GeoSmart Information

Environmental Thinking

FloodSmart Pro and Sequential Testing

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Site 1 address:

Land at Pool Court,
Pool Court,
London,
SE6 3JQ
Site coordinates: 537383, 172960

Site 2 address:

New Cross Social Club & Adjoining Land,
Honshay street,
London,
SE15 1HB
Site coordinates: 535336, 177556

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Site(s) address	Land at Pool Court Pool Court London SE6 3JQ (537383, 172960) and New Cross Social Club & Adjoining Land Hornshay street London SE15 1HB (535336, 177556)
Report prepared for	London Borough of Lewisham 3rd Floor Laurence House 1 Catford Road SE6 4RU
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Date issued	August 2016 and updated October 2016
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1. Executive summary

The National Planning Policy Framework (2012) and Planning Practice Guidance (2014) require that flood risk assessments review flooding from all potential sources. A review has been undertaken of national environmental data sets to assess the potential flood risk to both of the Sites. The review is provided within this concise interpretative report written by an experienced GeoSmart flood risk consultant. This report concentrates on two different Sites within the London Borough of Lewisham, Land at Pool Court and New Cross Social Club & Adjoining Land.

Pool Court:

The Site is located in the London Borough of Lewisham in a setting of residential land use with ground levels on the Site falling in a westerly and a northerly direction. Historic fluvial flood events have been recorded at the Site (November, 1965) and the Site is in a fluvial Flood Zone 2 (the extreme perimeter of the north-west of the Site lies within the outline of the 1 in 100 year flood event) and is not protected by flood defences. The Site would also appear to be located within a Critical Drainage Area. Data was obtained indicating the 1 in 100 year + Climate Change modelled flood level for a node point at the center of the Site to be 17.71 mAOD. There is a significant area of the Site which is considered to be at high risk of surface water pluvial flooding and is considered to be at moderate risk of groundwater flooding. The proximity of the bridges to the Site would mean that flood risk from infrastructure cannot be discounted.

As the Site is classified as 'highly vulnerable' and is predominately located in a Flood Zone 2, an Exception Test is required once a Sequential Test has been passed. A SuDS design must be considered to mitigate any flood risk both to and from the Site as well as mitigation for groundwater flooding. It is also recommended that a site specific flood evacuation plan is prepared. The developer needs to ensure that minimum floor levels exceed those stated in Section 7.

Site analysis – Land at Pool Court

Source of Flood risk	Baseline*	After Mitigation
River and coastal	Moderate	Low
Surface water pluvial flooding	High	Moderate
Groundwater flooding	Moderate	Low
Other flood risk factors present	Yes	

*Includes the benefit of Environment Agency Flood Defences

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New Cross Social Club & Adjoining Land:

The Site is located in the London Borough of Lewisham in a setting of commercial and residential land use with ground levels on the Site falling in a northerly direction. Historic fluvial flood events have not been recorded at the Site. The Site is in a coastal/tidal Flood Zone 3 and is protected by flood defences designed to protect up to the 1 in 1000 year event. The Site is not located within a Critical Drainage Area and the nearest area which would remain flood free (not become a dry island) is approximately 590 m south of the Site.

Data obtained from the Environment Agency indicated that the Site is outside of a modelled flood defence breach event. The majority of the Site is considered to be at very low risk of surface water (pluvial) flooding however there is an isolated area to the west of the proposed Site area which is at moderate to high risk of surface water flooding. The Site is considered to be at negligible risk of groundwater flooding. In accordance with Table 2 of the NPPF, the Site is classified as a 'highly vulnerable' and is located in a Flood Zone 3a.

Highly vulnerable development is not usually permitted within a Flood Zone 3a, however as the risk to the Site has been identified to be low and the probability of residual risk is also low, it could be considered that highly vulnerable development may be feasible for the Site on the provision that both a Sequential and Exception Test is passed. A SuDS design needs to be considered to mitigate any flood risk both to and from the Site. It is also recommended that a site specific flood evacuation plan is prepared. The developer should ensure that minimum floor levels exceed those stated in Section 7.

Site analysis – New Cross Social Club & Adjoining Land:

Source of Flood risk	Baseline*	After Mitigation
River and coastal	Low	Low
Surface water pluvial flooding	Negligible to High	Low
Groundwater flooding	Negligible	N/A
Other flood risk factors present	Yes	

*Includes the benefit of Environment Agency Flood Defences

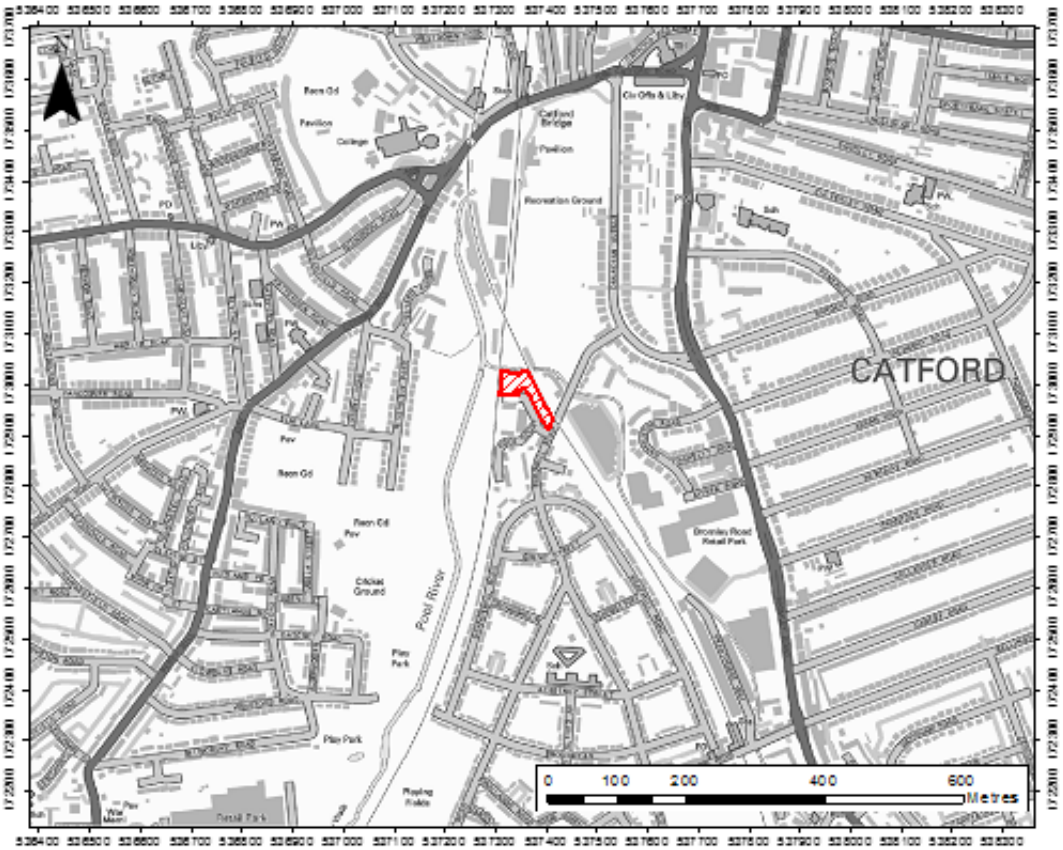
2. Site Introduction - Land at Pool Cross

Site information

The Site is located in the London Borough of Lewisham (Catford) in a setting of predominately residential land use, National Grid TQ 37383 72960 (see Figure 1). According to OS data the immediate area surrounding the Site is in the base of a shallow valley between 15-20 mAOD. Using a 1 km buffer around the Site, it is noted that, to the north the land remains between 15-20 mAOD with a slight fall in elevation to the north. To the west land rises to between 25-30 mAOD. To the south and to the east, land rises to between 20-25 mAOD.

The general level of the Site is between 17.2 and 22.8 mAOD with the Site declining in a westerly and a northerly direction. Land immediately to the east of the Site boundary steeply rises as land rises to the railway embankment. Topographic data indicates that the Site has areas of higher elevation to the south and to the center of the Site compared to the surrounding land. This is based on EA elevation data obtained for the Site to a 50cm resolution with a vertical accuracy of ±150 mm. Site plans and drawings are provided in Appendix A and EA site elevation is provided within Appendix F.

Figure 1 Site Location – Land at Pool Court



Development

The Site is currently an area of open land to the rear of Pool Court residential development and an adjoining area currently used with an industrial use (scaffolding yard) (Approximate size: 3,100 m^2). The open land is owned by London Borough of Lewisham and the adjoining scaffolding yard is privately owned by Network Rail.

Hydrological features

Watercourses/surface water features within 2km of the Site:

Water Courses

Pool River is approximately 40m west of the Site and flows in a northerly direction. Pool River's confluence with Ravensbourne River is approximately 40m north west of the Site

Ravensbourne River flows parallel to the eastern boundary of the Site before flowing west, adjacent to the northern boundary. After the confluence with Pool River, Ravensbourne flows in a northerly direction where it eventually flows into the River Thames.

Drainage channels

A drainage channel from to the Ravensbourne River is located approximately 100m north west of the Site.

Potential overland flow routes to the Site could exist from the west, south and the east.

Potential overland flow routes from the Site could exist to the north.

Proximity to relevant infrastructure

The eastern and western boundaries of the Site are located adjacent to railway lines. Both these railway lines cross over the Ravensbourne River via a bridge adjacent to the northern boundary of the Site.

A culvert on the Ravensbourne River is located approximately 380m north (downstream) of the Site.

A road bridge (Fordmill Road) over the Ravensbourne River is approximately 70m to the north east of the Site.

Hydrogeological features

British Geological Survey mapping indicates that the underlying superficial geology consists of Alluvium (Clay, Silt, Sand and Gravel)(BGS, 2016) and is classified as a Secondary A Aquifer (EA, 2016d).

British Geological Survey mapping indicates that the underlying bedrock geology consists of the London Clay Formation (Sandstone)(BGS, 2016) and is not classified as an aquifer (EA, 2016d).

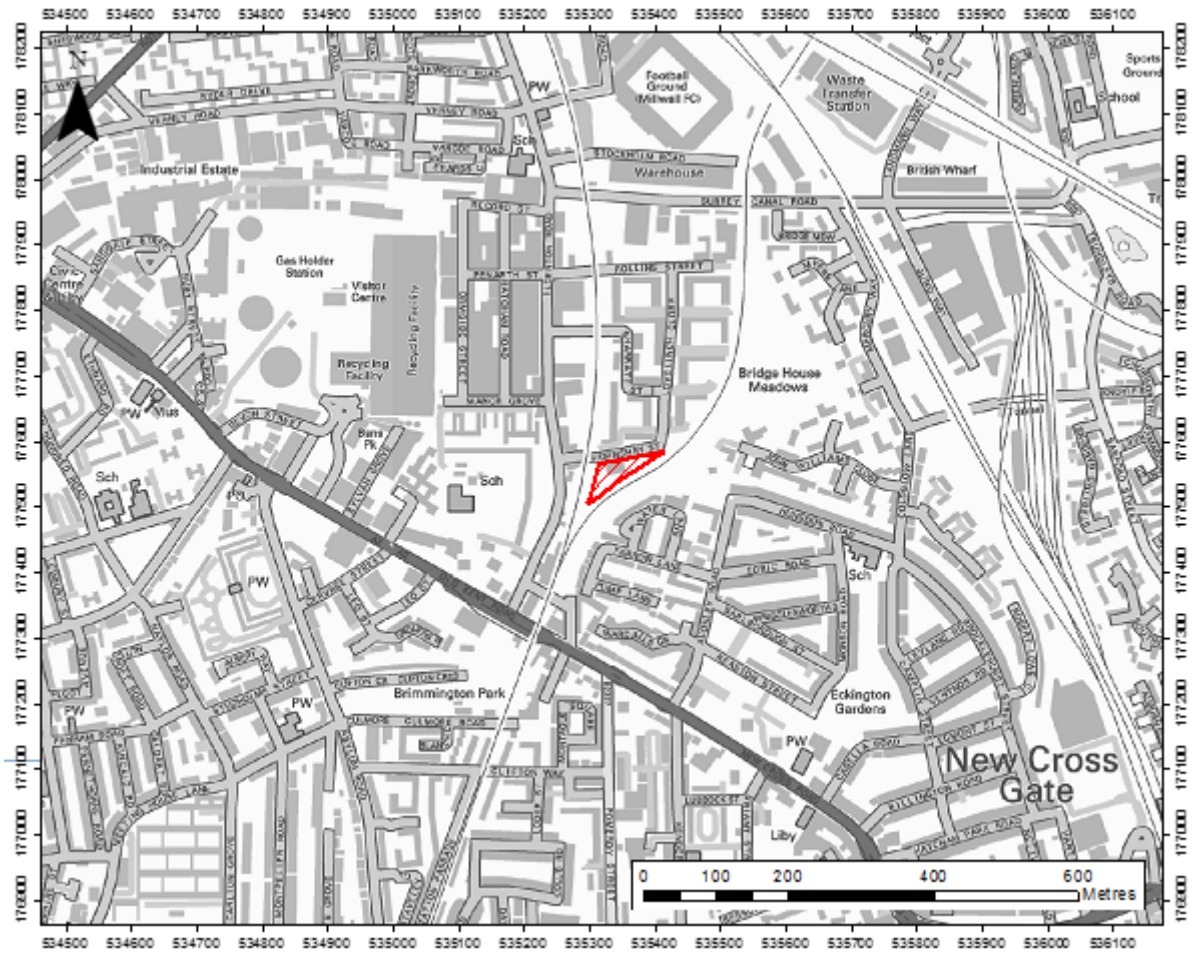
The Site is located within a Source Protection Zone (Inner Zone – Zone 1) (EA, 2016d).

3. Site Introduction - New Cross Social Club & Adjoining Land

The Site is located in the London Borough of Lewisham in a setting of a mixture of commercial and residential land use, National Grid TQ 35336 77556 (see Figure 2). According to OS data the immediate area surrounding the Site is relatively flat between 1-5 mAOD. Using a 1 km buffer around the Site, it is noted that, to the north, east and west land remains between 1-5 mAOD with a slight fall in elevation to the north. To the south, land rises to between 5-10 mAOD.

The general level of the Site is between 2.97 and 2.07 mAOD with the Site falling gradually in a northerly direction. Land immediately to the west, south and east of the Site boundary steeply rises to between 6-8 mAOD. This is based on EA elevation data obtained for the Site to a 50cm resolution with a vertical accuracy of ±150 mm. Site plans and drawings are provided in Appendix A and EA site elevations are provided within Appendix F.

Figure 2 Site Location – New Cross Social Club & adjoining land



Development

The Site is currently used within a commercial capacity (Approximate size: 3,110 m^2). The existing development is a part one and part two-storey licensed bar and hall which is utilised for community events, including church services on Sundays. To the east of the building is a car park and a flood-lit Multi Games Area (MUGA)

Hydrological features

Watercourses/surface water features within 2km of the Site:

Water Courses

The River Thames is approximately 1.9 km north east of the site.

Quay and Marinas

Greenland Dock is approximately 1.6 m north east of the Site.

South Dock Marina is approximately 1.7 km north east of the Site.

Canada Water is approximately 1.8 km north east of the Site.

Standing water features

There are four standing water features within 2 km of the Site. The closest to the Site is approximately 850m north east located within Folkestone Gardens.

Potential overland flow routes to the Site could exist from the west, south and the east.

Potential overland flow routes from the Site could exist to the north and north east.

Proximity to relevant infrastructure:

The eastern and western boundaries of the Site are located adjacent to railway lines.

Hydrogeological features

British Geological Survey mapping indicates that the underlying superficial geology consists of Kempton Park Gravel Formation (Sand and Gravel)(BGS, 2016) and is classified as a Secondary A Aquifer (EA, 2016d).

British Geological Survey mapping indicates that the underlying bedrock geology consists of the Thanet Formation (Sandstone) (BGS, 2016d) and is classified as a Secondary A Aquifer (EA, 2016).

The Site is not located within a Source Protection Zone (EA, 2016d).

Sequential Test

4. Sequential Test Introduction

Report Objectives

Lewisham Borough Council have undertaken a Site selection process to identify the most suitable Gypsy & Traveller Site in Lewisham. The Site selection process so far has provided two potential Sites, which are now subject to an initial Flood Risk Assessment and Sequential Testing in order to identify the most suitable Site to take forward through planning. The proposed development intends to accommodate approximately 6 caravan pitches (including circulation) with a static and potentially a touring caravan space, complete with a single storey utilities block (see Appendix A).

Sequential Test Report

Background and purpose

This assessment has been undertaken by firstly compiling information concerning the Site and the surrounding area. The information which is gathered is then used to construct a 'conceptual site model', including an understanding of the appropriateness of the development as defined in the NPPF (2012) and the source(s) of any flood risk present.

This report has been prepared with reference to the National Planning Policy Framework (NPPF, 2012).

"*The National Planning Policy Framework set out the Government's planning policies for England and how these are expected to be applied"* (NPPF, 2012).

The National Planning Policy Framework promotes a sequential, risk based approach to the location of development.

"This general approach is designed to ensure that areas at little or no risk of flooding from any source are developed in preference to areas at higher risk. The aim should be to keep development out of medium and high risk flood areas (Flood Zones 2 and 3) and other areas affected by other sources of flooding where possible" (NPPG, 2014).

The aim of a Sequential Test is to steer new development towards areas with the lowest probability of flooding (NPPF, 2012). Reasonably available sites located in Flood Zone 1 should be considered before those in Flood Zone 2 and only when there are no reasonably available sites in Flood Zones 1 and 2 should development in Flood Zone 3 be considered.

Sequential Test Report scope

A thorough review of a range of publically available documents including the Local Plan, the local authority SHLAA, and the Strategic Flood Risk Assessment has been conducted. A review of a list of sites considered to be 'reasonably available and appropriate for the proposed development in areas with a lower probability of flooding' within the council area at the time of assessment.

Information obtained from the Environment Agency and a review of the local Strategic Flood Risk Assessment (SFRA) is used to ascertain local flooding issues and, where appropriate, identify information to support a Sequential and/or Exception test required as part of the National Planning Policy Framework (NPPF, 2012).

Report limitations

It is noted that the findings presented in these reports are based on a desk study of information supplied by third parties. Whilst we assume that all information is representative of past and present conditions we can offer no guarantee as to its validity and a proportionate program of site investigations would be required to fully verify these findings.

These reports exclude consideration of potential hazards arising from any activities at the Site other than normal use and occupancy for the intended land uses. Hazards associated with any other activities have not been assessed and must be subject to a specific risk assessment by the parties responsible for those activities.

5. Sequential Test National & Local Policy

The Planning policy and Guidance Framework in relation to The Sequential Test & The Exception Test comprises of the NPPF, Technical Guidance to the NPPF, PPS25 Development and Flood Risk Practice Guide, and guidance from the Environment Agency and Department for Environment and Rural Affairs entitled "Flood Risk Assessment: The Sequential Test for Applicants".

When determining planning applications, local planning authorities should ensure flood risk is not increased elsewhere and only consider development appropriate in areas at risk of flooding where, informed by a site-specific flood risk assessment following the Sequential Test, and if required the Exception Test, it can be demonstrated that:

- Reasonably available sites located in Flood Zone 1 have been considered before those in Flood Zone 2 and only when there are no reasonably available sites in Flood Zones 1 and 2 is development in Flood Zone 3 be considered.
- 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; and
- Development is appropriately flood resilient and resistant, including safe access and escape routes where required, and that any residual risk can be safely managed, including by emergency planning; and it gives priority to the use of sustainable drainage systems.

The advice regarding flooding matters in the NPPF is supplemented by additional guidance in the associated document titled, "Technical Guidance to the National Planning Policy Framework"

National Policy: Planning Policy for Traveller Sites (Department for Communities and Local Government, 2015)

The Planning Policy for Traveller Sites document sets out the Government's planning policy for traveller sites. Planning law requires that applications must be determined in accordance with the policy, unless material considerations indicate otherwise, and must be taken into account in the preparation of development plans as it is a material consideration in planning decisions.

The objectives of the planning policy are to certify fair and equal treatment for travellers while respecting the interests of the surrounding community by ensuring:

> *"a. that local planning authorities should make their own assessment of need for the purposes of planning*
> *b. to ensure that local planning authorities, working collaboratively, develop fair and effective strategies to meet need through the identification of land for sites*
> *c. to encourage local planning authorities to plan for sites over a reasonable timescale*

d. that plan-making and decision-taking should protect Green Belt from inappropriate development
e. to promote more private traveller site provision while recognising that there will always be those travellers who cannot provide their own sites
f. that plan-making and decision-taking should aim to reduce the number of unauthorised developments and encampments and make enforcement more effective
g. for local planning authorities to ensure that their Local Plan includes fair, realistic and inclusive policies
h. to increase the number of traveller sites in appropriate locations with planning permission, to address under provision and maintain an appropriate level of supply
i. to reduce tensions between settled and traveller communities in plan-making and planning decisions
j. to enable provision of suitable accommodation from which travellers can access education, health, welfare and employment infrastructure
k. for local planning authorities to have due regard to the protection of local amenity and local environment"

Policy B: Planning for traveller sites discusses how local planning authorities can and should ensure that traveller sites are sustainable (economically, socially and environmentally). Local planning authorities should ensure that their policies:

a. promote peaceful and integrated co-existence between the site and the local community
b. promote, in collaboration with commissioners of health services, access to appropriate health services
c. ensure that children can attend school on a regular basis
d. provide a settled base that reduces both the need for long-distance travelling and possible environmental damage caused by unauthorised encampment
e. provide for proper consideration of the effect of local environmental quality (such as noise and air quality) on the health and well-being of any travellers that may locate there or on others as a result of new development
f. avoid placing undue pressure on local infrastructure and services
g. do not locate sites in areas at high risk of flooding, including functional floodplains, given the particular vulnerability of caravans
h. reflect the extent to which traditional lifestyles (whereby some travellers live and work from the same location thereby omitting many travel to work journeys) can contribute to sustainability.

Local Policy: Lewisham local development framework: Core Strategy Development plan document (Adopted June 2011)

The Core Strategy is the primary document of the Lewisham Local Development Framework, which will provide strategic objectives which are then developed to address the issues and, in turn, they lead to the borough's future picture or vision. This in turn leads to the strategy of where and how development should take place in the borough including

specific policies and proposals for different areas and strategic sites for delivering growth for Lewisham up to 2026.

In terms of policy for Gypsies and Travellers, the Core Strategy; Policy 2 states that proposals for additional and alternative gypsy and traveller sites will be assessed having regard to the following criteria;

> *"a. They have reasonable access to local shops, services and community facilities in particular schools and health services.*
> *b. They are safe and have reasonably convenient access to the road network.*
> *c. They have provision for parking, turning, service and emergency vehicles.*
> *d. Any business activities do not have unacceptable adverse impacts on the safety and amenity of occupants and their children and neighbouring residents particularly in terms of noise and overlooking, and other disturbance from the movement of vehicles to and from the site.*
> *e. They have a supply of essential services such as water, sewerage and drainage and waste disposal.*
> *f. They are designed and landscaped to a high standard which facilitates the integration of the site with the surrounding environment and amenity of the occupiers adjoining the site."*

Policy 2 also states:

> *"The Council will continue to assess and provide for the identified needs of gypsies and travellers in appropriate locations. The Council is in the process of identifying a suitable site to meet the immediate need arising from the redevelopment of the Thurston Road site, which forms part of the approved Lewisham Gateway development. A site will be identified through the Site Allocations DPD."*

To address the housing requirements of Lewisham's gypsy and traveller population, the Council will assess and identify a site for the minimum number of required pitches in accordance with a criteria based policy to ensure site selection and assessment meet national and regional requirements.

London Borough of Lewisham: Gypsy and Traveller Accommodation Needs Assessment (June 2015) and Update (August 2016)

The primary objective of the Gypsy and Traveller Accommodation Needs Assessment (GTANA) was to provide an assessment of current and future need for Gypsy, Traveller and Travelling Showpeople accommodation in London Borough of Lewisham. The GTANA was also supposed to identify current and future permanent accommodation needs and identify whether or not the Council needed to plan for the provision of transit sites or emergency stopping places.

