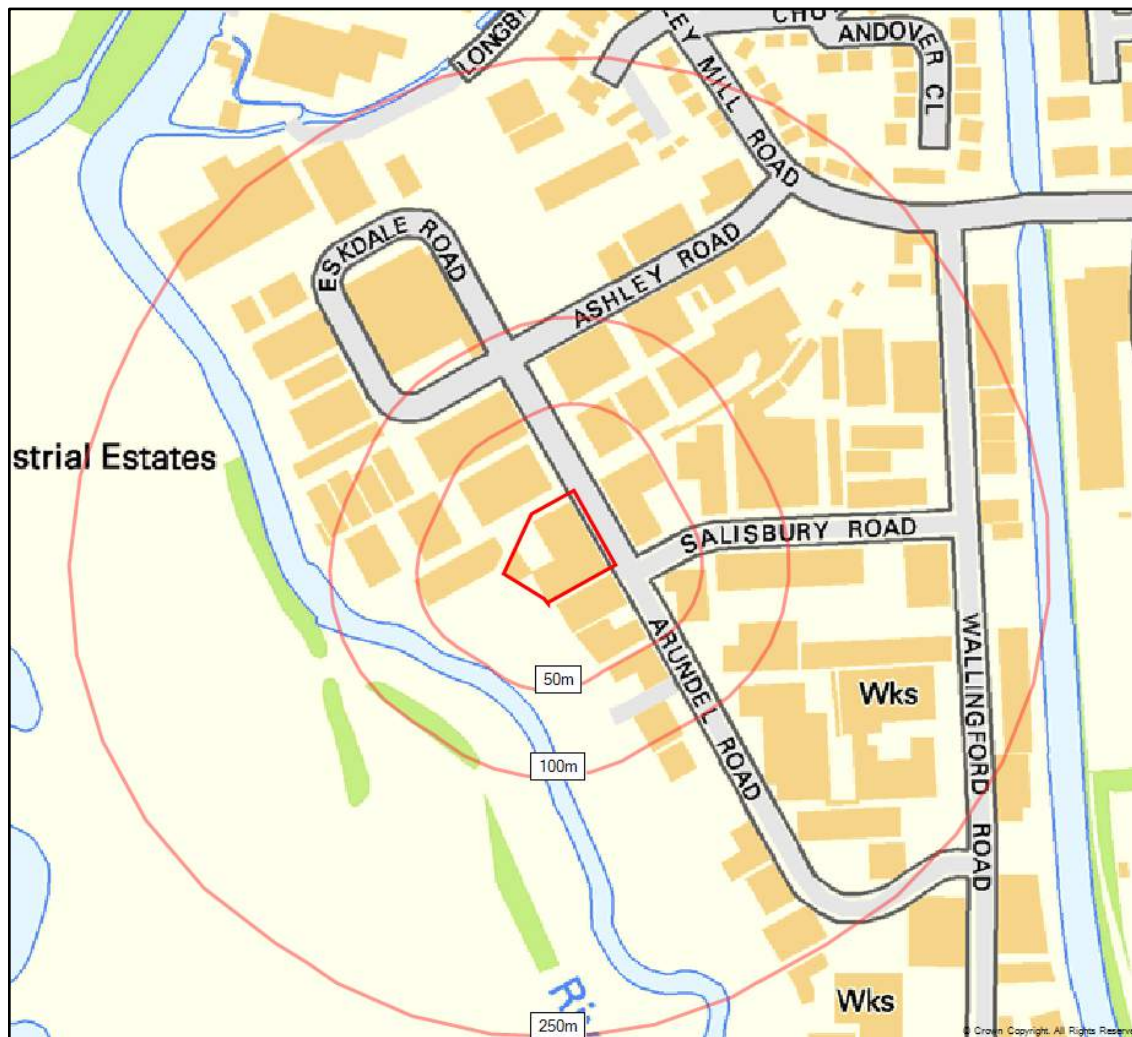


Figure 1: Site Location Plan

6 SITE DESCRIPTION

The site is irregular in plan and occupies 0.24ha.

The site is currently occupied, and in use by a number of businesses including an engineering works, a fabricator of conference equipment, a recording studio and a vehicle repair workshop.

The units form a 'U' shape around a small yard on the north of the site and occupy the greater part of the site. An access road runs along the north edge of the site from Arundel Rd to the yard. The access road and yard are concrete surfaced. There is an electrical sub-station in the yard. There are parking spaces along Arundel road frontage, which is asphalt surfaced, there is also a shipping container located on the frontage.

The main buildings are generally brick built, single storey with pitched roofs with skylights, while the RnR building and the entrance to the Trinity unit have flat roofs. The floors appear to be concrete slabs.



Photograph 1: View of the site from Arundel Road

The north eastern boundary is formed by wooden fencing, dividing the access road and yard area from the adjacent access road to the Chiltern Business Village. The rear of the site is bounded by chain link fencing but is hidden within an area of overgrown vegetation and trees.

The boundary along Arundel Road is undefined and the southern elevation of the building forms the southern boundary.

The estate manager advised that within the vehicle repair workshop there was a tank for waste oil, contained within a bund which was emptied by a contractor and appropriate records maintained.

To the north of the site is the adjacent Chiltern Business Village, and industrial units occupy the area to the east and south. To the west of the site lies an area of overgrown vegetation extending to the nearby river.

The nearby surrounding area is generally industrial with some commercial activity.

No significant visual or olfactory evidence of contamination, such as staining or odours were noted during the visit.

7 GROUND CONDITIONS

7.1 Geology

Reference to the geological survey of Great Britain indicates that beneath made ground, the area generally is underlain by superficial deposits comprising Alluvium which is described as Clay, Silt, Sand and Gravel.

The superficial is underlain by bedrock comprising London Clay Formation described as Clay, Silt and Sand.

7.2 Hydrogeology

The Environment Agency maps show the site to be located over a Secondary A Aquifer in the superficial or drift deposits, in the bedrock they show the site to be over Unproductive Strata.

Secondary A Aquifers comprise 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.

Unproductive Strata are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow.

The Environment Agency maps show the site is not located within a source protection zone of a borehole abstraction point.

7.3 Hydrology

The nearest surface water feature is the River Colne, approximately 50 metres to the south west. The direction of flow is southwards. It is considered there is the possibility for this to be impacted by the site.

The River Quality recorded for the River Colne, from a point approximately 80m southwest of the site sampled in 2000 is given a GQA Grade of River Quality A.

The Grand Union Canal lies approximately 250m to the east of the site. This is unlikely to be in hydraulic continuity with ground water and also considered too distant to be impacted by the site.

The Environment Agency maps show the site is not located within a flood zone.

The British Geological Society data shows the site lies in an area with potential for groundwater flooding to occur at surface.

8 PROPOSED DEVELOPMENT

Plan details for the proposed redevelopment of the site are shown on the RGP Architects drawing contained in appendix B.

The drawing shows a development comprising an industrial building divided into two units with parking facilities for cars, cycle and bin storage. Access to the rear will be gained via a dedicated access from Arundel Road.

The proposed plan indicates the existing substation is to be relocated and that no significant soft landscaping is proposed.

9 PLANNING POLICY

The National Planning Policy Framework (NPPF) promotes sustainable development and as a core principle encourages the effective use of land by reusing land that has been previously developed (brownfield land) provided that it is not of high environmental value. In addition, the following sets out advice from the NPPF that is of relevance to the proposed works.

- Section 5: Delivering a sufficient supply of homes advises that:

To support the Government's objective of significantly boosting the supply of homes, it is important that a sufficient amount and variety of land can come forward where it is needed, that the needs of groups with specific housing requirements are addressed and that land with permission is developed without unnecessary delay.

- Section 14: Meeting the challenge of climate change, flooding and coastal change advises that:

The application of the exception test should be informed by a strategic or site specific flood risk assessment, depending on whether it is being applied during plan production or at the application stage. For the exception test to be passed it should be demonstrated that:

- a) the development would provide wider sustainability benefits to the community that outweigh the flood risk; and*
- b) the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall.*

When determining any planning applications, local planning authorities should ensure that flood risk is not increased elsewhere. Where appropriate, applications should be supported by a site-specific flood-risk assessment. Development should only be allowed in areas at risk of flooding where, in the light of this assessment (and the sequential and exception tests, as applicable) it can be demonstrated that:

- a) within the site, the most vulnerable development is located in areas of lowest flood risk, unless there are overriding reasons to prefer a different location;*
- b) the development is appropriately flood resistant and resilient;*
- c) it incorporates sustainable drainage systems, unless there is clear evidence that this would be inappropriate;*
- d) any residual risk can be safely managed; and*
- e) safe access and escape routes are included where appropriate, as part of an agreed emergency plan.*

10 SEQUENTIAL AND EXCEPTION TEST

10.1 Sequential Test

From reference to the Environment Agency Flood Maps, the proposed development lies within an area likely to be affected by a major flood from fluvial or tidal sources with up to a 1 in 1000 (0.1%) chance of occurring each year. Therefore, in accordance with Table 1 of the technical guidance to the NPPF (TGNPPF), the site is defined as being in Flood Zone 1, which means it can be developed for essential infrastructure, water-compatible, less vulnerable, more vulnerable and highly vulnerable land uses as classified in Table 2 of the TGNPPF.

The proposed development will provide commercial premises and therefore in accordance with Table 2 of the TGNPPF, would fall within the less vulnerable classification.

As shown by Table 3 of the TGNPPF, the vulnerability classification is compatible with Flood Zone 1 and is therefore the proposed development is considered to be appropriate.

10.2 Exception Test

The proposed development is compatible with flood zone 1 and therefore application of the exception test is not necessary. However, in accordance with Section 14 of the National Planning Policy Framework this FRA will demonstrate that:

- The development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere and, where possible, will reduce flood risk overall.
- The development will be appropriately flood resilient and resistant, including safe access and escape routes where required, and that any residual risk can be safely managed, including emergency planning; and it gives priority to the use of sustainable drainage systems.

11 STRATEGIC FLOOD RISK

11.1 West London Strategic Flood Risk Assessment

The West London Boroughs of Barnet, Brent, Ealing, Harrow, Hillingdon and Hounslow joint Strategic Flood Risk Assessment (SFRA) was produced in order to provide a strategic overview of all forms of flood risk throughout the study area, now and in the future and to provide the information required to apply the sequential and exception tests and identify the level of detail required for a site-specific FRA. The SFRA is found on line, the maps referred to herein can be found at <https://westlondonsfra.london/mapping-tool/>

This SFRA is a planning tool that enables the Council to identify sites for development away from vulnerable flood risk areas. The assessment focuses on the existing site allocations within the Borough but also sets out the procedure to be followed when identifying future sites for development. The SFRA will assist the Council to make the spatial planning decisions required to inform the Local Development Framework (LDF).

In addition to informing site allocations the SFRA will inform decision making on planning applications on non-allocated sites, strategic flood alleviation measures and other measures to reduce flood risk to existing development, planning requirements for new development and emergency planning.

There are two main fluvial rivers in Hillingdon, the River Crane and River Colne. The Environment Agency policy to managing flood risk in the long term is to take action to ensure the flood risk does not increase from the current level.

In the fluvial and Tidal Flood Risk Map contained within the SFRA the site is shown to be located in Flood Zone 1. According to the map part of the site lies within or near an area of flood risk from the Lower River Colne in the event of a 1 in 100-year flood event with a 70% increase in peak river flow. However, the majority of the site does not lie within this zone and the risk is considered negligible.

The SFRA Sewer, Groundwater & Artificial Flood Risk Web Map does not indicate that there have been any reported incidents of groundwater flooding to the Environment agency since 2017, however does show that there is a greater than 75% susceptibility to groundwater flooding and that there is an Increased Potential for Elevated Groundwater due to Permeable Superficial deposits.

The map does not indicate that there is a risk from flooding from reservoirs.

12 LOCAL FLOOD RISK

12.1 L.B. Hillingdon Preliminary Flood Risk Assessment

The Hillingdon Council Preliminary Flood Risk Assessment (PFRA) was initially published in 2011 and has since been reviewed in 2017. While the original report was not available at the time of writing this report however the addendum was and the maps from this report are contained in Appendix F.

The PFRA is a high-level screening exercise to locate areas in which risk of local flooding is of significance and warrants further examination through the production of flood risk maps and flood risk management plans. Local flood risk is defined as the risk originating from surface water runoff, groundwater, ordinary watercourses and lakes and ponds, but not sewers unless the flooding is caused by rainwater affecting the system or flooding originating from the water supply system. The PRFA also informs the local risk management strategy and any updates to the strategic flood risk assessment.

Appendix A 4.1.1 indicates that there has been between 16-25 sewer flood incidents between 2011 and 2017 in the UB8 2 postcode area although Appendix A 1.1.5 would not indicate that they are in the near vicinity of the site.

12.2 Hillingdon Council Surface Water Management Plan

The Hillingdon Council Surface Water Management Plan (SWMP) outlines a surface water management strategy and long term action plan for the management of local surface water flood risk and is used to determine investment, maintenance, land-use planning, emergency planning and future developments to ensure the long term and sustainable management of water that will also assist in managing surface water flooding and reducing the impact of flooding should it occur.

The SWMP uses modelling from the Drain London Project to analyse the impact of heavy rainfall events across the Borough by assessing flow paths, velocities and catchment response. The main surface water flood mechanism in the Borough is pluvial flooding where water from the extreme rainfall event is not able to drain into the ground due to the heavy urban development in the Borough.

The results of the modelling have been used to identify Local Flood Risk Zones (LFRZs) in the Borough where flooding affects houses, businesses and infrastructure. From this 17 Critical Drainage Areas (CDAs) have been identified where combined sources of flood risk (surface water, groundwater, sewer, Main River) causes flooding in LFRZs during severe weather. Figure 1.2 of the SWMP shows that the site does not lie within a CDA and is therefore unlikely to be affected by the issues identified.

The SWMP contains mapping showing the predicted likelihood and extent of surface water flooding across all the borough. The maps are extracted from the Drain London Project and the SWMP advises that they are good at predicting overland flow paths and areas where surface water flooding might occur in local depressions and are adequate at representing the flooding from drains, small watercourses and ditches (ordinary watercourses). The maps do not represent the mechanisms that cause sewer flooding although sewer flooding can be more likely to occur in low lying areas with flat gradients; the same locations where surface water ponds. The coarse nature of the source data used, means that the maps are not considered detailed or accurate enough to reliably predict flooding at individual properties.

The SWMP contains mapping, produced for the Drain London Project, which shows areas with increased potential for groundwater to rise sufficiently to interact with the ground surface or to be within 2m of the ground surface. Figure 10.2 shows the site in, or adjacent to an area of permeable superficial deposits which have an increased potential for elevated groundwater. The notes in Figure 10.2 inform that such a rise in the groundwater level could lead to the following consequences:

- flooding of basements of buildings below ground level;
- flooding of buried services or other assets below ground level;
- inundation of farmland, roads, commercial, residential and amenity areas;
- flooding of ground floors of buildings above ground level; and
- overflowing of sewers and drains

The notes also advise that areas without increased potential can be regarded as having low potential but should not be regarded as having no potential for elevated groundwater. The SWMP advises that the mapping techniques used aims to identify only those areas with the greatest potential for elevated groundwater and where there is high confidence in the assessment.

The SWMP advises that in areas with combined sewers, sewer flooding can occur even for relatively small events such as the 1 in 2 return period and where sewers are relatively high when compared to their connections to property, particularly basements, backflow can occur

causing internal flooding. Figure 9.2 of the SWMP shows that there have been between 21 and 50 sewer flood incidents in the UB8 2 postcode area.

Figures from the Surface Water Management plan is contained in appendix E.

12.3 Environment Agency Information

Environment Agency Interactive mapping

The interactive mapping available from the Environment Agency Website provides the following information:

The site lies within an area at risk from tidal flooding that has less than 0.1% (1 in 1000), chance of occurring each year, or from fluvial flooding that has a 0.1% (1 in 1000), chance of occurring each year and is therefore in an area designated as Flood Zone 1.

The Environment Agency categorise the probability or likelihood of flooding as very low if the chance of flooding is less than 1 in 1000 (0.1%) in any given year.

The surface water mapping shows that the site itself and the immediate surrounding area have a very low risk of flooding, which means that the chance of flooding each year is less than 1 in 1000 (0.1%). In case of a high medium and low risk flooding event, the site will be safe from surface water flooding.

The Interactive mapping also indicates that the site is safe from reservoir flooding.

Product 4 Data

The data provides the following information:

- A flood map that shows the site within the outline of flood zone 1. This zone represents land assessed as having a less than 0.1% (1 in 1000) annual probability of fluvial flooding.
- A flood map showing that the site lies within the 0.1% Annual Exceedance Probability (AEP) with an allowance for climate change.

Environment Agency Information is contained in Appendix D.

12.4 Local Authority enquiry

A request for information was sent to the local authority however a response had not been received at time of writing this report.

12.5 Planned Works

Any planned or ongoing maintenance or upgrade works can be viewed at the roadworks.org website.

There are no planned works shown in the near vicinity of the site shown on the website for the next 12 months.

13 FLOOD SOURCES

Annex C of PPS25 identifies significant forms of flooding that should be considered by a flood risk assessment and these are addressed hereunder.

13.1 Rivers

Flooding from river (fluvial) sources occurs when the volume of water flow exceeds the capacity of the river channel. Most rivers have a flood plain, which is a natural area that water will occupy in the event of a flood. Flooding in these areas can occur very rapidly where there are steep gradients, or very gradually in large relatively flat areas. The local land use and forms of development together with topography are the main influences on the velocity and volume of water and the direction of flow in the event of a flood. The 1 in 100 year flood event is normally taken into consideration with respect to fluvial flooding.

The SFRA advises that peak fluvial flows are likely to increase by around 20% over the next 50 to 100 years however maps to show an increase up to 70%. The site in general remains in an area safe from the climate change effect on fluvial flooding with only a portion in the east of the site at risk from a 1 in 100-year flood event with a 70% increase in peak river flow.

13.2 Seas

Flooding to low-lying land from the sea and tidal estuaries is caused by storm surges and high tides. The severity of tidal flooding is dependent upon several factors including tide heights, weather systems, wind and wave conditions and the effectiveness of defence systems. Tidal defences can be overtopped or breached during severe weather conditions and deep fast

flowing flood waters can occur with very little warning, because of this the 1 in 200 year flood event is considered in respect of tidal flooding.

The Environment Agency interactive mapping shows that the site does not lie within an area at risk from tidal flooding. The Environment Agency categorise the likelihood of flooding as very low if the chance of flooding is less than 0.1% (1 in 1000).

The SFRA advises that most of the Borough is protected from events in the Tidal Thames to a standard of over and above the 0.1% annual probability flood (1 in 1000 year event).

13.3 Surface Water

Flooding from surface water generally occurs when rainwater is unable to soak into the ground or enter into the drainage system and therefore runs off the land in an uncontrolled manner. This run off occurs mainly during periods of intense rainfall and is often the cause of localised flooding.

The SFRA shows the results of modelling undertaken to provide an indication of surface water flooding should a 0.1% AEP event occur and also when climate change is taken into consideration. In both cases the mapping indicates the potential for flooding on or close to the site to be safe or a depth of water over 0.9m.

The Environment Agency mapping indicates the site has a low chance of flooding from surface water.

The available information generally confirms that the site is at low risk should the 1 in 1000 year event occur and indicates that there is no increased risk when climate change is taken into consideration.

13.4 Groundwater

Flooding from groundwater occurs when water levels in the ground rise above the surface. This occurs most commonly in low-lying areas, which are underlain by permeable rocks (aquifer). These can be extensive regional aquifers such as chalk or sandstone, or sands and gravels such as occur in valley bottoms and underlain by less permeable rock.

The SFRA does not indicate that there have been any reported incidents of groundwater flooding in close proximity to the site.

Given the superficial geology of the area around the site, together with the potential for groundwater to interact with the ground surface there is considered to be some potential for groundwater flooding to occur in extreme circumstances.

13.5 Sewers

Rainwater generally drains into the local sewer system and flooding can occur in extreme events, such as periods of intense or prolonged rainfall, if the volume of run off due to insufficient capacity overwhelms the system, or if the sewer is blocked.

The SFRA has not identified any flooding from sewers either on the site or in the surrounding area. Accordingly, there is not considered to be a significant risk of flooding from sewers.

13.6 Reservoirs, Canals and other Artificial Sources

Flooding from artificial sources such as reservoirs and canals is generally a risk when the artificial source retains water above ground level and can occur if there is a breach or failure of the retaining structure. Artificial sources can also include mining, quarrying and mineral extraction as well as some industrial processes and flooding is often the result of operational difficulties such as pump failure.

The SFRA advises that the site is not at risk from flooding from artificial sources such as canals and reservoirs.

The Environment Agency interactive mapping shows that the site is safe from reservoirs flooding.

Based on the information currently available there is not considered to be a significant risk of flooding from reservoirs Canals, or other artificial sources.

14 RISK ASSESSMENT

A risk matrix is used to combine the assessment of probability and consequence into an indicative risk level for each of the identified flood sources. The definitions for qualitative flooding probability and consequence used in the DTSFRA have been adopted for this FRA and these definitions are presented below.

14.1 Category Definitions

Qualitative Probability	Definition
Likely	Events of common occurrence that an individual may experience a few times in their lifetime. This corresponds approximately to an annual probability of 10% - 4% (i.e. return periods of between 10 and 25 years)
Infrequent	Events that an individual may experience once in a lifetime, approximately equivalent to the 1% annual probability event (i.e. return period of 1 in 100 years)
Possible	Events that may be seen once in every few lifetimes. These correspond to approximately a 0.1% annual probability (1 in 1000 year event). This category may also include the combination of an infrequent event (1% annual probability) in combination with a failure of flood defences designed to protect against such an event.
Remote	Events that are of a low order of likelihood (approximately 0.1% annual probability), but combined with a failure of flood defences designed to protect against such an event.
Very remote	Extreme flood events with an annual probability of less than 0.1%.

Qualitative Consequence	Definition
High	Serious damage to property and high risk of injury and loss of life. High depths of floodwater (>1m) and high flood flow velocities.
Medium	Moderate damage to property, moderate flood depths (<1m) and flow velocities. Some risk of injury.
Low	Minor damage to property, low depths of floodwater (<0.5m) and low flow velocities. Minor risk of injury.
Negligible	No damage to property or risk of injury.

14.2 Risk Matrix

Consequence	Probability				
	Likely	Infrequent	Possible	Remote	Very remote
High	Very High	Very High	High	High	High
Medium	High	High	Medium	Medium	Medium
Low	Medium	Medium	Low	Low	Negligible
Negligible	Low	Negligible	Negligible	Negligible	Negligible

14.3 Risk Assessment

Based upon the qualitative probability and consequence definitions, the risk assessment provides the site with a level of risk determined by the risk matrix, for each of the identified flood sources.

Flood Source	Probability	Consequence	Risk level
Rivers	Very remote	Low	Negligible
Seas	Very remote	Low	Negligible
Land (surface water)	Very remote	Low	Negligible
Sewers	Very remote	Low	Negligible
Groundwater	Remote	Low	Low
Reservoirs, Canals and other artificial sources	Very remote	Negligible	Negligible

15 MITIGATION AND MANAGEMENT PROPOSALS

15.1 Principles

It is important that new developments, particularly in the higher flood risk zones, are proofed against future uncertainty for their lifespan, which is assumed to be 75 years for commercial and industrial developments and 100 years for residential developments. Therefore it is advised that proposed flood mitigation measures associated with developments are reviewed at the detailed FRA stage, paying attention to the potential implications of future changes in climate and land use. The impact of climate change on drainage networks should also be considered as existing drainage systems and flood barriers will not provide the same level of protection in years to come as now. The application of the precautionary principle and the provision of freeboard and flood resistance and resilience in buildings at design stage can mitigate the impact of future increases in flood risk at relatively low cost at the construction stage.

The risk assessment has identified a negligible risk of flooding from rivers, seas, surface water, sewers, groundwater and reservoirs, canals and other artificial sources.

15.2 Building Layout

The plans in appendix B show the development of a ground floor commercial area; there are no residential or sleeping areas.

15.3 Resilient and resistant construction

In order to provide mitigation against floodwater damage in any event, it is recommended that where appropriate, the following design initiatives be incorporated into the new building works:

- Water resilient material in structural elements;
- Cracks and joints to be sealed with a suitable material;
- Floor surfaces to have tiled finish;
- Electrical appliances and fittings, service panels, boilers and supplies should be installed at high level;
- Plastic, metal and other easily replaceable alternatives to chipboard or MDF;
- Lime plaster or cement render rather than gypsum plaster;
- Installation of positive pumped devices to foul and surface water drain systems
- Inclusion of emergency Sump and Pump equipment.

Retrofitting properties in this way after flooding is common practice. These measures are not necessarily more expensive than conventional techniques, but will significantly reduce the damage, cost and time to repair should a property be flooded. Reference should be made to BS 85500:2015 Flood resistant and resilient construction, this guide to improving the flood performance of buildings sets out guidance for improving the flood performance, resistance and resilience of buildings.

15.4 Protection from Flooding

Although the site is considered likely to be affected by ground water flooding only in extreme circumstances the overall risk level from such an event is categorised as medium therefore in mitigation consideration should be given in the design for the inclusion of proprietary purpose made protection boards to doorways and windows with low cills and similar air vent protection wherever appropriate. Slight raising of the ground floor slab may also be beneficial to mitigate against shallow flood water.

15.5 Maintenance Regime

A robust maintenance regime should be instigated to support any mitigation and management proposals. The regime should include routine servicing and inspection with particular attention given to emergency pump equipment.