The GTANA provides a credible evidence base which can be used to aid the implementation of Development Plan policies and the provision of new Gypsy and Traveller pitches and Travelling Showpeople plots. Based upon the evidence presented in this study the additional pitch provision needed for Gypsies and Travellers in Lewisham is for 6 additional

pitches. This figure is what is necessary to meet the statutory obligations towards identifiable needs of the Gypsy and Traveller population arising in Lewisham.

Strategic Flood Risk Assessment (SFRA): London Borough of Lewisham's SFRA (2008 and update in 2015)

The London Borough of Lewisham has the River Thames to the north and falls within the catchment of the River Ravensbourne and its tributaries. In terms of the River Thames (and of the New Cross social Club development site), the natural floodplain of the Thames is now almost fully developed, and the northern proportion of the Borough is heavily dependent upon manmade flood defences to protect against the risk of flooding. No informal raised flood defences have been identified in Lewisham but it is important to recognise that local roads and/or rail lines that have been constructed on raised embankments may alter overland flow routes, and as such may have a localised effect upon the risk of flooding.

As with the River Thames, the corridor of the River Ravensbourne is heavily constrained by urban development along much of the river lengths, resulting in modification to the river channel via canalisation or culverting. In tributaries of the Ravensbourne, there has been flooding of properties (since 2001) from surface water flooding due to capacity of urban drainage systems and/or backwater effects on urban drains from high water levels in the watercourses. Partial culvert blockages have also contributed to flood events since 2001.

6. The Sequential Test

Approach to the Sequential Test

The Sequential Test should be applied to demonstrate that there are no reasonably available sites in areas with a lower probability of flooding that would be appropriate to the type of development or land use proposed.

Guidance

Section 4.27 of the PPS25 defines reasonably available as sites that are suitable, developable & deliverable.

Deliverable – sites that are available, suitable, & achievable as shown on Local Planning Authority's SHLAA (Strategic Housing Land Availability Assessments) or other appropriate guidance or documentation.

Developable – sites should be in a suitable location for development and there should be a reasonable prospect that the site is available and could be viably developed at the point envisaged.

A development proposal will only fail to pass the Sequential Test if alternative sites are identified within the search area that are at lower risk of flooding, would be appropriate for the proposed development and are 'reasonably available' for development. A site is only considered to be reasonably available if it is both 'deliverable' and 'developable' as defined by the NPPF (Para.47, footnotes 11-12) and within the Planning Policy for Traveller Sites document (Para.10, footnotes 4-5):

- To be considered deliverable, sites should be available now, offer a suitable location for development now, and be achievable with a realistic prospect that development will be delivered on the site within five years and in particular that development of the site is viable.
- Sites with planning permission should be considered deliverable until permission expires, unless there is clear evidence that schemes will not be implemented within five years, for example they will not be viable, there is no longer a demand for the type of units or sites have long term phasing plans.
- To be considered developable, sites should be in a suitable location for traveller site development and there should be a reasonable prospect that the site is available and could be viably developed at the point envisaged. London Borough of Lewisham have applied Search Parameters and Site Selection Criteria in order to determine developable Sites.

These sites will usually be drawn from the evidence base / background documents that have been produced to inform the emerging Local Plan. To identify potential reasonably available sites the following documents were assessed:

- London Borough of Lewisham Gypsy & Traveller Search Parameters and Site Selection Criteria (attached as Appendix B)
- London Borough of Lewisham's Local Plan and Core Strategy
- Strategic Flood Risk Assessment

These are the most current evidence based documents pertaining to land availability for housing development in the London Borough of Lewisham.

The conditions set out above have been used to identify sites and determine whether they are reasonably available and suitable alternatives for the proposed development to pass the Sequential Test.

Criteria for the Sequential Test Report

In order to conduct a search for alternative Sites which could be more feasible then the current Site, a number of search parameters and Site selection Criteria were set, consulted on and approved. The search parameters included a threshold of 2,400 m² (based on 6 pitches at the average size of 400 m²), all council owned land anywhere in the Borough (Appendix B).

When considering applications, local planning authorities need to consider effective use of previously developed (brownfield), untidy or derelict land (DCLG, 2015) and the Gypsy, traveller and needs assessment has already stated that, due to high land cost and demand for housing in the area will make it difficult to provide a new Site, and it was noted in Para 5.20 that:

"*Stakeholders also noted there is a significant shortage of available and affordable land within the Borough. Any available land is likely to be used to meet the demand for high density market sale or affordable housing. Traveller sites are low density and thought by some to be not the best use of land*."

A plot which is smaller than 2,400m² is unlikely to provide the accommodation levels required. As the intended development is for 6 caravan pitches (400m² each including circulation) with a static and potentially a touring caravan, complete with a single storey utilities block, a Site which is smaller than 2,400m² would not be feasible and would not be able to accommodate the requirements of the proposed development.

Site Testing:

Strategic Lewisham Gypsy & Traveller Site Selection (GTSS) - Review of Shortlisted Sites (2016)

A review of the London Borough of Lewisham's Gypsy & Traveller Site Selection: Lewisham Gypsy and Traveller Site Selection Background Paper (2016) has been undertaken as part of this report. The primary role of the review was to identify sites in Lewisham Borough with the potential for housing, assess that housing potential and assess when they are likely to be developed. The review does not represent policy and will not be used to determine

whether a site should be allocated or granted planning permission for development, it will simply determine the most suitable Site to take forward through to planning.

In January 2016, the Mayor and Cabinet noted a staged approach to identifying potential gypsy and traveller site's. A Gypsy & Traveller Site Selection was produced which reviews a long list of possible sites identified by LBL Property on 26 April 2016. The review was based on the proposed Site Selection Criteria that were approved for consultation purposes by the Mayor and Cabinet in January 2016, as amended following comments received and officer reflection.

The Council originally identified a seven-step site selection process, including 'long-list', 'short-list' and 'Preferred Site or Sites' steps. However, given the relatively small number of potential sites that emerged from Step 3, the 'long-list' and 'short-list' steps were combined in to one. This resulted in the following six-step approach:

Step	Task
Step 1	Consult on proposed scope of Plan, Search Parameters, Site Selection Criteria & Sustainability Appraisal Scoping Report. This was undertaken in March and April 2016.
Step 2	Establish a list of appropriate Council assets. Officers identified a list of all Council assets (land and buildings) of 0.24ha in size and above based on 6 pitches with an average of 400sqm from Council ownership data by reviewing the Council's asset registers.
Step 3	Identify a long-list of potential sites. Officers applied Site Selection Criterion 1 (Effective and efficient use of public assets) and this resulted in 5 potential Council-owned sites being identified. A private landowner also put its site forward for consideration during Stage 1 and this was included on the following long-list of 6 sites: A - Land on Westbourne Drive SE23; B - Land off Turnham Road, SE4 ; C - New Cross Social Club & adjoining land, Hornshay Street, SE15; D - Land at R/O 46-116 Baizdon Road SE3; E - Land at Pool Court, SE6; and F - Land at St Mildred's Road, Hither Green, SE12.
Step 4	Identify a preferred site or sites. Officers apply Site Selection Criteria 2 to 10 (summarised below) to the long-list of sites • Reasonable access to local shops, services and community facilities in particular schools and health services. • Safe and reasonably convenient access to the road network. • Capable of satisfactory provision for parking, turning, service and emergency vehicles. • Mixed residential and business use opportunities

Step	Task
	• They have a supply of essential services such as water, sewerage and drainage and waste disposal. • Scope for healthy lifestyles and integration. • Local environmental quality. • Spatial planning and development management considerations. • Deliverability This resulted in the identification of the proposed preferred sites. Officers drew on the results of engagement with officers across the Council and the Clinical Commissioning Group and the Metropolitan Police, together with and earlier draft version of this report when applying Criteria 2 to 10 to the long-list of sites and assessing the appropriateness of potential sites. A site selection matrix was established so that each criterion for each site could be given a qualitative score (1 – Excellent, 2- Good, 3 – Average, 4 – Poor or 5 - Very poor). This in turn allowed for the six long-listed sites to be compared and the merits and shortcomings of each site to be considered in order that the most appropriate site or sites to be identified. This resulted in Sites C (New Cross Social Club & adjoining land) and E (Land at Pool Court) being identified as potential sites.

The two final Sites (noted in the table above) are now subject to Flood Risk Assessment and Sequential Testing and will be set against the rest of the Sites shortlisted within the London Borough of Lewisham Gypsy & Traveller Site Selection: Lewisham Gypsy and Traveller Site Selection Background Paper (2016). The final two Sites have been included within the assessment of the GTSS sites. Due to a number of potential Sites which have been determined to be potential viable alternatives for the Site, further investigation into the availability of these sites has been undertaken.

Of the six sites which were highlighted to be potentially viable alternatives, four were excluded from further consideration. This was due to poor results in the overall assessment against the Site assessment criteria.

Flood Risk Assessment

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7. Flood Risk Assessment Introduction

Flood Risk Assessment

Background and purpose

This assessment has been undertaken by firstly compiling information concerning the Site and the surrounding area. The information which is gathered is then used to construct a 'conceptual site model', including an understanding of the appropriateness of the development as defined in the NPPF (2012) and the source(s) of any flood risk present. Finally, a preliminary assessment of the steps that can be taken to manage any flood risk to the development is undertaken.

This report has been prepared with reference to the National Planning Policy Framework (NPPF, 2012).

"*The National Planning Policy Framework set out the Government's planning policies for England and how these are expected to be applied*" (NPPF, 2012).

The National Planning Policy Framework promotes a sequential, risk based approach to the location of development.

"This general approach is designed to ensure that areas at little or no risk of flooding from any source are developed in preference to areas at higher risk. The aim should be to keep development out of medium and high risk flood areas (Flood Zones 2 and 3) and other areas affected by other sources of flooding where possible" (NPPG, 2014).

The purpose of this report is to provide clear and pragmatic advice regarding the nature and potential significance of flood hazards which may be present at the Site.

Flood Risk Assessment Report scope

A thorough review of a commercially available flood risk report and Environment Agency supplied data indicating potential sources of flood risk to the Site from rivers and coastal sources, surface run-off (pluvial), groundwater and reservoirs, including historical flood information and modelled flood extent. Appropriate measures are recommended to manage and mitigate the flood risk to the property.

Local rainfall data for the 1 in 100 year rainfall event is used to support site run-off calculations if there is an increase in impermeable area as a result of the development. The effects of climate change will also be included in these calculations, using industry standard advice.

Information obtained from the Environment Agency and a review of the London Borough of Lewisham's Strategic Flood Risk Assessment – update 2015 (SFRA) has been used to ascertain local flooding issues and, where appropriate, identify information to support a Sequential and/or Exception test required as part of the National Planning Policy Framework (NPPF, 2012).

Using the available data the existing and future flood risks to and from the Site from all flood sources will be assessed in line with current best practice.

An indication of potential flood risk from the Site to downstream receptors is provided where the proposed development increases run-off from the Site, above the Greenfield run-off rates.

Datasets

The following table shows the sources of information that have been consulted as part of this report:

Source of flooding	Datasets consulted				
	Landmark Flood Report (Appendix C)	SFRA*	Environment Agency (Appendix D)	Thames Water (Appendix E)	OS Data
Historical	X	X	X		
Fluvial/tidal	X	X	X		
Surface water (pluvial)	X	X	X		
Groundwater	X	X			
Sewer		X		X	
Culvert/bridges		X			X
Reservoir		X	X		

* London Borough of Lewisham's Strategic Flood Risk Assessment – update 2015
*Supporting information on the datasets used is provided in the relevant appendix

8. Flood Risk Assessment - Land at Pool Court

Historical flood events

Historic fluvial flood events have been recorded at the Site, according to the EA (EA, 2016a). Part of the Site to the north east was affected by a flood in November 1965 due to an exceedance of the channel capacity (assumed to be from the River Ravensbourne).

Fluvial/coastal flood risk

According to mapping and data provided by the Environment Agency (Figure 3), the majority of the Site is located within an Environment Agency (undefended) Flood Zone 2 and is classified as being at moderate risk of fluvial flooding from the Ravensbourne River and Pool River. It is noted that the Site is adjacent to a fluvial Flood Zone 3 on the north eastern boundary however this area of high flood risk would appear to be contained by the railway line. The EA flood map and product 4 also states that the extreme perimeter of the north-west of the Site lies within the outline of the 1 in 100 year flood event from rivers in any given year. The Site is protected by flood defences and is not within an area considered as the functional flood plain.

The eastern section of the Site is located outside Flood Zones 2 and 3 however this area would become isolated during a 1 in 1000 year flood event. The nearest area which would remain flood free is approximately 170 m south/south west of the Site. As the development is located in a Flood Zone 2 , compensation for any loss in flood plain storage is unlikely to be required. However the inclusion of updated figures for climate change may alter the level at which the Site is impacted and thereby require compensatory flood storage within Flood Zone 2.

The extreme perimeter of the north-west of the Site lies within the outline of the 1 in 100 year flood event from rivers in any given year. Therefore development should be located away from the North West boundary. If developments are placed within Flood Zone 3, floodplain compensation is likely to be required.

According to the Surface Water Management Plan (Halcrow, 2011), the majority of the Site would appear to be located within Critical Drainage Area (CDA6031).

Guidance

As defined in the NPPF (2012):

Ignoring the presence of any defences, land located in a Flood Zone 2 is considered to be at medium risk of flooding, with between a 1 in 100 and 1 in 1000 annual probability of fluvial flooding or between a 1 in 200 and 1 in 1000 annual probability of coastal flooding in any one year.

Development of "Water-Compatible", "Essential Infrastructure", "Less Vulnerable" and "More Vulnerable" land uses are suitable for this zone with "Highly Vulnerable" land uses requiring an Exception Test to be passed prior to development taking place (see glossary for terminology).

Model data:

As the Site is within the Environment Agency modelled fluvial flood plain, flood elevation data for the Site was obtained from the Environment Agency (EA, 2016a).

Flood data for nine node points (including the presence of defences) were supplied for the Site, all of which were based either within or in close proximity to the Site boundary.

Confirmation of flood levels on the Site were provided by taking the modelled flood levels from the nearest node point located within the centre of the Site (Node point 6), based within a defended flood zone (Further information is provided in the Appendix D).

Relevant node point: Located within the center of the Site (Node ID Number: 6)

- 1 in 100 year modelled flood level: N/A
- 1 in 100 year + Climate Change modelled flood level: 17.71 mAOD
- 1 in 1000 year modelled flood level: 17.70mAOD

It is noted the Climate Change modelled flood level figures and extents are based on a 20% climate change allowance. The most up to date DeFRA guidance (March 2016) has been used to calculate the likely flood level.

In terms of 'highly vulnerable' development in Flood Zone 2 and in accordance with National DeFRA guidance (2016), the higher central and upper end allowances should be used to provide a suitable climate change factor, which is +35% and +70% for 2115 within the Thames catchment.

Model flood flows were not provided for the Site by the EA, therefore analysis of the impact a +35% and +70% flow increase cannot be undertaken. However it is highly likely that such either increase could have a detrimental impact on the Site. The flood levels obtained for a 1 in 1000 year flood level are already lower than the flood level given for a 1 in 100 plus climate change with a 20% allowance. It is feasible that the current Flood Zone 2 extent could become the extent of the 1 in 100 year with a 70% climate change allowance. Guidance provided by the EA for the Thames Region confirms that in the absence of modelled flows, 700mm could be added onto the 1 in 100 year flood level for the "Higher Central Allowance" and 1000mm could be added to the 1 in 100 year flood level for the

"Upper Allowance". At node point 2, the 1 in 100 year in channel water level is 17.61 mAOD and this would increase to 18.31 mAOD incorporating the "Higher Central Allowance" and to 18.61 mAOD incorporating the "Upper Allowance". Model re-runs to incorporate these allowances including any proposed defence improvements would be the only real way to gain a suitable insight to the future flood risk on the Site.

Guidance

These levels relate to site specific modelled levels for this Site. Data taken from Ravensbourne Mapping Study, completed by Halcrow Group Ltd in 2015. Data received from the EA is shown in Appendix D.

Model data provided by the Environment Agency has been updated since the SFRA was published and is deemed the best available, therefore this data has been used in this report.

Flood defences:

- The Site is located 390 m north east from the nearest flood defences.
- The Site is not located within an area which benefits from flood defences
- There are proposed flood defences within 250 m of the Site.

According to the EA data received, the Site is within 1km of some form of flood defence. At the time of the EA data being provided, the defences take the form of a fluvial concrete lined channel at the Ravensbourne confluence with Pool to Randelsdown Road, Catford, SE6.

The type and condition of the existing flood defences influence the actual risk of fluvial flooding to the Site, further information is therefore required in relation to the type and condition of the asset.

Information from the Environment Agency relating to the defences is outlined below:

Culverted channel:

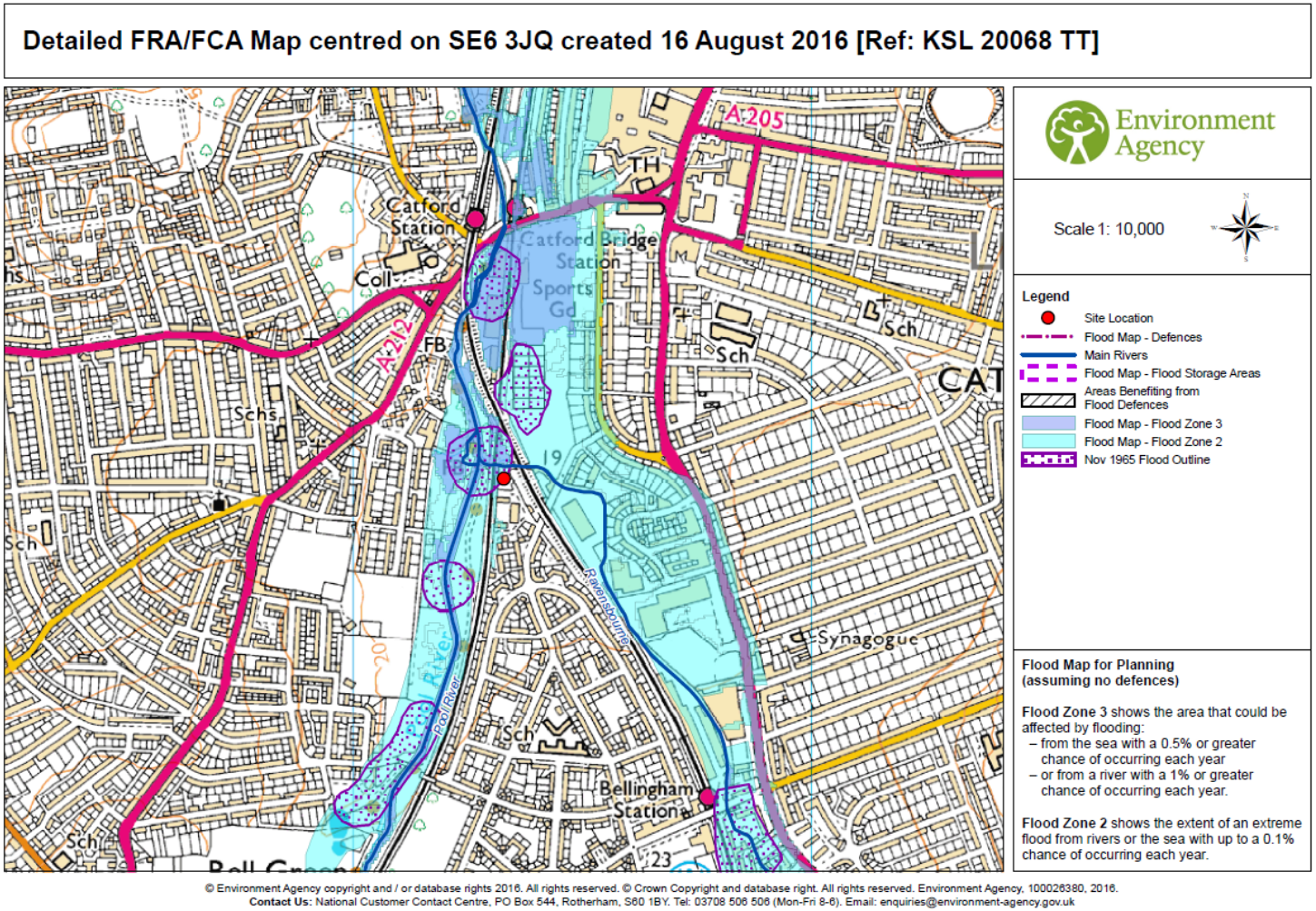
- Asset is described as a simple culvert. The culverted section of the channel has a design standard of protection to a 1 in 70 year flood event. No data has been recorded for the capacity, dimensions, invert / soffit or defence condition (Appendix D).

Proposed Scheme:

- Works are due to commence on the Lewisham and Catford Flood Alleviation Scheme in 2017 and are expected to last for two years. The proposed scheme will incorporate floodwater storage at Beckenham Place Park, works on the Honor Oak Stream in Ladywell, as well as some works to river walls through Lewisham. Benefits will be felt in the urban centres of Lewisham and Catford.

Based on the current defences in place and the protection afforded to the Site by the culvert which runs along Ravensbourne confluence, fluvial flood risk to the Site is still considered to be moderate.

Figure 3. Environment Agency (EA) Flood Risk for Planning Map (EA, 2016a) – Land at Pool Court



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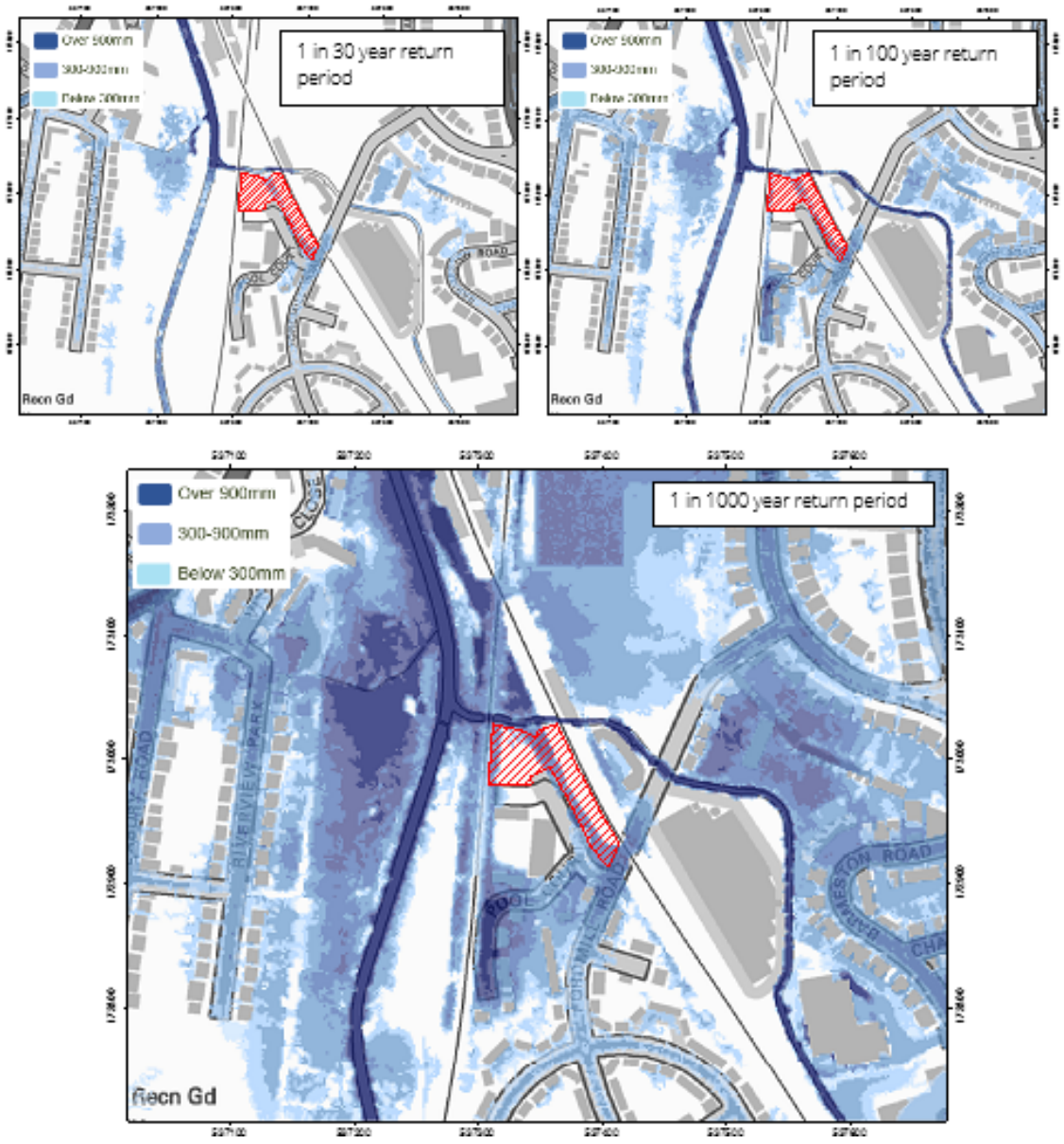
Surface water (pluvial) flooding

There is a significant area of the Site which is considered to be at high risk of surface water pluvial flooding which correlates with the areas on the site which have a lower elevation then the surrounding area (EA, 2016a).