The regime should include routine servicing and inspection and responsibility for maintenance and emergency repairs should be clearly identified and contact details included in the emergency plan.

15.6 Drainage

The site is currently covered by concrete hardstanding and therefore the proposed development will not increase the impermeable area. A drainage strategy should be designed to demonstrate that the site can be drained in a sustainable manner, and that through development flood risk to properties downstream of the site will not be exacerbated. A drainage strategy should include the following information:

- Permitted discharge rates;
- Storm water runoff calculations;
- Attenuation required to restrict runoff to permitted discharge rates;
- Proposed means of attenuation (SuDS techniques);
- Distribution of storm water attenuation across the site; and,
- Design standards and parameters of the proposed storm drainage techniques.

This list should not be considered as exhaustive and may require additional elements to be included depending on the mitigation required.

15.7 Flood Warning

The risk from all forms and sources of flooding has been assessed as low or negligible and therefore it is not considered necessary for the development to have a flood warning system or an emergency plan. However, consideration could be given to developing a simple emergency plan.

15.8 Emergency Plan

It is recommended that an Emergency Plan is prepared for the development, which takes cognisance of existing local flood incident management strategies and compliment any major incident plans already in place.

The Emergency Plan should be available to all occupants of the site with information displayed in communal areas. It should include the following information and generally accord with the Environment Agency Flood Plan Advice and the Flood warning and Evacuation Plan Requirements in the RBG Developers Guide for Flood Risk (refer to appendix J).

- Roles and responsibilities of organisations involved in local flood risk management
- Detail of flood sources and expected flood water depths and hazard rating
- Flood risk management measures
- Evacuation Routes
- Contact details
- Individual flood plan pro-forma

15.9 Emergency Access and Escape

This report has identified the possibility of groundwater or sewer flooding should an extreme rainfall event occur.

The potential depth of groundwater or sewer flooding is not quantified by any of the reference sources.

Notwithstanding the information provided by the PFRA mapping there are areas immediately adjacent to the site, that are shown to be unaffected by any source of flooding and therefore it is not anticipated that emergency access and escape routes will be significantly restricted.

15.10 Climate Change

The SFRA advises that peak fluvial flows are likely to increase by around 20% over the next 50 to 100 years however maps to show an increase up to 70%. The site in general remains in an area safe from the climate change effect on fluvial flooding with only a portion in the east of the site at risk from a 1 in 100-year flood event with a 70% increase in peak river flow.

Based on the available information the proposed mitigation and management proposals are considered sufficient to address climate change for the likely lifespan of the development.

16 RESIDUAL RISK

Residual risk is the risk remaining after implementation of all risk management and mitigation measures. It can arise due to the failure of flood management infrastructure, such as breach, or blockage; or severe flood events that exceed the design standard of flood defences, such as overtopping.

According to the SFRA the site is in tidal Flood Zone 1, and at low residual risk so the SFRA should be considered an acceptable assessment of residual risk. The site is defended from all tidal risk and is at low residual risk.

Provided that the appropriate mitigation and management proposals recommended in Section 13.0 have been incorporated into the design there is not considered to be any residual risk.

17 FLOODPLAIN AND FLOW ROUTES

17.1 Floodplain

Floodplain is the area that would naturally be affected by flooding if a river rises above its banks, or high tides and stormy seas cause flooding in coastal areas.

The site lies in an area classified as flood zone 1 and is therefore not considered to be floodplain.

17.2 Flow Routes

In extreme flood events flood flow routes can form on roads, pathways and in passages between buildings.

Due to the natural topography of the area around the site, it is anticipated that in an extreme event there will be surface water flow in a southwest direction along Ashley Rd. The proposed development will not change the building outline and therefore any existing flow route will be not be adversely affected.

18 CONCLUSIONS

The site lies within an area at risk from tidal, fluvial and river or sea flooding that has less than 0.1% (1 in 1000) chance of occurring each year and is therefore in an area designated as Flood Zone 1.

The risk assessment has determined that there is a low level of flood risk to the site from groundwater. The other significant sources; rivers, seas, surface water, sewers and reservoirs and artificial sources present a negligible level of risk.

The use of appropriate flood protection measures and water resilient and resistant construction will protect the development in the event of flooding and ensure that the site is safe without increasing flood risk elsewhere.

There are areas immediately adjacent to the site that are unaffected by any source of flooding and it is not anticipated that emergency access and escape routes will be significantly restricted.

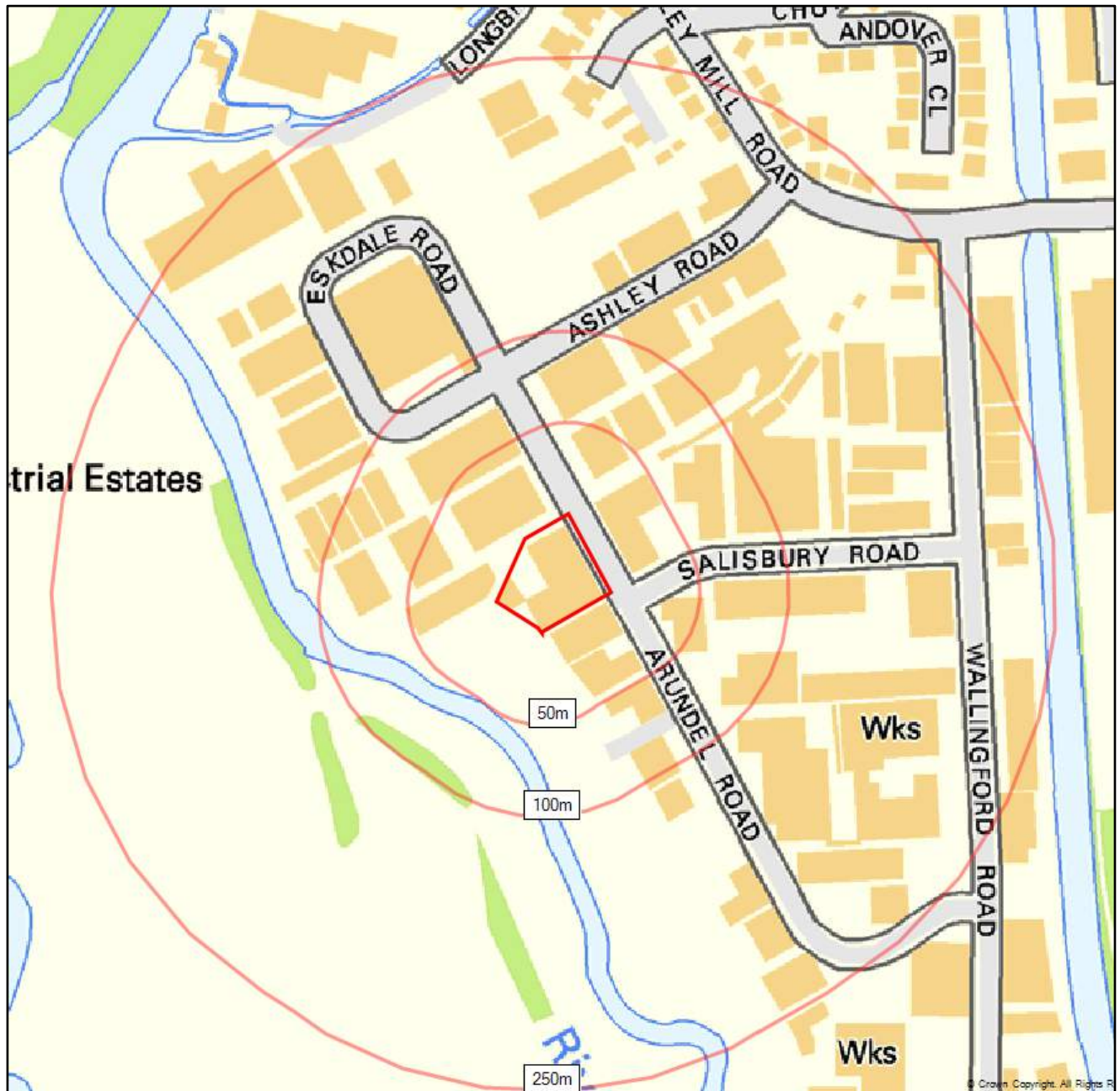
Therefore, the proposed development will satisfy the requirements of the National Planning Policy Framework and is considered suitable for the proposed residential use.

*This document has been prepared for the titled project or named part thereof and should not be relied upon or used for any other project without an independent check being carried out as to its suitability and the prior written authority of GO Contaminated Land Solutions Ltd being obtained. No responsibility or liability is accepted for the consequences of this document being used for a purpose other than that for which it was commissioned. Any person using or relying on this document for such other purpose will by such use or reliance be taken to confirm his agreement to indemnify GO Contaminated Land Solutions Ltd for all loss or damage resulting therefrom. GO Contaminated Land Solutions Ltd accepts no responsibility or liability for this document to any party other than **Cyril Leonard ltd** by whom it was commissioned.*



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Appendix A – Site Location Plan

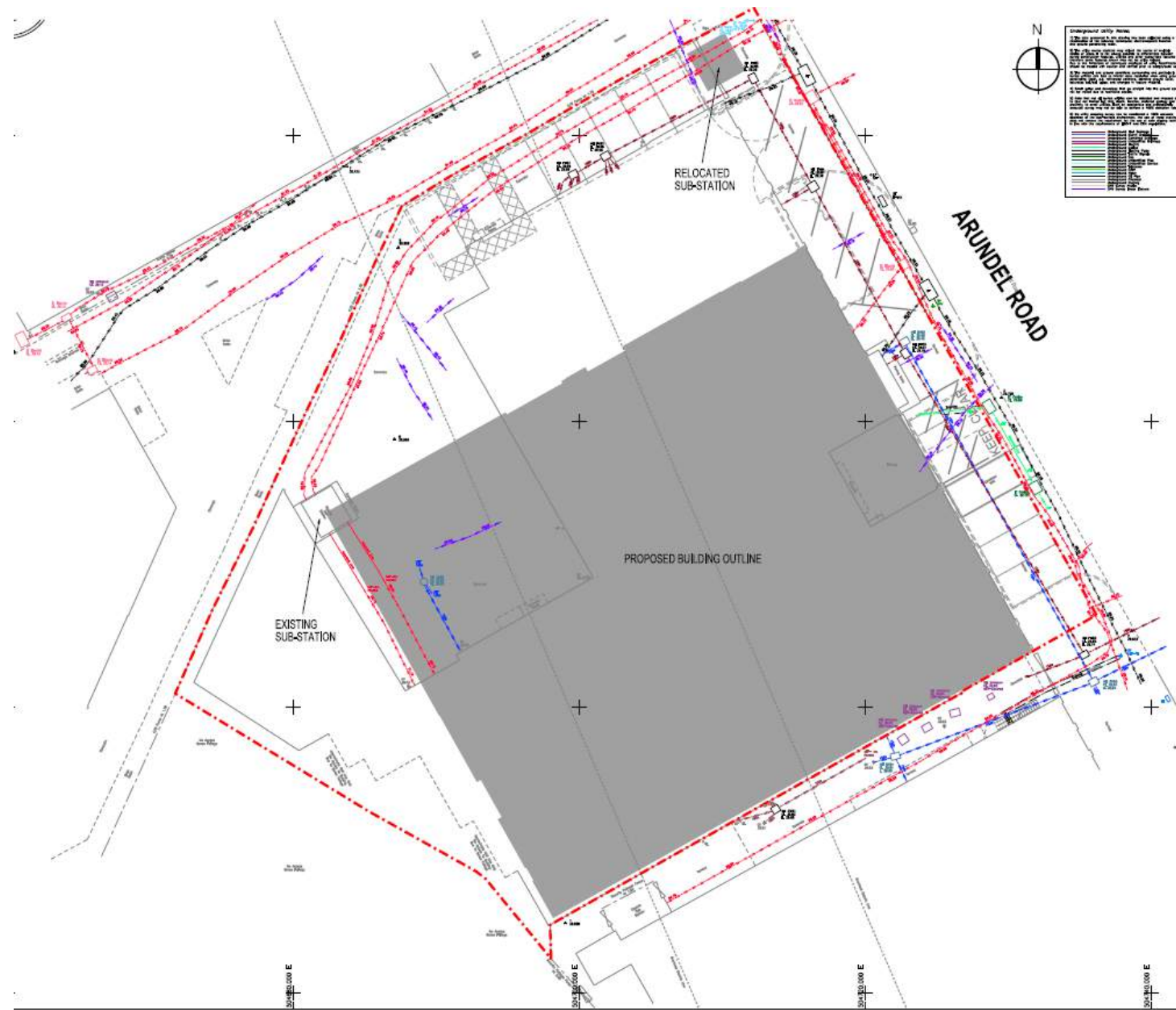




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Appendix B – Proposed Site Plan

DRAFT FOR COMMENT ONLY



Underground utility notes

1. All utilities shown are based on the latest available information and are not to be taken as a guarantee of their location or depth.

2. The depth of all utilities shown is based on the latest available information and is not to be taken as a guarantee of their location or depth.

3. The depth of all utilities shown is based on the latest available information and is not to be taken as a guarantee of their location or depth.

4. The depth of all utilities shown is based on the latest available information and is not to be taken as a guarantee of their location or depth.

5. The depth of all utilities shown is based on the latest available information and is not to be taken as a guarantee of their location or depth.

6. The depth of all utilities shown is based on the latest available information and is not to be taken as a guarantee of their location or depth.

7. The depth of all utilities shown is based on the latest available information and is not to be taken as a guarantee of their location or depth.

8. The depth of all utilities shown is based on the latest available information and is not to be taken as a guarantee of their location or depth.

9. The depth of all utilities shown is based on the latest available information and is not to be taken as a guarantee of their location or depth.

10. The depth of all utilities shown is based on the latest available information and is not to be taken as a guarantee of their location or depth.

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SITE SPECIFIC HAZARDS

IN ACCORDANCE WITH THE REQUIREMENTS OF THE CONSTRUCTION (CIVIL) REGULATIONS 2015 THE FOLLOWING SIGNIFICANT RESIDUAL HAZARDS HAVE NOT BEEN DISCLOSED OUT OF THIS PROJECT AND MUST BE TAKEN INTO CONSIDERATION BY CONTRACTORS PLANNING TO UNDERTAKE THE WORKS SHOWN ON THIS DRAWING:



- SITE BOUNDARY
- PROPOSED BUILDING OUTLINE

DRAWING TO BE READ IN CONJUNCTION WITH
LASER SURVEYS TOPO SURVEY N8574/1
UNDERGROUND SERVICES PLAN N8574/3
AND UTILITY SEARCH 426839

A	21.01.20	UPDATED WITH SURVEY	WCS
REV.	DATE	NOTES	INT.

CLIENT / PROJECT
CYRIL LEONARD
UXBRIDGE INDUSTRIAL ESTATE
BARTON BUILDINGS, UB8 2SN

DRAWING TITLE
SITE CONSTRAINTS PLAN

STATUS FOR INFORMATION

DATE	20.01.20	DRAWN	ME	SCALE @ A3	1:250
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PROJECT NUMBER	UNIT / BLOCK	CL / SPS CODE	TYPE & NUMBER	REVISION LETTER
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DRAWING NO.
10773 P 105

Mr Leonard	Mr Leonard	Mr Leonard	Mr Leonard	Mr Leonard
Mr Leonard	Mr Leonard	Mr Leonard	Mr Leonard	Mr Leonard

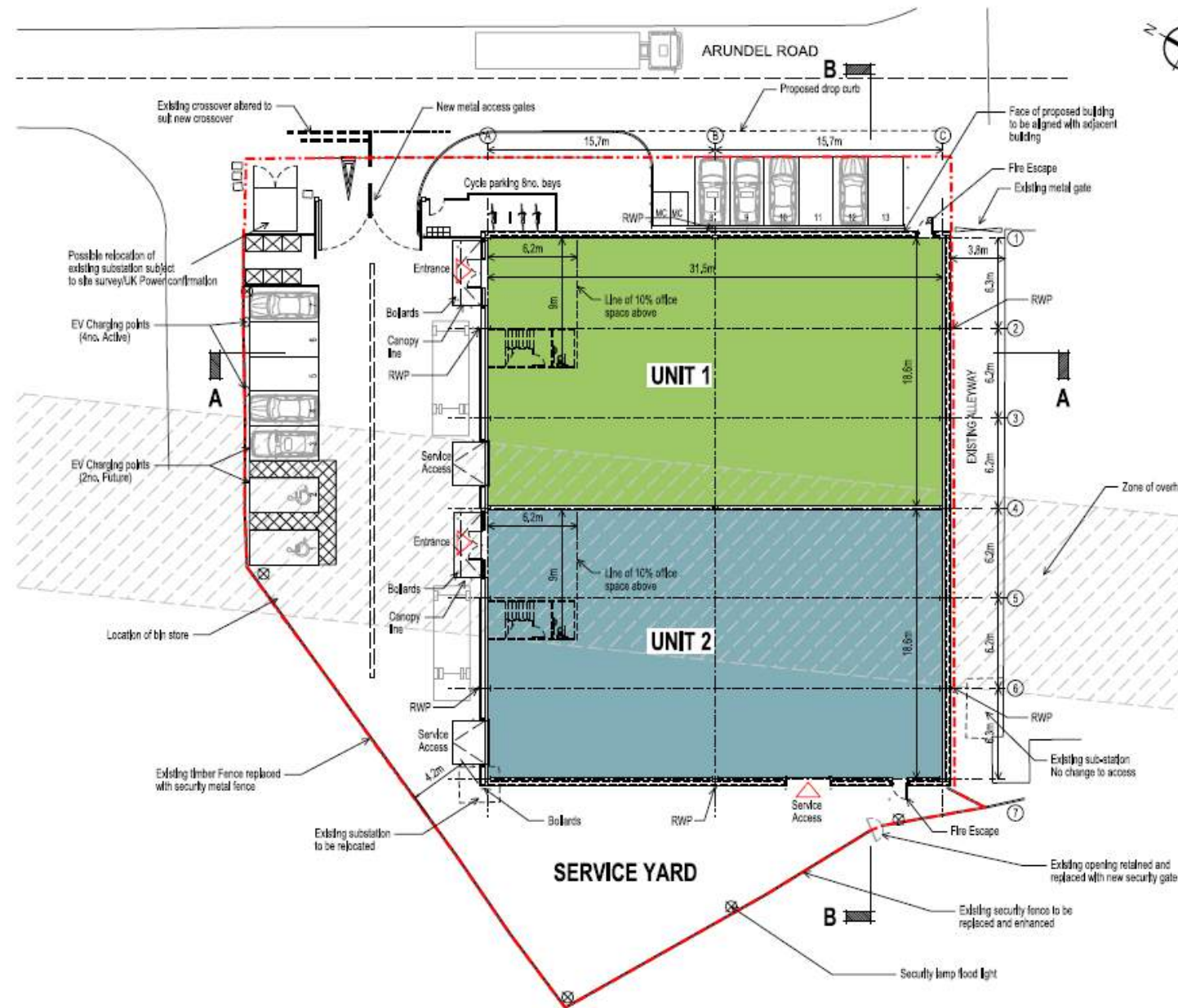
THE RATCLIFFE GROVES PARTNERSHIP

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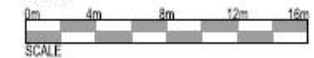
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SITE SPECIFIC HAZARDS

IN ACCORDANCE WITH THE REQUIREMENTS OF THE CONSTRUCTION (OSHA) REGULATIONS 2005, THE FOLLOWING SIGNIFICANT RESIDUAL HAZARDS HAVE NOT BEEN IDENTIFIED OUT OF THIS PROJECT AND MUST BE TAKEN INTO CONSIDERATION BY CONTRACTORS PLANNING TO UNDERTAKE THE WORKS SHOWN ON THIS DRAWING.



PROPOSED GROSS INTERNAL AREA

584 sqm / 6,286 sqft

584 sqm / 6,286 sqft

TOTAL 1,168 sqm / 12,572 sqft
EXISTING (1,437 sqm / 15,467 sqft)

--- Site Boundary

⊗ Security lamp flood light

12no. car parking spaces,
including 2no. disabled bays and 4no. Active / 2no.
Future EV charging bays
2no. motorcycling bays

E	12/05/19	EXISTING PEDESTRIAN GATED ACCESS AND SECURITY FLOOD LIGHTS ACCESS	CP
D	27/11/19	GENERAL AMENDS FOLLOWING MEETING ON 24/11	JT
C	21/01/20	GENERAL AMENDS FOLLOWING SURVEY	ME
B	26/05/19	GENERAL AMENDMENTS	ME
A	21/05/19	Service door added to Unit 2	JT
REV.	DATE	NOTES	INT.

CLIENT PROJECT
CYRIL LEONARD
UXBRIDGE INDUSTRIAL ESTATE
BARTON BUILDINGS, UB8 2SN
DRAWING TITLE
PROPOSED GROUND FLOOR PLAN

STATUS PLANNING ISSUE

DATE	16/05/19	DRAWN	JT	SCALE @ A3	1:250
PROJECT NUMBER	10773	UNIT / BLOCK	P	TYPE A NUMBER	102
REVISION LETTER					E

DRAWING NO.				
10773	P	102	E	
Site Location Plans	L	On Plot	P	Revision
Sections	B	Date	D	Photo Colour

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Appendix C – Photographs



Arundel Road Frontage, Access Road, North Boundary & adjacent site to the North



View Southeast towards the Site



Storage building in eastern part of site



Inside the storage building



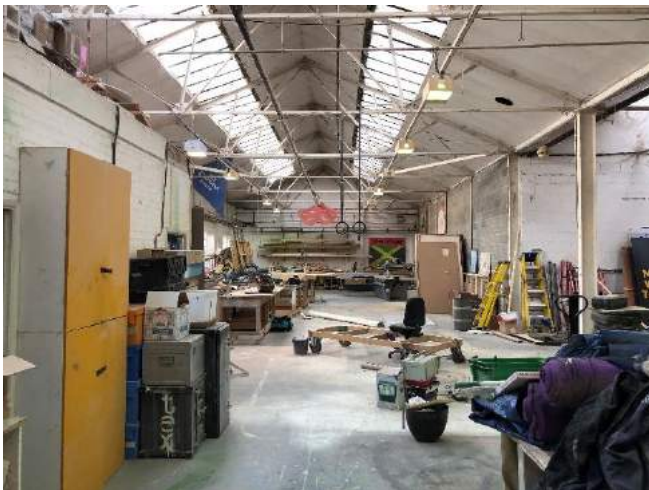
North western boundary and rear of ADR Engineering building (behind RnR Studio)



View across rear yard



Views inside ADR Engineering building



Inside Trinity building



Electricity sub-station housing, in rear yard



Entrance to RnR studio from Arundel Road



Front of Trinity works on Arundel Road



View along side of Trinity Building (Southeast Boundary)



Rear of storage building, view from outside of eastern end of site.



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Appendix D – Sequential and Exceptional Test

PPS 25 states that when applying the Sequential Test for individual planning applications the following should be considered:

- 4.20 Planning applications should be determined in accordance with development plan policies. Where plans and policies have been sequentially tested using evidence from SFRA's the application should be relatively straight forward. The site-specific FRA will show how the proposal meets the requirements of PPS25 and the plan policies.
- 4.21 Where applications are brought forward on sites not allocated in the plan, LPAs should consider the flood risk implications of the proposal, including applying the Sequential Test.
- 4.22 Where a site has not yet been sequentially tested in the LDD, the Sequential Test will need to be applied at the individual site level. In these cases the developer will need to provide evidence to the LPA that there are no other reasonably available sites where the development could be located. The LPA applies the Sequential Test to the application. If the proposed development is needed for wider sustainable development reasons in flood risk areas it must then satisfy the three criteria of the Exception Test, set out in PPS25 (annex D, paragraph D9), to ensure that the development would be safe for its occupants, and would not increase flood risk.
- 4.23 Another instance when the Sequential Test will need to be applied to individual planning applications is where the use of the site being proposed is not in accordance with LDD allocations and policies. For example, if housing is proposed on a site allocated for less vulnerable industrial uses.
- 4.24 It is the responsibility of the developer to assemble the evidence for their application to allow the LPA's planning officer to carry out the Sequential Test. This is likely to include evidence:
- on the flood risk to the site. (The starting point for this will be the Environment Agency's Flood Map. It should be borne in mind that this map does not cover all sources of flooding such as surface water flooding or groundwater flooding. If a SFRA has been produced this should build on the Environment Agency Flood Map and include flooding from all sources. Site-specific FRAs may also be available from previous applications made);
 - on the availability of 'reasonably available' (suitable developable and deliverable) sites in the relevant area with a lower flood risk that could be used for the development;
 - the vulnerability classification of the development, bearing in mind that a mixed use development could contain various vulnerabilities (table D.2. of PPS25);

- if it is likely that the Exception Test will need to be applied, evidence to show that wider sustainability benefits to the community outweighs the flood risk; and
- that the development is safe and residual flood risk can be overcome to the satisfaction of the Environment Agency and other stakeholders.