The SFRA does not indicate reported incidents of surface water flooding at the Site but does state that severe rainfall has caused extensive surface water flooding within the district, particularly in 2004. The SFRA also states that, in most tributaries of the Ravensbourne, there has been flooding of properties (since 2001) from surface water flooding. This has been the result of insufficient capacity of urban drainage systems and/or backwater effects on urban drains from high water levels in the watercourses (Peter Brett Associates, 2015).

Figure 4. Environment Agency (EA) Surface Water Flood Risk Map (EA, 2016a) – Land at Pool Court



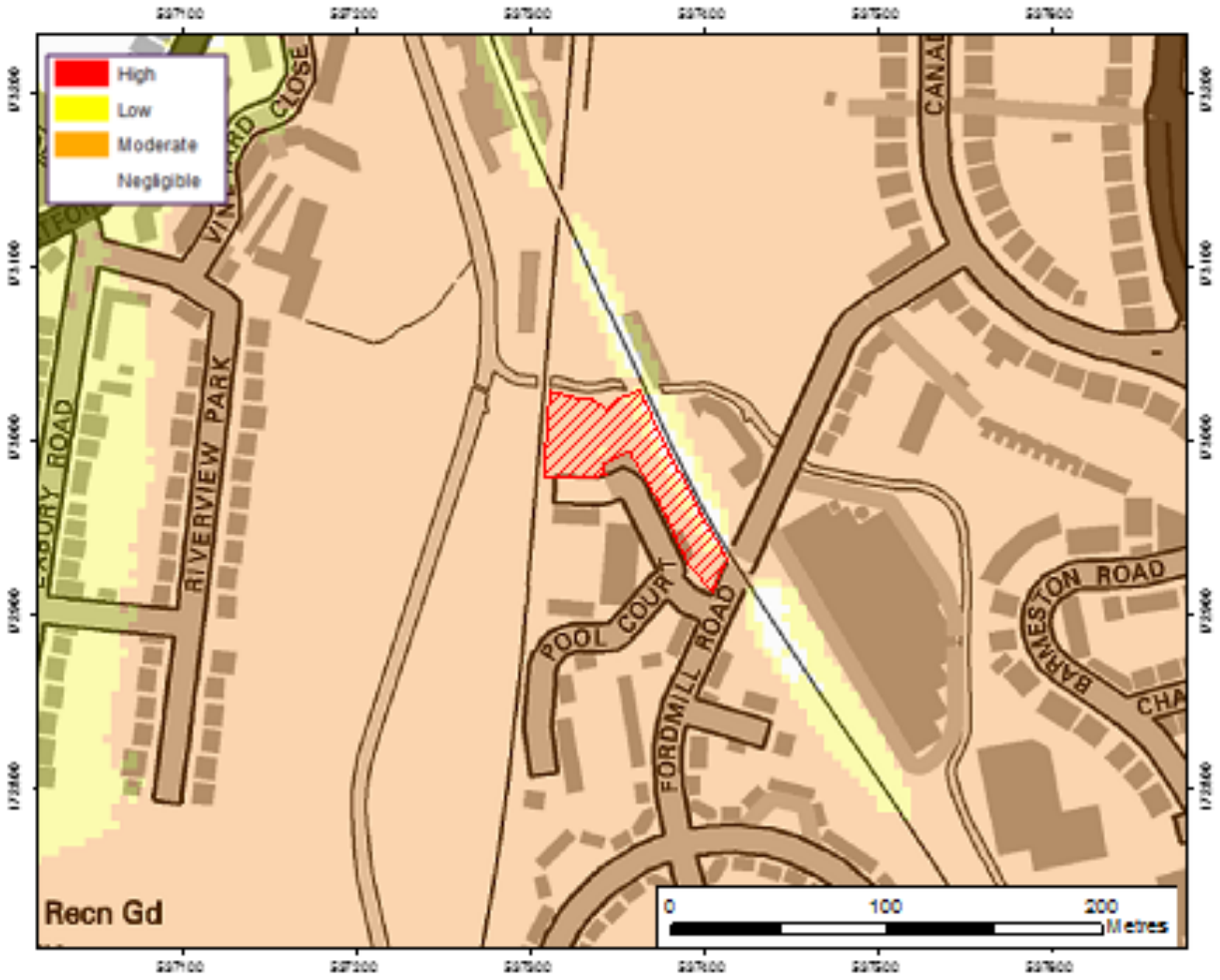
The eastern and western boundaries of the Site are located adjacent to railway lines which influence surface water flow both to and from the Site. According the EA elevation maps, the railway line to the east is located at a higher elevation to the Site which is likely to exacerbate the flooding located on the Site along with the section of the site which is also at higher elevation in comparison to the rest of the Site. These topographic variations channel the surface water into the Site and create an overland flow route for water which is flowing off the higher elevated land to the south.

Based on inspection of OS data, the Site is located on a potential overland flow route and contains some areas of low topography in relation to the surrounding area. Overland flows are likely to be obstructed if development were to occur on the Site.

Groundwater flooding

Based on GeoSmart's GW5 Groundwater Flood Risk Map, the Site is considered to be at moderate to negligible risk of groundwater flooding.

Figure 5. GeoSmart GW5 Groundwater Flood Risk Map (EA, 2016) – Land at Pool Court



The main mechanisms of groundwater flooding at the Site are related to flooding via permeable Superficial Deposits potentially in response to river and tidal events. The Site is unlikely to be at risk of Bedrock or Clearwater flooding relating to prolonged recharge and a rise in the water table. The Site is also located approximately 360m north east from a report groundwater flooding incident (Peter Brett Associates, 2015).

BGS borehole records obtained for a Site located 80m south east from the site (TQ37SE719 and TQ37SE717) indicates that the winter water table is likely to be between 1-2 mbgl which will exacerbate groundwater flood risk (BGS, 2016). It could also increase the risk of flooding from fluvial and pluvial sources.

Sewer flooding

Records held by Thames Water indicate that there have been no incidences of flooding related to the surcharging of public sewers at the Site (Thames Water, 2016; Appendix E). The Strategic Flood Risk Assessment (SFRA) also has no records of sewer flooding incidences on Site and has mapped the Site within an area which has had 2 properties flooded by overloaded sewers in the last 10 years (Peter Brett Associates, 2015).

Culverts and bridges

Culverts and bridges have been identified within 1 km of the Site. The SFRA has not identified any historic drainage issues within the Site area but does states that partial culvert blockages have possibly contributed to flood events since 2001 (Peter Brett Associates, 2015). The proximity of the bridges to the Site would mean that flood risk from infrastructure cannot be discounted.

Reservoir flooding

According to the Environment Agency mapping (2016d) and the SFRA mapping (Peter Brett Associates, 2015), the Site is not at risk of flooding from reservoirs.

Suitability of the proposed development

Suitability of the proposed development, and whether an Exception Test is required, is based on the flood zone the Site is located within and the flood risk vulnerability classification of the Site (Table 8.1).

The intended development of the Site as a potential Gypsy & Traveller Site would be classified as a 'highly vulnerable' that is located in a Flood Zone 2. Therefore an Exception Test is required for the Site.

If any of the proposed developments were situated at the perimeter of the northwest of the Site, developments would be located within a Flood Zone 3, floodplain compensation would therefore be required. When incorporating climate change, the level of floodplain compensation required may be greater as a result.

Table 8.1: Flood risk vulnerability and flood zone 'compatibility (taken from NPPF, 2012) – Land at Pool Court

Flood risk vulnerability classification		Essential infrastructure	Water compatible	Highly vulnerable	More vulnerable	Less vulnerable
Flood Zone	Zone 1 – low probability	✓	✓	✓	✓	✓
	Zone 2 – medium probability	✓	✓	Exception test required	✓	✓
	Zone 3a – high probability	Exception test required	✓	X	Exception test required	✓
	Zone 3b - – functional flood plain	Exception test required	✓	X	X	X

Environment Agency pre-application response:

The Environment Agency (2016c) was contacted as part of this FloodSmart report. Their response is shown below (full response letter is included in Appendix D):

"*The Pool Court site is adjacent to the River Ravensbourne. It lies within Flood Zone 2, and partly in Flood Zone 3, the medium and high risk zones respectively. Caravans and mobile homes are categorised as highly vulnerable in terms of flood risk according to Table D3 in the National Planning Policy Framework (NPPF) Planning Practice Guidance.*

Our latest (2015) modelling shows that the western edge of the site adjacent to the railway line is at risk of flooding in a 100 year flood event, with a 20% flow increase to allow for climate change. Since the modelling was carried out, government has revised the recommended climate change allowances which now stipulate that developments should be shown to be safe with a 35% allowance, and that the consequences of a 70% flow increase should be considered.

The new modelling and climate change allowances are likely to increase the flood risk to the site, and these are not represented in the Lewisham Strategic Flood Risk Assessment. As such, we are concerned that the SFRA may not be a suitable evidence base to demonstrate that the allocation of this site would be appropriate. In our opinion, this site should only be allocated for development classified as highly vulnerable to flooding if the risk of flooding has been fully considered using the latest flood modelling and climate change allowances.

Colleagues are working on providing data from our 2015 modelling of the Ravensbourne, but please note that this does not include the latest climate change allowances. We will shortly be carrying out further modelling on the Ravensbourne in relation to a major flood alleviation scheme and we are seeking to get model runs inclusive of the new climate change allowances delivered through that scheme modelling. This is likely to take place in late 2016 or early 2017.

We would request that that an 8 metre wide buffer zone is kept between the development and the top of the bank of the watercourse. The buffer zone shall be free from built development including lighting, domestic gardens and formal landscaping. The permanent retention of a continuous unobstructed area is an essential requirement for emergency access to the river for repairs to the bank and for future maintenance and/or improvement works. A buffer between new development and the river wall is also required to ensure no adverse loading which could impact the stability of the channel wall.

Where development is proposed next to the river we recommend that it includes a green buffer strip alongside the watercourse. Where such a buffer strip does not currently exist, we normally seek that it is established. This is a key way in which we carry out our legal duty to further and promote the ecological and landscape value of rivers and land associated with them. In urban areas, in particular, rivers have often been degraded by past development, and the Environment Agency takes the view that it is reasonable to expect that any new development should go some way to redress the balance. "

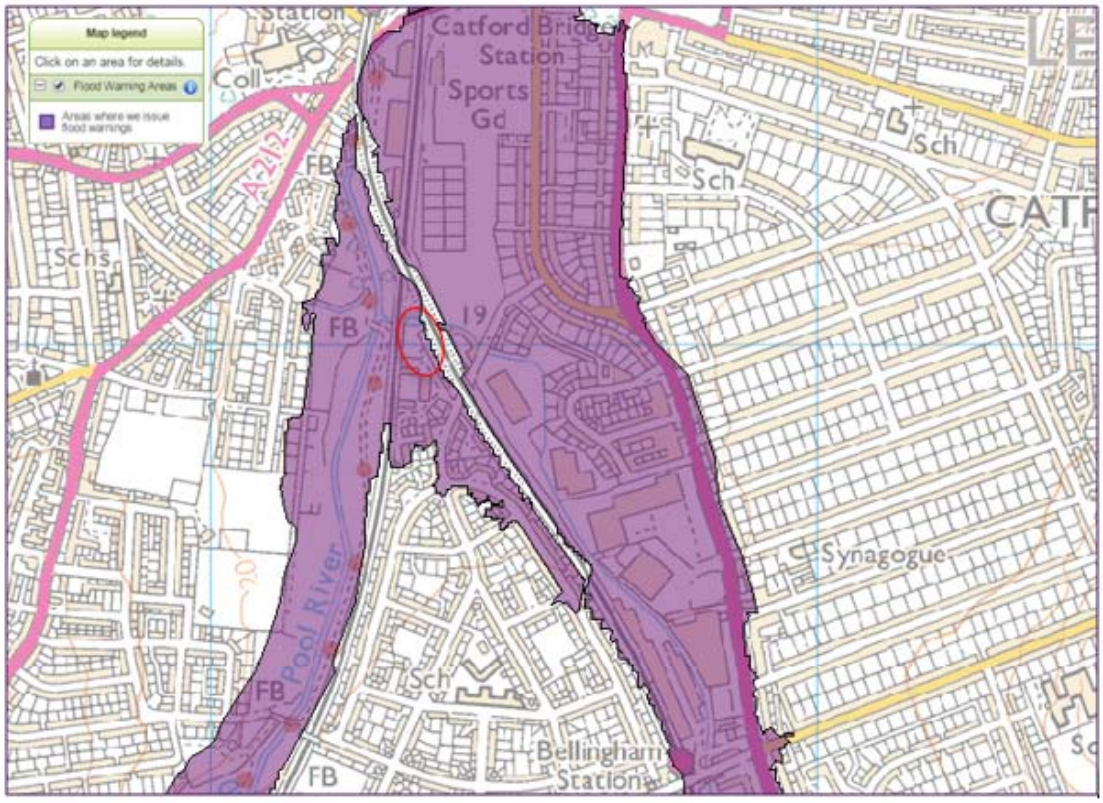
Emergency evacuation/safe access and egress routes

Flood Warnings Direct (FWD)

The flood warning information on the EA website is updated every 15 minutes. All warnings are also available through the EA's 24 hour Floodline Service 0845 988 1188 (specific information for the Pool River at Bell Green and New Beckenham, London Boroughs of Lewisham and Bromley can be found by entering the quick-dial number 173909). Furthermore, people may sign up to Flood Warnings Direct (FWD) to receive a pre-recorded flood warning message sent to their home, work or mobile phone number.

The Site is located within an EA Flood Warning Coverage area so is able to receive warnings via the EA Flood Warnings Direct Service (Figure 6)(EA, 2016d). The EA aims to issue flood warnings 2 hours in advance of a flood event. Flood warnings can provide adequate time to enable protection of property and evacuation from a Site, reducing risk to life and property.

Figure 6. EA Flood Warning Coverage for Land at Pool Court



Emergency Evacuation

As the Site is located within Flood Zone 2 and estimated flood levels for a 1 in 100 plus climate change event are lower than the main access point to and from the Site, a 'very low' hazard route should always be available from the Site during a 1 in 100 plus climate change event. The SFRA does not state a rate of inundation for the Site as only areas impacted flood defence breach for the River Thames were modelled (JE Jacobs, 2008).

Based on the EA Flood Risk Map the closest dry evacuation area within Flood Zone 1 is approximately 170 m south/south west of the Site (the junction of Brookehowse Street and Ghent Street). It is advised that evacuation from the Site would be the preferred option in a flood event if safe to do so. It is recommended that residents prepare to evacuate as soon as an EA flood warning is issued in order to completely avoid flood waters.

Principal escape route: Vehicle

Residents should exit the Site and travel south along Pool Court before turning right onto Fordmill Road for approximately 480m. Following this route will lead residents into Flood Zone 1 and an area within a 'Very Low Hazard' rating where provisions can be made for alternative accommodation.

In total, the proposed primary evacuation route is 485 m from the Site and would take approximately 1 minute without traffic to complete by car and 6 minutes by foot. Upon inspection of OS data, the EA flood map and LiDAR data, this is considered to be the most appropriate evacuation route for this Site.

The proposed primary evacuation route utilises a public highway, which should allow for easier navigation.

On-site refuge

Due to the nature of the proposed development, if flood waters were to reach the Site, onsite refuge is not recommended.

9. Flood Risk Assessment - New Cross Social Club & Adjoining Land

Historical flood events

Historic fluvial/coastal flood events have not been recorded at the Site (EA, 2016b) (Peter Brett Associates, 2015).

Fluvial/coastal flood risk

According to mapping and data provided by the Environment Agency (Figure 7), the Site is located within an Environment Agency (defended) Flood Zone 3 and is classified as being at high risk of tidal (coastal) flooding from the River Thames. The Site is protected by flood defences and is not within an area considered as the functional flood plain.

The Site lies adjacent to the west of the nearest land outside Flood Zones 2 and 3 however this area would become isolated during a 1 in 1000 year flood event. The nearest area which would remain flood free is approximately 590 m south of the Site. As the development is located within Flood Zone 3 due to tidal flood risk, compensation for any loss in flood plain storage would not be required.

According to the Surface Water Management Plan (Halcrow, 2011) the Site is not located within a Critical Drainage Area (CDA).

Guidance

As defined in the NPPF (2012):

Ignoring the presence of any defences, land located in a Flood Zone 3 is considered to be at high risk of flooding with a 1 in 100 year or greater annual probability of fluvial flooding or a 1 in 200 or greater annual probability of coastal flooding in any one year.

Development of "Water-Compatible" and "Less Vulnerable" land uses are suitable for this zone with "More Vulnerable" and "Essential Infrastructure" requiring an Exception test to be passed prior to development taking place. (see glossary for terminology).

Model data:

As the Site is within the Environment Agency modelled fluvial and tidal flood plain, Environment Agency flood elevation data was obtained. Two modelled data sets were provided for the Site, Tidal inundation modelling and tidal breach modelling; both originating from the Thames Tidal Modelling Study completed in March 2015 (EA, 2016b).

The modelled data used to inform flood mitigation was obtained from the Thames Tidal Upstream Inundation Modelling rather than the Thames Tidal Breach Model and the Thames Estuary 2100 (TE2100) study. The site is not located within the outlines of the Thames Tidal Breach Model due to the considerable distance of the site from the Thames. Therefore no data from the breach models is available for this site. It should be noted that the the scenario modelled within the Thames Tidal Upstream Inundation Modelling is that the Thames Barrier is operational but all linear defences have been removed, which is

extremely unlikely to occur. The TE2100 project is planned to raise flood defences and maintain the existing protection to London.

Relevant node point: Located within the center of the Site (Node ID Number: 2)

- Maximum Water Level (2014): N/A
- Maximum Water Level (2065): 3.20 mAOD
- Maximum Water Level (2100): 3.75 mAOD

Guidance

These levels relate to site specific modelled levels for this Site. The flood levels are based on simulations of defence breaches at pre-determined breach locations. Data received from the EA is shown in Appendix C.

Model data provided by the Environment Agency has been updated since the SFRA was published and is deemed the best available, therefore this data has been used in this report.

Flood defences:

- The Site is located 1.9 km north east from the nearest flood defences.
- The Site is located within an area which benefits from flood defences
- There are no proposed flood defences within 250 m of the Site, although the TE2100 project is planned to raise flood defences to consider the impacts of climate change.

The fluvial and tidal flood risk identified in the "Fluvial and Coastal flooding" section represents a residual flood risk as the Site benefits from defences. The type and condition of the existing flood defences influence the actual risk of fluvial flooding to the Site.

Information from the Environment Agency relating to the defences is outlined below:

- The Thames Tidal Barrier was constructed specifically to prevent the tidal surge passing upstream into the built up areas of London. Not only does this (in conjunction with the raised River Thames flood defences) protect London from unusually high river levels as a result of a surge tide, but it also ensures that there is capacity in the river channel to safely store fluvial floodwaters that are travelling downstream from the upper catchment (Peter Brett Associates, 2015)
- According to the Environment Agency (2016b) the linear flood defences in place for this area work alongside the Thames Barrier and are designed to defend up to a 1 in 1,000 year flood event. The linear defences are raised, man-made and privately owned with a minimum crest level of 5.23 mAOD (Appendix D). The current crest level and the proposed crest levels would provide protection to the Site for all modelled flood levels provided by the EA, up to and including a 2100 plus climate change modelled flood event scenario. Therefore flood risk due to overtopping of linear defences is not considered to be a risk for the Site.

- It is also understood the EA are expected to undertake the future management of the Thames Barrier as part of the TE2100 project, which will include ensuring that the maximum likely water levels upstream of the barrier do not exceed the crest levels of the defences. This again confirms the low risk to the Site from defence overtopping (EA, 2012).

- The Environment Agency inspects the defences twice a year and classifies their current condition as "good".

- The flood risk posed to the Site from a breach in the flood defences has also been assessed. Mapping provided by the EA confirms the modelled defence breach flood extents for 2014, 2065 and 2100 which are shown in Appendix D.

- These mapped outputs show the Site would not impacted by a breach scenario for all three modelled events (See Figure 8). It must be noted there are no return periods for the modelled levels provided as they are controlled by barrier closures and instead represent maximum likely water levels for each epoch (2014, 2065 and 2100). Due to the management in place for the linear defences, the condition of these defences and the requirement of all riparian owners to maintain a statutory crest level, it is considered very unlikely that a breach would occur. The SFRA update also maps the site as being located outside the modelled breach outline (Peter Brett Associates, 2015)

The protection afforded to the Site by the flood defences, which are in good condition, effectively reduce the tidal flood risk from High to Low. However it is acknowledged that there is a potential residual risk of flooding from a breach in the existing flood defences. Although breach modelling provided by the EA confirms the Site would not be affected in such an event (shown in Figure 8, overleaf)..

Figure 7. Environment Agency (EA) Flood Risk for Planning Map (EA, 2016b) – New Cross Social Club & Adjoining Land

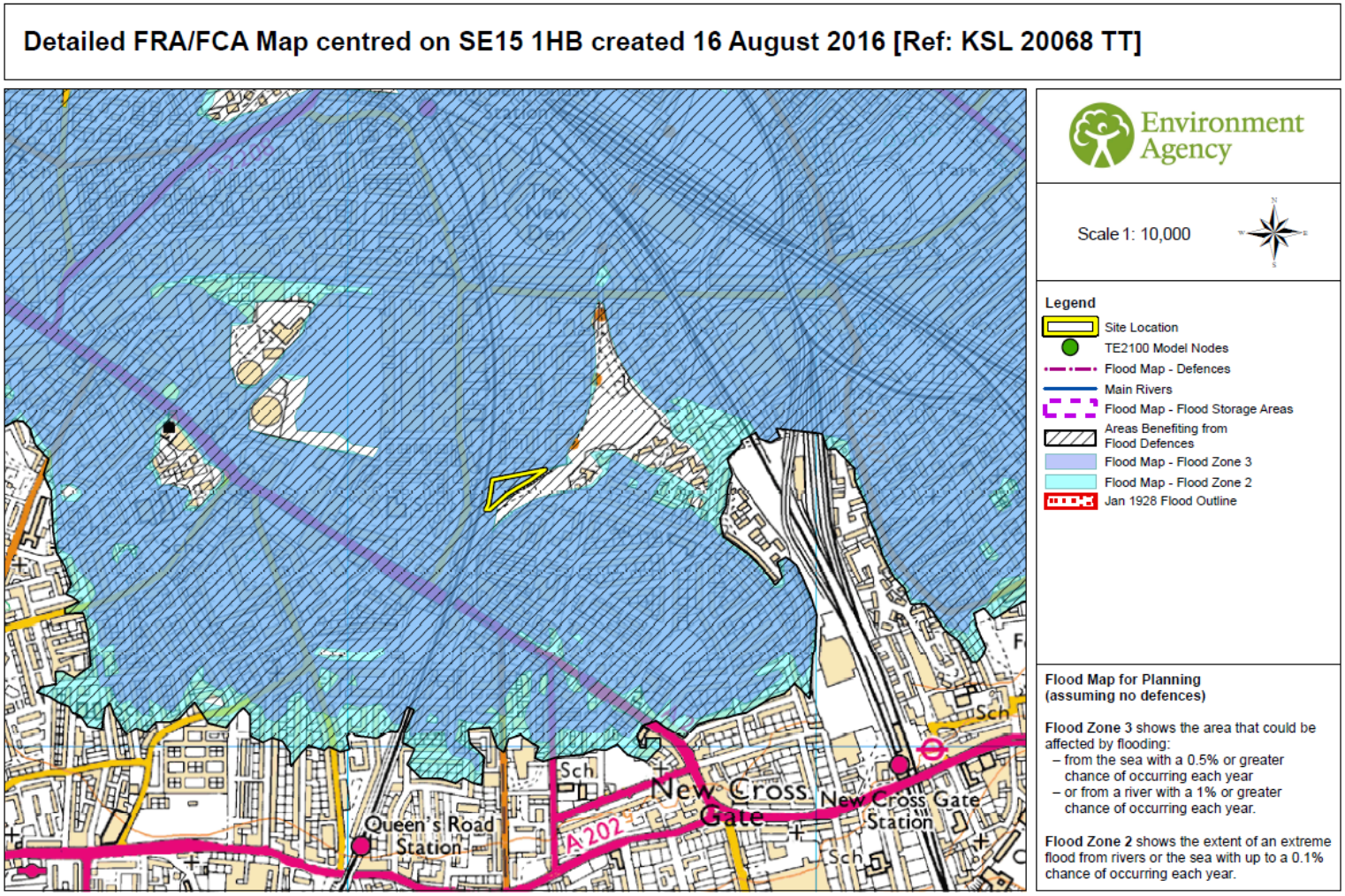
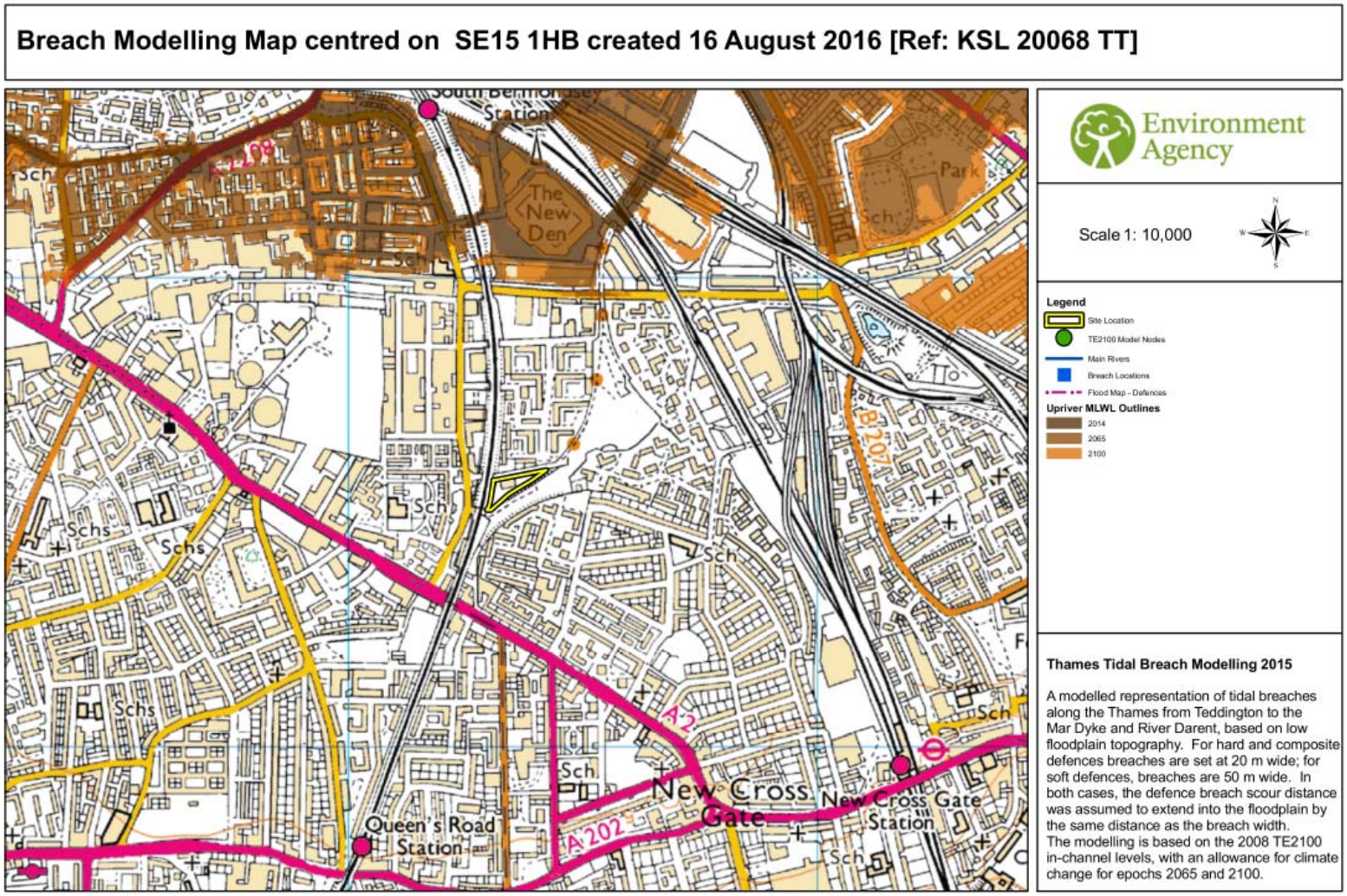


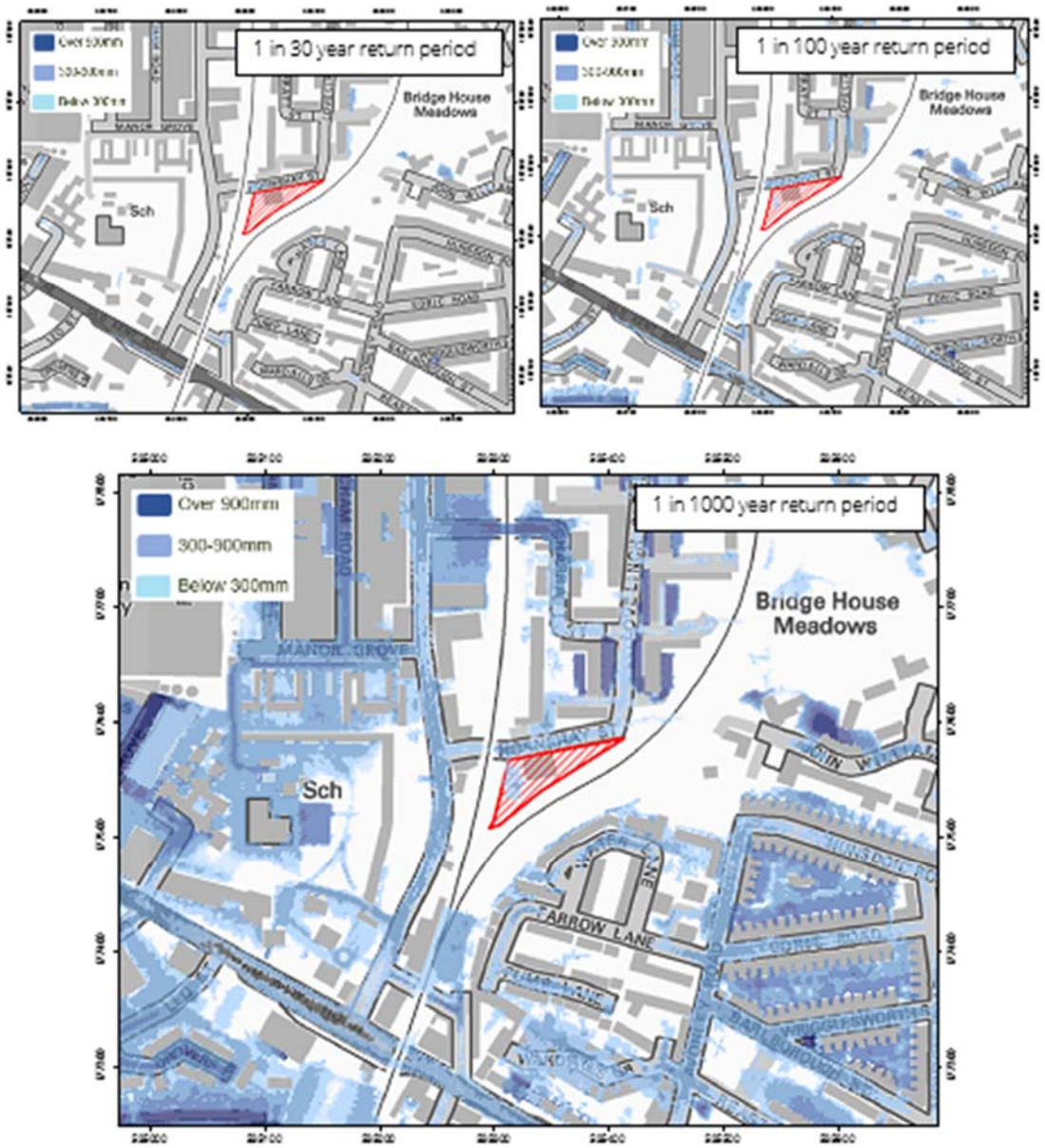
Figure 8. Environment Agency (EA) Thames Tidal Breach Modelling 2015 Map (EA, 2016b) – New Cross Social Club & Adjoining Land



Surface water (pluvial) flooding

The majority of the Site is considered to be at very low risk of surface water pluvial flooding however there is an isolated area to the west of the proposed Site area which is at moderate to high risk of surface water flooding which correlates with areas on the site which have a slightly lower elevation then the surrounding area (EA, 2016b)(Figure 9). It is also noted that the road which runs adjacent to the northern boundary of the Site (Hornshay Street) is also at a moderate-high risk of surface water flooding. The SFRA does not indicate reported incidents of surface water flooding at the Site but does state that severe rainfall has caused extensive surface water flooding within the district, particularly in 2004 (Peter Brett Associates, 2015).

Figure 9. Environment Agency (EA) Surface Water Flood Risk Map (EA, 2016) – New Cross Social Club & Adjoining Land

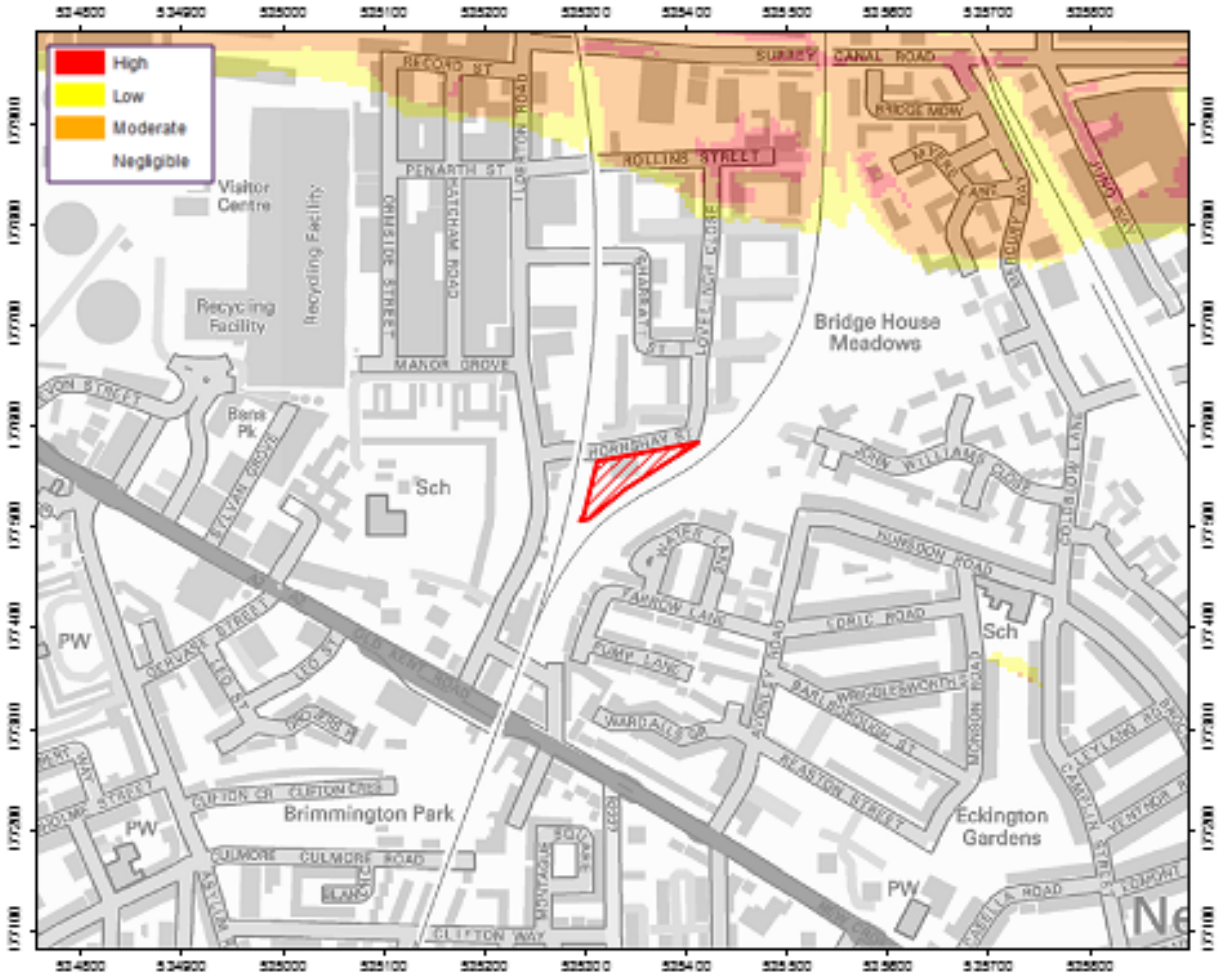


The southern, eastern and western boundaries of the Site are located adjacent to railway lines which could influence surface water flow both to and from the Site. According the EA elevation maps, these railway lines are located at a higher elevation to the Site which is likely to be the cause of the localised flooding located on the Site. The EA elevation data indicates that the source of this flood area is from the north (Hornshay Street) which is able to flow into the site due to areas of low topography. These railway embankments effectively block in the surface water which may result in shallow ponding. While localised depressions and accumulations cover a very small area of the Site, they must be considered if further development were to occur.

Groundwater flooding

Based on GeoSmart's GW5 Groundwater Flood Risk Map, the Site is considered to be at negligible risk of groundwater flooding (Figure 10).

Figure 10. GeoSmart GW5 Groundwater Flood Risk Map (EA, 2016) – New Cross Social Club & Adjoining Land



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Sewer flooding

Records held by Thames Water indicate that there have been no incidences of flooding related to the surcharging of public sewers at the Site (Thames Water, 2016; Appendix D). The Strategic Flood Risk Assessment (SFRA) also has no records of sewer flooding incidences on Site and has mapped the Site within an area which has had 3 properties flooded by overloaded sewers in the last 10 years (Peter Brett Associates, 2015).

Culverts and bridges

Culverts and bridges have not been identified within 1 km of the Site. The SFRA has not identified any historic drainage issues within the Site area (Peter Brett Associates, 2015).

Reservoir flooding

According to the Environment Agency mapping (2016d) and the SFRA mapping (Peter Brett Associates, 2015), the Site is not at risk of flooding from reservoirs.

Suitability of the proposed development

Suitability of the proposed development, and whether an Exception Test is required, is based on the flood zone the Site is located within and the flood risk vulnerability classification of the Site (Table 9.1).

The intended development of the Site as a potential Gypsy & Traveller Site would be classified as a 'highly vulnerable' that is located in a Flood Zone 3a. Highly vulnerable development is not usually permitted within a Flood Zone 3a.

However, as the risk to the Site has been identified to be low and the probability of residual risk is also low, as the Site is located outside the Thames Tidal breach modelling mapping, it could be considered that highly vulnerable development is feasible for the Site. This would be subject to suitable mitigation measures to alleviate any flood risk.

Table 9.1: Flood risk vulnerability and flood zone 'compatibility (taken from NPPF, 2012)

Flood risk vulnerability classification		Essential infrastructure	Water compatible	Highly vulnerable	More vulnerable	Less vulnerable
Flood Zone	Zone 1 – low probability	✓	✓	✓[1]	✓	✓
	Zone 2 – medium probability	✓	✓	Exception test required	✓	✓
	Zone 3a – high probability	Exception test required	✓	X*	Exception test required	✓
	Zone 3b - – functional flood plain	Exception test required	✓	X	X	X

*Flood Risk vulnerability reduced from Zone 3a (High probability) to Zone 1 (low probability)

Environment Agency pre-application response:

The Environment Agency (2016c) was contacted as part of this FloodSmart report. Their response is shown below (full response letter is included in Appendix D):

"Flood risk management

This site lies within Flood Zone 3, the high risk zone. It benefits from the protection of the Thames Tidal Defences but remains at residual risk of a breach in the flood defence at this location. Caravans and mobile homes are categorised as highly vulnerable in terms of flood risk according to Table D3 in the National Planning Policy Framework (NPPF) Planning Practice Guidance

Groundwater protection and contaminated land

The history of industrial land use in this area would restrict the use of sustainable drainage systems, and ground remediation may be necessary to make the site acceptable for residential use. You should refer to your authority's environmental health team for advice on matters with respect to human health

[1] Due to the low risk classification due to the presence of flood defences and the low risk of residual breach.

Evacuation plan

We advise local planning authorities to formally consider the emergency planning and rescue implications of development proposals when making their decisions, particularly in any circumstances where warning and emergency response are fundamental to managing flood risk. Please refer to your emergency planning team for further advice."

It is noted that the statement "remains at residual risk of a breach in the flood defence at this location" is in contradiction to the Thames Tidal Breach Modelling 2015 Map (Figure 8) which shows the Site outside the breach modelled extents. While the Site is located within the breach scenario modelled within the Thames Tidal Upstream Inundation Modelling, it needs to be acknowledged that this modelling depicts the scenario that the Thames Barrier is operational but all linear defences have been removed, which is extremely unlikely to occur.

Emergency evacuation/safe access and egress routes

Flood Warnings Direct (FWD)

The flood warning information on the EA website is updated every 15 minutes. All warnings are also available through the EA's 24 hour Floodline Service 0845 988 1188 (specific information for the River Thames from Deptford Creek to the Wandsworth Bridge including Deptford, Rotherhithe, Bermondsey, Camberwell, Kennington, Vauxhall, Lambeth, Battersea and Clapham Junction can be found by entering the quick-dial number 174201). Furthermore, people may sign up to Flood Warnings Direct (FWD) to receive a pre-recorded flood warning message sent to their home, work or mobile phone number.

The Site is located within an EA Flood Warning Coverage area so is able to receive warnings via the EA Flood Warnings Direct Service (Figure 11)(EA, 2016d). The EA aims to issue flood warnings 2 hours in advance of a flood event. Flood warnings can provide adequate time to enable protection of property and evacuation from a Site, reducing risk to life and property.

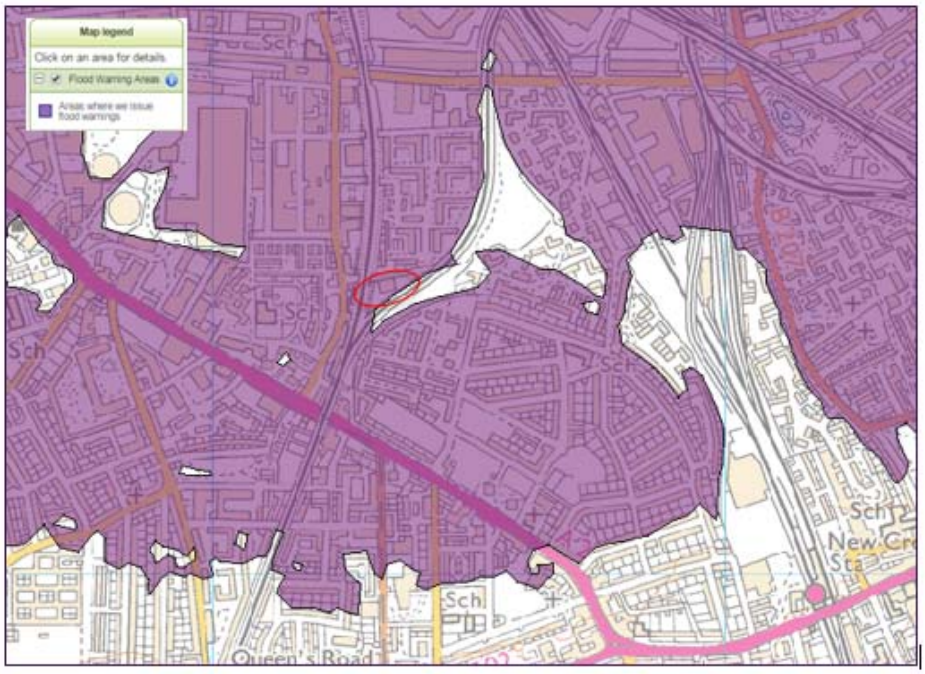
Emergency Evacuation

A safe egress route with a 'very low' hazard rating is possible if flood warnings are monitored and acted upon. In this case, residents are able to evacuate before flooding occurs and flood depths along the route reach their maximum level. The primary flood risk to the Site comes from the River Thames and the SFRA states that the rate of inundation for the Site would be between 6 to 12 hours (JE Jacobs, 2008).

Based on the modelled breach maps included in the SFRA and the EA Flood Risk Map the closest dry evacuation area is on Pomeroy Street (c. 590 m south of the Site – direct measurement). Given the predicted rate of onset time outlined in the SFRA occupants should be able to reach this point with sufficient warning.

It is advised that evacuation from the site would be the preferred option in a flood event if safe to do so. It is recommended that residents prepare to evacuate as soon as an EA flood warning is issued in order to completely avoid flood waters.

Figure 11. EA Flood Warning Coverage for New Cross Social Club & Adjoining Land



Principal escape route: Vehicle

Residents should exit the property to the north and travel west along Hornshey Road for 80 m before turning left onto Ilderton Road. Residents should follow Ilderton Road south for approximately 200m before turning left onto Old Kent Road. After 100m, residents should take the right turn onto Pomeroy Street. After 200m, residents will be located within a Flood Zone 1 and within an area with a 'Very Low Hazard' rating where provisions can be made for alternative accommodation.

In total, the proposed primary evacuation route is 805 m from the Site and would take approximately 3 minutes without traffic to complete by car and 10 minutes by foot. Upon inspection of OS data, the EA flood map and LiDAR data, this is considered to be the most appropriate evacuation route from the Site.

The proposed primary evacuation route utilises a public highway, which should allow for easier navigation.

On-site refuge

Due to the nature of the proposed development, if a flood event were to reach the Site, onsite refuge is not recommended

10. Additional information

Drainage and run-off

The proposed developments involve an increase of impermeable surfaces at the Site. Therefore, an estimation of run-off is required to permit effective site water management and prevent any increase in flood risk to off-site receptors from both the Sites. A SuDSmart Pro report is recommended to assess surface water runoff from the Site within section 13 of this report.