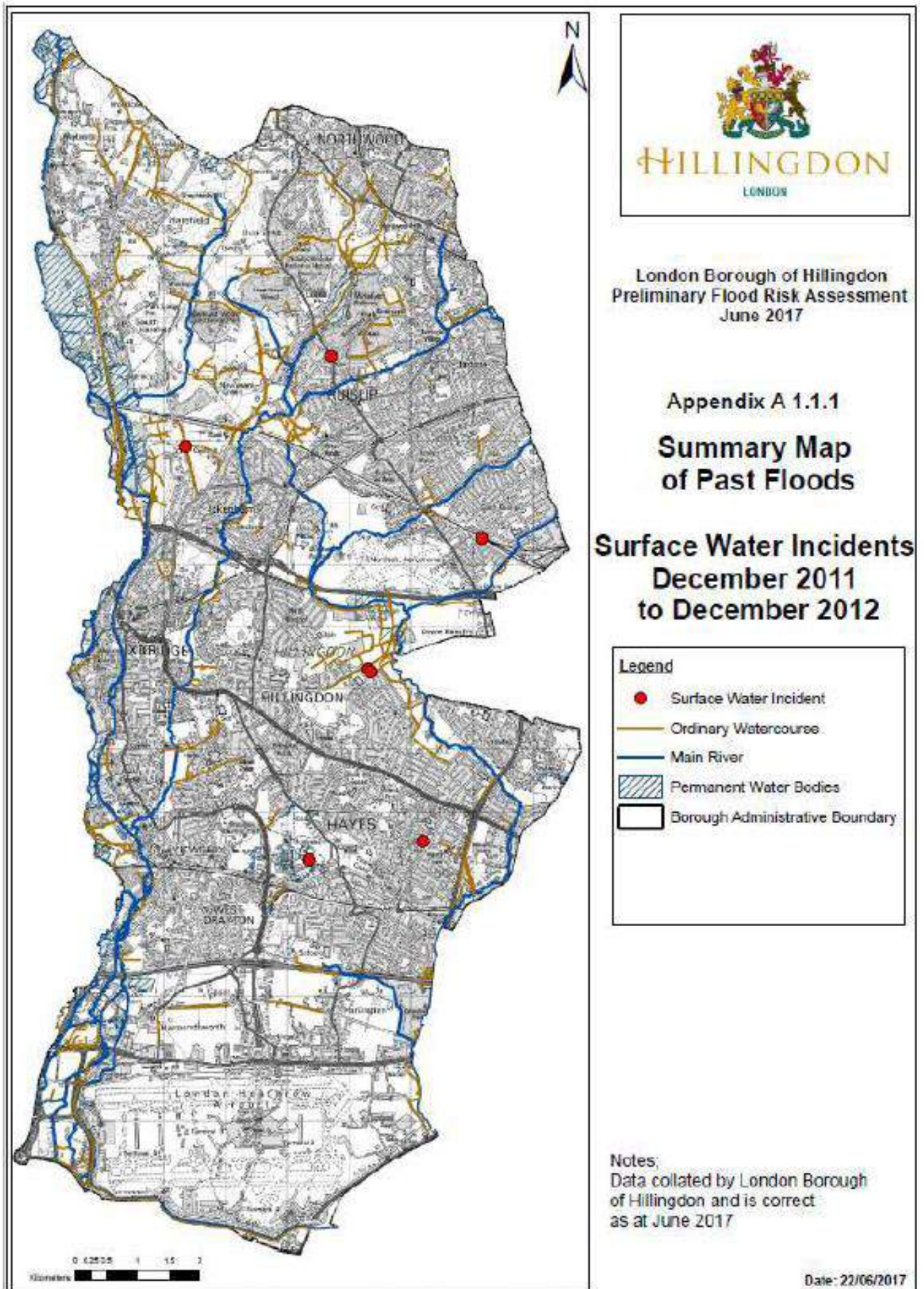
PLANNING POLICY STATEMENT 25 PRACTICE GUIDE | The Sequential and Exception Tests 75

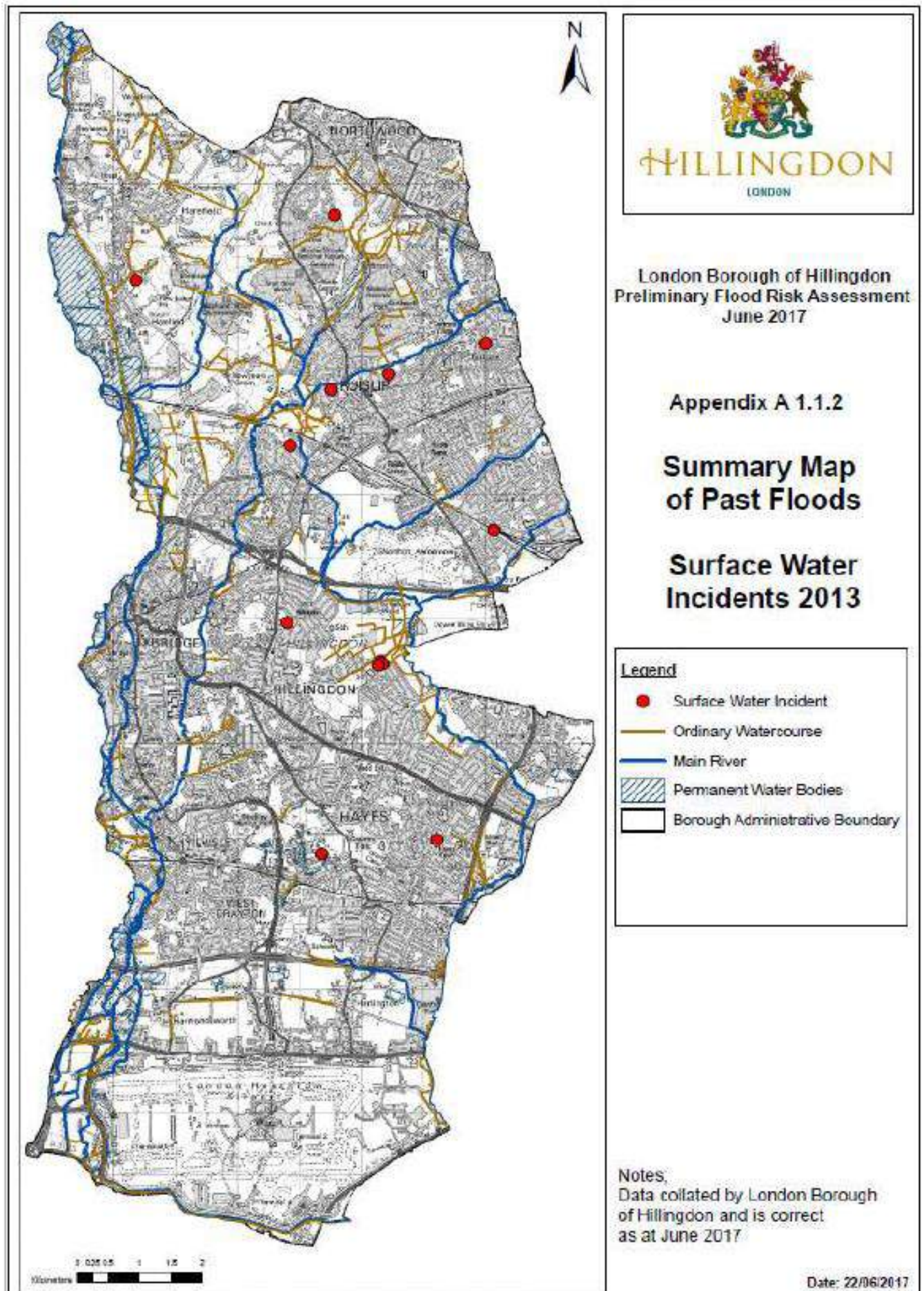
- 4.25 Developers seeking to develop in flood risk areas should undertake pre-application discussions with the LPA, Environment Agency and other relevant stakeholders to scope out the availability of other sites that would meet the functional requirements of the application, and what evidence will be needed to show that consideration has been given to alternative locations in lower risk areas, so that the LPA can apply the Sequential Test.
- 4.26 The Sequential Test will show whether there are any reasonably available sites for the type and scale of proposed development in a lower flood risk zone or at a lower flood risk than the application site.
- 4.27 'Reasonably available' alternative sites can be identified from evidence based documents which feed into the development of the LDDs e.g. Strategic Housing Land Availability Assessments required by PPS3.
- 4.28 As the process of RFRAs/SFRAs is completed and LDDs are reviewed applying the Sequential Test, the need to apply the Sequential Test at the planning application level will reduce. However, there will still be instances where the Sequential Test will need to be applied at the planning application stage e.g. where windfall sites are not in accordance with LDD plans and policies.
- 4.29 The EA and stakeholders will work together on the application of the Sequential Test.

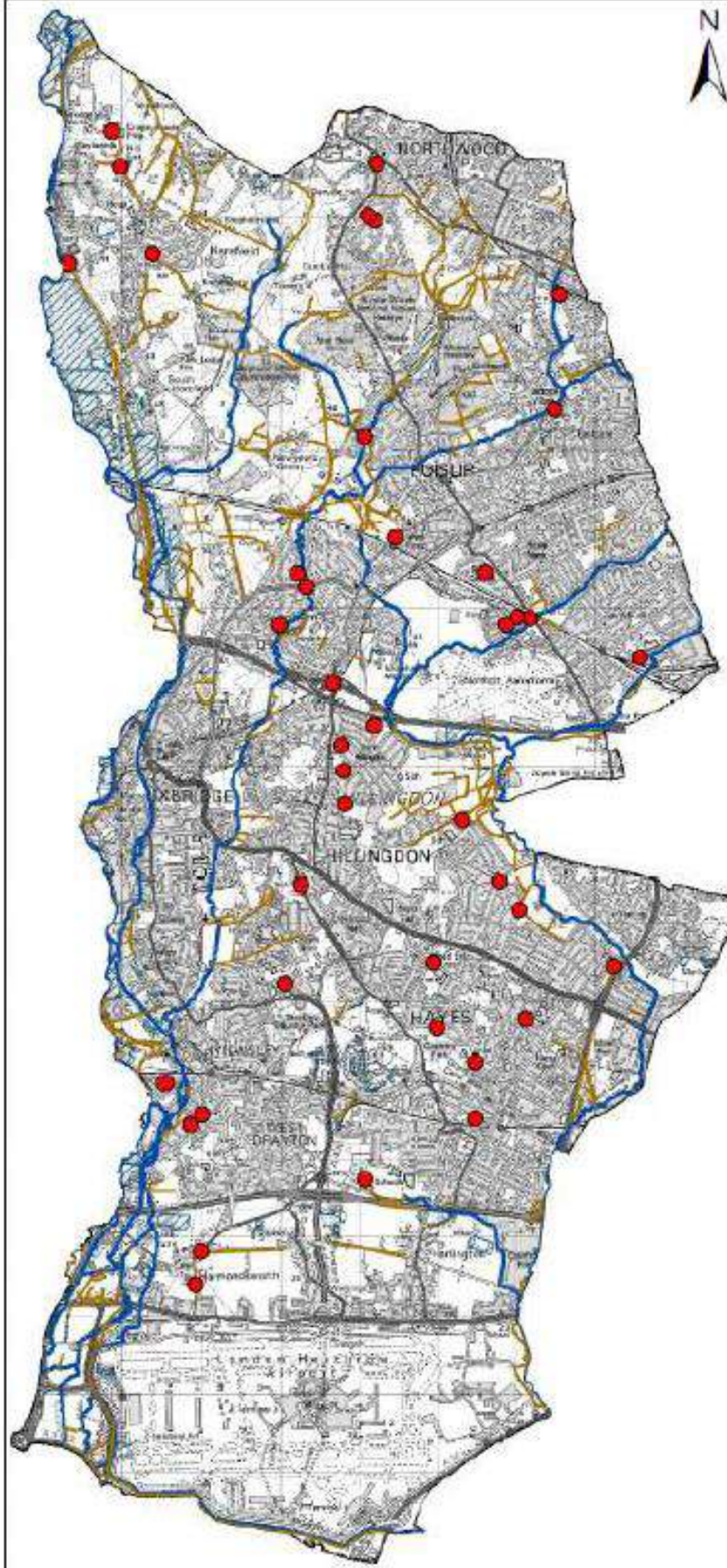


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Appendix D – Extracts from Preliminary Flood Risk Assessment







London Borough of Hillingdon
Preliminary Flood Risk Assessment
June 2017

Appendix A 1.1.3

Summary Map of Past Floods

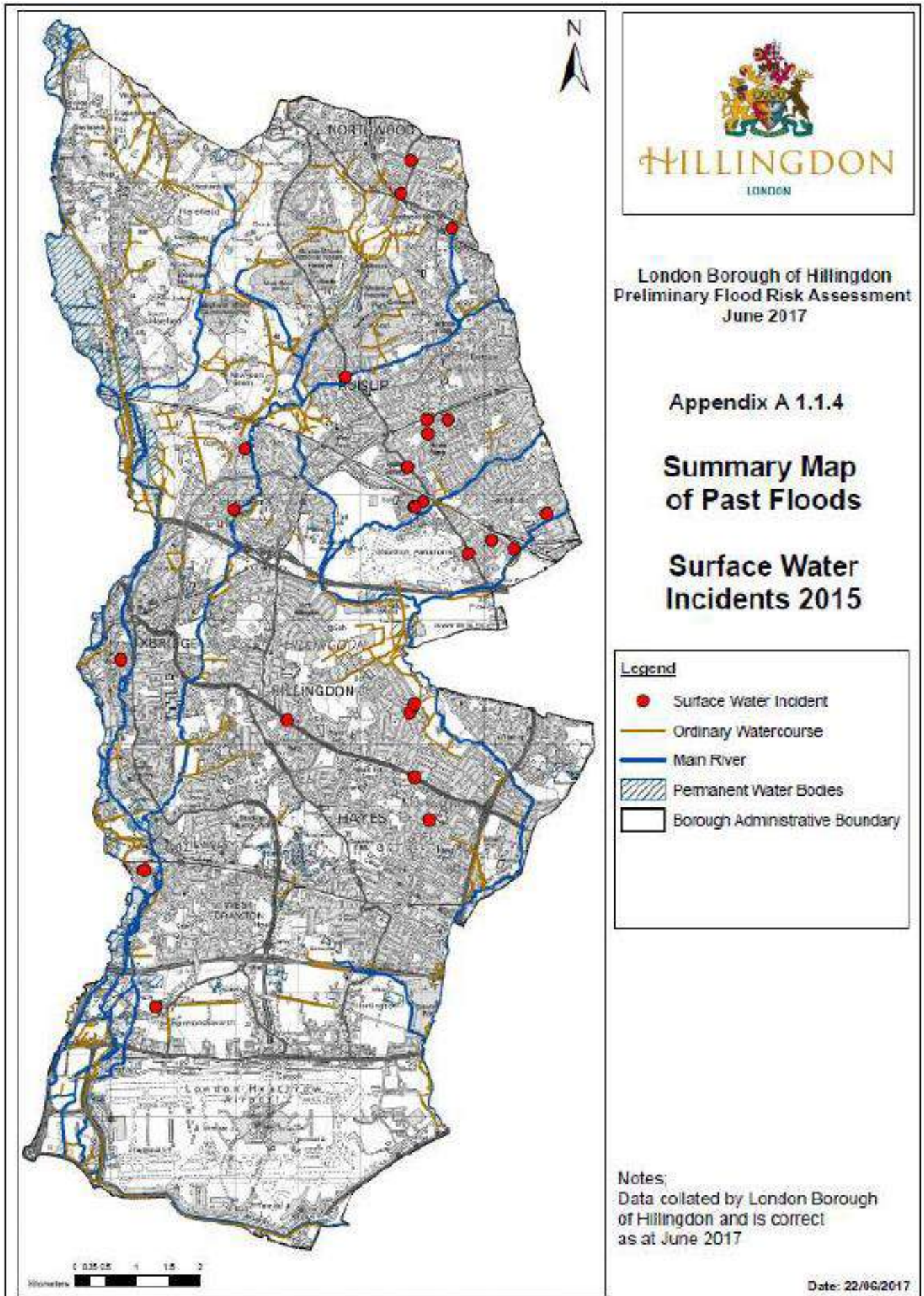
Surface Water Incidents 2014

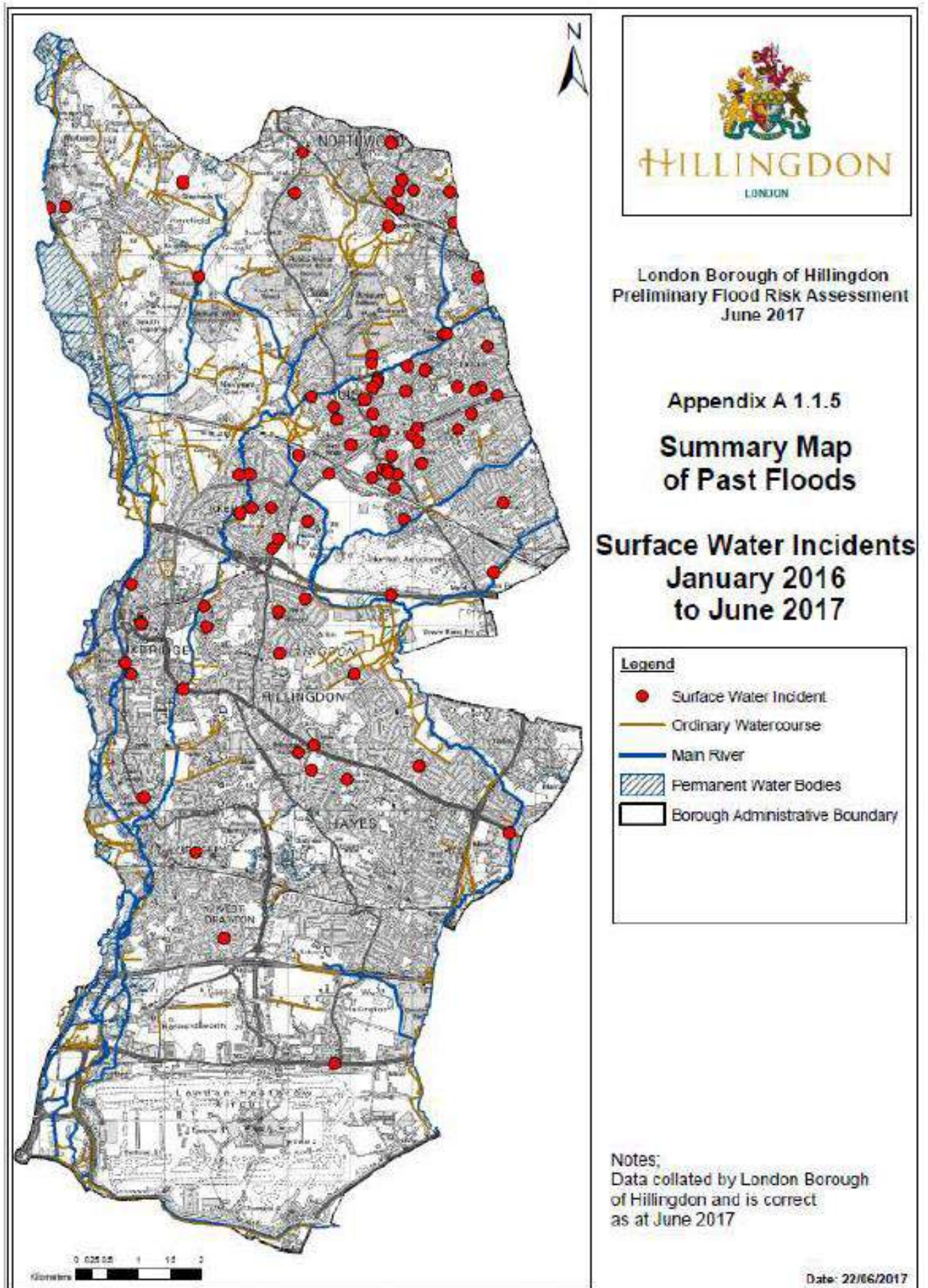
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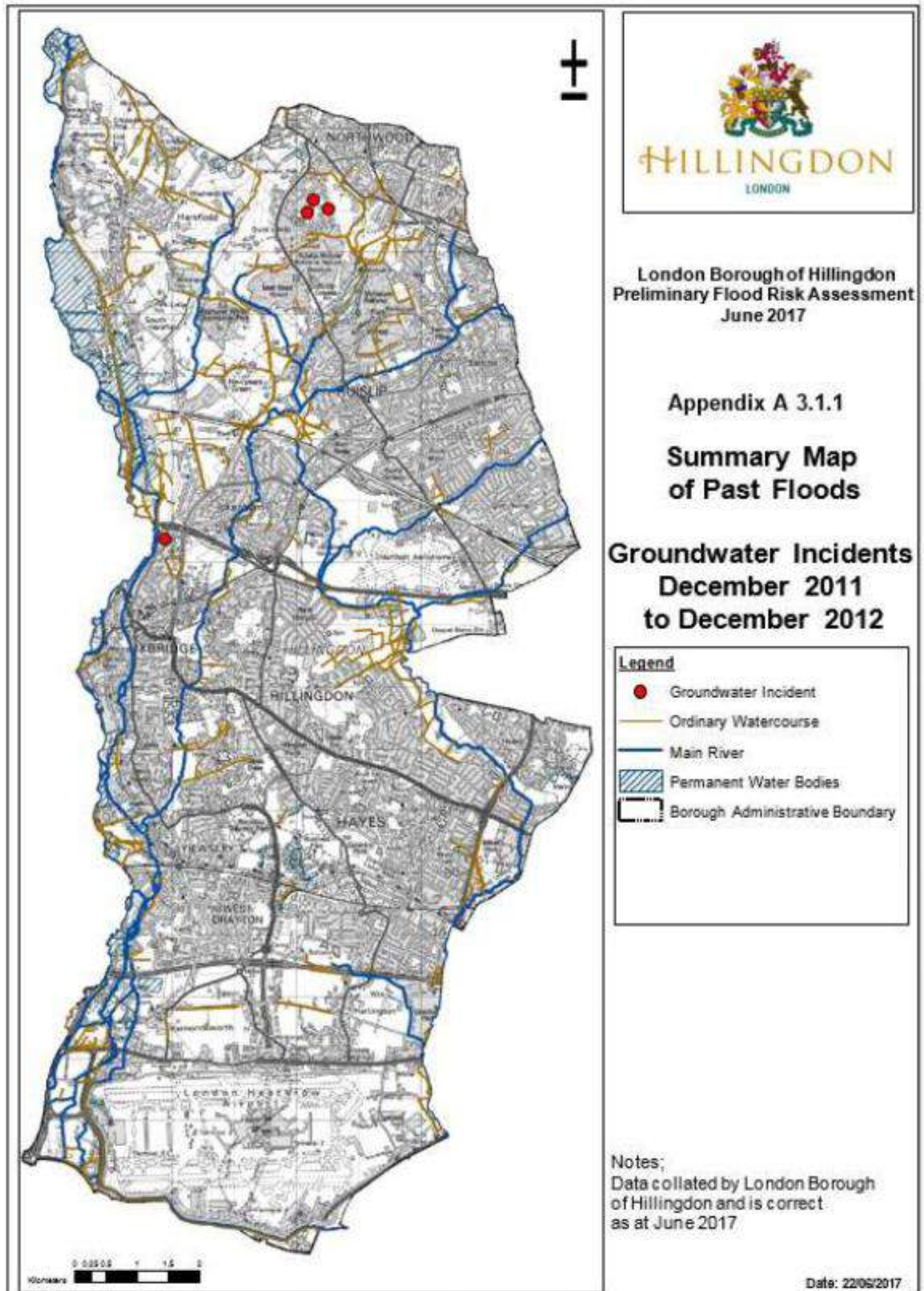
- Surface Water Incident
- Ordinary Watercourse
- Main River
- Permanent Water Bodies
- Borough Administrative Boundary

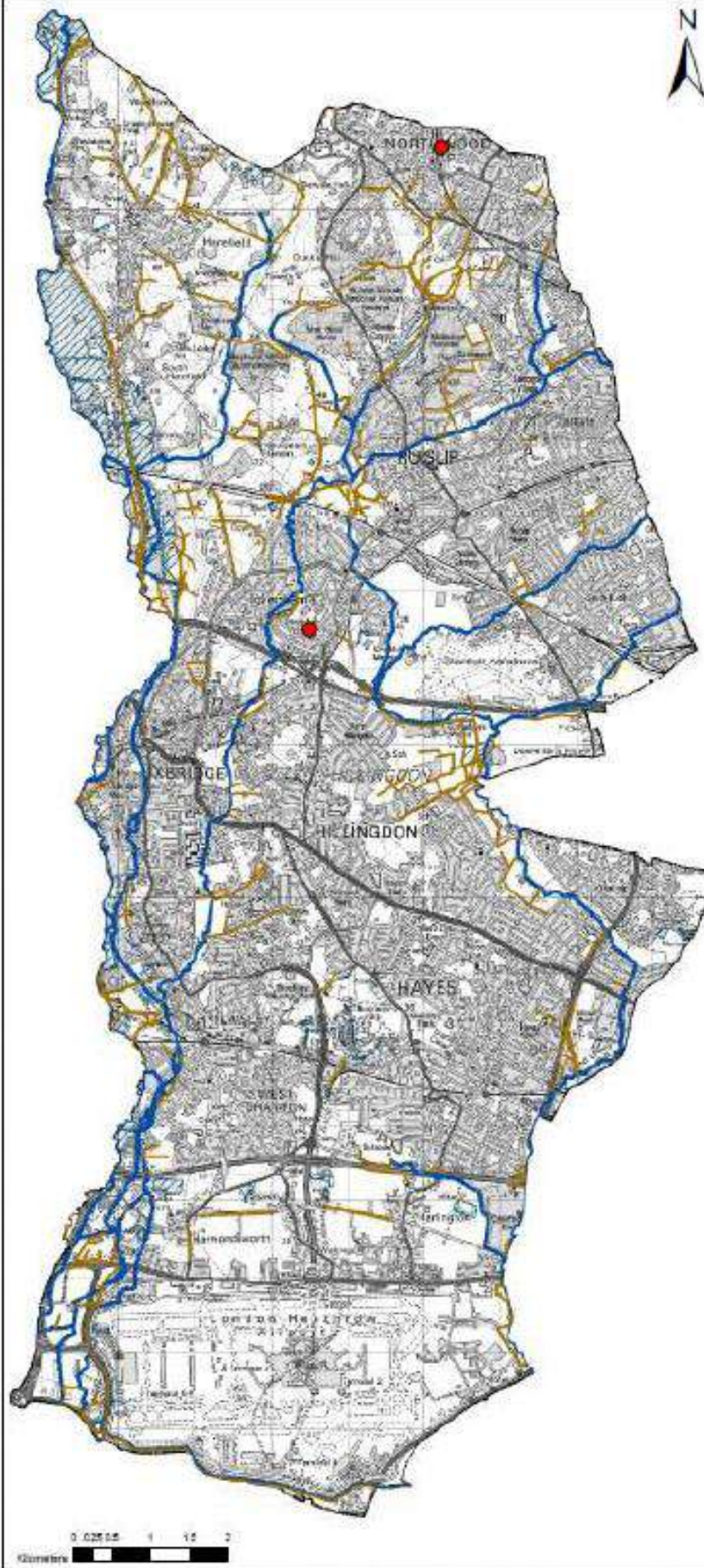
Notes;
Data collated by London Borough
of Hillingdon and is correct
as at June 2017

Date: 22/06/2017









London Borough of Hillingdon
Preliminary Flood Risk Assessment
June 2017

Appendix A 3.1.2

Summary Map of Past Floods

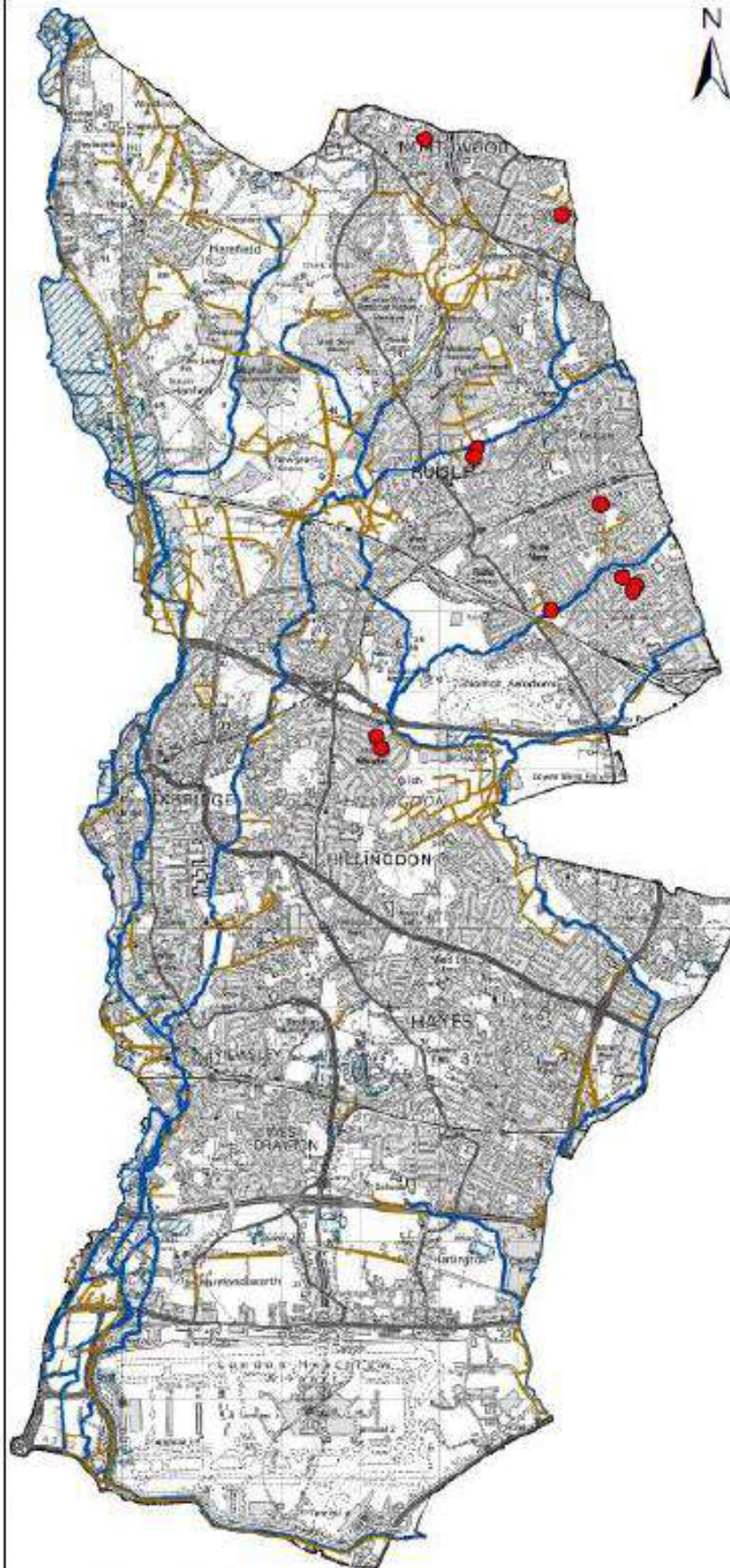
Groundwater Incidents 2013

Legend

- Groundwater Incident
- Ordinary Watercourse
- Main River
- Permanent Water Bodies
- Borough Administrative Boundary

Notes:
Data collated by London Borough
of Hillingdon and is correct
as at June 2017.

Date: 22/06/2017



London Borough of Hillingdon
Preliminary Flood Risk Assessment
June 2017

Appendix A 3.1.3

Summary Map of Past Floods

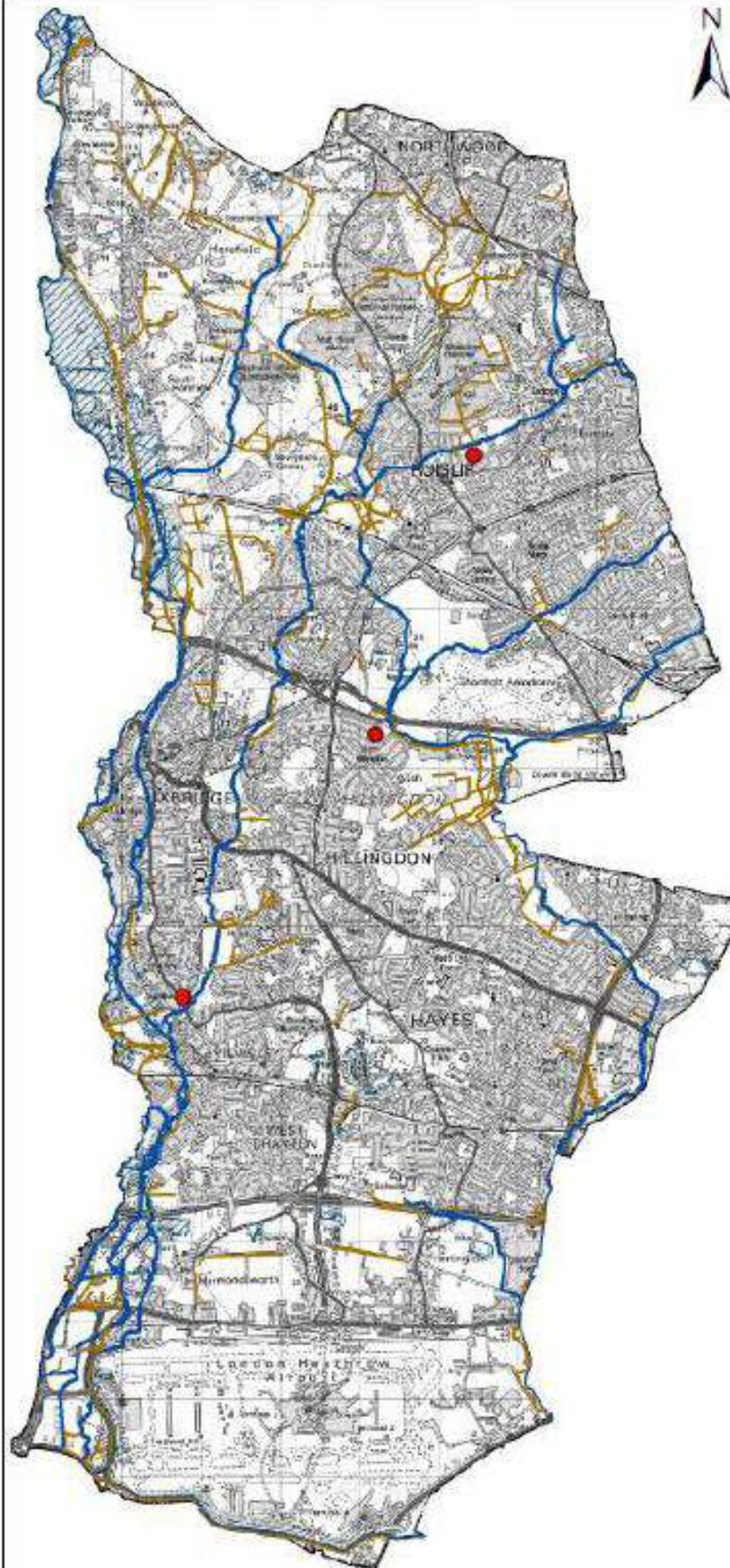
Groundwater Incidents 2014

Legend

- Groundwater Incident
- Ordinary Watercourse
- Main River
- Permanent Water Bodies
- Borough Administrative Boundary

Notes:
Data collated by London Borough
of Hillingdon and is correct
as at June 2017

Date: 22/06/2017



London Borough of Hillingdon
Preliminary Flood Risk Assessment
June 2017

Appendix A 3.1.4

Summary Map of Past Floods

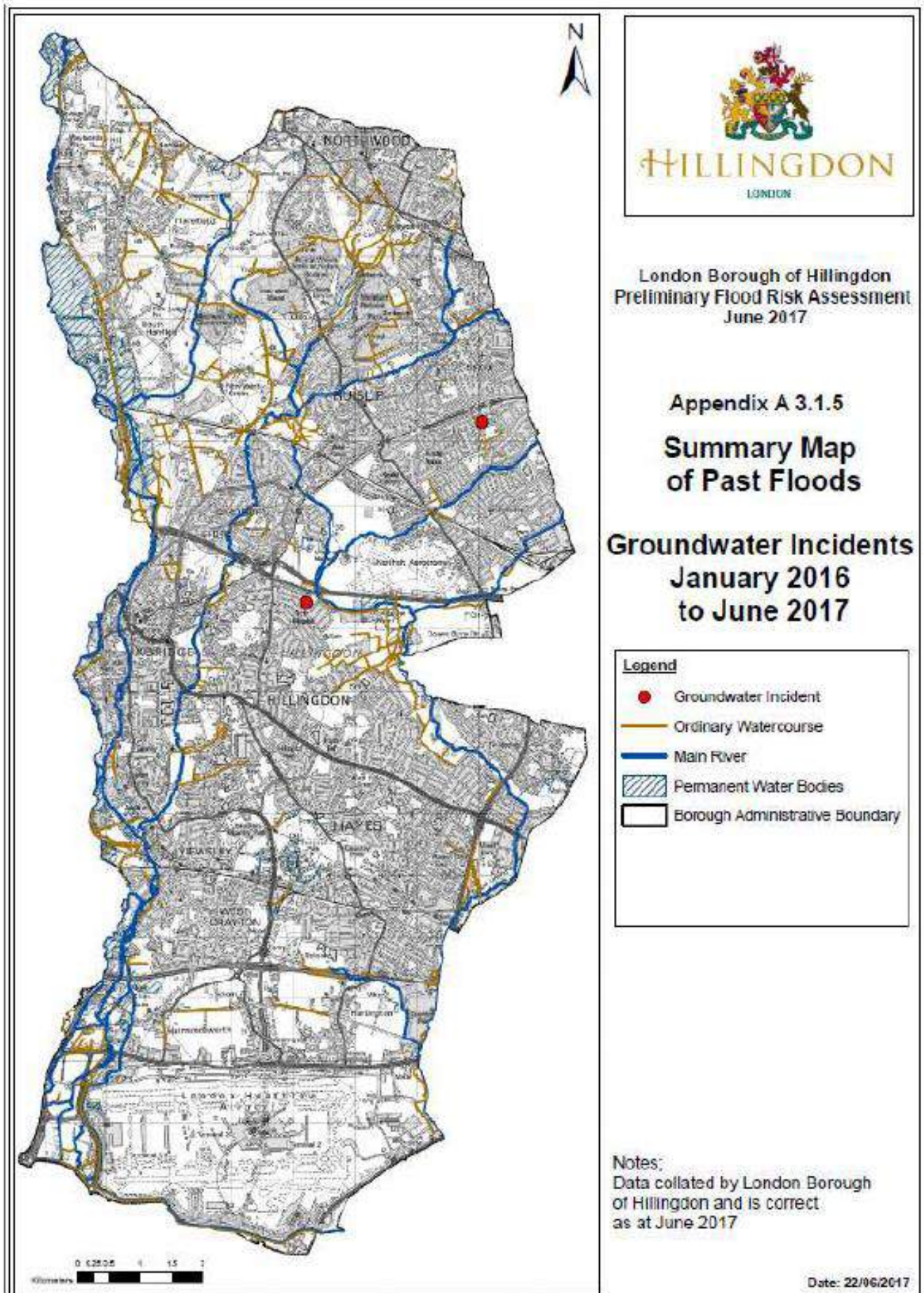
Groundwater Incidents 2015

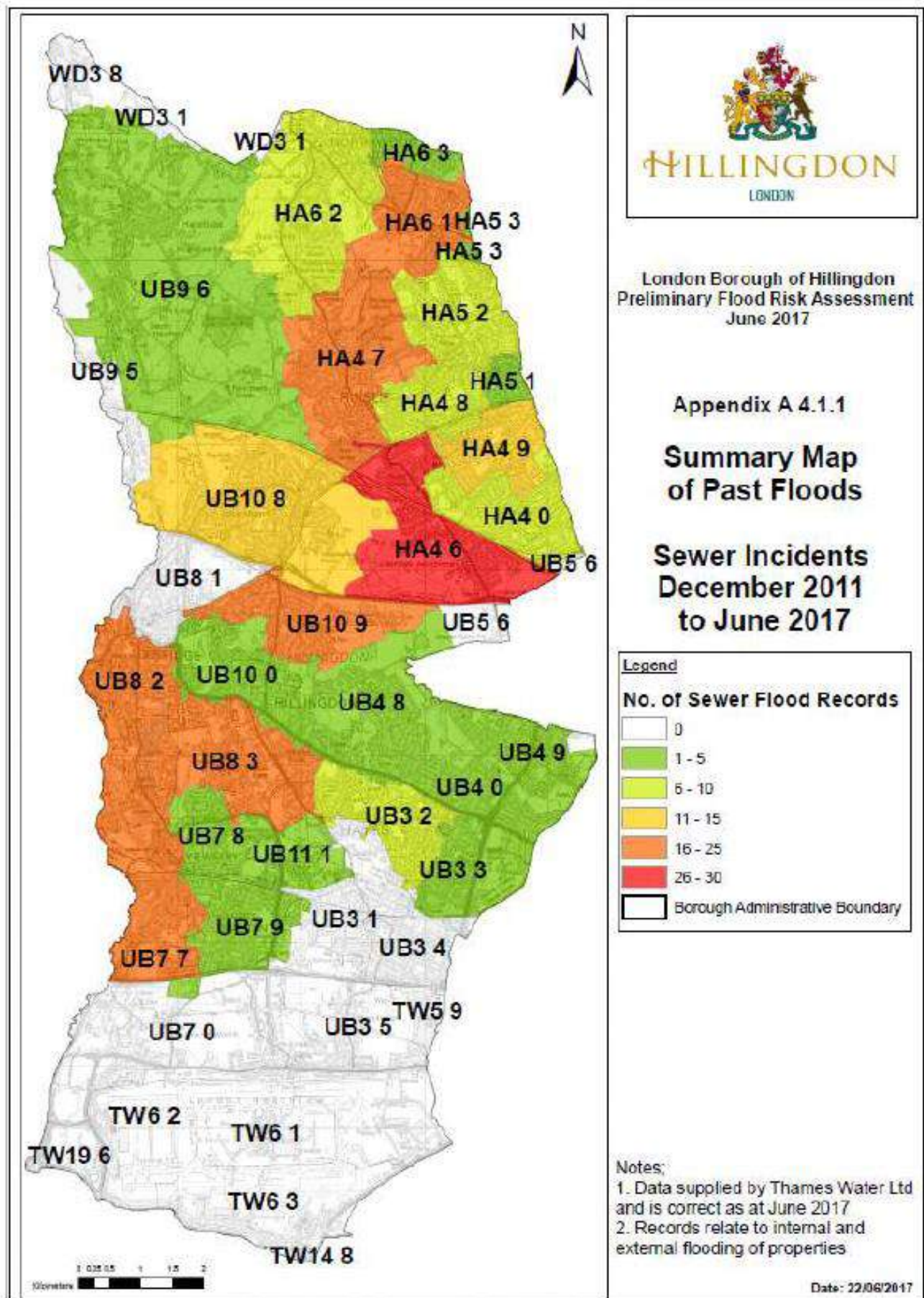
Legend

- Groundwater Incident
- Ordinary Watercourse
- Main River
- Permanent Water Bodies
- Borough Administrative Boundary

Notes;
Data collated by London Borough
of Hillingdon and is correct
as at June 2017