Using rainfall data from the Flood Estimation Handbook (FEH) CD-ROM, developed by NERC (2009), the potential surface water run-off generated from the Site during a 1 in 100 year return period has been calculated. Guidance included within the National Planning Policy Framework (NPPF) recommends that the effects of climate change are incorporated into Flood Risk Assessments (Flood Risk Assessments: Climate Change Allowances Guidance, 2016).

Applies across all of England	Total potential change anticipated for 2010 to 2039	Total potential change anticipated for 2040 to 2059	Total potential change anticipated for 2060 to 2115
Upper end	10%	20%	40%
Central	5%	10%	20%

The results for a 1 in 100 year 6 hour rainfall event both Sites are summarised in the tables below.

Land at Pool court

Climate change allowance	Rainfall (mm)	Rainfall (mm) inc. CC (+40% for Upper End +20% for Central)	Run-off from impermeable surfaces	
			m3/m2	m3/m2 incl. CC (+40% for Upper End +20% for Central)
Upper End	79.9	111.86	0.08	0.1
Central	79.9	95.88	0.08	0.1

Climate change allowance	Rainfall (mm)	Rainfall (mm) inc. CC (+40% for Upper End +20% for Central)	Run-off from impermeable surfaces	
			m3/m2	m3/m2 incl. CC (+40% for Upper End +20% for Central)
Upper End	52.8	73.92	0.05	0.07
Central	52.8	63.36	0.05	0.06

A method of investigating the run-off due to the proposed development can be calculated by multiplying the run-off per square metre by the impermeable area within the proposed development plan.

It is recommended that attenuation of run-off is undertaken on site to compensate for proposed increases in impermeable surface areas. Attenuation may comprise the provision of storage within a sustainable drainage system.

A list of SuDS components that could be used to manage surface water run-off from the Site are listed in the following table. Alternative SUDs components may also be considered and more information can be found at http://www.susdrain.org/. Always seek expert advice on the selection and sizing of the SuDS components most suitable for your Site.

Option	Description
Rainwater harvesting	Rain water harvesting can collect run-off from the roofs for use in non-potable situations, using water butts for example.
Permeable paving	Permeable pavements can be used for driveways, footpaths and parking areas to increase the amount of permeable land cover. Suitable aggregate materials (angular gravels with suitable grading as per CIRIA, 2007) will improve water quality due to their filtration capacity. Plastic geocellular systems beneath these surfaces can increase the void space and therefore storage but do not allow filtration unless they are combined with aggregate material and/or permeable geotextiles.

Swales	Shallow, wide and vegetated channels that can store excess run-off whilst removing any pollutants.
Soakaways	An excavation filled with gravel within the Site. Surface water run-off is piped to the soakaway.
Attenuation basins/pond	Dry basin or a permanent pond that is designed to hold excess water during a rainfall event.

GeoSmart would be happy to provide an outline drainage strategy as required through our SuDSmart Pro report.

It is assumed that any changes to the existing drainage system will be undertaken in accordance with best practice and that care will be taken to ensure the new development does not overload/block any existing drainage or flow pathways to/from the Site.

Based on the topography and high surface water flood risk in the vicinity, interference with overland flow paths is likely.

11. Mitigation

Fluvial mitigation measures

Land at Pool Court

As the Site is located within a Flood Zone 2, we recommend that minimum floor levels are set above 18.31 mAOD where possible[2]. Due to the nature of the proposed development, the level provided above should be used as the minimum ground level for the positioning of the mobile homes on Site (and not for the floor level of the mobile homes). Modelled flood levels indicate that the development is elevated above the flood levels for a 1 in 100 plus climate change flood event. During a 1 in 1000 year flood event, flood depths on Site could reach approximately 0.5m and possibly more like 0.9m if updated climate change allowances are included.

If the Site were to be developed, an 8 m wide buffer zone which is required for between the development and the top of the bank of the watercourse which is free from built development including lighting, domestic gardens and formal landscaping with a green buffer strip alongside the watercourse, in line with requests made by the EA within their preliminary feedback (EA, 2016c). A Flood Risk activity permit will also be required for development

New Cross Social Club & Adjoining Land

The Site is located within a Flood Zone 3, however due to the protection afforded to the Site by flood defences along both the River Thames and the Thames Barrier; the flood risk to the site is Low. The site is not located within the outlines of the Thames Tidal Breach Model due to the considerable distance of the site from the Thames – which indicated that the Site is not at risk of a flood defence breach event. The scenario modelled within the Thames Tidal Upstream Inundation Modelling (the Thames Barrier is operational but all linear defences have been removed) is extremely unlikely to occur.

We therefore recommend that minimum floor levels are set at least 600mm above the ground level where possible to account for residual risk from flood defence breach. Due to the nature of the proposed development, the level provided above should be used as the minimum ground level for the positioning of the mobile homes on Site (and not for the floor level of the mobile homes).

For proposed developments at Land at Pool Court:

A water entry strategy and water exclusion strategy are not considered appropriate for this type of 'highly vulnerable' development which is in a Flood Zone 2 and at risk from fluvial flood events.

---

2 600mm above the 1 in 100 plus climate change model flood level of 17.71 mAOD

Surface water (pluvial) flooding

Mitigation measures detailed above for fluvial/coastal flood risk are likely to be suitable for the flood depths which could be experience in a pluvial flood event for both sites.

In addition, the regular maintenance of any drains and culverts surrounding/on the Site should be undertaken to reduce the flood risk.

A SuDS design needs to be considered to mitigate any flood risk both to and from the Site.

Groundwater mitigation measures

Specific groundwater measures that may need to be considered for the site at Pool Court:

- Waterproof tanking of the ground floor and basement
- Interceptor drains
- Automatic sump to extract flood water
- Non-return valve on the sewer lines

Other Flood Risk mitigation measures

It is likely that the mitigation measures put in place for fluvial risk will be sufficient for the flood risk at the Sites due to infrastructure.

12. Conclusions and recommendations

Sequential Test

To address the housing requirements of Lewisham's gypsy and traveller population, Lewisham Borough Council assessed and identified a number of sites for the minimum number of required pitches in accordance with criteria based policy to ensure site selection and assessment meet national and regional requirements. The London Borough of Lewisham Gypsy & Traveller Search Parameters and Site Selection Criteria produced a shortlist of six viable sites

Of the six sites which were highlighted to be potentially viable alternatives, four were excluded from further consideration. This was due to poor results in the overall assessment against the site assessment criteria. The final two Sites, Land at Pool Court and New Cross Social Club & Adjoining Land, included a Flood Risk Assessment.

Land at Pool Court Flood Risk Assessment

The Site is located within an Environment Agency (defended) Flood Zone 2 and therefore most of the Site is classified as being at MODERATE risk of fluvial flooding from the Ravensbourne River and Pool River.

There is a significant cover of the Site which considered being at HIGH risk of surface water pluvial flooding which correlates with the areas on the site which have a lower elevation then the surrounding area.

The Site is considered to be at MODERATE risk of groundwater flooding.

The intended development of the Site as a potential Gypsy & Traveller Site would be classified as a 'highly vulnerable' that is located in a Flood Zone 2. Highly vulnerable development is permitted within a Flood Zone 2 on the provision that the site passes an Exception and Sequential Test. Providing the recommended mitigation measures are put in place (see previous sections), a flood evacuation plan is prepared, residents are made aware of the flood risk and existing defences continue to be maintained, it is possible that flood risk to this Site could be reduced to an acceptable level.

Is any further work recommended if selected for development?	It is recommended that minimum floor levels for the Site are set no lower than 18.31 mAOD It is recommended that a site specific flood evacuation plan is prepared. Further analysis of groundwater flooding should be considered for the site. It is recommended that a Sustainable Drainage strategy is developed for the site A Flood Risk activity permit is required for development

The Site is located within an Environment Agency (defended) Flood Zone 3 and is classified as being at HIGH risk of tidal (coastal) flooding but, based on the presence of the existing defences, the actual risk to the Site is considered to be LOW. The Site is currently protected from flooding by the River Thames Tidal Defences (TTD) up to the 0.1% annual probability (1 in 1000 year) event. The residual flood risk from a potential breach of flood defences is also low and the Site would remain unaffected in all modelled breach scenarios provided by the EA.

A MODERATE-HIGH surface water flood risk has been identified for sections of the Site due in part to the surrounding topography.

A NEGLIGIBLE groundwater flood risk has been identified to the site

The intended development of the Site as a potential Gypsy & Traveller Site would be classified as a 'highly vulnerable', located in a Flood Zone 3a. Highly vulnerable development is not usually permitted within a Flood Zone 3a. However as the risk to the Site has been identified to be low and the probability of residual risk is also low, it could be considered that highly vulnerable development may be feasible for the Site on the provision that both the Sequential and Exceptions Test is passed.

Is any further work recommended if selected for development?	It is recommended that minimum floor levels for the Site are set no lower than 600 mm above ground levels. It is recommended that a site specific flood evacuation plan is prepared. It is recommended that a Sustainable Drainage strategy is developed for the site An Exception Test will be required for the Site required for the Site.

Conclusion:

Based on the available data at time of writing and taking into account flood risk from all sources, the presence of defences and the feedback obtained from the Environment Agency, New Cross Social Club & Adjoining Land would appear to be the more viable option for development in comparison to Land at Pool Court.

13. Further information and what to do next

The following table includes a list of products by GeoSmart:

Recommendations for next steps		
✓	Additional assessment: SuDSmart Report 	The SuDSmart Report range assesses which drainage options are available for a Site. They build on technical detail starting from simple infiltration screening, and work up to more complex SuDS Assessments detailing alternative options and designs. Please contact info@geosmartinfo.co.uk for further information.
	Additional assessment: FloodSmart Report 	The FloodSmart Report range provides clear and pragmatic advice regarding the nature and potential significance of flood hazards which may be present at a site. Our consultants assess available data to determine the level of risk based on professional judgement and years of experience. Please contact info@geosmartinfo.co.uk for further information.
	Additional assessment: GroundSmart Report 	Should you require any geotechnical advice to inform your site development please contact info@geosmartinfo.co.uk for further information.
	Additional assessment: EnviroSmart Report 	Provides a robust desk-based assessment of potential contaminated land issues, taking into account the regulatory perspective. Our EnviroSmart reports are designed to be the most cost effective solution for planning conditions. Each report is individually prepared by a highly experienced consultant conversant with Local Authority requirements. Ideal for pre-planning or for addressing planning conditions for small developments. Can also be used for land transactions. Please contact info@geosmartinfo.co.uk for further information.

14. References and glossary

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Glossary

General terms

BGS	British Geological Survey
EA	Environment Agency
GeoSmart groundwater flood risk model	GeoSmart's national groundwater flood risk model takes advantage of all the available data and provides a preliminary indication of groundwater flood risk on a 50m grid covering England and Wales. The model indicates the risk of the water table coming within 1 m of the ground surface for an indicative 1 in 200 year return period scenario.
Dry-Island	An area considered at low risk of flooding (eg. In a Flood Zone 1) that is entirely surrounded by areas at higher risk of flooding (eg. Flood Zone 2 and 3)
Flood resilience	Flood resilience of wet-proofing accepts that water will enter the building, but through careful design will minimise damage and allow the re-occupancy of the building quickly. Mitigation measures that reduce the damage to a property caused by flooding can include water entry strategies, raising electrical sockets off the floor, hard flooring.
Flood resistance	Flood resistance, or dry-proofing, stops water entering a building. Mitigation measures that prevent or reduce the likelihood of water entering a property can include raising flood levels or installation of sandbags.
Flood Zone 1	This zone has less than a 0.1% annual probability of river flooding
Flood Zone 2	This zone has between 0.1 and 1% annual probability of river flooding and between 0.1% and 0.5 % annual probability sea flooding
Flood Zone 3	This zone has more than a 1% annual probability of river flooding and 0.5% annual probability of sea flooding
Functional Flood Plain	An area of land where water has to flow or be stored in times of flood.
Hydrologic model	A computer model that simulates surface run-off or fluvial flow. The typical accuracy of hydrologic models such as this is ±0.25m for estimating flood levels at particular locations.
OS	Ordnance Survey
Residual Flood Risk	The flood risk remaining after taking mitigating actions.
SFRA	Strategic Flood Risk Assessment. This is a brief flood risk assessment provided by the local council
SuDS	A Sustainable drainage system (SuDS) is designed to replicate, as closely as possible, the natural drainage from the Site (before development) to ensure that the flood risk downstream of the Site does not increase as a result of the land being developed. SuDS also significantly improve the quality of water leaving the Site and can also improve the amenity and biodiversity that a site has to offer. There are a range of SuDS options available to provide effective surface water management that intercept and store excess run-off. Sites over 1 Ha will usually require a sustainable drainage assessment if planning permission is required. The current proposal is that from April 2014 for more than a single dwelling the drainage system will require approval from the SuDs Approval Board (SABs).

Aquifer Types

Principal aquifer	These are layers of rock or drift deposits that have high intergranular and/or fracture permeability - meaning they usually provide a high level of water storage. They may support water supply and/or river base flow on a strategic scale. In most cases, principal aquifers are aquifers previously designated as major aquifer.
Secondary A aquifer	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.
Secondary B aquifer	Predominantly lower permeability layers which may store and yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering. These are generally the water-bearing parts of the former non-aquifers.
Secondary undifferentiated	Has been assigned in cases where it has not been possible to attribute either category A or B to a rock type. In most cases, this means that the layer in question has previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type.
Unproductive Strata	These are rock layers or drift deposits with low permeability that has negligible significance for water supply or river base flow.

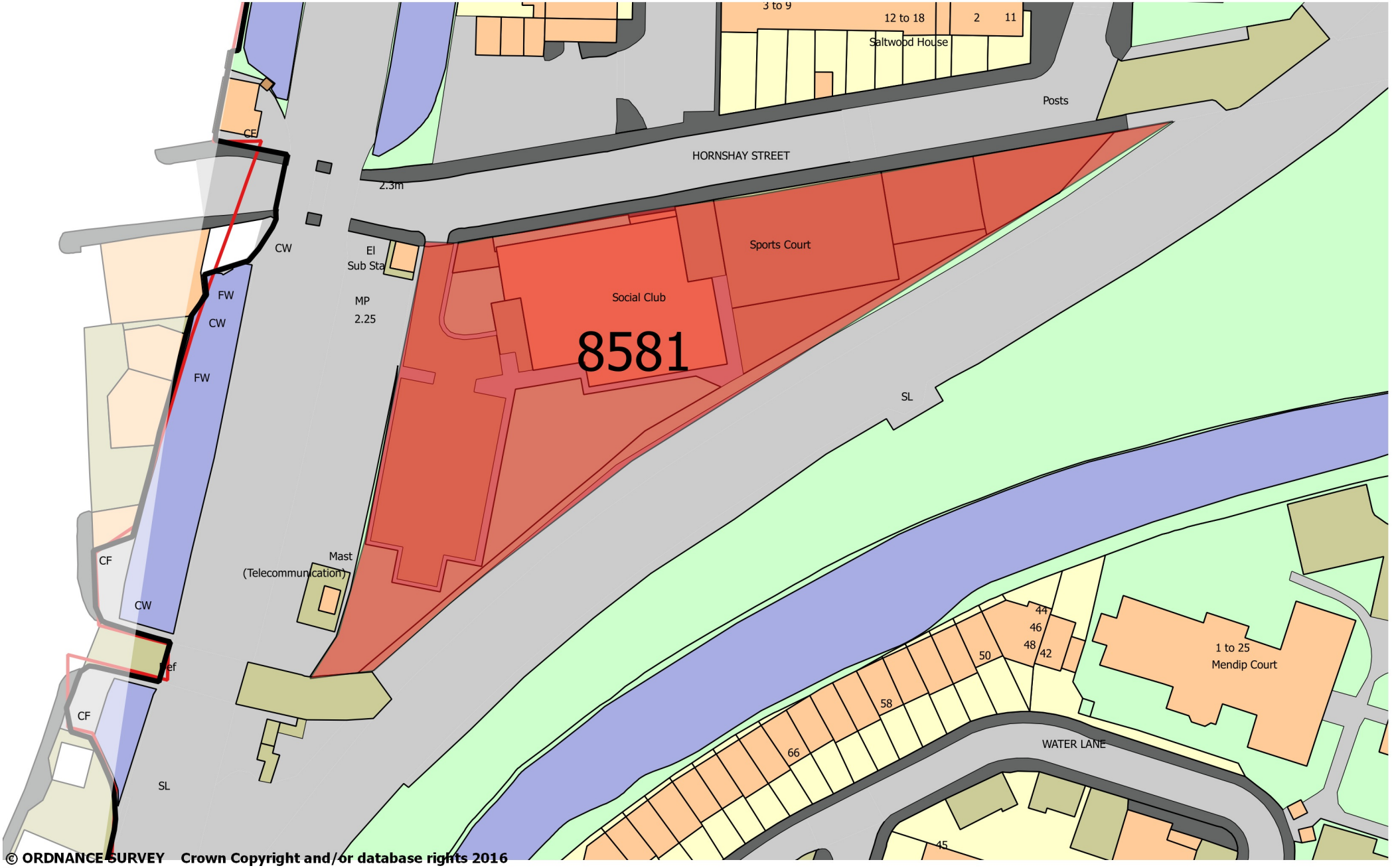
NPPF (2012) terms

Exception test	Applied once the sequential test has been passed. For the exception test to be passed it must be demonstrated that the development provides wider sustainability benefits to the community that outweigh flood risk and a site-specific FRA must 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.
Sequential test	Aims to steer new development to areas with the lowest probability of flooding.
Essential infrastructure	Essential infrastructure includes essential transport infrastructure, essential utility infrastructure and wind turbines.
Water compatible	Water compatible land uses include flood control infrastructure, water-based recreation and lifeguard/coastal stations.
Less vulnerable	Less vulnerable land uses include police/ambulance/fire stations which are not required to be operational during flooding and buildings used for shops/financial/professional/other services.
More vulnerable	More vulnerable land uses include hospitals, residential institutions, buildings used for dwelling houses/student halls/drinking establishments/hotels and sites used for holiday or short-let caravans and camping.
Highly vulnerable	Highly vulnerable land uses include police/ambulance/fire stations which are required to be operational during flooding, basement dwellings and caravans/mobile homes/park homes intended for permanent residential use.

Appendices

Appendix A

Site Plans



DATE: 26.04.2016
AUTHOR: Cheryl Maughan

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Planning Policy Team
3rd Floor, Laurence House
Catford SE6 4RU

Tel: 0208 314 6438

Lewisham


LBL OWNED 1375 SQM
NETWORK RAIL ?
RAIL EMBANKMENT SCAFFOLDING YARD
TOTAL 2845 SQM
Rivers Centre
15.6m

Appendix B

London Borough of Lewisham Gypsy & Traveller Search Parameters & Site Selection Criteria

The approved search parameters are as follows:

- Council-owned housing land.
- Council-owned non-housing land.
- Private and other publicly owned land – focus on Council owned land, other than, possibly, adjacent land in other ownerships that may be necessary to develop a Council asset.
- For practical considerations of site management and economic considerations the Council consider the need for 6 pitches should be met on a single site.
- Type of site - full range of potential sites, including vacant open land, open land that is in use, vacant and occupied buildings and any combination.
- Size of site - base a search for sites on 400sqm per pitch (average size).
- Location of site – whole borough.

Site Selection Criteria

The final Site Selection Criteria are as follows:

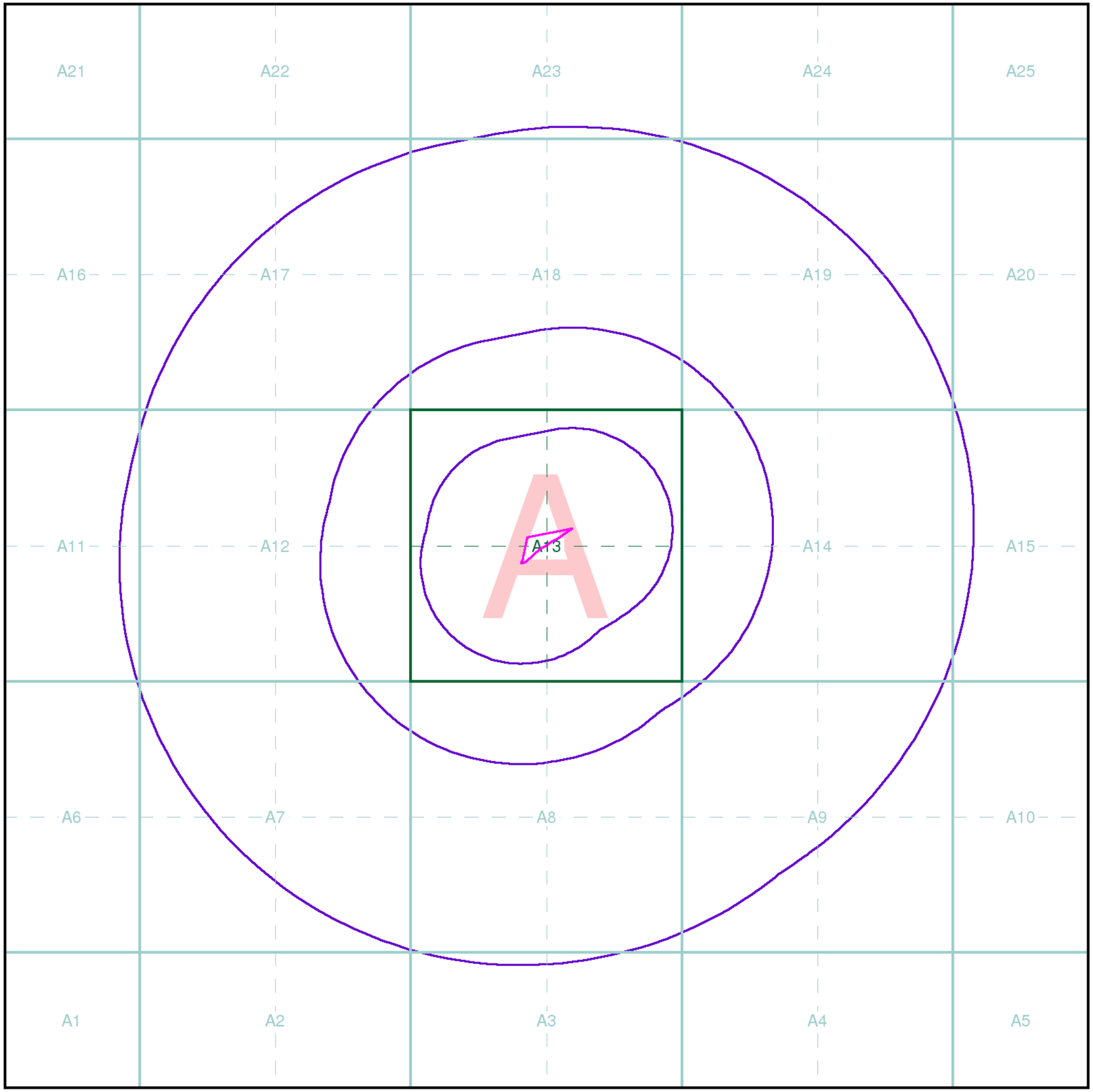
Site Selection Criteria	Explanation and application
1. Effective and efficient use of public assets.	(a) Effective use of public assets – Judgement, taking account of existing service commitments and use, running costs, investment requirements, reasonable alternative use(s) for the provision of other services and the Strategic Asset Management Plan (SAMP). (b) Efficient use of public assets– Judgement, taking account of reasonable alternative use(s) and the Council's need to minimise opportunity costs and optimise capital receipts.
2. Reasonable access to local shops, services and community facilities in particular schools and health services.	(a) Site within 800m of bus stop and/or station. (b) The following services within 1,500m: (i) Local shop; (ii) Primary School; and (iii) Health facility.
3. Safe and reasonably convenient access to the road network.	(a) Safe vehicular access or capable of creating safe vehicular access for 15m long caravan to/off a public highway. (b) Access for emergency services. (c) Clearance height of 3.7m.