Date: 22/06/2017

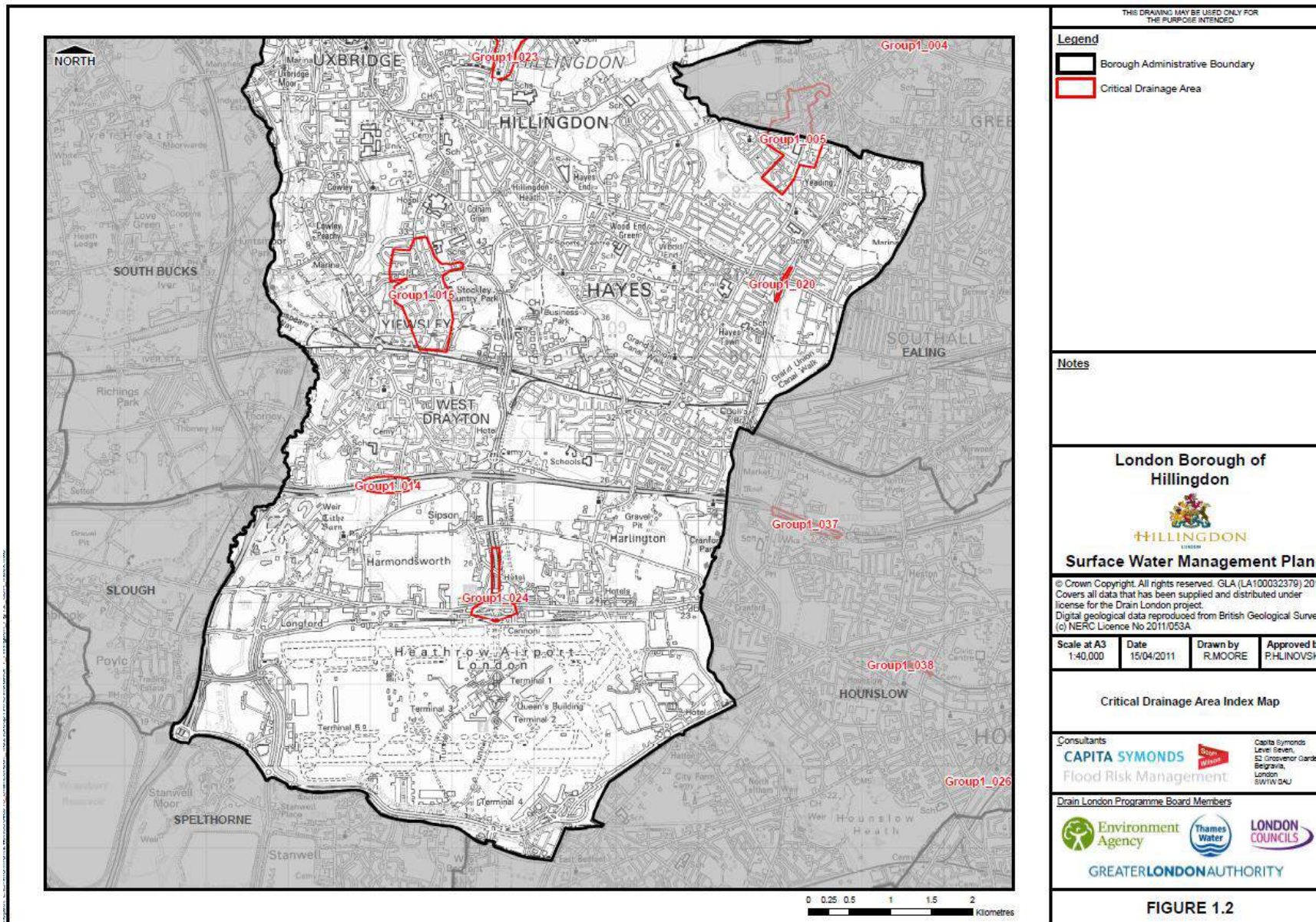


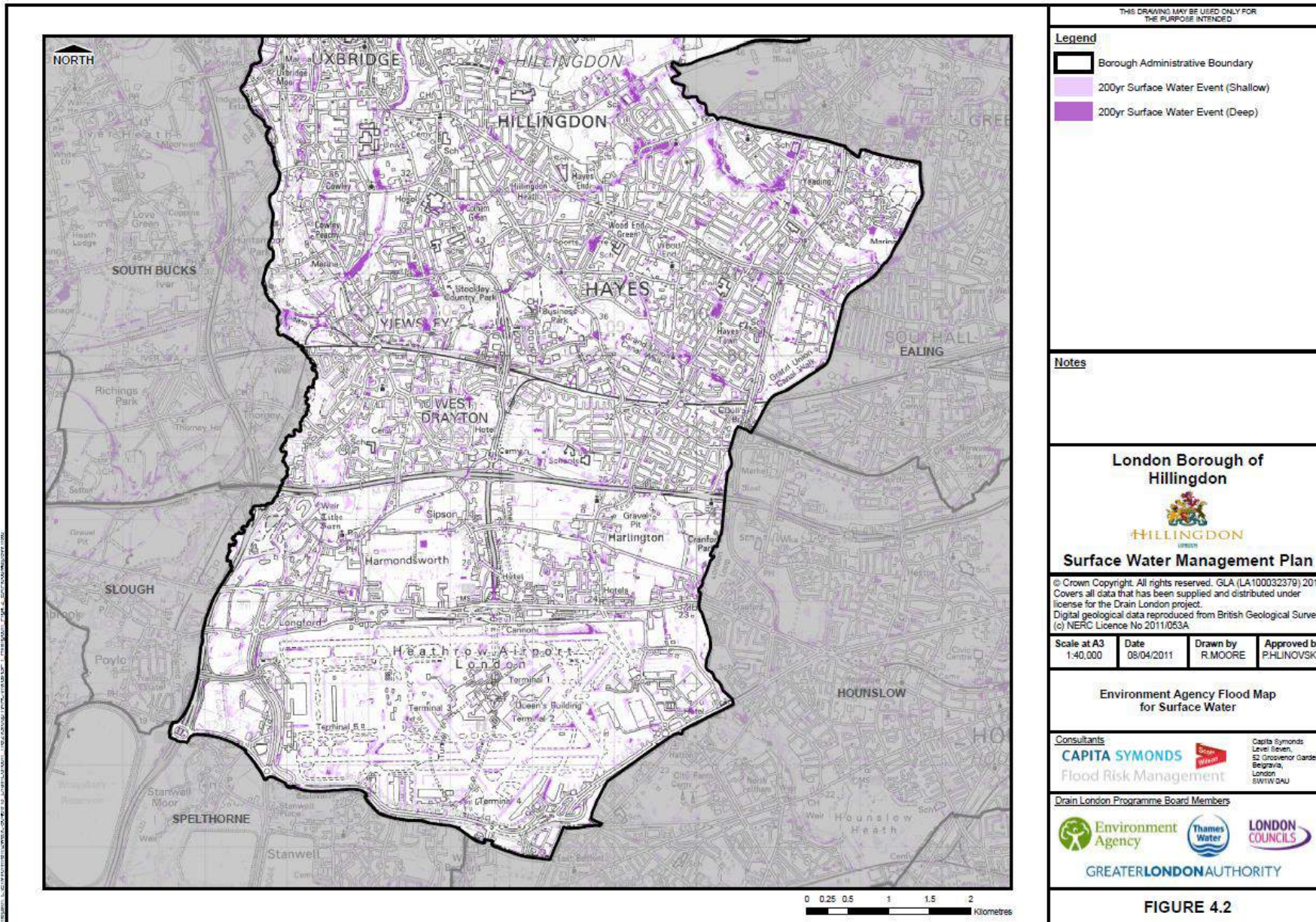


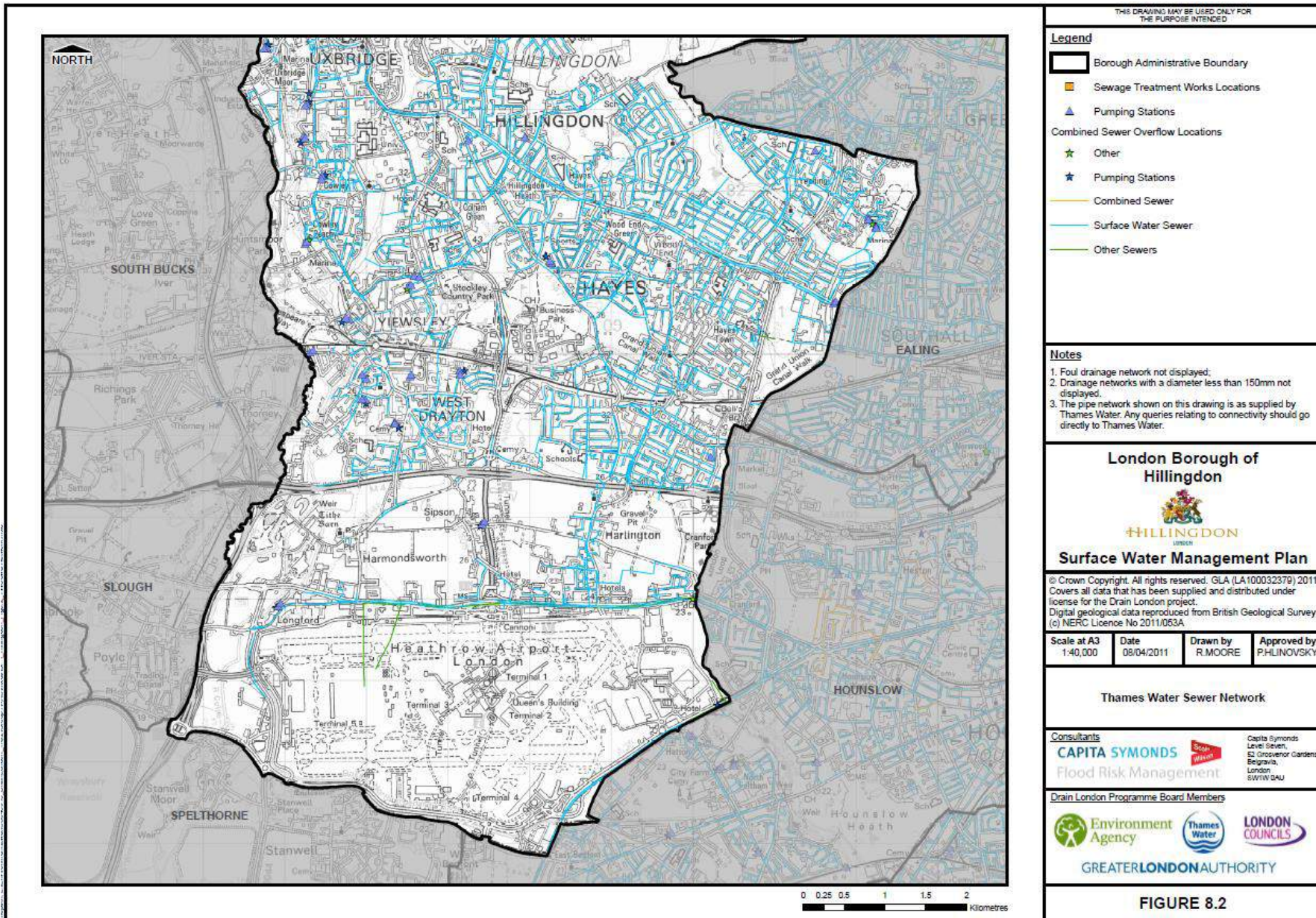


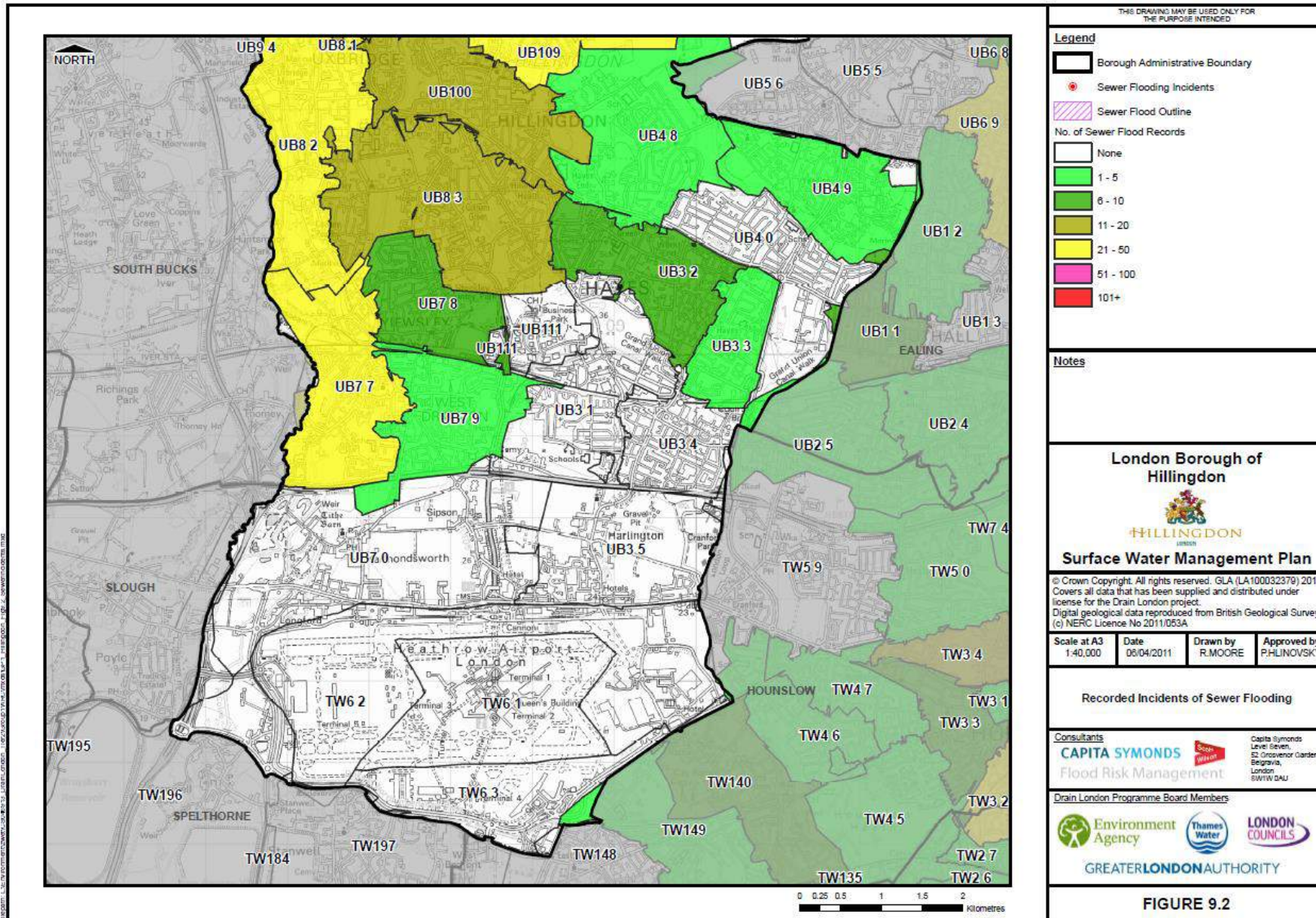
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Appendix E – Extracts from Surface Water Management Plan





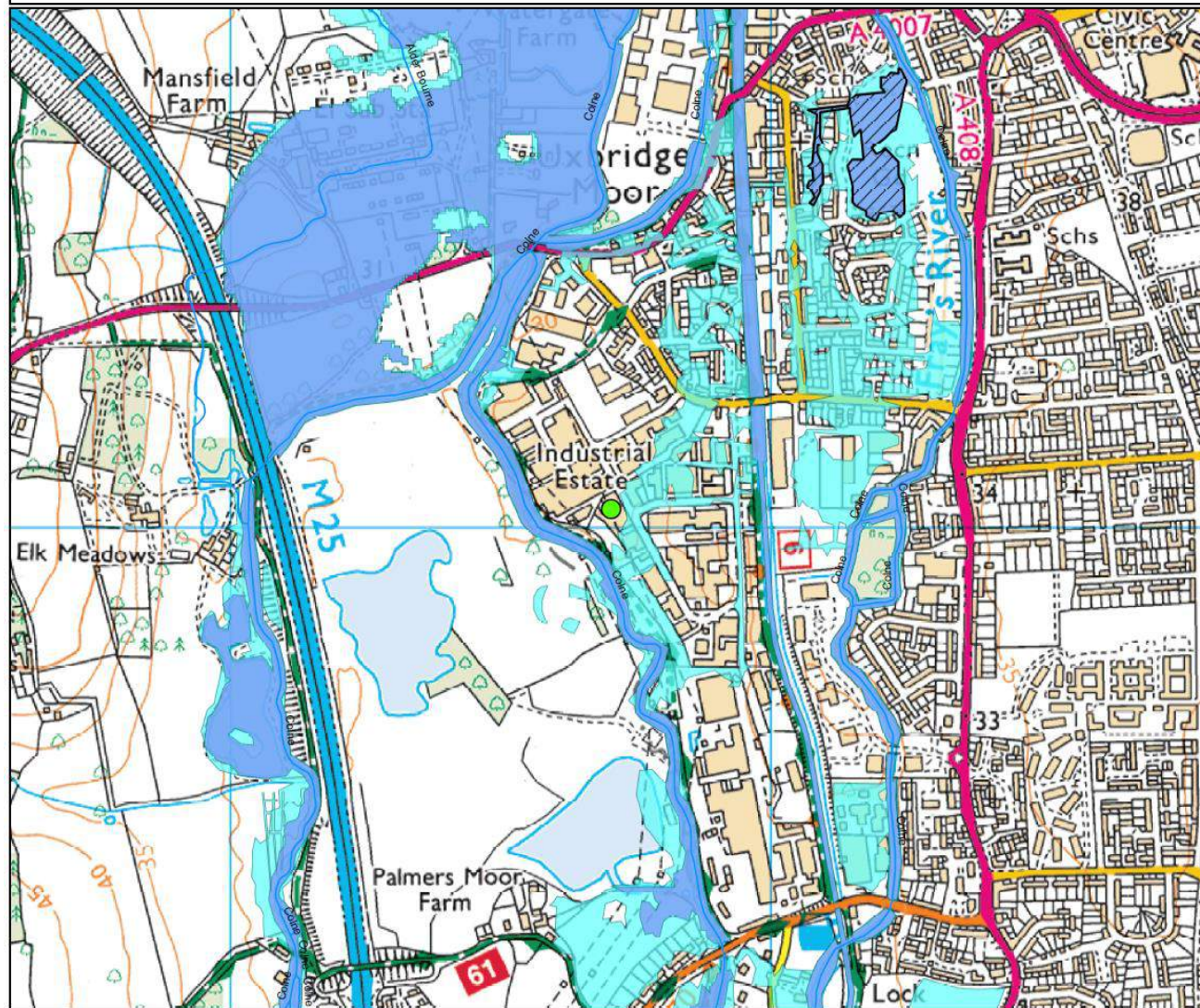






Appendix F – Environment Agency Information

Flood Map for Planning centred on: Uxbridge Industrial Estate, Barton Buildings, UB8 2SN - 02/04/2020 - HNL 167227 JH



Environment Agency
Alchemy,
Bessemer Road,
Welwyn Garden City,
Hertfordshire,
AL7 1HE



0 150 300 600
Metres

Legend

- Main Rivers
- Site location

Flood Map for Planning

- ▨ Flood Storage Area
- ▨ Areas Benefiting from Flood Defences
- Flood Zone 3
- Flood Zone 2

Flood Map for Planning (assuming no defences)

Flood Zone 3 shows the area that could be affected by flooding:

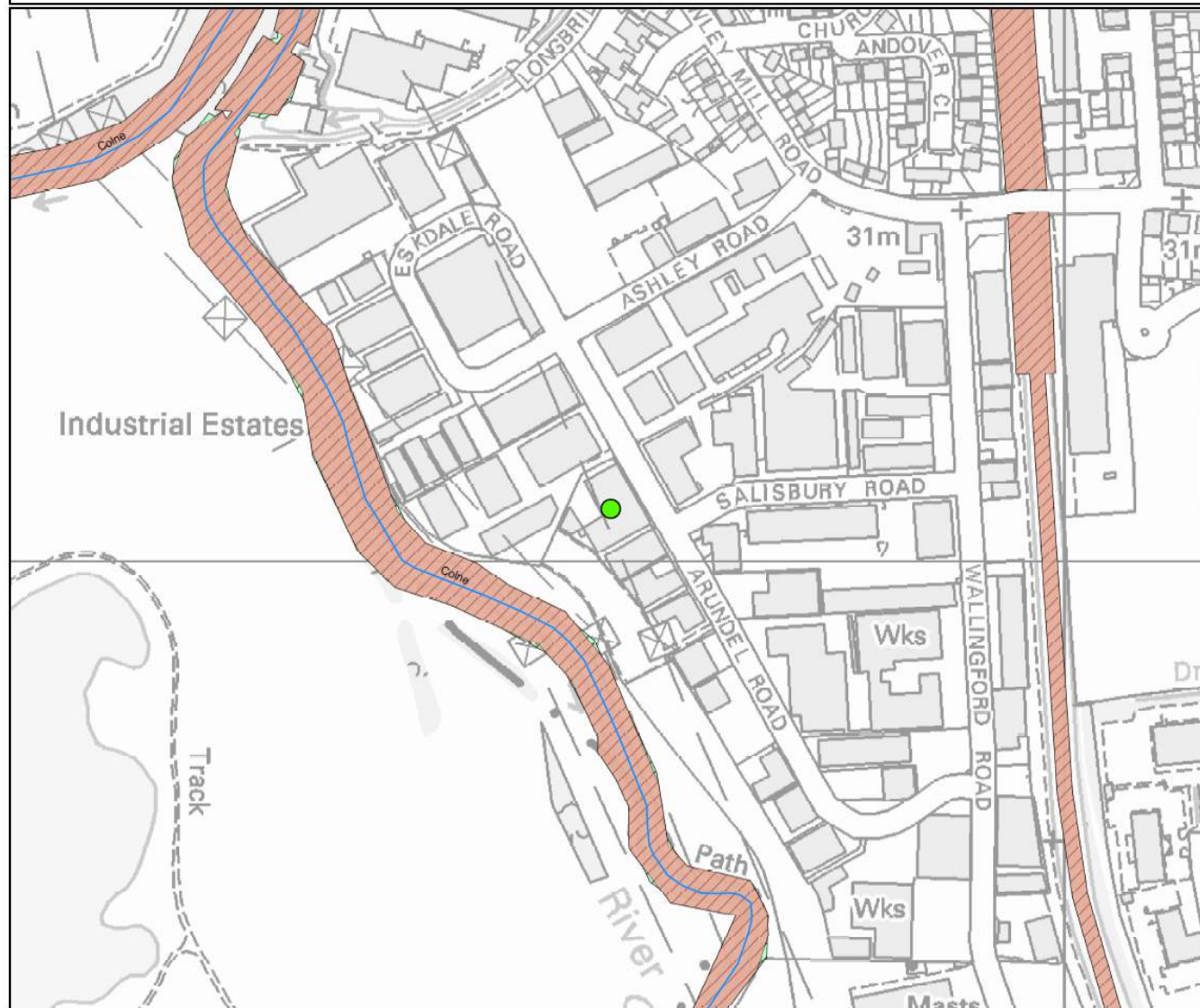
- from the sea with a 1 in 200 or greater chance of happening each year
- or from a river with a 1 in 100 or greater chance of happening each year.

Flood Zone 2 shows the extent of an extreme flood from rivers or the sea with up to a 1 in 1000 chance of occurring each year.

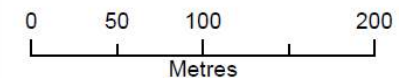
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Detailed FRA centred on: Uxbridge Industrial Estate, Barton Buildings, UB8 2SN - 02/04/2020 - HNL 167227 JH



Environment Agency
Alchemy,
Bessemer Road,
Welwyn Garden City,
Hertfordshire,
AL7 1HE



Legend

— Main Rivers

● Site location

Defended Flood Outlines

1 in 2 (50%) Defended

1 in 5 (20%) Defended

1 in 10 (10%) Defended

1 in 20 (5%) Defended

The data in this map has been extracted from the Lower Colne Modelling and Mapping Study (Mott MacDonald 2012).

This model has been designed for catchment wide flood risk mapping. It should be noted that it was not created to produce flood levels for specific development sites within the catchment. Modelled outlines take into account catchment wide defences.

Flood risk data requests including an allowance for climate change will be based on the 1 in 100 flood plus 20% allowance for climate change, unless otherwise stated. You should refer to 'Flood risk assessments: climate change allowances' to check if this allowance is still appropriate for the type of development you are proposing and its location. You may need to undertake further assessment of future flood risk using different allowances to ensure your assessment of future flood risk is based on best available evidence.
<https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances>

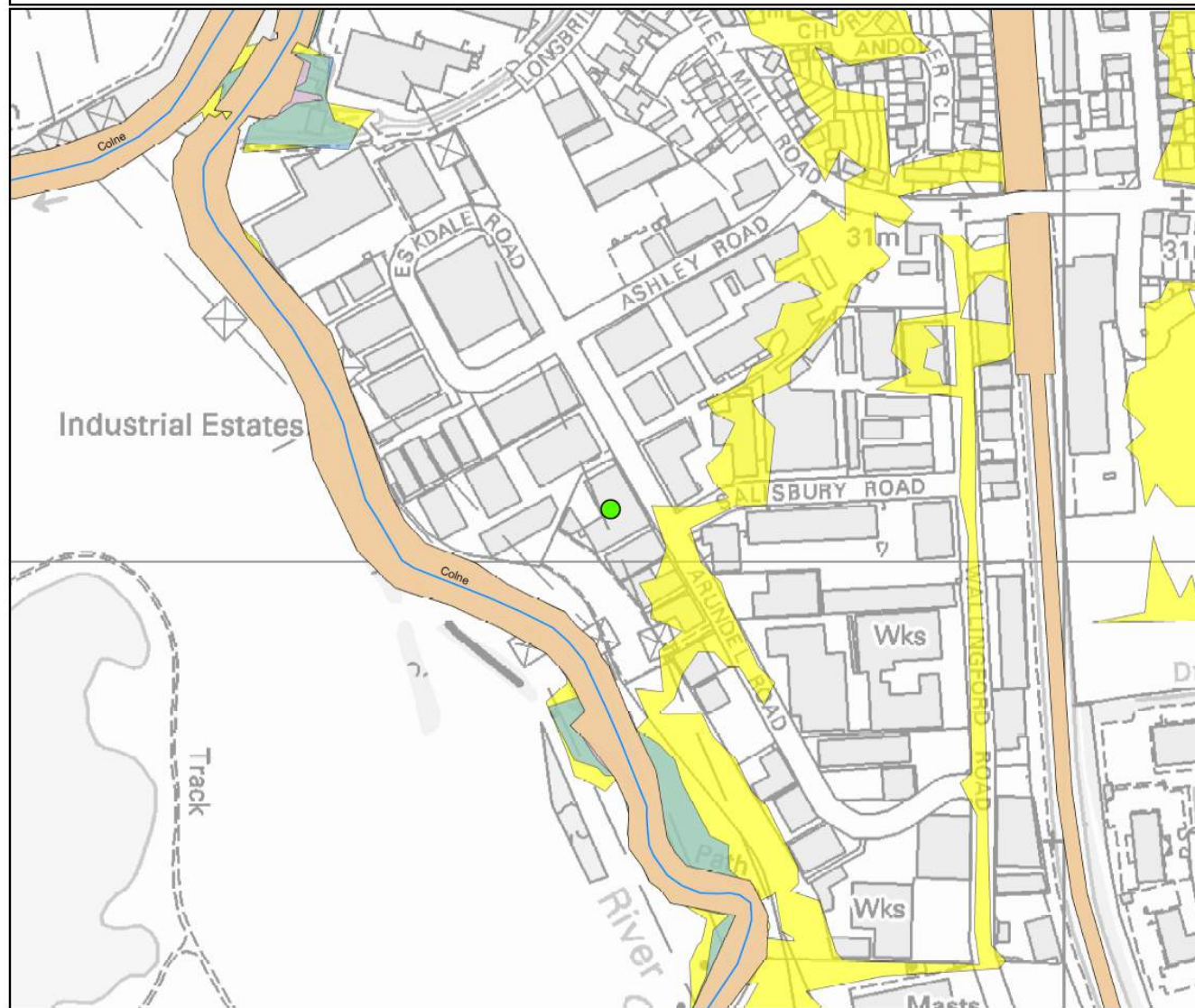
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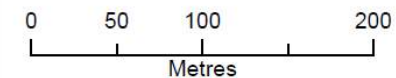
1833-FRA-1-Draft: Barton Buildings, Uxbridge Industrial Estate

Cyril Leonard Ltd

Detailed FRA centred on: Uxbridge Industrial Estate, Barton Buildings, UB8 2SN - 02/04/2020 - HNL 167227 JH



Environment Agency
Alchemy,
Bessemer Road,
Welwyn Garden City,
Hertfordshire,
AL7 1HE



Legend

- Main Rivers
- Site location

Defended Flood Outlines

- 1 in 50 (2%) Defended
- 1 in 100 (1%) Defended
- 1 in 100+20% (*CC) Defended
- 1 in 1000 (0.1%) Defended

The data in this map has been extracted from the Lower Colne Modelling and Mapping Study (Mott MacDonald 2012).

This model has been designed for catchment wide flood risk mapping. It should be noted that it was not created to produce flood levels for specific development sites within the catchment. Modelled outlines take into account catchment wide defences.

Flood risk data requests including an allowance for climate change will be based on the 1 in 100 flood plus 20% allowance for climate change, unless otherwise stated. You should refer to 'Flood risk assessments: climate change allowances' to check if this allowance is still appropriate for the type of development you are proposing and its location. You may need to undertake further assessment of future flood risk using different allowances to ensure your assessment of future flood risk is based on best available evidence.

<https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances>

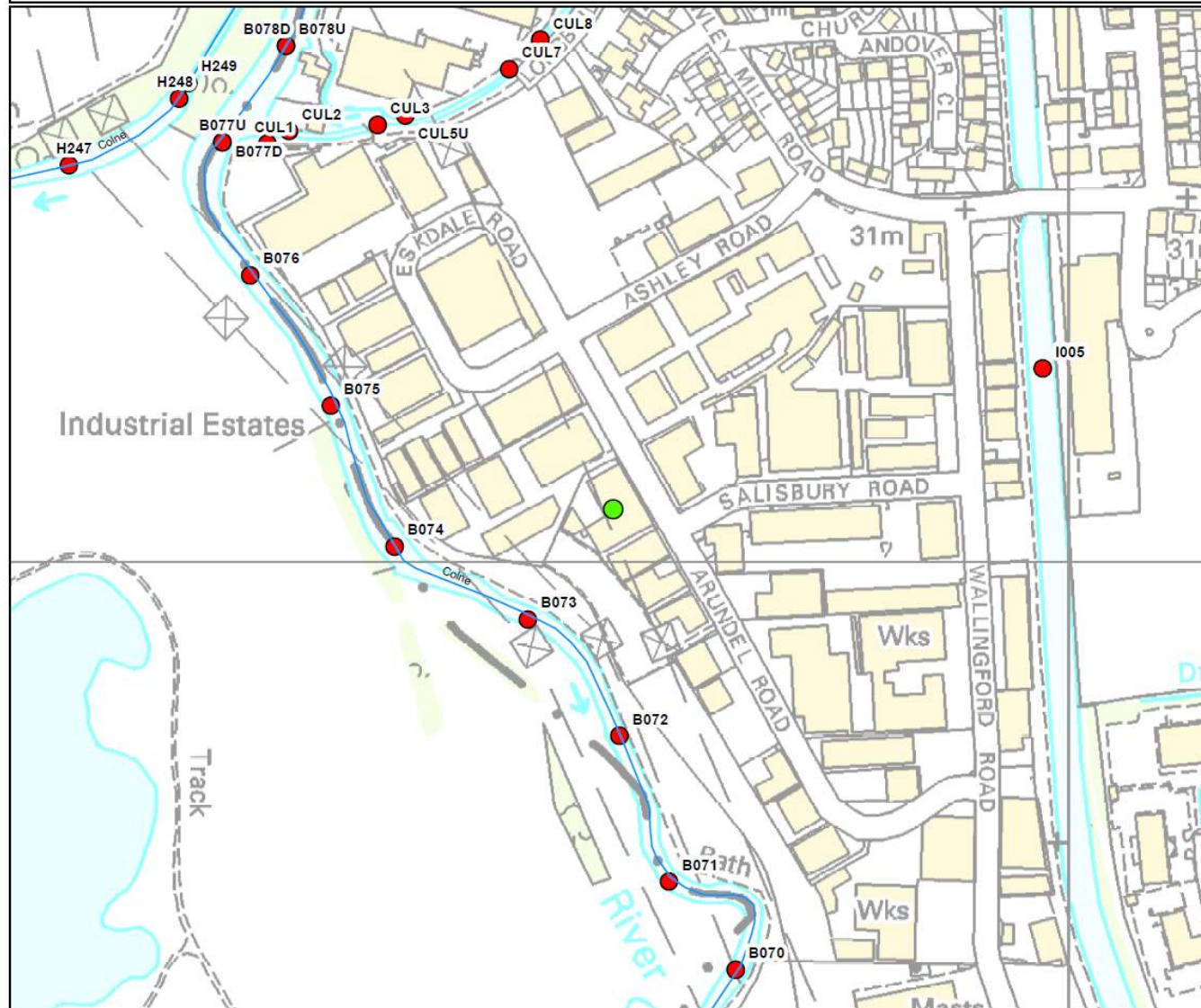
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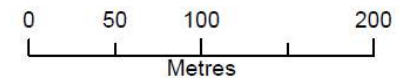
1833-FRA-1-Draft: Barton Buildings, Uxbridge Industrial Estate

Cyril Leonard Ltd

Detailed FRA centred on: Uxbridge Industrial Estate, Barton Buildings, UB8 2SN - 02/04/2020 - HNL 167227 JH



Environment Agency
Alchemy,
Bessemer Road,
Welwyn Garden City,
Hertfordshire,
AL7 1HE



Legend

- Main Rivers
- Site location
- 1D Node Results
- Node Results

1D Node Results

The data in this map has been extracted from the Lower Colne Modelling and Mapping Study (Mott MacDonald 2012).