Site Selection Criteria	Explanation and application
4. Capable of satisfactory provision for parking, turning, service and emergency vehicles.	(a) Judgement (size and shape of site). (b) Infrequent access needed for 15m long caravan.
5. Mixed residential and business use opportunities.	**(a)** Mixed-use residential and business use acceptable in principle **(b)** Any likely adverse impacts are acceptable (assuming environmental permitting regulations, appropriate licensing and planning conditions manage activities that could be carried out).
6. Supply of essential services such as water, sewerage and drainage and waste disposal.	Assume all sites have access to all essential services or are capable of being connected (NB cost of doing so may vary and affect deliverability).
7. Scope for healthy lifestyles and integration.	(a) Opportunities for healthy lifestyles such as adequate landscaping & play areas - Judgement (size and shape of site). (b) High standard design and landscaped which facilitates the integration of the site with the surrounding environment and amenity of the occupiers adjoining the site - Judgement (size and shape of site).
8. Local environmental quality	(a) Contamination – Free from significant contamination or able to be cleaned up (consult LBL Environmental Health) ((NB cost of doing so may vary and affect deliverability). (b) Noise – Acceptable internal noise environment (consult LBL Environmental Health) **(c)** Air quality – Acceptable air quality (consult LBL Environmental Health) **(d)** Flooding – Reasonable prospect of sequential test and exceptions tests being met
9. Spatial planning & development management considerations.	**(a)** Key relevant site specific development plan policies – both for the site itself and adjoining land **(b)** Key relevant general policies **(c)** Key relevant policies in emerging Local Plan and any emerging Neighbourhood Plan **(d)** Key relevant planning guidance **(e)** Planning history – identification of any key relevant planning history. **(f)** Summary – overall conclusion, taking account of the above.
10. Deliverability.	Taking account of all of the previous criteria, sites should be: **(a)** Available now; **(b)** Offer a suitable location for development; and

Site Selection Criteria	Explanation and application
	(c) Be achievable with a realistic prospect that development will be delivered on the site within five years.

Appendix C

Commercial flood report



GeoSmart Information

Environmental Thinking

Index Map

For ease of identification, your site and buffer have been split into Slices, Segments and Quadrants. These are illustrated on the Index Map opposite and explained further below.

Slice
Each slice represents a 1:10,000 plot area (2.7km x 2.7km) for your site and buffer. A large site and buffer may be made up of several slices (represented by a red outline), that are referenced by letters of the alphabet, starting from the bottom left corner of the slice "grid". This grid does not relate to National Grid lines but is designed to give best fit over the site and buffer.

Segment
A segment represents a 1:2,500 plot area. Segments that have plot files associated with them are shown in dark green, others in light blue. These are numbered from the bottom left hand corner within each slice.

Quadrant
A quadrant is a quarter of a segment. These are labelled as NW, NE, SW, SE and are referenced in the datasheet to allow features to be quickly located on plots. Therefore a feature that has a quadrant reference of A7NW will be in Slice A, Segment 7 and the NW Quadrant.

A selection of organisations who provide data within this report:

Map data

British Geological Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

Environment Agency

NATURAL ENGLAND

Envirocheck reports are compiled from 136 different sources of data.

Client Details

Miss S Cogan, Geo Smart Information Limited, New Zealand House, 160 Abbey Foregate, Shrewsbury, Shropshire, SY2 6FD

Order Details

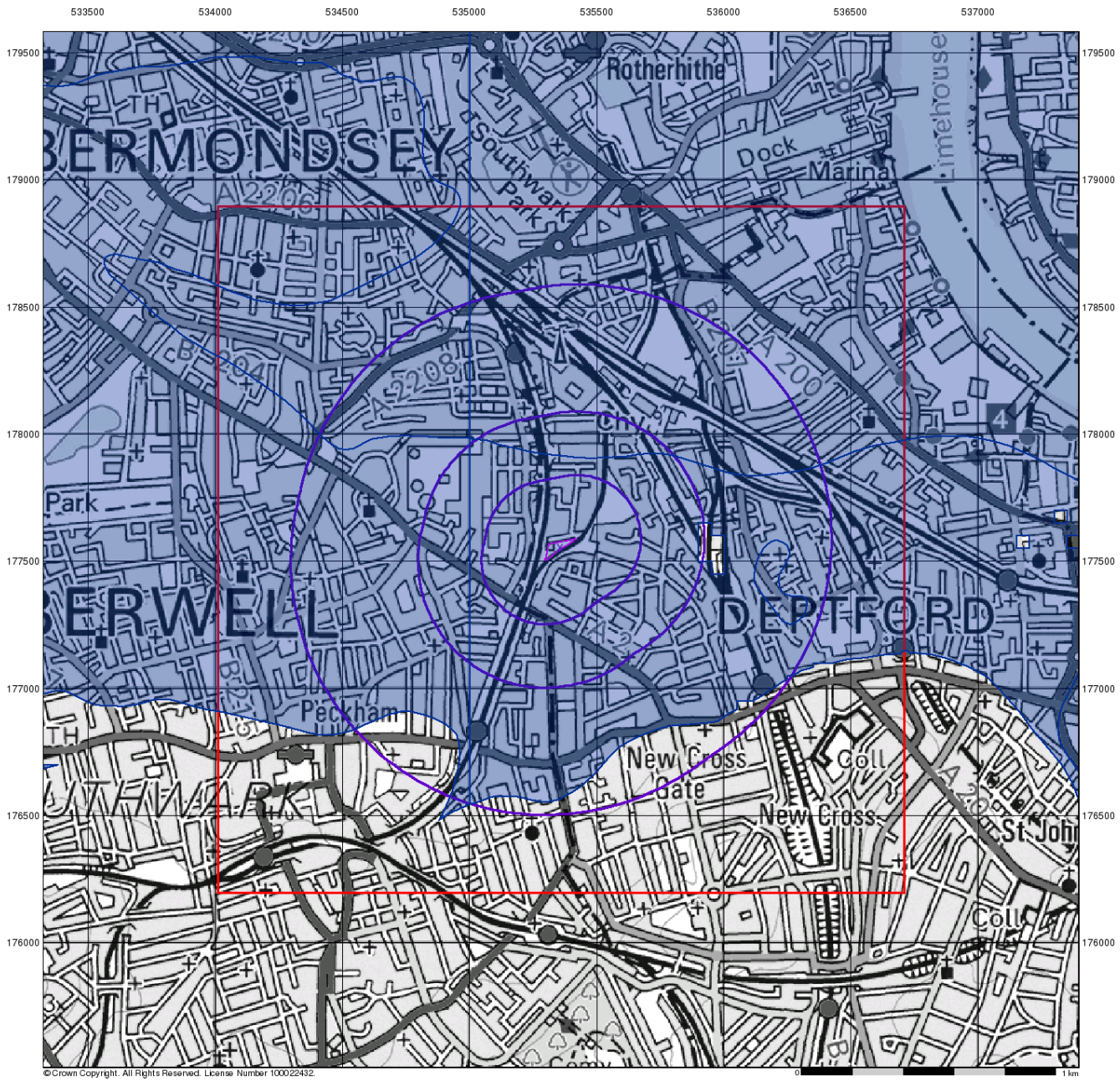
Order Number:	91971283_1_1
Customer Ref:	65199
National Grid Reference:	535340, 177550
Site Area (Ha):	0.34
Search Buffer (m):	1000

Site Details

New Cross Social Club & Adjoining Land, Hornshay Street, LONDON, SE15 1HB

Full Terms and Conditions can be found on the following link:
http://www.landmarkinfo.co.uk/Terms/Show/515

Landmark Information Group
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



GeoSmart Information

Environmental Thinking

BGS Flood Data (1:50,000)

General

Specified Site | Specified Buffer(s) | Bearing Reference Point

Slice | Map ID

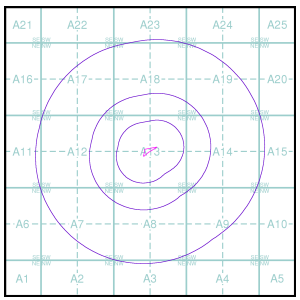
BGS Geological Indicators of Flooding

Coastal

Inland

Bodies of Water

BGS Flood Data Map - Slice A



Order Details

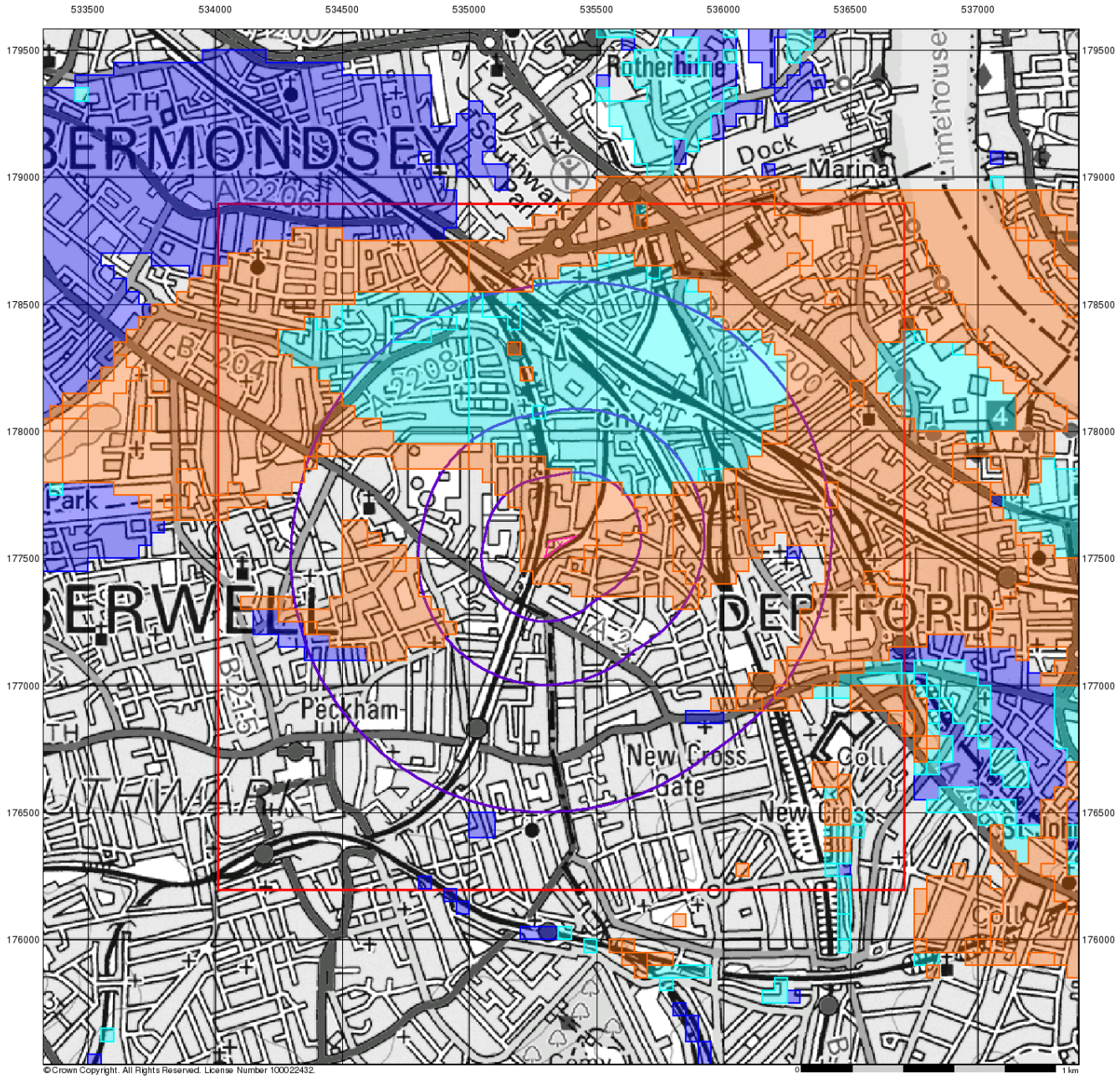
Order Number:	91971283_1_1
Customer Ref:	65199
National Grid Reference:	535350, 177550
Slice:	A
Site Area (Ha):	0.34
Search Buffer (m):	1000

Site Details

New Cross Social Club & Adjoining Land, Hornshay Street, LONDON, SE15 1HB

Landmark Information Group

Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



GeoSmart Information

Environmental Thinking

BGS Flood Data (1:50,000)

General

Specified Site | Specified Buffer(s) | Bearing Reference Point

Slice | Map ID

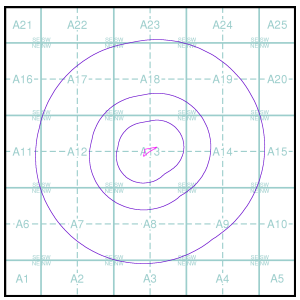
BGS Groundwater Flooding Susceptibility

Potential for Groundwater Flooding to Occur at Surface

Potential for Groundwater Flooding of Property Situated Below Ground Level

Limited Potential for Groundwater Flooding to Occur

BGS Flood Data Map - Slice A



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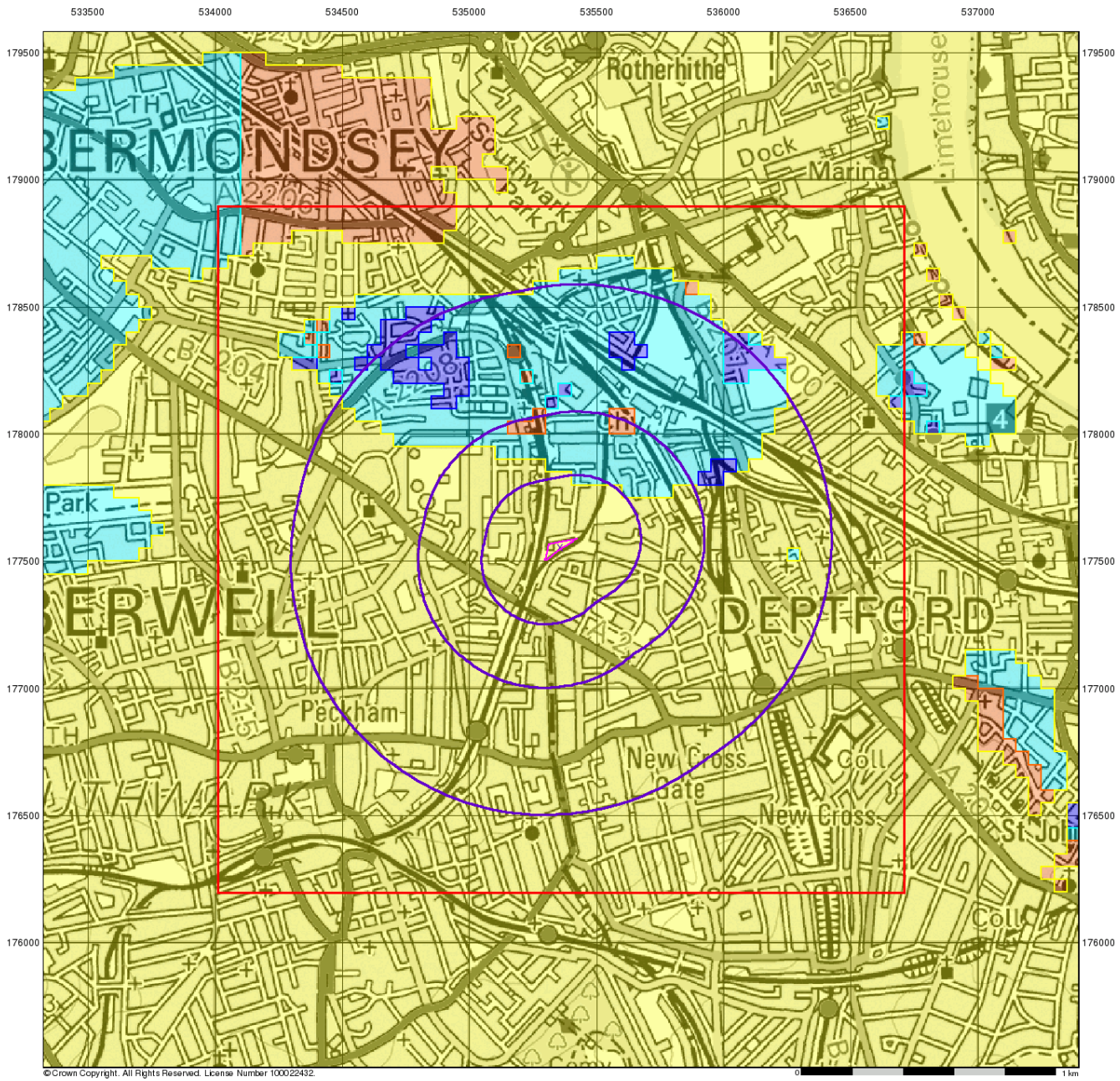


GeoSmart Information

Environmental Thinking

ESI Groundwater Flood Map (1:50,000)

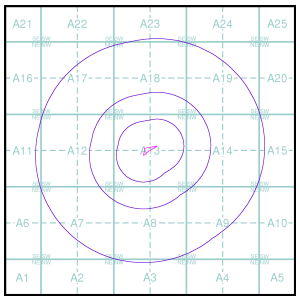
General

Specified Site | Specified Buffer(s) | Bearing Reference Point | Slice

ESI Groundwater Flooding Risk

- High Risk
- Moderate Risk
- Low Risk
- Negligible Risk

ESI Groundwater Flood Map - Slice A



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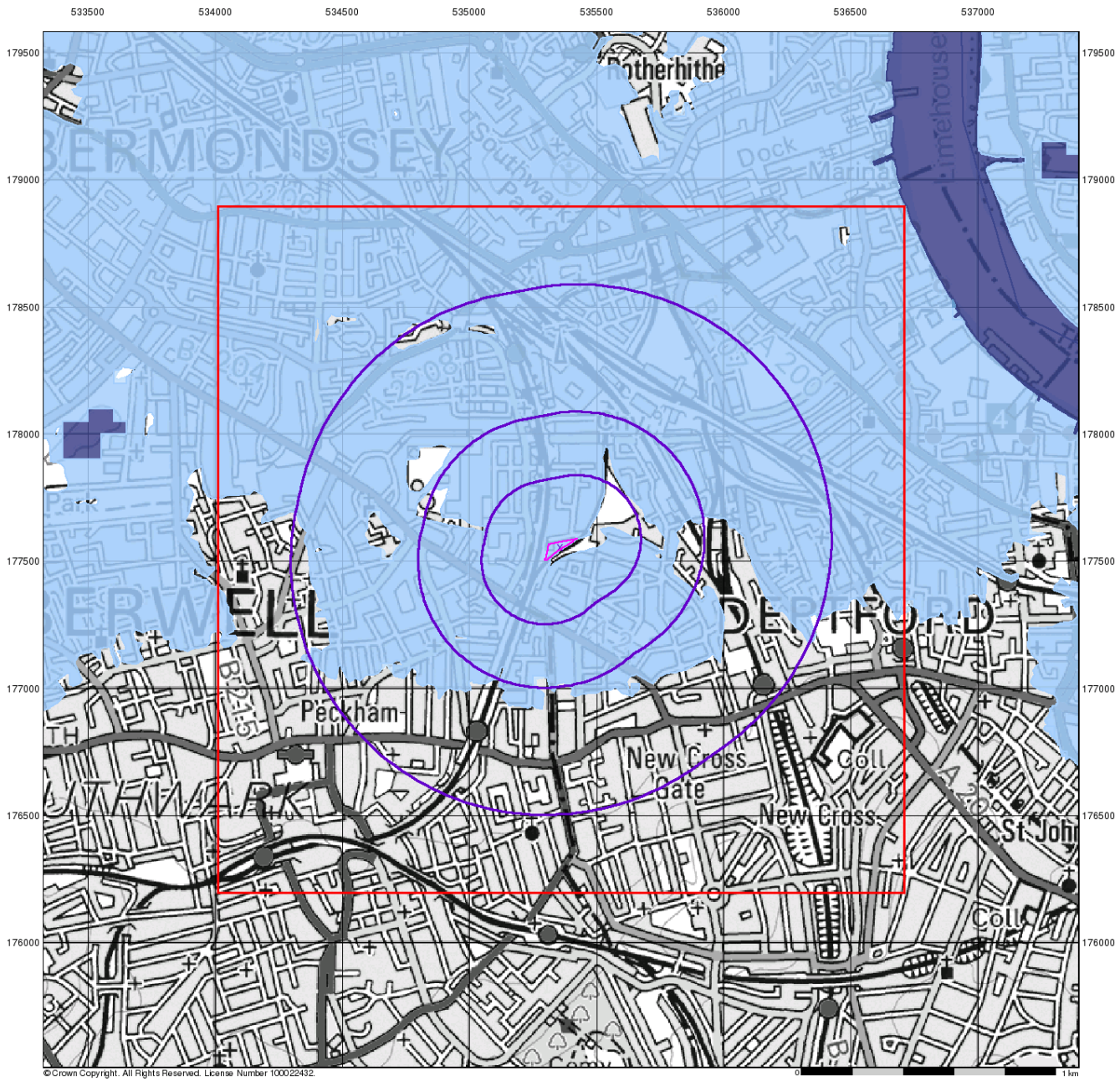


GeoSmart Information

Environmental Thinking

EA/NRW RoFRS Data (1:50,000)

General

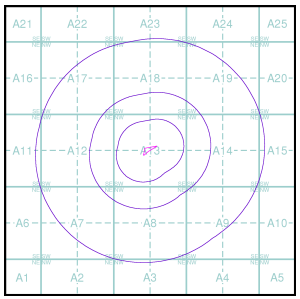
Specified Site | Specified Buffer(s) | Bearing Reference Point

Slice | Map ID

Risk of Flooding from Rivers and Sea (RoFRS)

- High Risk
- Medium Risk
- Low Risk
- Very Low Risk

EA/NRW RoFRS Data Map - Slice A



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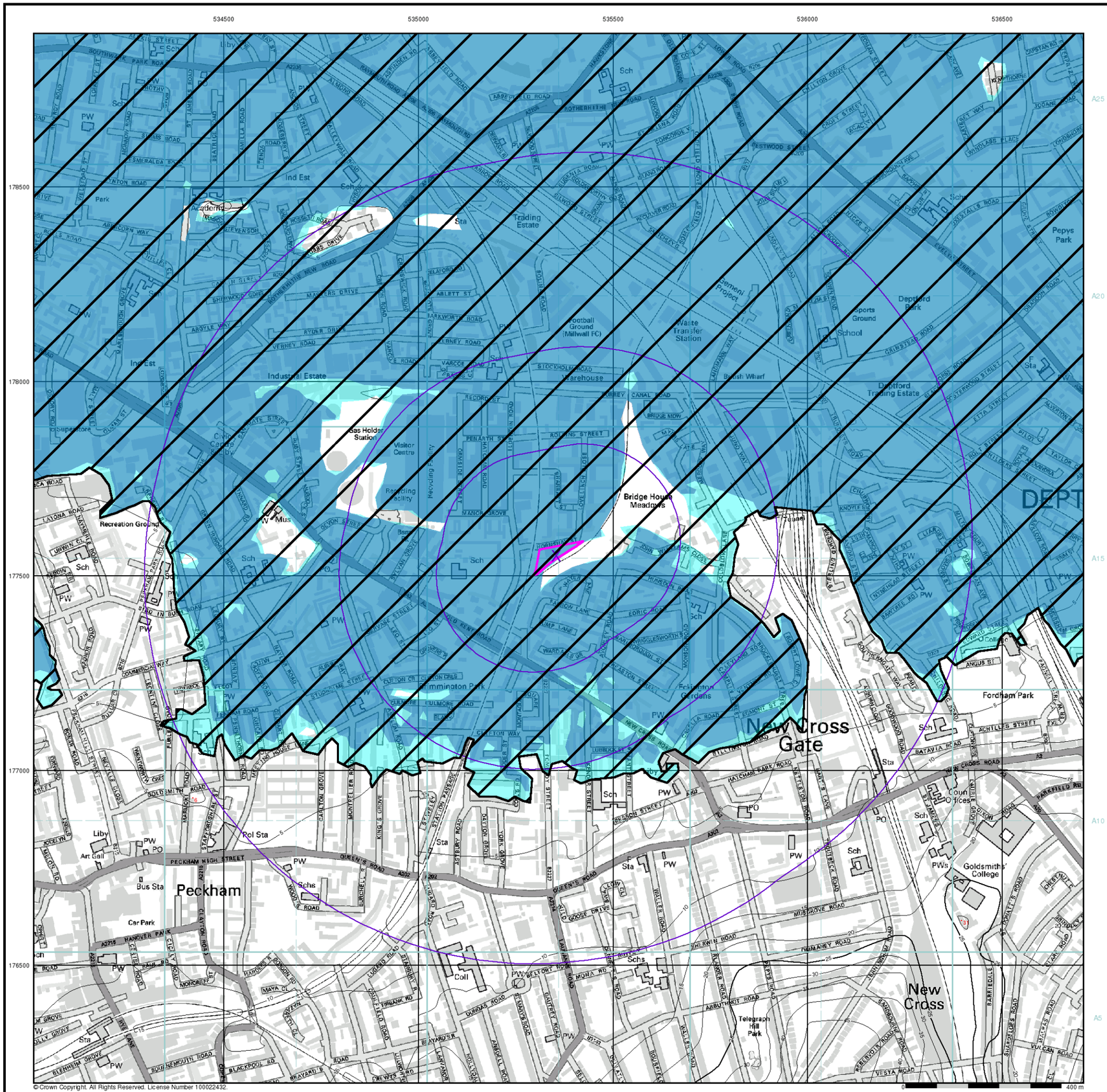


GeoSmart Information

Environmental Thinking

EA/NRW Flood Data Map (1:10,000)

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point

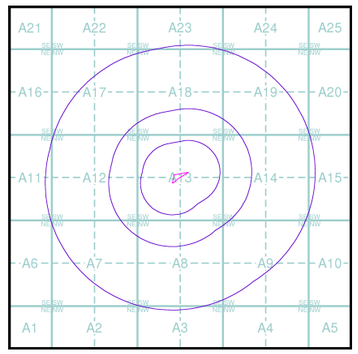
Flood Data

- Extreme Flooding from Rivers or Sea without Defences (Zone 2)
- Flooding from Rivers or Sea without Defences (Zone 3)
- Area Benefiting from Flood Defence
- Flood Water Storage Areas
- Flood Defence

Contours (height in metres)

- Standard Contour
- Master Contour
- Spot Height *167.8
- MLW Mean Low Water
- MHW Mean High Water

EA/NRW Flood Data Map - Slice A



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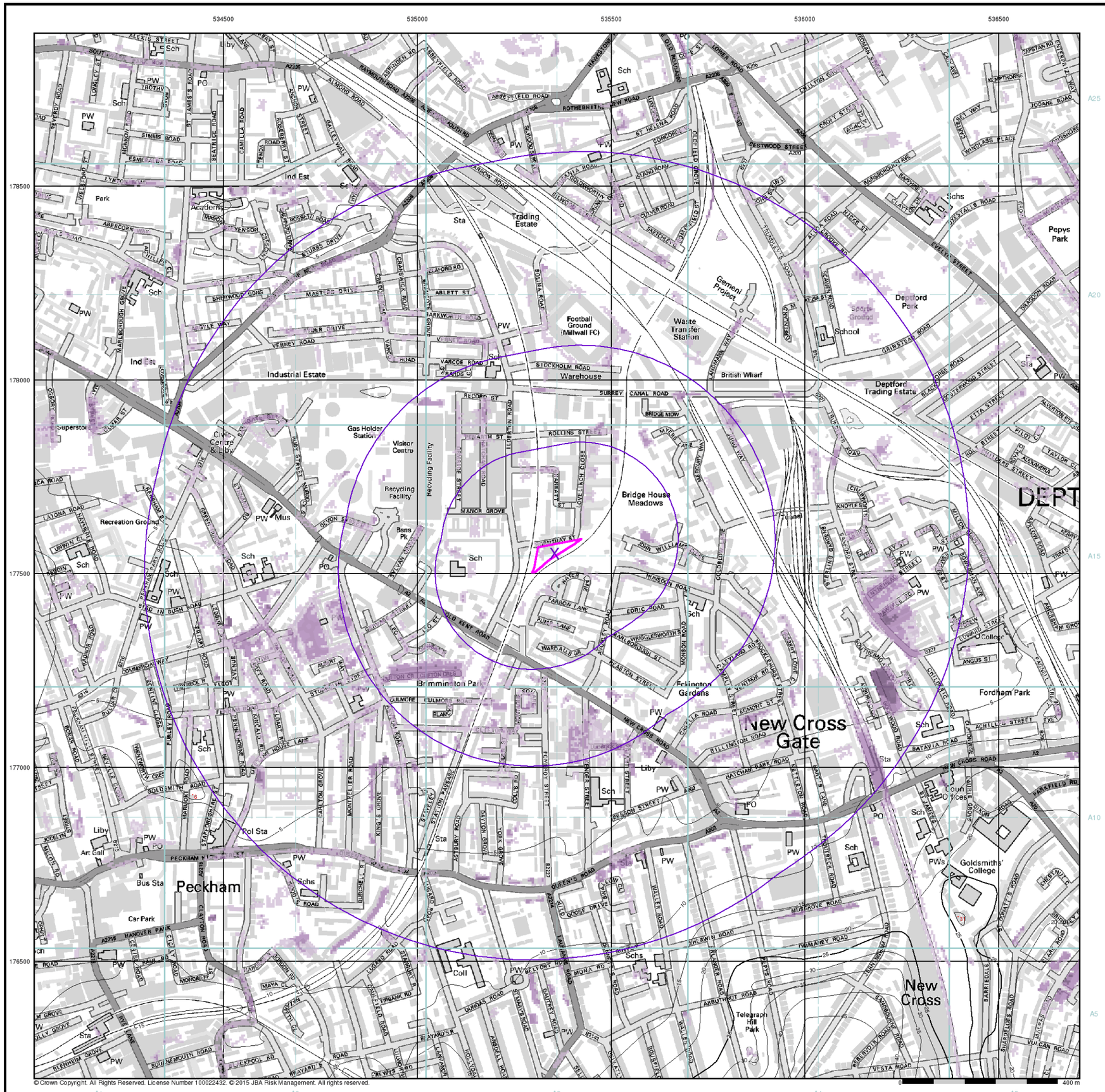


GeoSmart Information

Environmental Thinking

JBA 75 Year Return Flood Map (Undefended) (1:10,000)

General

- Specified Site
- Specified Buffer(s)
- X Bearing Reference Point

Modelled Flood Depth

Pluvial Depth	Fluvial Depth	Coastal Depth
< 1cm	0.5mm - 10cm	< 10cm
1cm - 10cm	10cm - 30cm	10cm - 30cm
10cm - 30cm	30cm - 1m	30cm - 1m
30cm - 1m	>1m	>1m
>1m		

Contours (height in metres)

Standard Contour 105 100 95

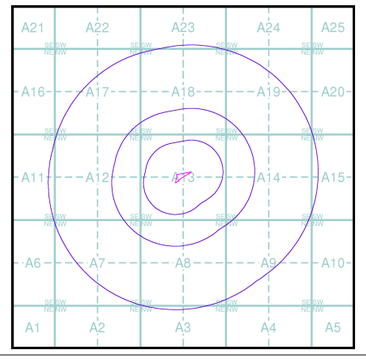
Master Contour

Spot Height *167.8

MLW Mean Low Water

MHW Mean High Water

JBA 75 Year Return Flood Map (Undefended) - Slice A



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GeoSmart Information

Environmental Thinking

JBA 100 Year Return Flood Map (Undefended) (1:10,000)

General

- Specified Site
- Specified Buffer(s)
- X Bearing Reference Point

Modelled Flood Depth

Fluvial Depth	Coastal Depth
0.5mm - 10cm	< 10cm
10cm - 30cm	10cm - 30cm
30cm - 1m	30cm - 1m
>1m	>1m

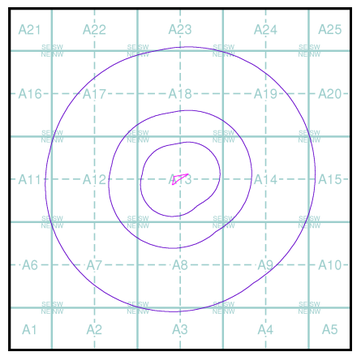
Contours (height in metres)

Standard Contour 105 100 95 — MLW Mean Low Water

Master Contour — MHW Mean High Water

Spot Height *167.8

JBA 100 Year Return Flood Map (Undefended) - Slice A



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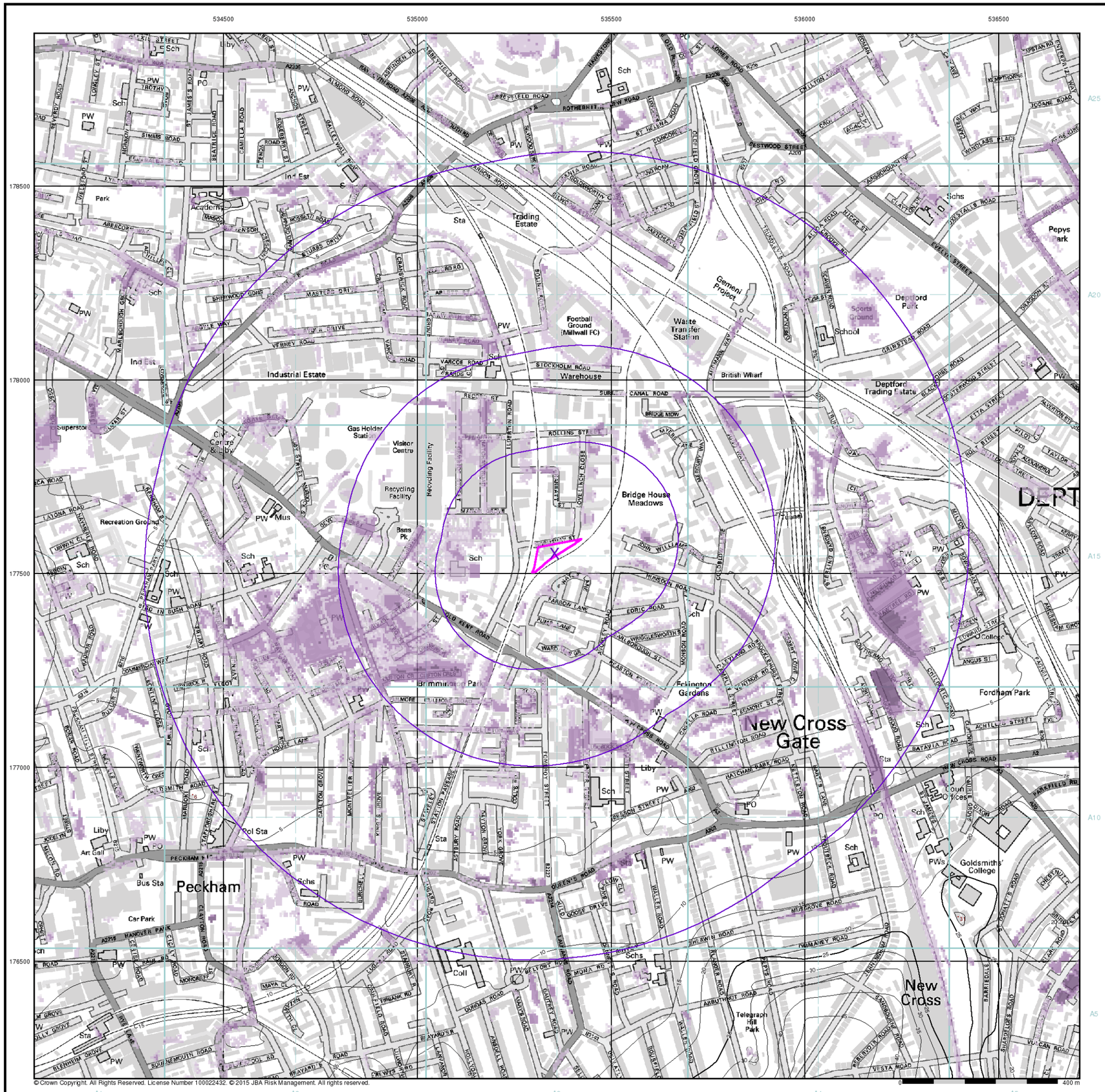


GeoSmart Information

Environmental Thinking

JBA 200 Year Return Flood Map (Undefended) (1:10,000)

General

- Specified Site
- Specified Buffer(s)
- X Bearing Reference Point

Modelled Flood Depth

Pluvial Depth	Fluvial Depth	Coastal Depth
< 1cm	0.5mm - 10cm	< 10cm
1cm - 10cm	10cm - 30cm	10cm - 30cm
10cm - 30cm	30cm - 1m	30cm - 1m
30cm - 1m	>1m	>1m
>1m		

Contours (height in metres)

Standard Contour 105 100 95

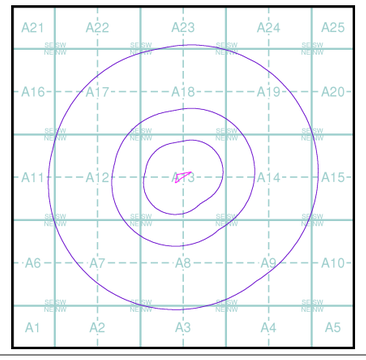
Master Contour

Spot Height *167.8

MLW Mean Low Water

MHW Mean High Water

JBA 200 Year Return Flood Map (Undefended) - Slice A



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Site Details

New Cross Social Club & Adjoining Land, Hornshay Street, LONDON, SE15 1HB

GeoSmart Information

Environmental Thinking

JBA 1000 Year Return Flood Map (Undefended) (1:10,000)

General

- Specified Site
- Specified Buffer(s)
- X Bearing Reference Point

Modelled Flood Depth

Pluvial Depth	Fluvial Depth	Coastal Depth
< 1cm	0.5mm - 10cm	< 10cm
1cm - 10cm	10cm - 30cm	10cm - 30cm
10cm - 30cm	30cm - 1m	30cm - 1m
30cm - 1m	>1m	>1m
>1m		

Contours (height in metres)

Standard Contour 105 100 95

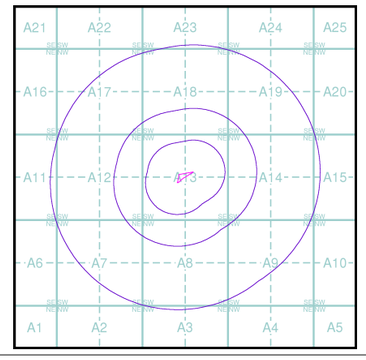
Master Contour

Spot Height *167.8

MLW Mean Low Water

MHW Mean High Water

JBA 1000 Year Return Flood Map (Undefended) - Slice A



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GeoSmart Information

Environmental Thinking

JBA Canal Failure Map (1:10,000)

General

- Specified Site
- Specified Buffer(s)
- X Bearing Reference Point

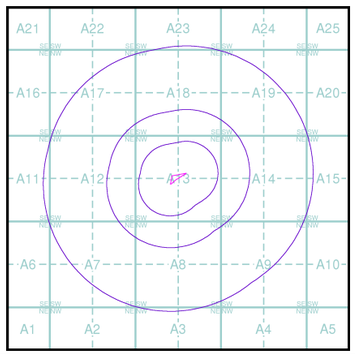
Flood Data

- Canal Failure
- Coverage

Contours (height in metres)

- Standard Contour
- Master Contour
- Spot Height *167.8
- MLW Mean Low Water
- MHW Mean High Water

JBA Canal Failure Flood Map - Slice A



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National Grid Reference:	535350, 177550
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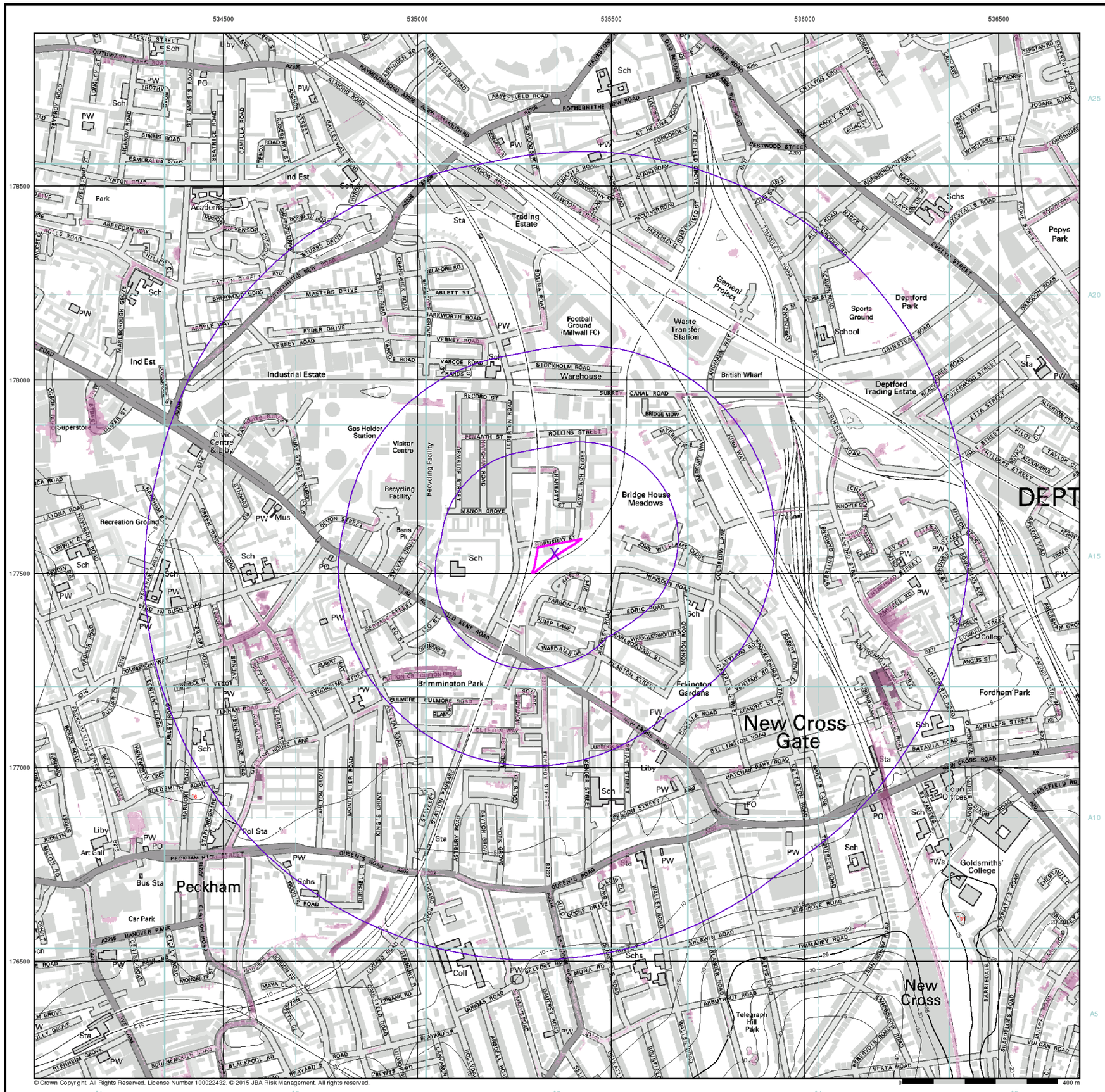


GeoSmart Information

Environmental Thinking

EA/NRW Surface Water 30 Year Return Depth Map (1:10,000)

General

Specified Site | Specified Buffer(s) | X Bearing Reference Point

Surface Water Depth

- 0 - 0.15m
- 0.15 - 0.30m
- 0.30 - 0.60m
- 0.60 - 0.90m
- 0.90 - 1.20m
- > 1.20m

Contours (height in metres)

Standard Contour 105 | Master Contour 100 95 | Spot Height *167.8

MLW Mean Low Water

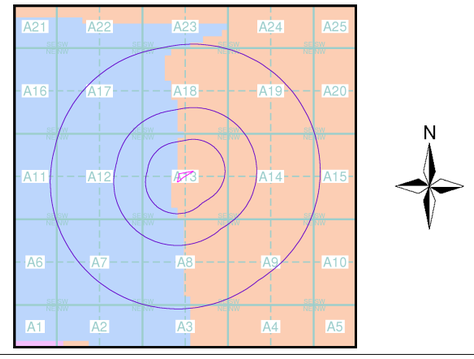
MHW Mean High Water

Suitability

See the suitability map below

- National to county
- County to town
- Town to street
- Street to parcels of land
- Property

EA/NRW Suitability Map - Slice A



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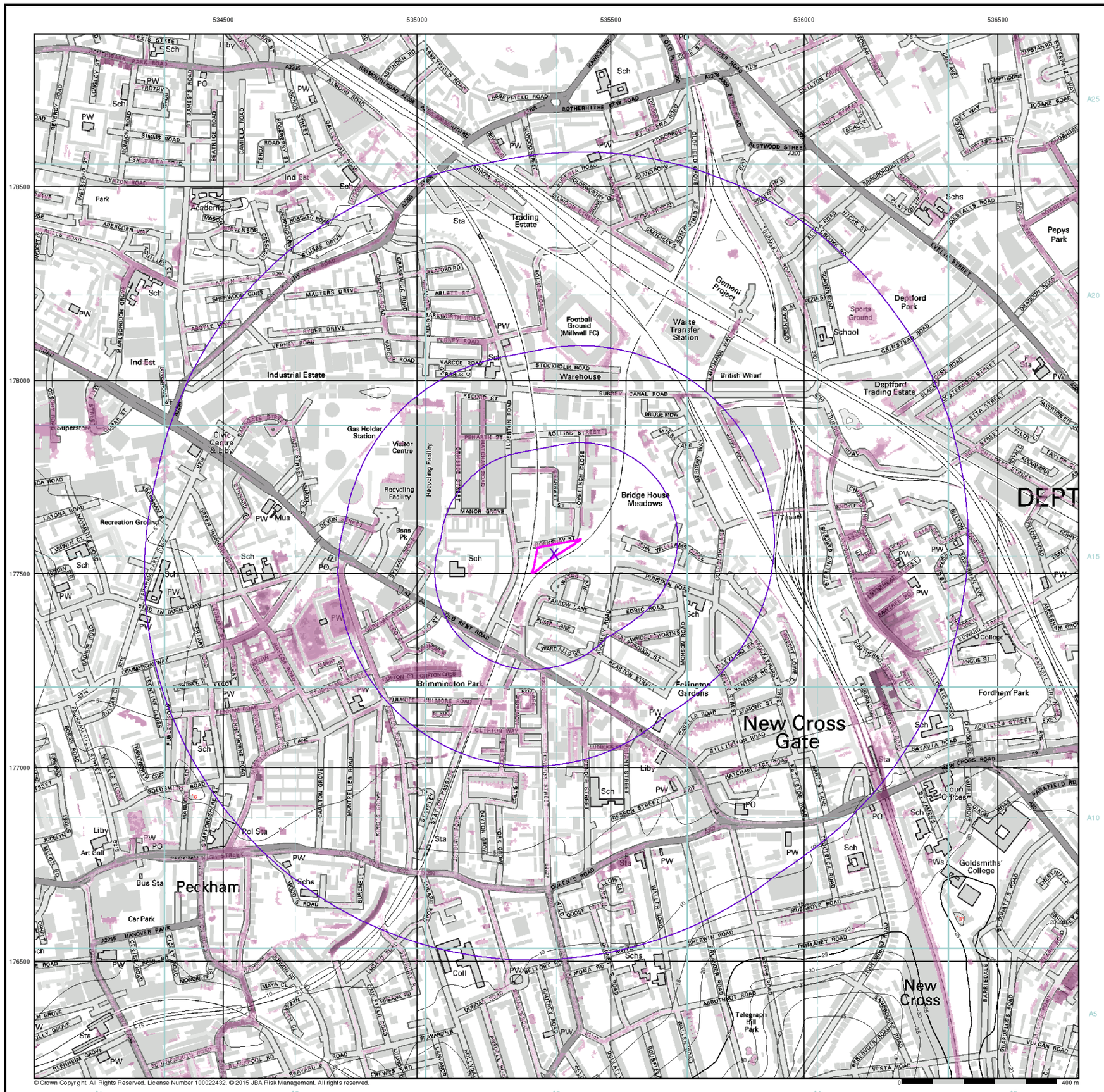