This model has been designed for catchment wide flood risk mapping. It should be noted that it was not created to produce flood levels for specific development sites within the catchment. Modelled outlines take into account catchment wide defences.

Flood risk data requests including an allowance for climate change will be based on the 1 in 100 flood plus 20% allowance for climate change, unless otherwise stated. You should refer to 'Flood risk assessments: climate change allowances' to check if this allowance is still appropriate for the type of development you are proposing and its location. You may need to undertake further assessment of future flood risk using different allowances to ensure your assessment of future flood risk is based on best available evidence.
<https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances>

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1833-FRA-1-Draft: Barton Buildings, Uxbridge Industrial Estate

Cyril Leonard Ltd

Environment Agency ref: HNL 187227 JH

The data in this map has been extracted from the Lower Colne Modelling and Mapping Study (Mott MacDonald 2012).

Flood risk data requests including an allowance for climate change will be based on the 1 in 100 flood plus 20% allowance for climate change, unless otherwise stated. You should refer to 'Flood risk assessments: climate change allowances' to check if this allowance is still appropriate for the type of development you are proposing and its location. You may need to undertake further assessment of future flood risk using different allowances to ensure your assessment of future flood risk is based on best available evidence.
<https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances>

All flood levels are given in metres Above Ordnance Datum (mAOD)

All flows are given in cubic metres per second (cumecs)

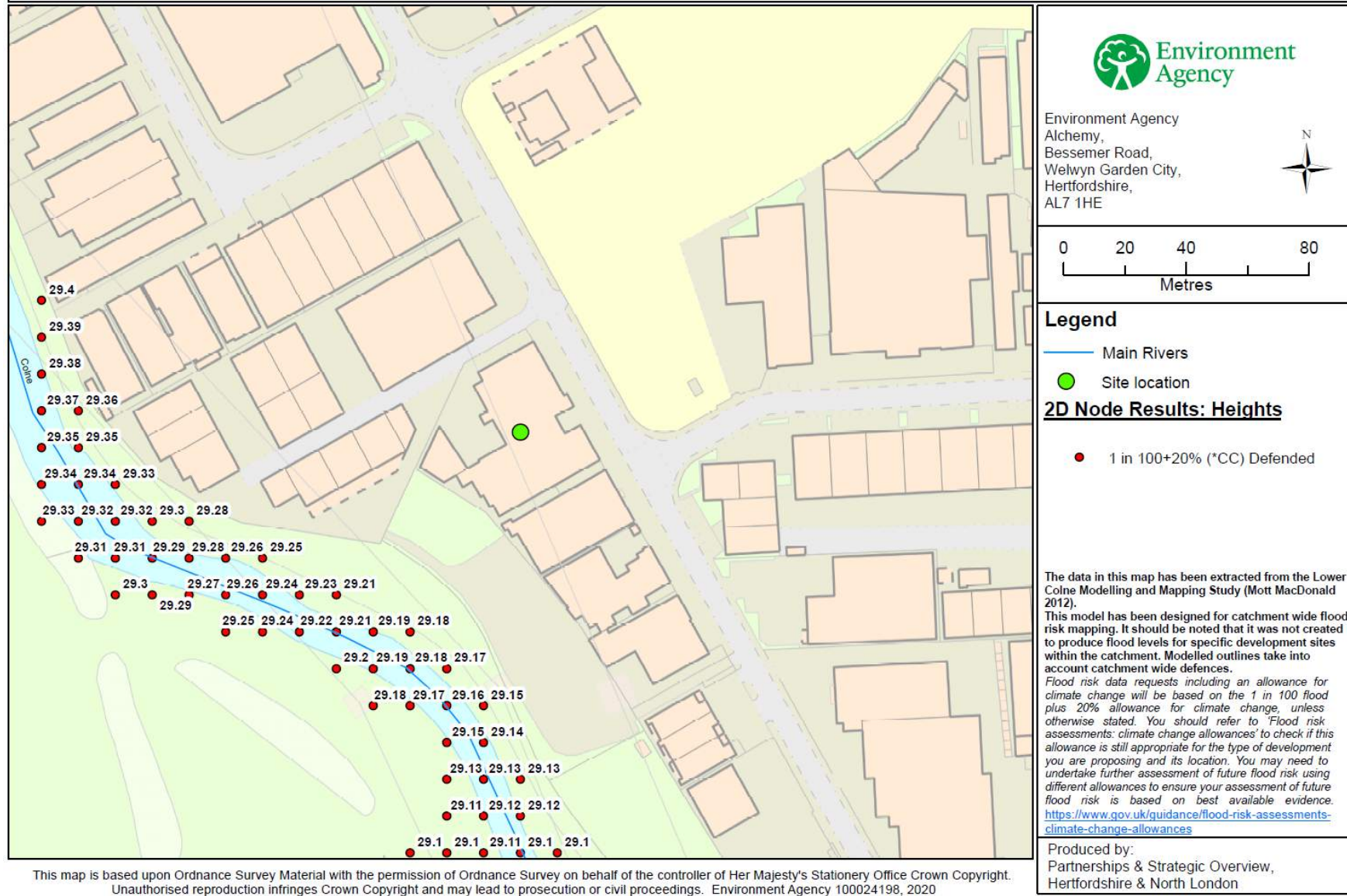
MODELLED FLOOD LEVEL

Node Label	Easting	Northing	Return Period							
			2 yr	6 yr	10 yr	20 yr	60 yr	100 yr	100 yr + 20%	1000 yr
B070	504785	182736	28.19	28.37	28.46	28.55	28.66	28.74	28.87	29.02
B071	504742	182793	28.28	28.46	28.56	28.66	28.77	28.85	28.99	29.14
B072	504710	182887	28.38	28.56	28.66	28.75	28.86	28.95	29.09	29.25
B073	504651	182962	28.52	28.68	28.78	28.87	28.98	29.06	29.19	29.34
B074	504565	183009	28.64	28.8	28.9	28.99	29.1	29.18	29.32	29.48
B075	504524	183100	28.8	28.95	29.04	29.13	29.23	29.31	29.43	29.58
B076	504472	183184	29	29.14	29.22	29.3	29.4	29.48	29.59	29.73
B077D	504454	183270	29.05	29.19	29.28	29.36	29.46	29.54	29.66	29.8
B077U	504454	183270	29.05	29.19	29.28	29.36	29.46	29.54	29.66	29.8
B078D	504495	183332	29.07	29.22	29.3	29.39	29.49	29.56	29.69	29.83
B078U	504495	183332	29.07	29.22	29.3	29.39	29.49	29.56	29.69	29.83
CUL1	504483	183269	29.05	29.19	29.28	29.36	29.46	29.54	29.66	29.8
CUL2	504497	183277	29.06	29.2	29.28	29.37	29.47	29.54	29.66	29.8
CUL3	504554	183281	29.14	29.27	29.34	29.42	29.51	29.57	29.68	29.82
CUL5U	504572	183287	29.17	29.31	29.39	29.47	29.57	29.65	29.76	29.88
CUL7	504639	183317	29.39	29.49	29.56	29.62	29.69	29.76	29.84	29.91
CUL8	504659	183336	29.45	29.55	29.61	29.68	29.75	29.81	29.89	29.98
H247	504355	183255	29.09	29.24	29.33	29.41	29.52	29.59	29.72	29.86
H248	504426	183298	29.09	29.24	29.33	29.41	29.52	29.6	29.73	29.86
H249	504432	183308	29.09	29.24	29.33	29.42	29.52	29.6	29.73	29.86
I005	504983	183124	31.51	31.61	31.65	31.69	31.72	31.74	31.79	31.87

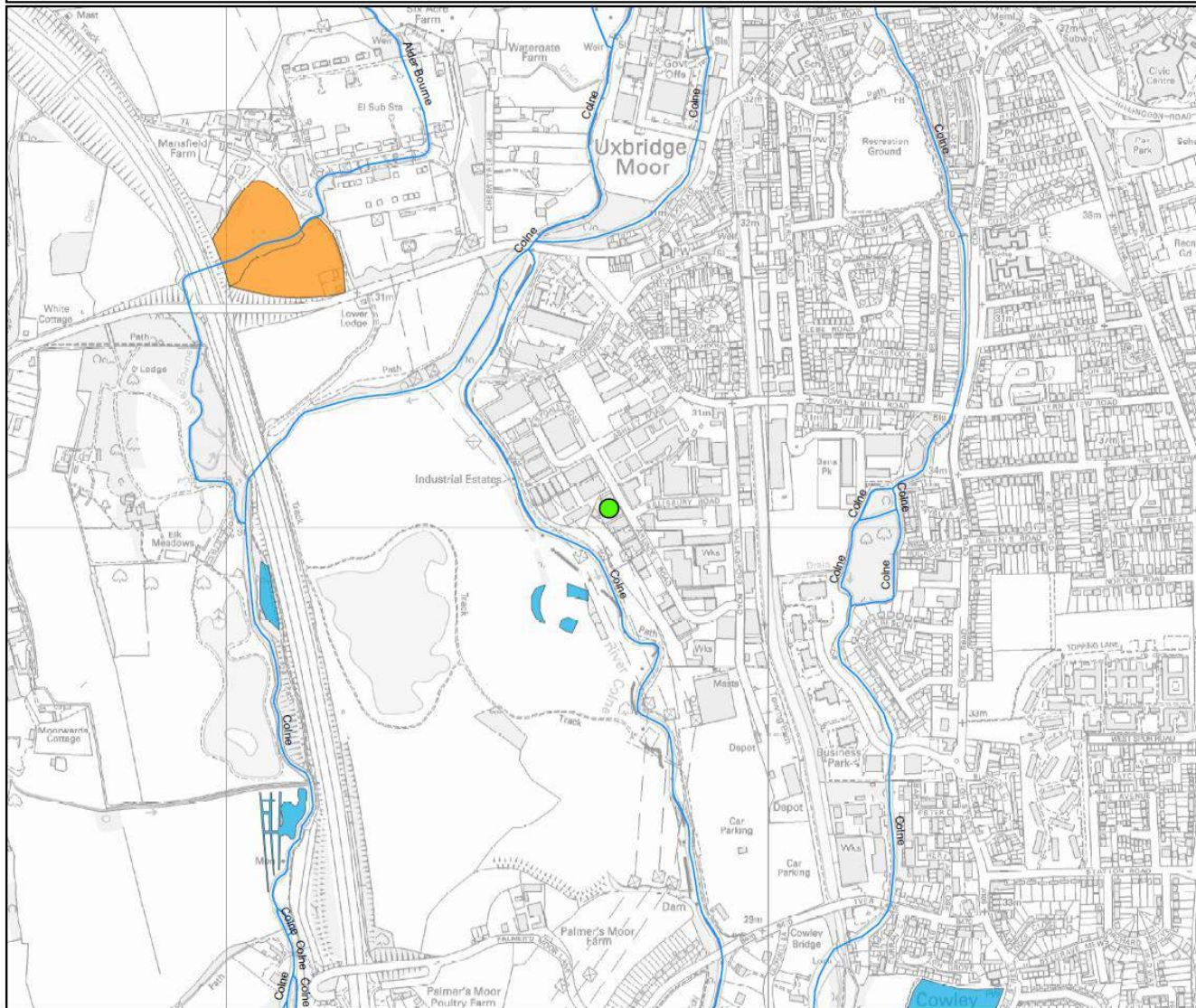
MODELLED FLOWS

Node Label	Easting	Northing	Return Period							
			2 yr	6 yr	10 yr	20 yr	60 yr	100 yr	100 yr + 20%	1000 yr
B070	504785	182736	7.73	10.13	11.62	13.11	15.02	16.52	19.3	22.63
B071	504742	182793	7.73	10.13	11.62	13.11	15.02	16.52	19.3	22.59
B072	504710	182887	7.73	10.13	11.62	13.11	15.02	16.5	18.58	20.89
B073	504651	182962	7.73	10.13	11.62	13.11	15.02	16.52	19.31	22.92
B074	504565	183009	7.73	10.13	11.62	13.11	15.02	16.52	19.31	22.92
B075	504524	183100	7.73	10.13	11.62	13.11	15.02	16.52	19.31	22.93
B076	504472	183184	7.73	10.13	11.62	13.11	15.02	16.52	19.31	22.92
B077D	504454	183270	7.73	10.13	11.62	13.11	15.02	16.52	19.31	22.93
B077U	504454	183270	5.78	7.67	8.86	10.09	11.74	13.05	15.67	19.05
B078D	504495	183332	5.78	7.67	8.86	10.09	11.75	13.03	15.32	17.71
B078U	504495	183332	4.92	6.7	7.85	9.02	10.62	11.9	14.28	16.86
CUL1	504483	183269	1.96	2.46	2.76	3.02	3.28	3.49	3.73	3.88
CUL2	504497	183277	1.96	2.46	2.76	3.02	3.27	3.49	3.68	3.68
CUL3	504554	183281	1.96	2.46	2.76	3.02	3.28	3.49	3.68	3.68
CUL5U	504572	183287	2.83	3.44	3.78	4.1	4.41	4.65	4.83	4.83
CUL7	504639	183317	2.83	3.44	3.78	4.1	4.4	4.65	5.19	6.08
CUL8	504659	183336	2.83	3.44	3.78	4.1	4.4	4.65	5.19	6.08
H247	504355	183255	2.17	2.88	3.38	3.9	4.64	5.23	6.38	8.04
H248	504426	183298	2.17	2.88	3.38	3.9	4.65	5.23	6.38	8.03
H249	504432	183308	2.17	2.88	3.38	3.9	4.64	5.23	6.38	8.04
I005	504983	183124	0	0	0	0	0	0	0	0

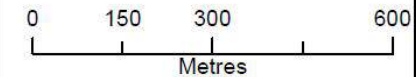
Detailed FRA centred on: Uxbridge Industrial Estate, Barton Buildings, UB8 2SN - 02/04/2020 - HNL 167227 JH



Historic Flood Map centred on: Uxbridge Industrial Estate, Barton Buildings, UB8 2SN - 02/04/2020 - HNL 167227 JH



Environment Agency
Alchemy,
Bessemer Road,
Welwyn Garden City,
Hertfordshire,
AL7 1HE



Legend

- Main Rivers
- Site location

Flood Event Outlines

- 1987
- 2014

The historic flood event outlines are based on a combination of anecdotal evidence, Environment Agency staff observations and survey.

Our historic flood event outlines do not provide a definitive record of flooding. It is possible that there will be an absence of data in places where we have not been able to record the extent of flooding. It is also possible for errors occur in the digitisation of historic records of flooding.

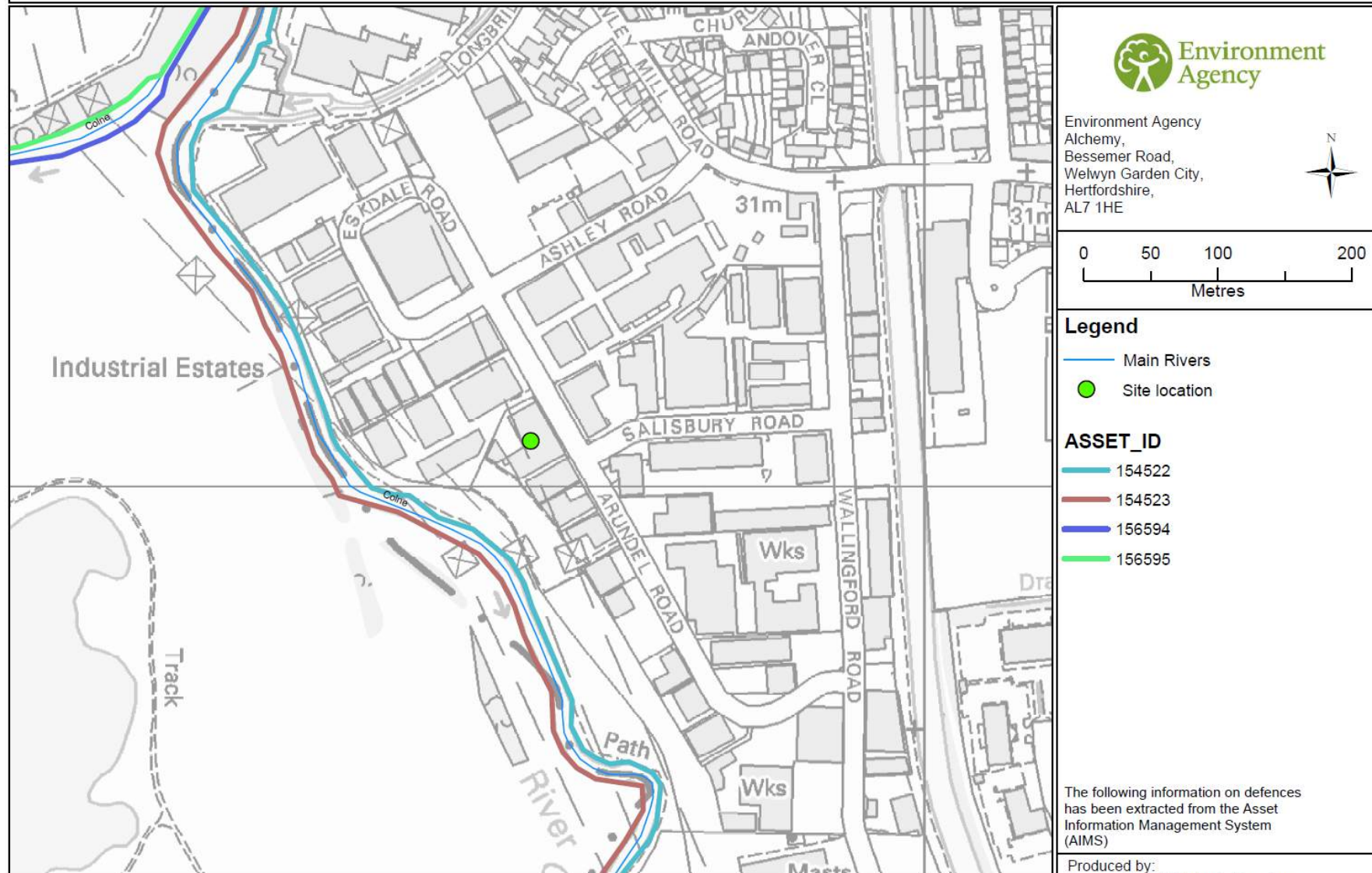
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Cyril Leonard Ltd

Structures and Defences centred on: Uxbridge Industrial Estate, Barton Buildings, UB8 2SN - 02/04/2020 - HNL 167227 JH



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Environment Agency ref: [HNL 167227 JH](#)

The following information on defences has been extracted from the Asset Information Management System (AIMS)

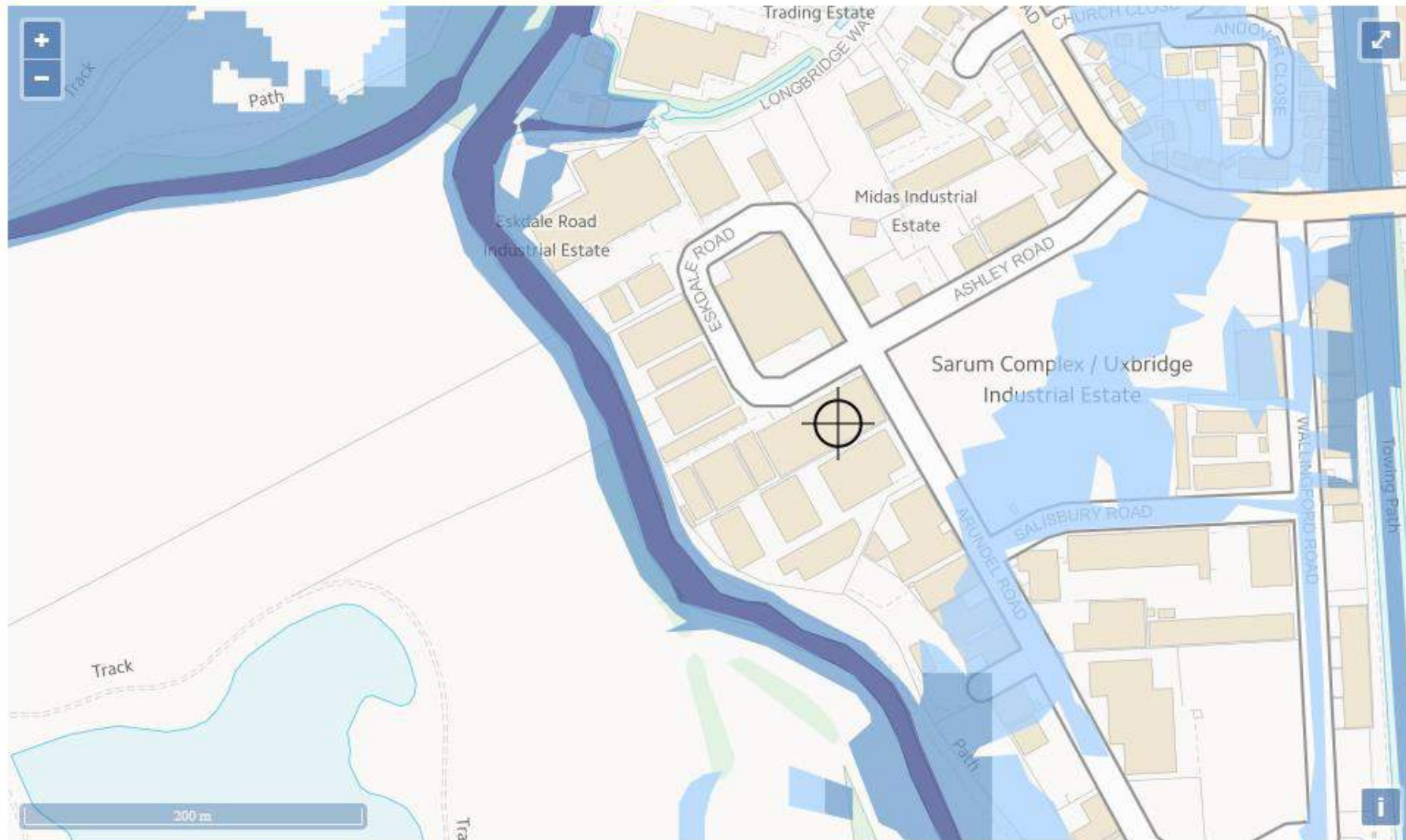
Defences

Asset ID	Asset Type	Asset Protection	Asset Comment	Asset Description	Design Standard of protection (years)	Downstream Crest Level	Upstream Crest Level	Condition of Defences (1=Good, 5 = Poor)
154523	high_ground	fluvial	Natural vegetated channel	Natural Channel	80	30.40	29.88	3
154522	high_ground	fluvial	Natural vegetated channel	Natural Channel	80	29.36	31.53	3
158595	high_ground	fluvial	Natural Vegetated channel	Natural Bank	80	29.44	31.00	3
158594	high_ground	fluvial	Natural Vegetated channel	Natural Bank	80	26.50	29.06	3

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Extent of flooding

Enter a place or postcode



Extent of flooding from rivers or the sea

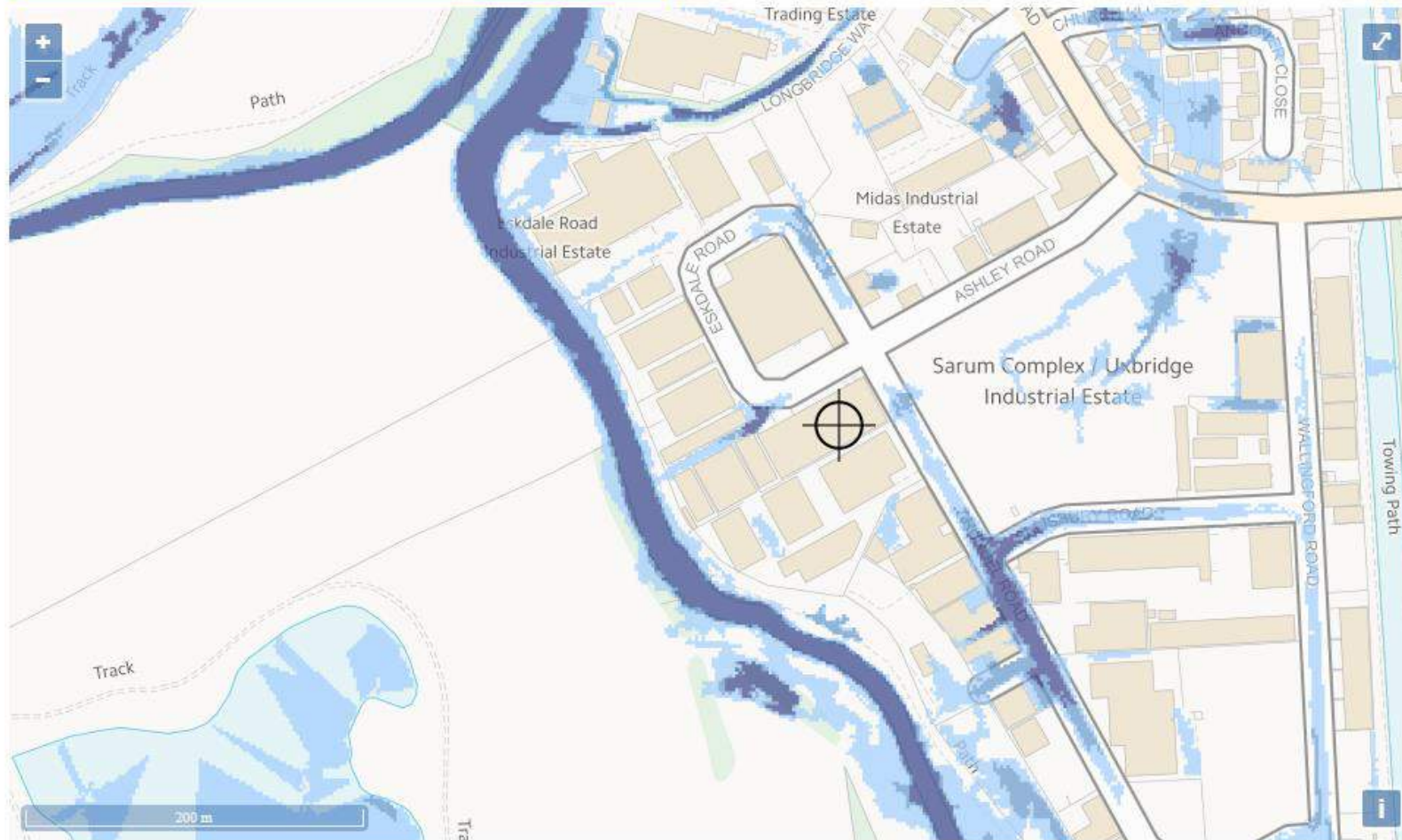
High Medium Low Very low Location you selected

DRAFT FOR COMMENT ONLY



Extent of flooding

Enter a place or postcode



Extent of flooding from surface water

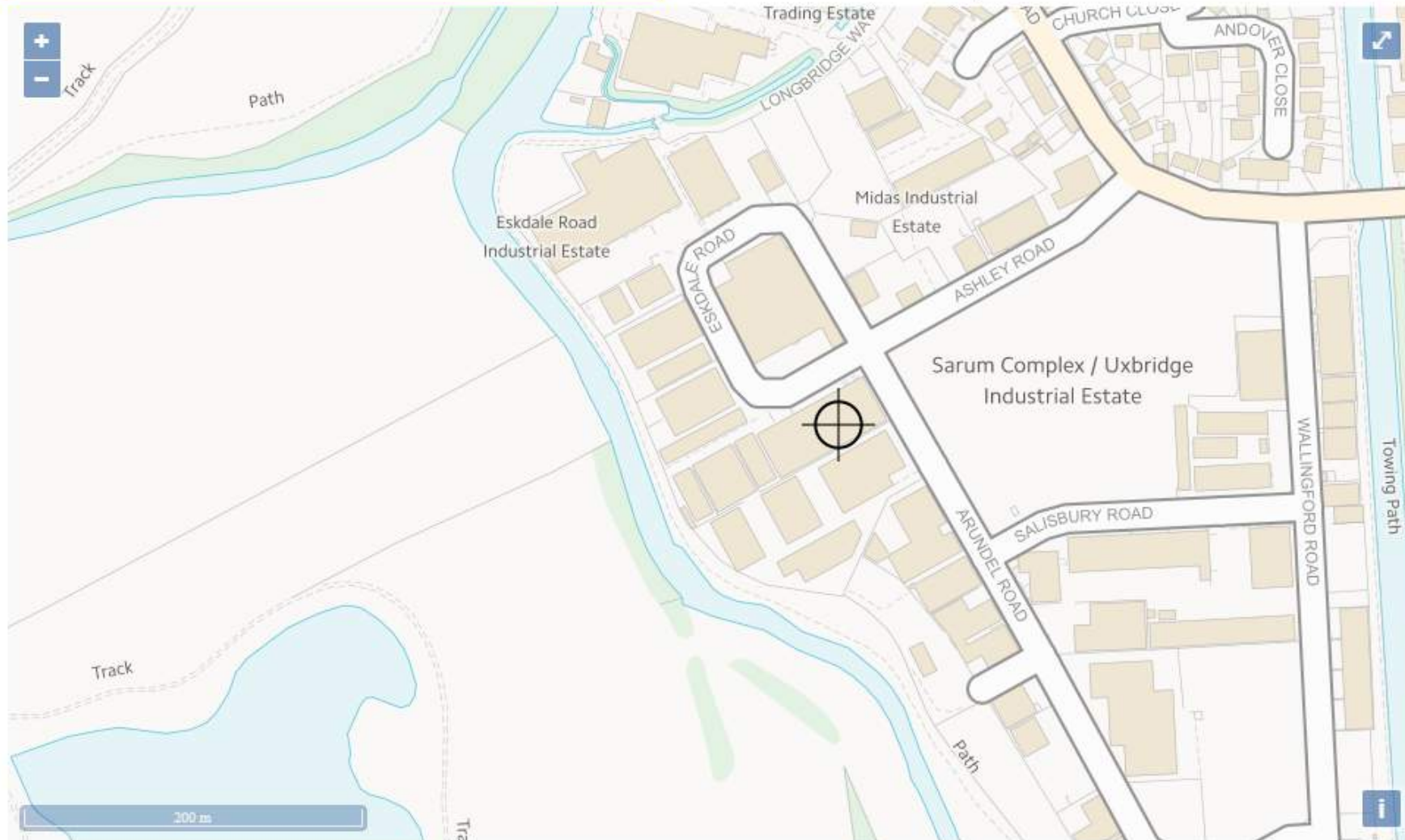
● [High](#) ● [Medium](#) ● [Low](#) ○ [Very low](#) ⊕ Location you selected

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Depth and flow estimates at monitoring stations ▾

Enter a place or postcode



Estimated depth and flow of water at river and sea level monitoring stations

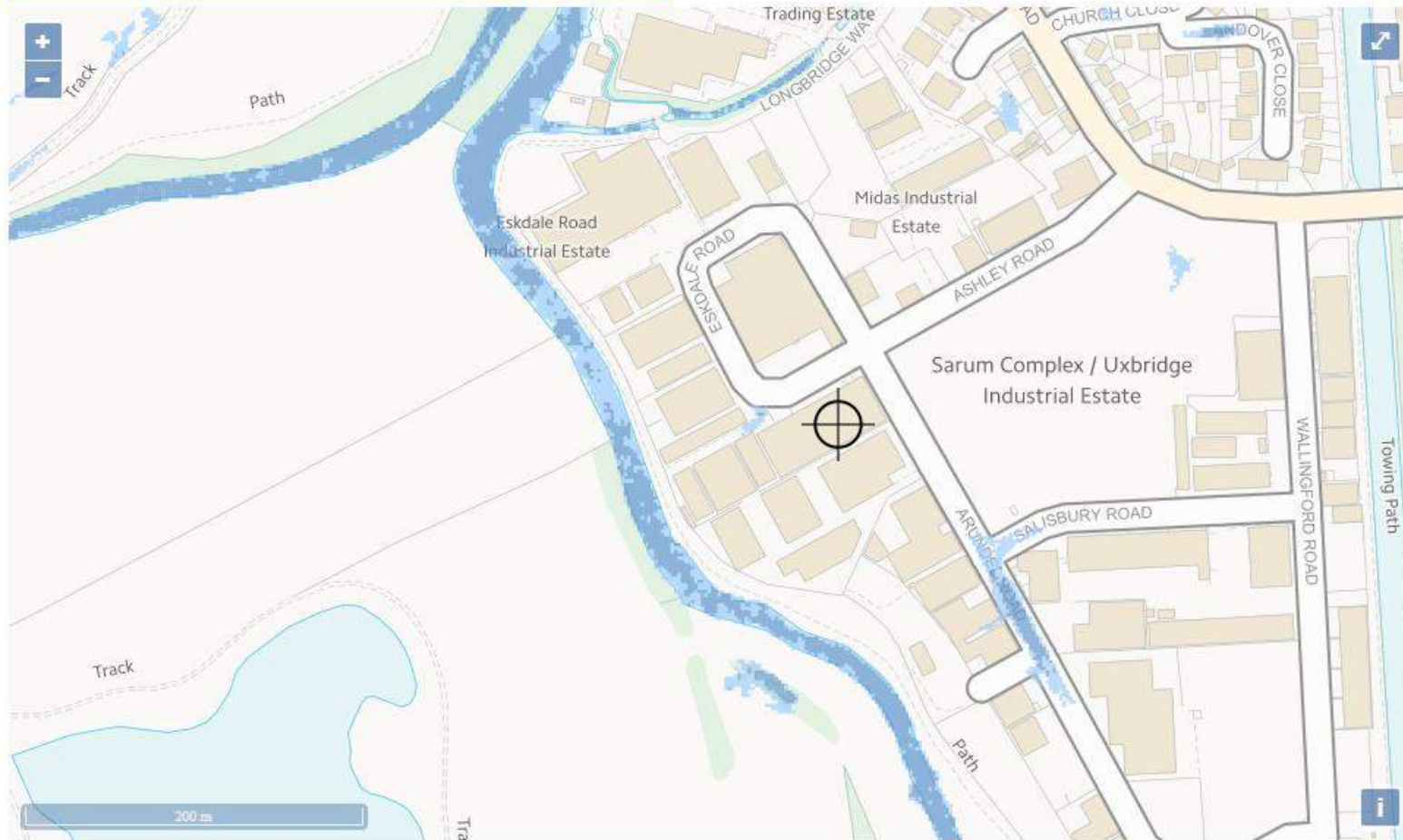
● River level monitoring station ● Sea level monitoring station ⊕ Location you selected

Industrial Estate
Cyril Leonard Ltd

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High risk: depth

Enter a place or postcode



Surface water flood risk: water depth in a high risk scenario

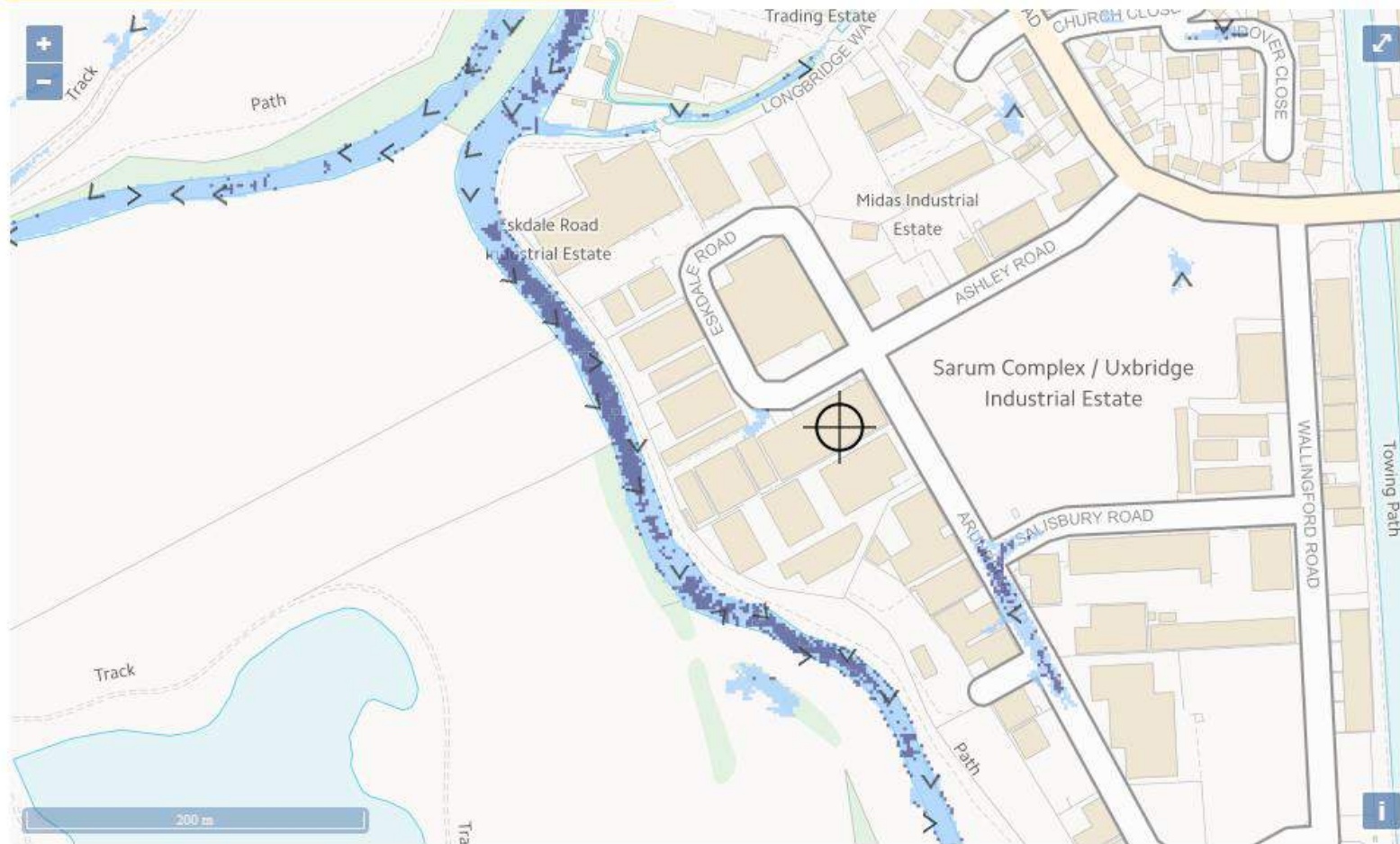
Flood depth (millimetres)

Over 900mm 300 to 900mm Below 300mm Location you selected

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High risk: velocity

Enter a place or postcode



Surface water flood risk: water velocity in a high risk scenario

Flood velocity (metres/second)

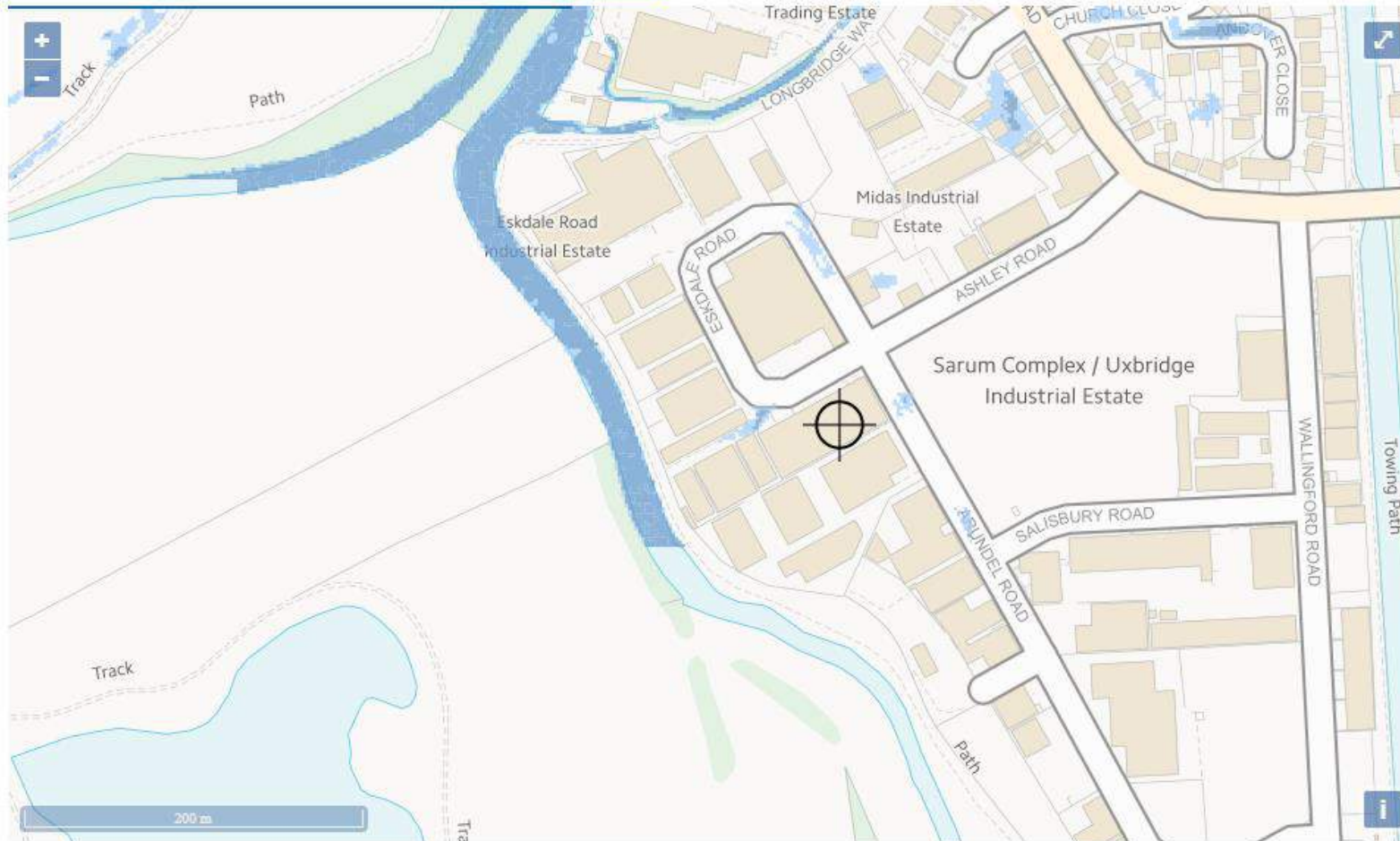
Over 0.25 m/s Less than 0.25 m/s Direction of water flow Location you selected

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Medium risk: depth

Enter a place or postcode



Surface water flood risk: water depth in a medium risk scenario

Flood depth (millimetres)

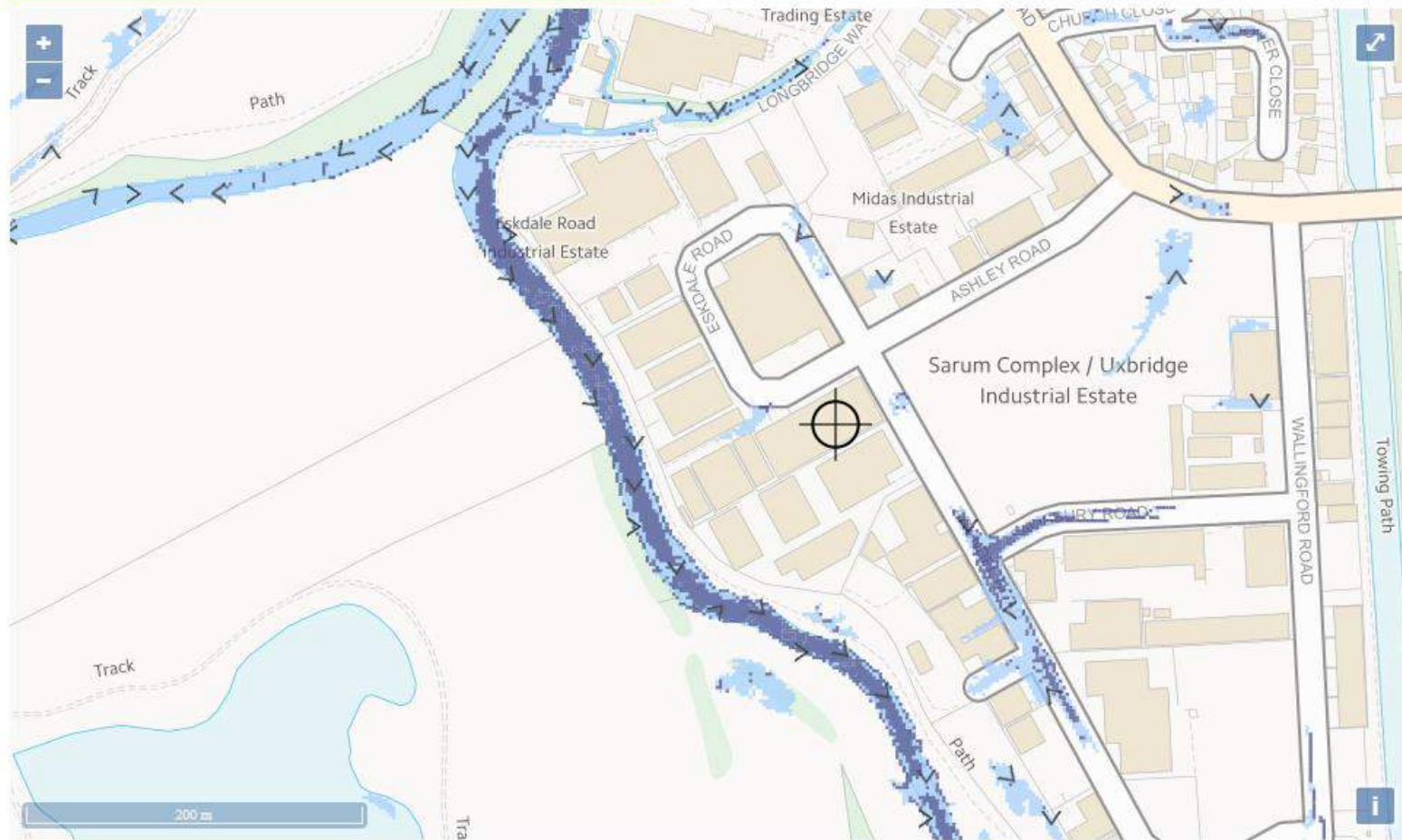
Over 900mm 300 to 900mm Below 300mm Location you selected

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Medium risk: velocity

Enter a place or postcode



Surface water flood risk: water velocity in a medium risk scenario

Flood velocity (metres/second)

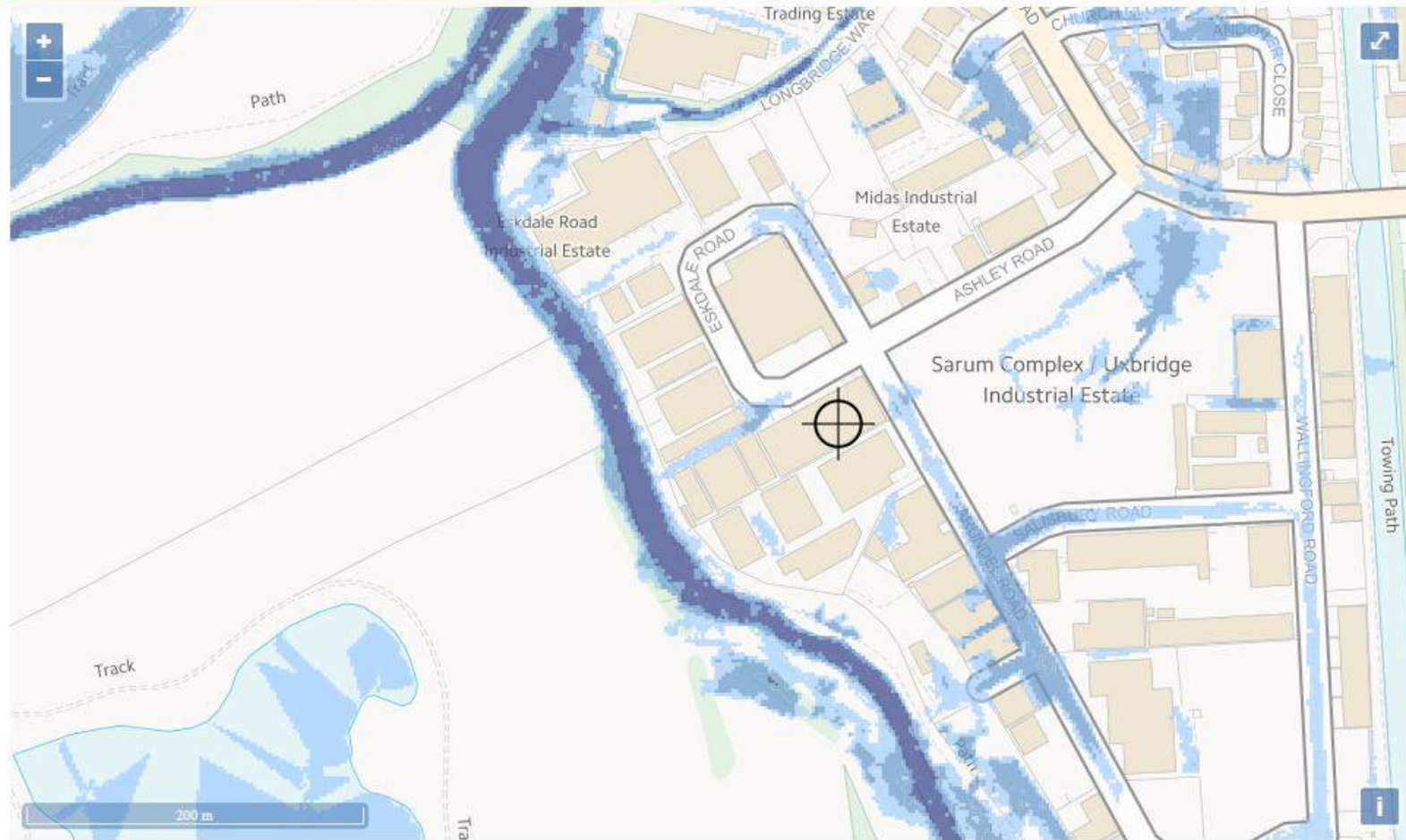
● Over 0.25 m/s ● Less than 0.25 m/s ↖ Direction of water flow ⊕ Location you selected

DRAFT FOR COMMENT ONLY



Low risk: depth

Enter a place or postcode



Surface water flood risk: water depth in a low risk scenario

Flood depth (millimetres)

Over 900mm 300 to 900mm Below 300mm Location you selected

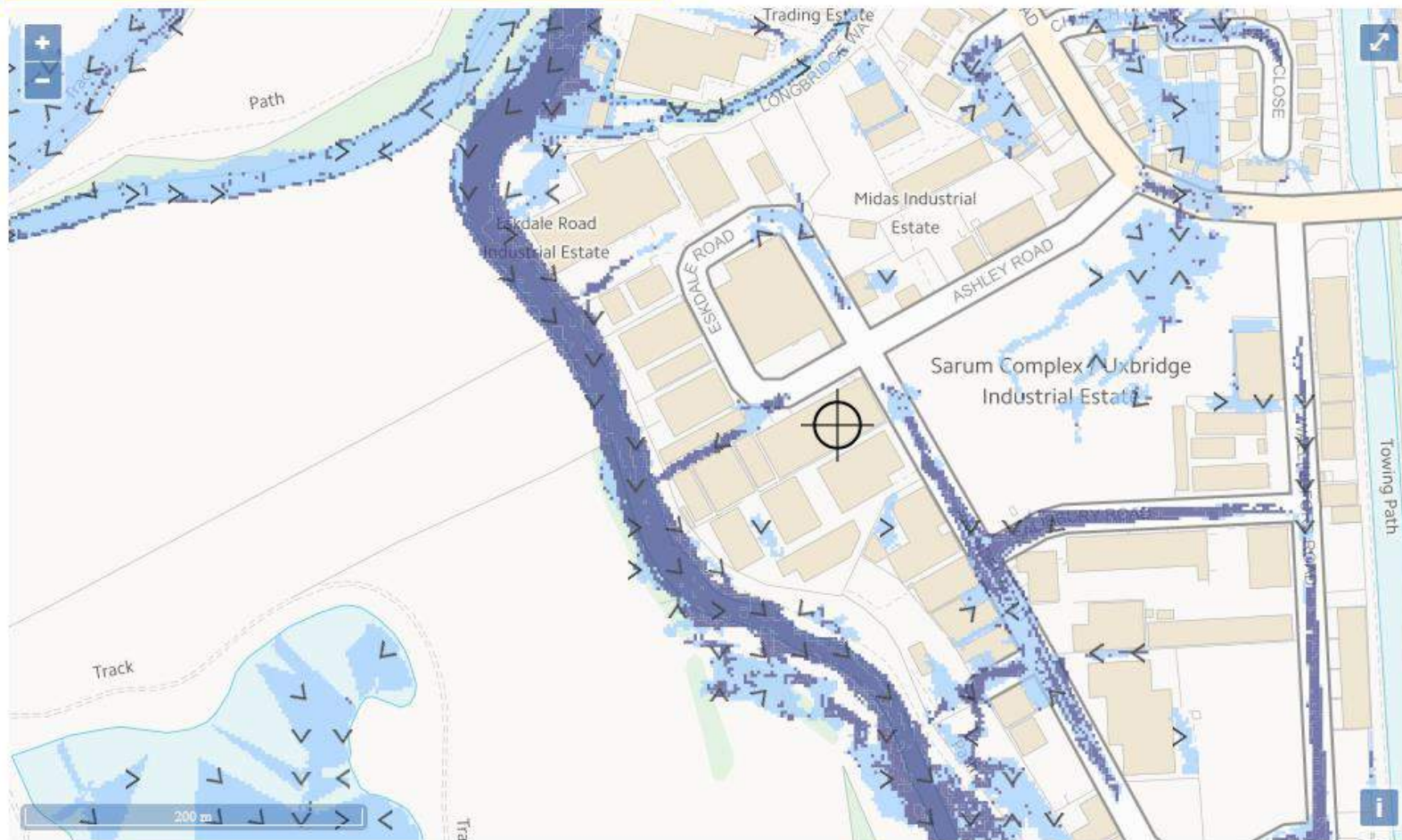
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Low risk: velocity

Enter a place or postcode



Surface water flood risk: water velocity in a low risk scenario

Flood velocity (metres/second)

Over 0.25 m/s Less than 0.25 m/s Direction of water flow Location you selected

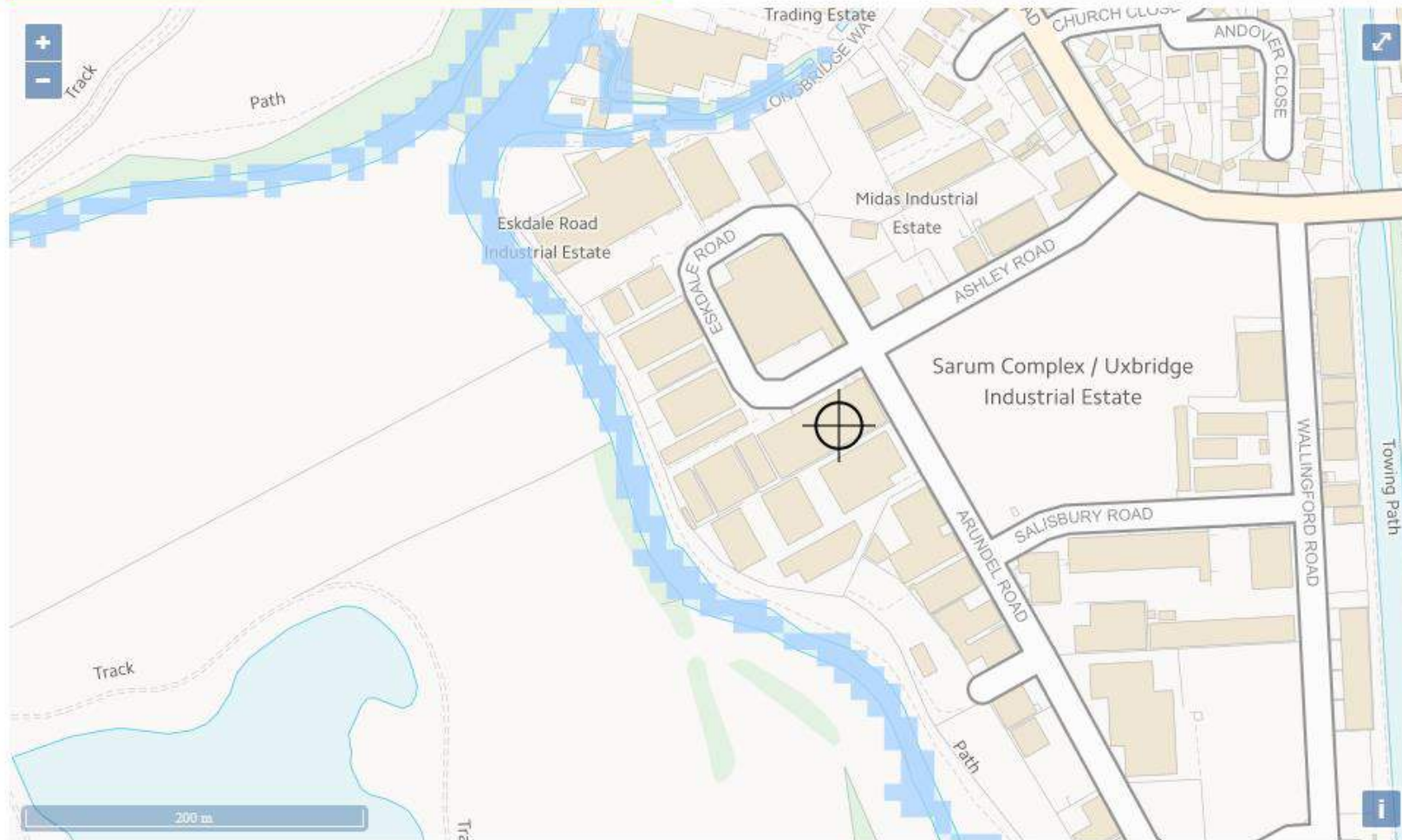
1833-FRA-1-Draft: Barton Buildings, Uxbridge Industrial Estate
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Extent of flooding

Enter a place or postcode

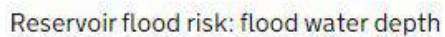


Extent of flooding from reservoirs

● Maximum extent of flooding ⊕ Location you selected

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Cyril Leonard Ltd

Enter a place or postcode



Over 2m
Between 0.3 and 2m
Below 0.3m
Location you selected

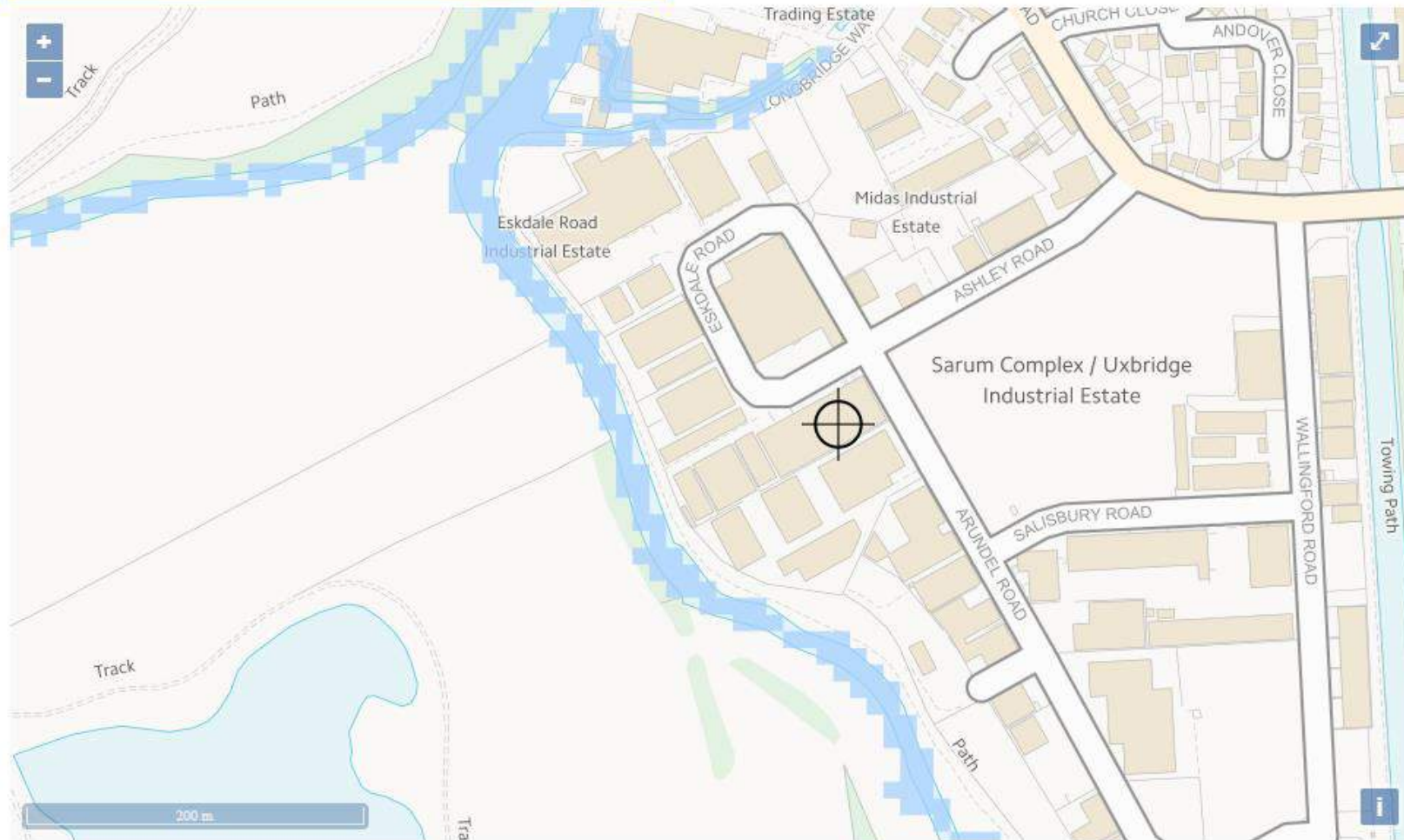
1833-FRA-1-Draft: Barton Buildings, Uxbridge Industrial Estate
Cyril Leonard Ltd

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Flood speed

Enter a place or postcode



Reservoir flood risk: flood water speed

Over 2m/s Between 0.5 and 2m/s Below 0.5m/s Location you selected

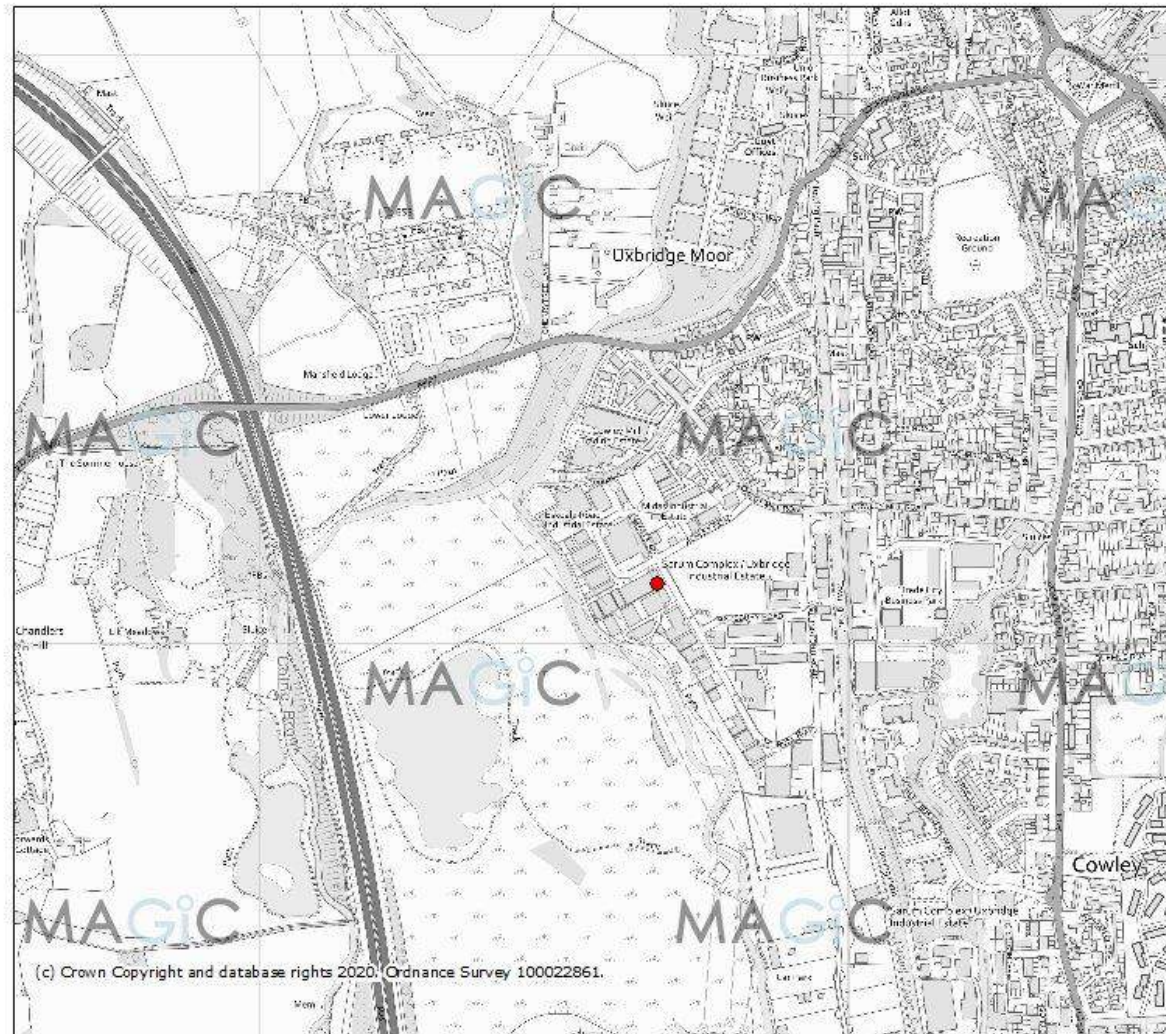
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Appendix G – Magic Defra Information

MAGiC

Source Protection Zones



Legend

Source Protection Zones merged (England)

- Zone I - Inner Protection Zone
- Zone I - Subsurface Activity
- Zone II - Outer Protection Zone
- Zone II - Subsurface Activity
- Zone III - Total Catchment
- Zone III - Subsurface Activity
- Zone of Special Interest

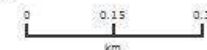
Projection = OSGB36

xmin = 502100

ymin = 181900

xmax = 507100

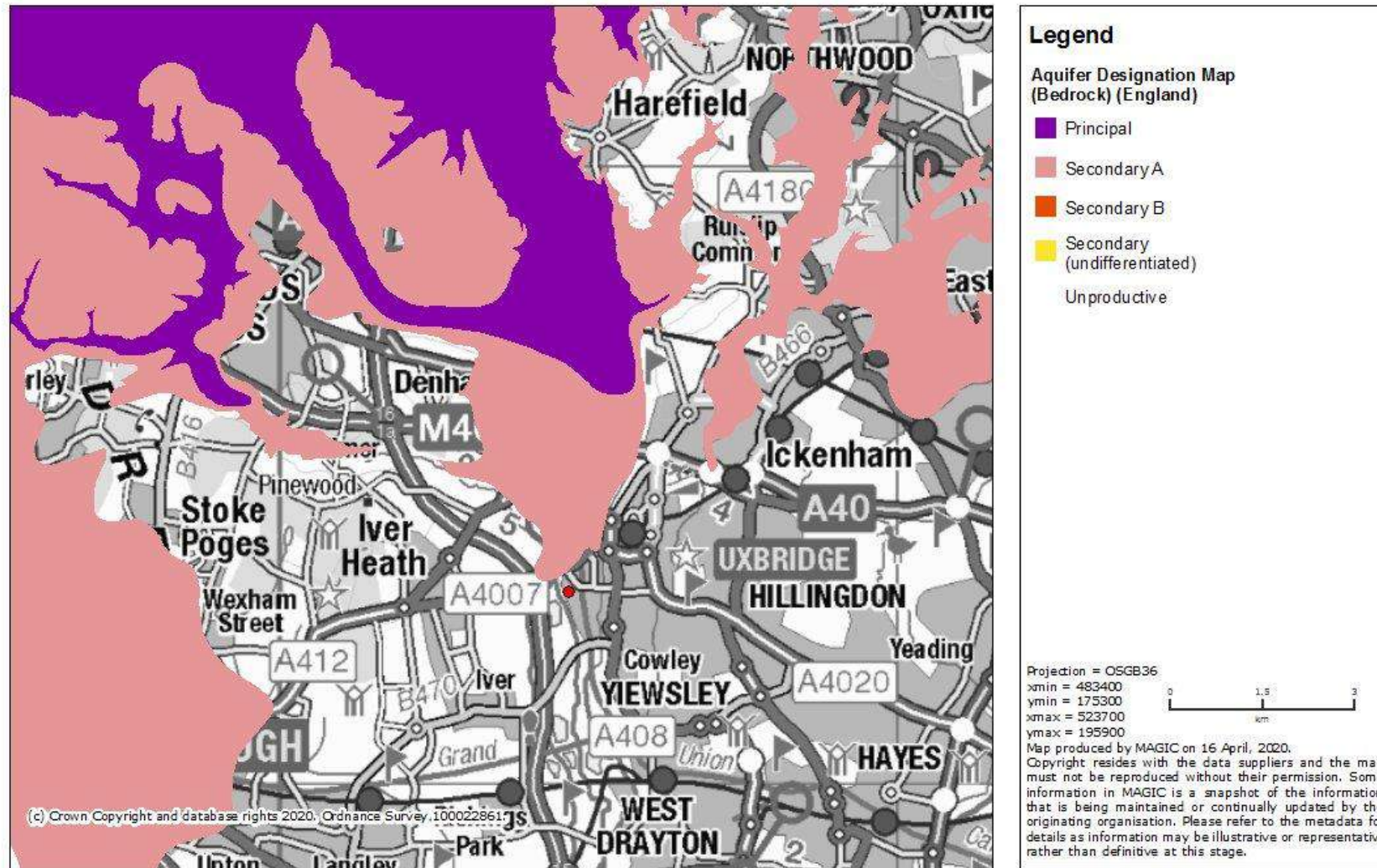
ymax = 184500



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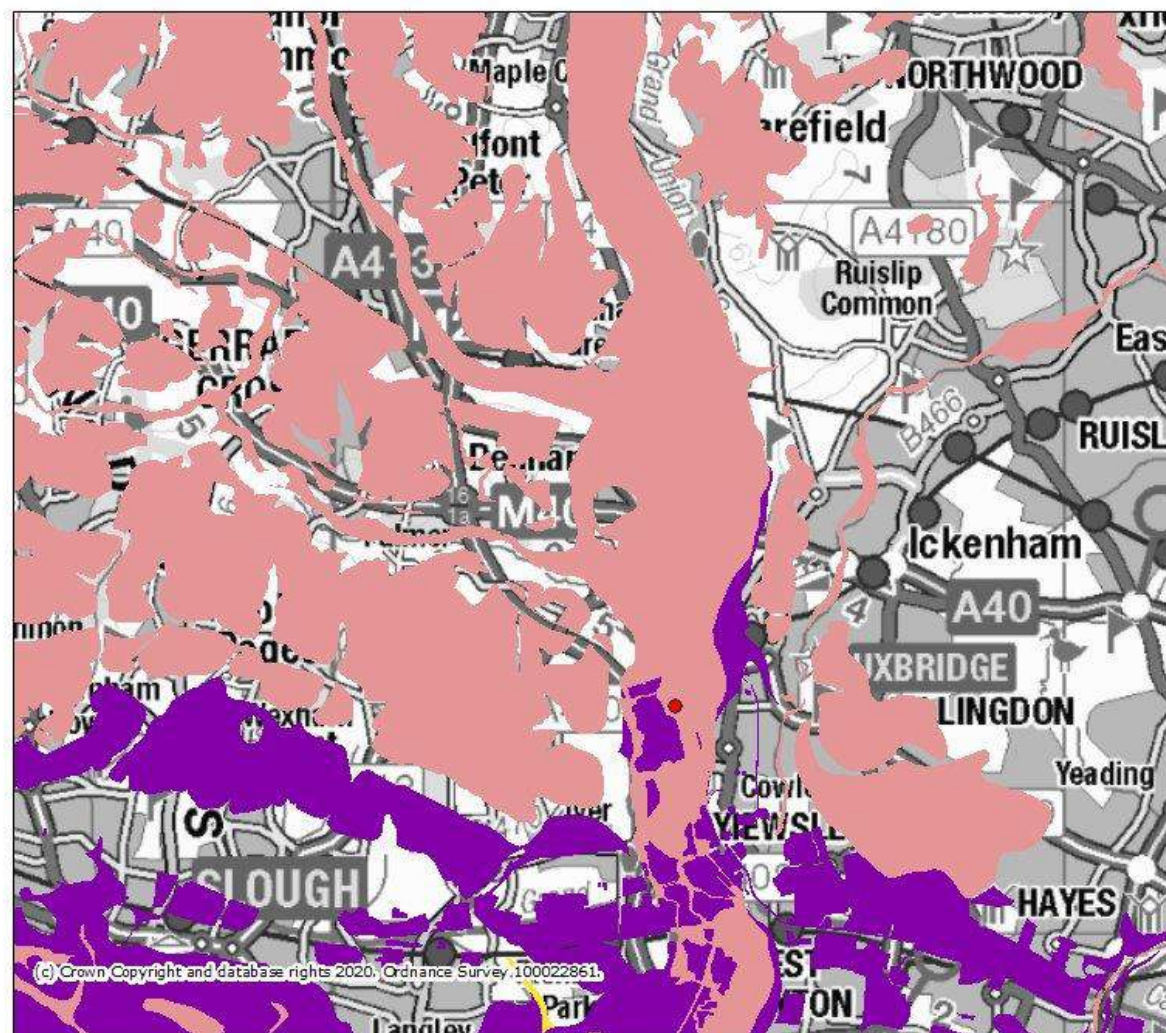
MAGiC

Bedrock Aquifer Designations



MAGiC

Superficial Aquifer Designation

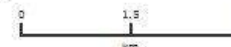


Legend

Aquifer Designation Map (Superficial Drift) (England)

- Principal
- Secondary A
- Secondary B
- Secondary (undifferentiated)
- Unknown (lakes+landslip)
- Unproductive

Projection = OSGB36
xmin = 483400
ymin = 175300
xmax = 523700
ymax = 195900



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Appendix H – Contacts

Local Authority	London Borough of Hillingdon Civic Centre, High Street, Uxbridge, Middlesex, UB8 1UW Building Control	Telephone: 01895 250111 Fax: 01895 250830 Website: www.hillingdon.gov.uk	
	Environmental Health	contact@hillington.gov.uk	
Environment Agency	National Customer Contact Centre PO Box 544 Rotherham S60 1BY	t	08708 506 506
		f	
		e	enquiries@environment-agency.gov.uk
Coal Authority	Mining Reports Office 200 Lichfield Lane Berry Hill, Mansfield Notts, HG18 4RG	t	
		f	
		e	www.coalminingreports .co.uk