GeoSmart Information

Environmental Thinking

EA/NRW Surface Water 100 Year Return Depth Map

General

Specified Site | Specified Buffer(s) | X Bearing Reference Point

Surface Water Depth

- 0 - 0.15m
- 0.15 - 0.30m
- 0.30 - 0.60m
- 0.60 - 0.90m
- 0.90 - 1.20m
- > 1.20m

Contours (height in metres)

Standard Contour 105 100 95 — MLW Mean Low Water

Master Contour — MHW Mean High Water

Spot Height * 167.8

Suitability

See the suitability map below

- National to county
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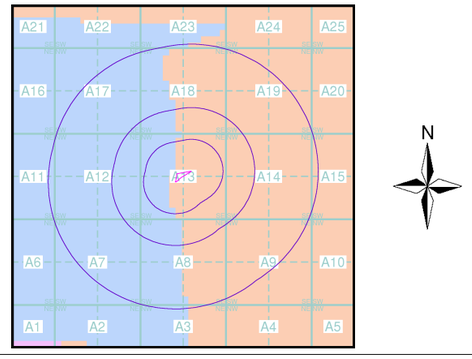
EA/NRW Suitability Map - Slice A



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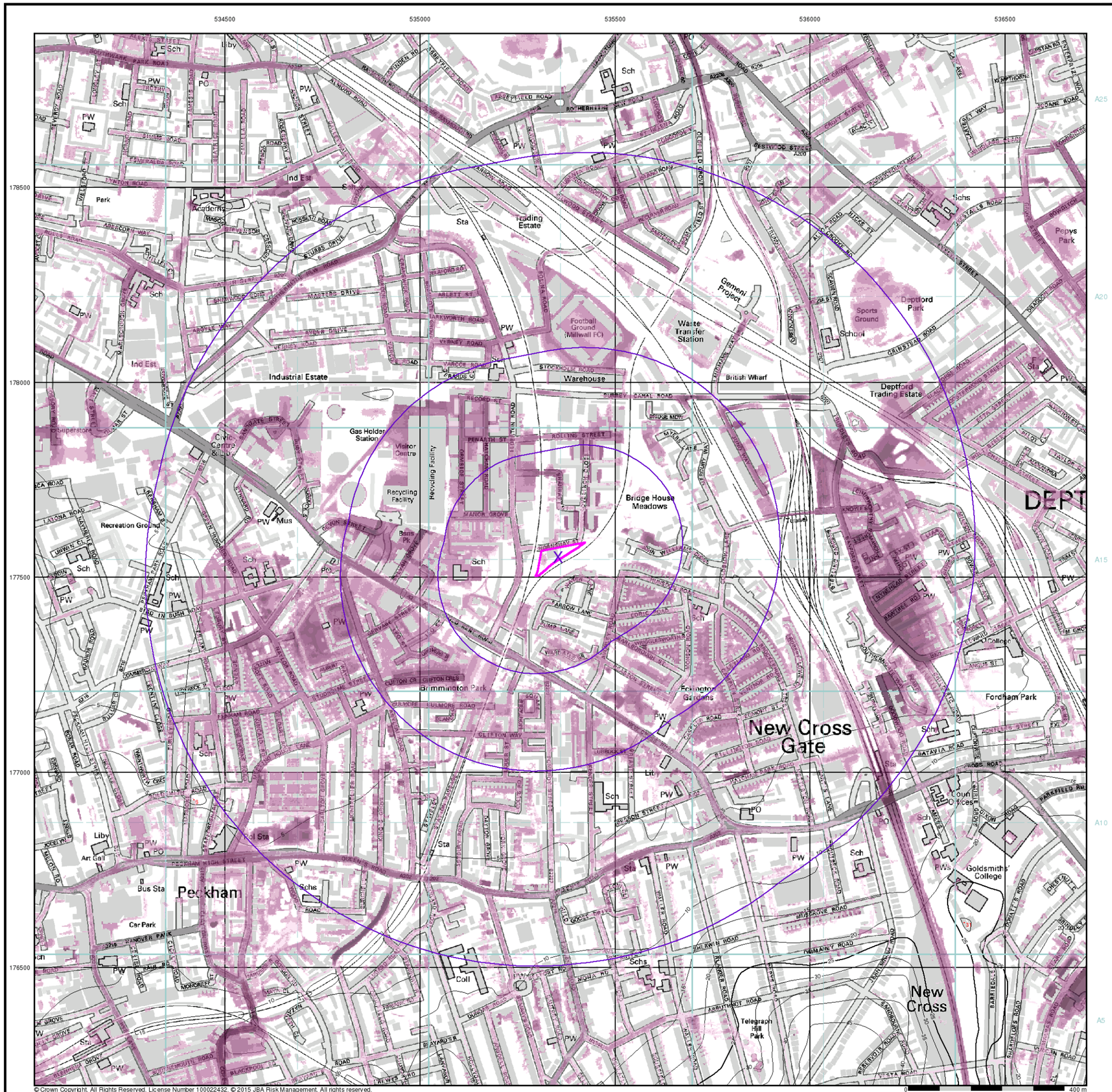

GeoSmart Information

Environmental Thinking

EA/NRW Surface Water 1000 Year Return Depth Map (1:10,000)

General

Specified Site | Specified Buffer(s) | X Bearing Reference Point

Surface Water Depth

- 0 - 0.15m
- 0.15 - 0.30m
- 0.30 - 0.60m
- 0.60 - 0.90m
- 0.90 - 1.20m
- > 1.20m

Contours (height in metres)

Standard Contour | Master Contour | Spot Height 167.8

MLW Mean Low Water

MHW Mean High Water

Suitability

See the suitability map below

- National to county
- County to town
- Town to street
- Street to parcels of land
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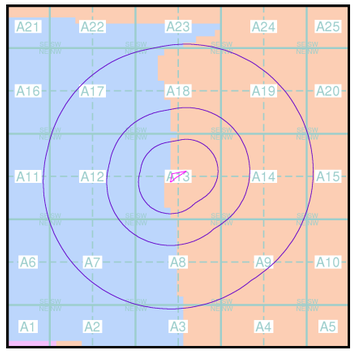
EA/NRW Suitability Map - Slice A



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GeoSmart Information

Environmental Thinking

EA/NRW Surface Water 30 Year Return Velocity and Flow Direction Map (1:10,000)

General

Specified Site | Specified Buffer(s) | X Bearing Reference Point

Surface Water Velocity and Direction

- 0.00 - 0.25m/s
- 0.25 - 0.50m/s
- 0.50 - 1.00m/s
- 1.00 - 2.00m/s
- > 2.00m/s

Flow Direction at maximum velocity

Contours (height in metres)

Standard Contour 105 100 95 — MLW — Mean Low Water

Master Contour — MHW — Mean High Water

Spot Height *167.8

Suitability

See the suitability map below

- National to county
- County to town
- Town to street
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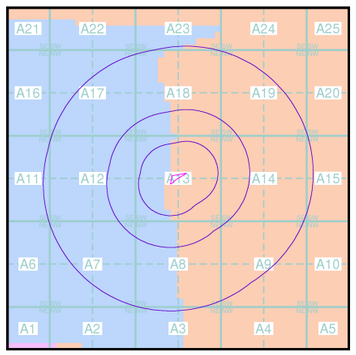
EA/NRW Suitability Map - Slice A



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GeoSmart Information

Environmental Thinking

EA/NRW Surface Water 100 Year Return Velocity and Flow Direction Map (1:10,000)

General

Specified Site | Specified Buffer(s) | X Bearing Reference Point

Surface Water Velocity and Direction

- 0.00 - 0.25m/s
- 0.25 - 0.50m/s
- 0.50 - 1.00m/s
- 1.00 - 2.00m/s
- > 2.00m/s

Flow Direction at maximum velocity

Contours (height in metres)

Standard Contour 105 100 95

Master Contour

Spot Height *167.8

MLW Mean Low Water

MHW Mean High Water

Suitability

See the suitability map below

- National to county
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- Street to parcels of land
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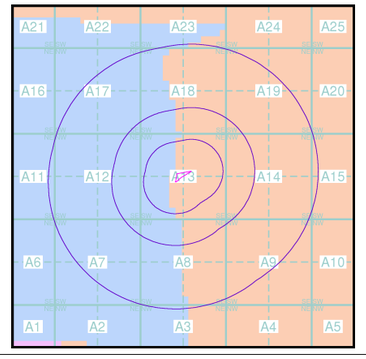
EA/NRW Suitability Map - Slice A



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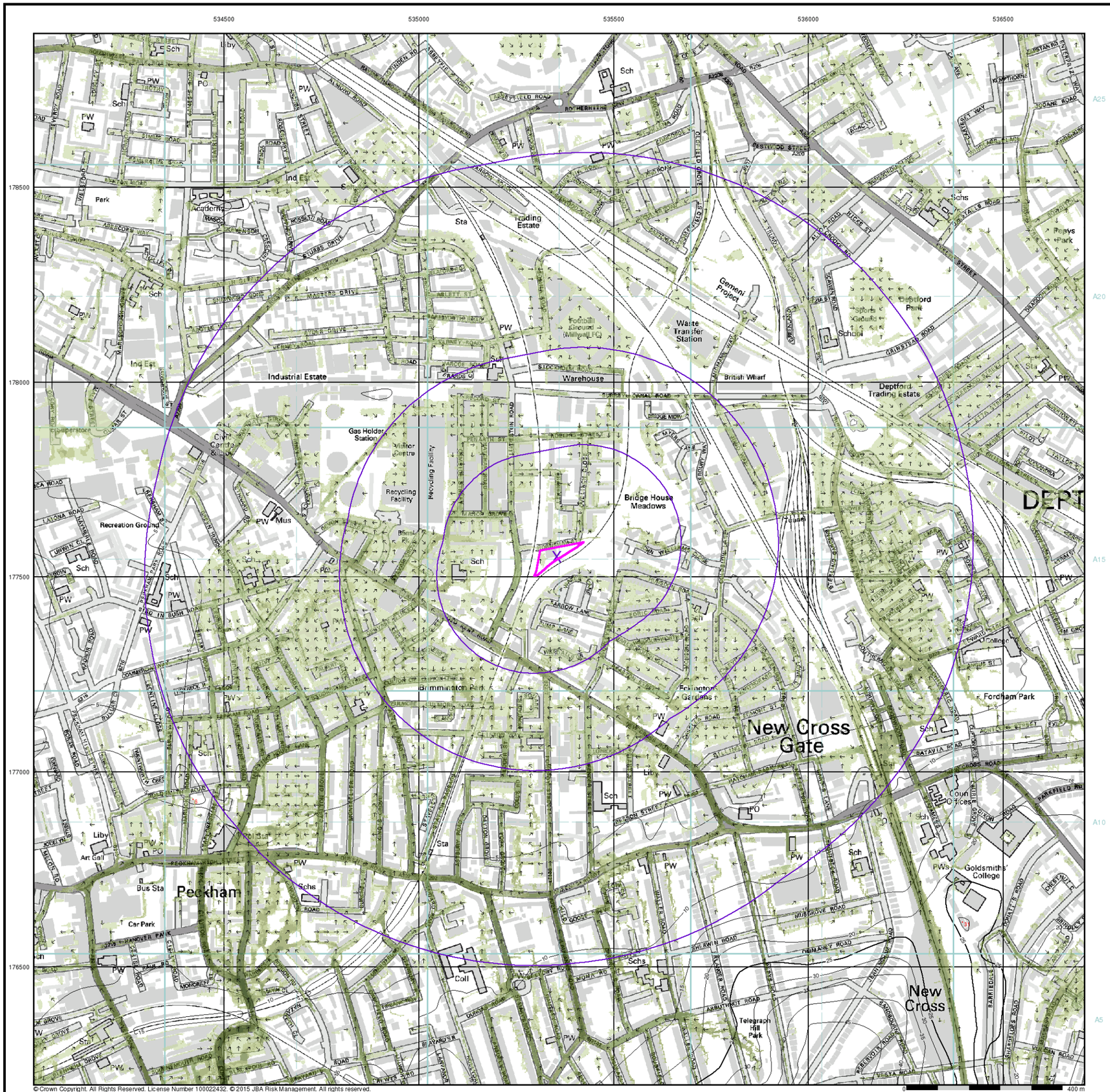

GeoSmart Information

Environmental Thinking

EA/NRW Surface Water 1000 Year Return Velocity and Flow Direction Map (1:10,000)

General

Specified Site | Specified Buffer(s) | X Bearing Reference Point

Surface Water Velocity and Direction

- 0.00 - 0.25m/s
- 0.25 - 0.50m/s
- 0.50 - 1.00m/s
- 1.00 - 2.00m/s
- > 2.00m/s

Flow Direction at maximum velocity

Contours (height in metres)

Standard Contour 105 100 95

Master Contour

Spot Height *167.8

MLW Mean Low Water

MHW Mean High Water

Suitability

See the suitability map below

- National to county
- County to town
- Town to street
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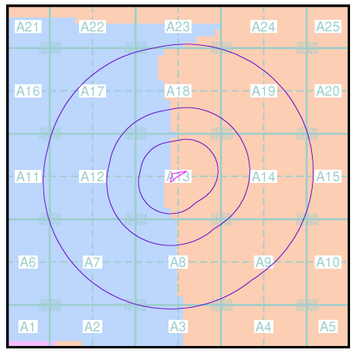
- Property

EA/NRW Suitability Map - Slice A



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GeoSmart Information

Environmental Thinking

EA/NRW Surface Water 30 Year Return Hazard Rating Map (1:10,000)

General

Specified Site | Specified Buffer(s) | X Bearing Reference Point

Surface Water Hazard Rating

- Low (0.5 – 0.75)
- Moderate (0.75 – 1.25)
- Significant (1.25 – 2.0)
- Extreme (>2.0)

Contours (height in metres)

Standard Contour | Master Contour | Spot Height *167.8

MLW Mean Low Water

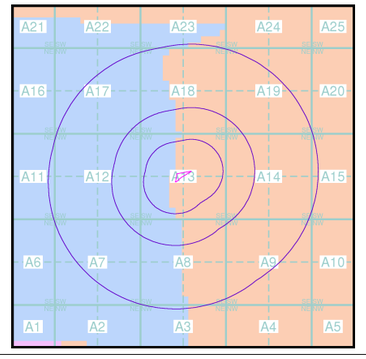
MHW Mean High Water

Suitability

See the suitability map below

- National to county
- County to town
- Town to street
- Street to parcels of land
- Property

EA/NRW Suitability Map - Slice A



Order Details

Order Number:	91971283_1_1
Customer Ref:	65199
National Grid Reference:	535350, 177550
Slice:	A
Site Area (Ha):	0.34
Search Buffer (m):	1000

Site Details

New Cross Social Club & Adjoining Land, Hornshay Street, LONDON, SE15 1HB

GeoSmart Information

Environmental Thinking

EA/NRW Surface Water 100 Year Return Hazard Rating Map (1:10,000)

General

Specified Site | Specified Buffer(s) | X Bearing Reference Point

Surface Water Hazard Rating

- Low (0.5 – 0.75)
- Moderate (0.75 – 1.25)
- Significant (1.25 – 2.0)
- Extreme (>2.0)

Contours (height in metres)

Standard Contour 105 100 95 — MLW — Mean Low Water

Master Contour — MHW — Mean High Water

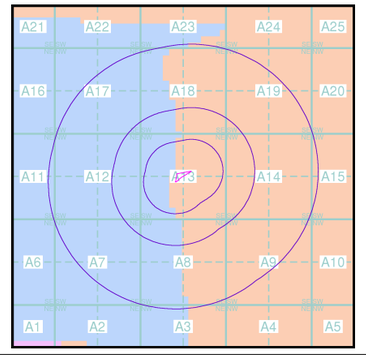
Spot Height *167.8

Suitability

See the suitability map below

- National to county
- County to town
- Town to street
- Street to parcels of land
- Property

EA/NRW Suitability Map - Slice A



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Search Buffer (m):	1000

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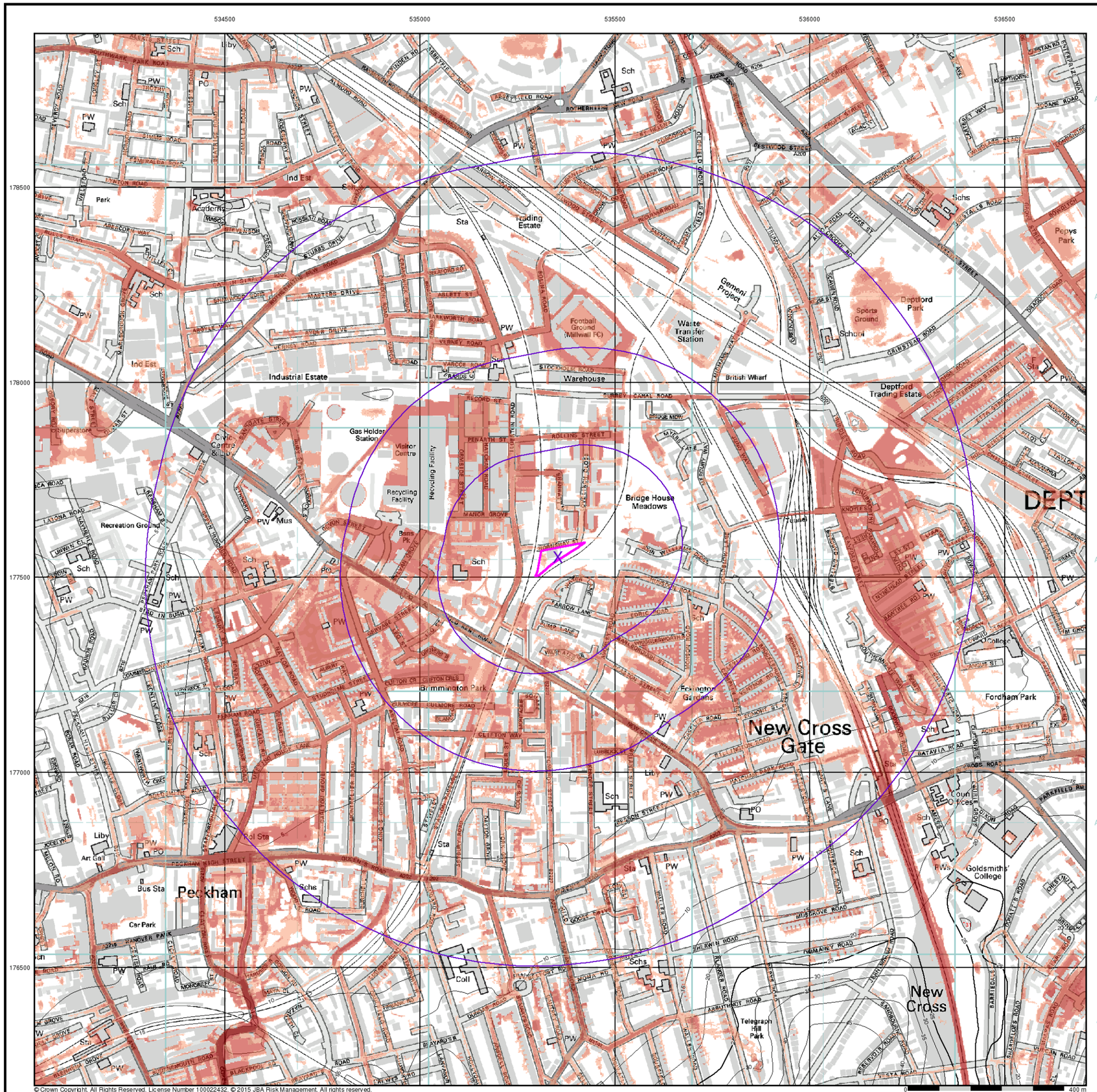
New Cross Social Club & Adjoining Land, Hornshay Street, LONDON, SE15 1HB

Landmark Information Group

Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



GeoSmart Information

Environmental Thinking

EA/NRW Surface Water 1000 Year Return Hazard Rating Map (1:10,000)

General

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Surface Water Hazard Rating

- Low (0.5 – 0.75)
- Moderate (0.75 – 1.25)
- Significant (1.25 – 2.0)
- Extreme (>2.0)

Contours (height in metres)

Standard Contour 105

Master Contour 100 95

Spot Height *167.8

MLW Mean Low Water

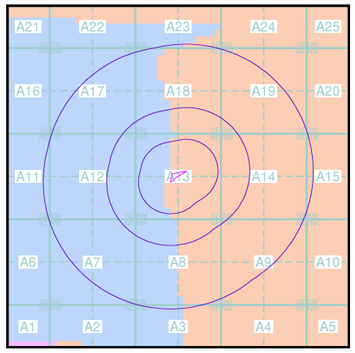
MHW Mean High Water

Suitability

See the suitability map below

- National to county
- County to town
- Town to street
- Street to parcels of land
- Property

EA/NRW Suitability Map - Slice A



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GeoSmart Information

Environmental Thinking

Detailed River Network Map (1:10,000)

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Map ID

Detailed River Network Data

- Primary River
- Secondary River
- Tertiary River
- Canal
- Canal Tunnel
- Undefined River
- Lake/Reservoir
- Source
- Junction
- Sink
- Non-interactive Node
- Offline Drainage Feature
- Extended Culvert (greater than 50m)
- Underground River (inferred)
- Underground River (local knowledge)
- Downstream of High Water Mark
- Downstream of Seaward Extension
- Not assigned River feature
- Not assigned River feature
- Pseudo Node (general)
- Pseudo Node (High Water Mark)
- Pseudo Node (OS MasterMap polygon boundary)

Contours (height in metres)

Standard Contour — 105 — 100 — 95

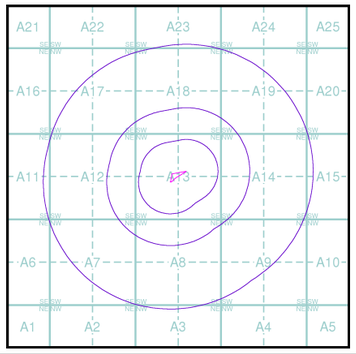
Master Contour

Spot Height *167.3

MLW Mean Low Water

MHW Mean High Water

Detailed River Network Map - Slice A



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GeoSmart Information

Environmental Thinking

EA/NRW Historic Flood Map (1:10,000)

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Map ID

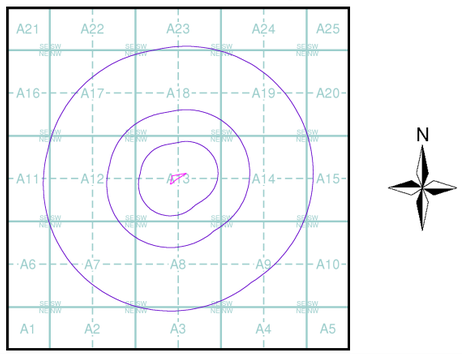
Historic Flood Events Data

- Channel Capacity Exceeded (no raised defences)
- Groundwater/High Water Table
- Local Drainage/Surface Water
- Mechanical Failure
- Obstruction/Blockage - Bridge
- Obstruction/Blockage - Channel
- Obstruction/Blockage - Culvert
- Obstruction/Blockage - Debris Screen
- Operational Failure/ Breach of Defence
- Other
- Overtopping of Defences
- Unknown
- Historical Flood Liabilities

Contours (height in metres)

- Standard Contour
- Master Contour
- Spot Height *167.8
- MLW Mean Low Water
- MHW Mean High Water

EA/NRW Historic Flood Map - Slice A



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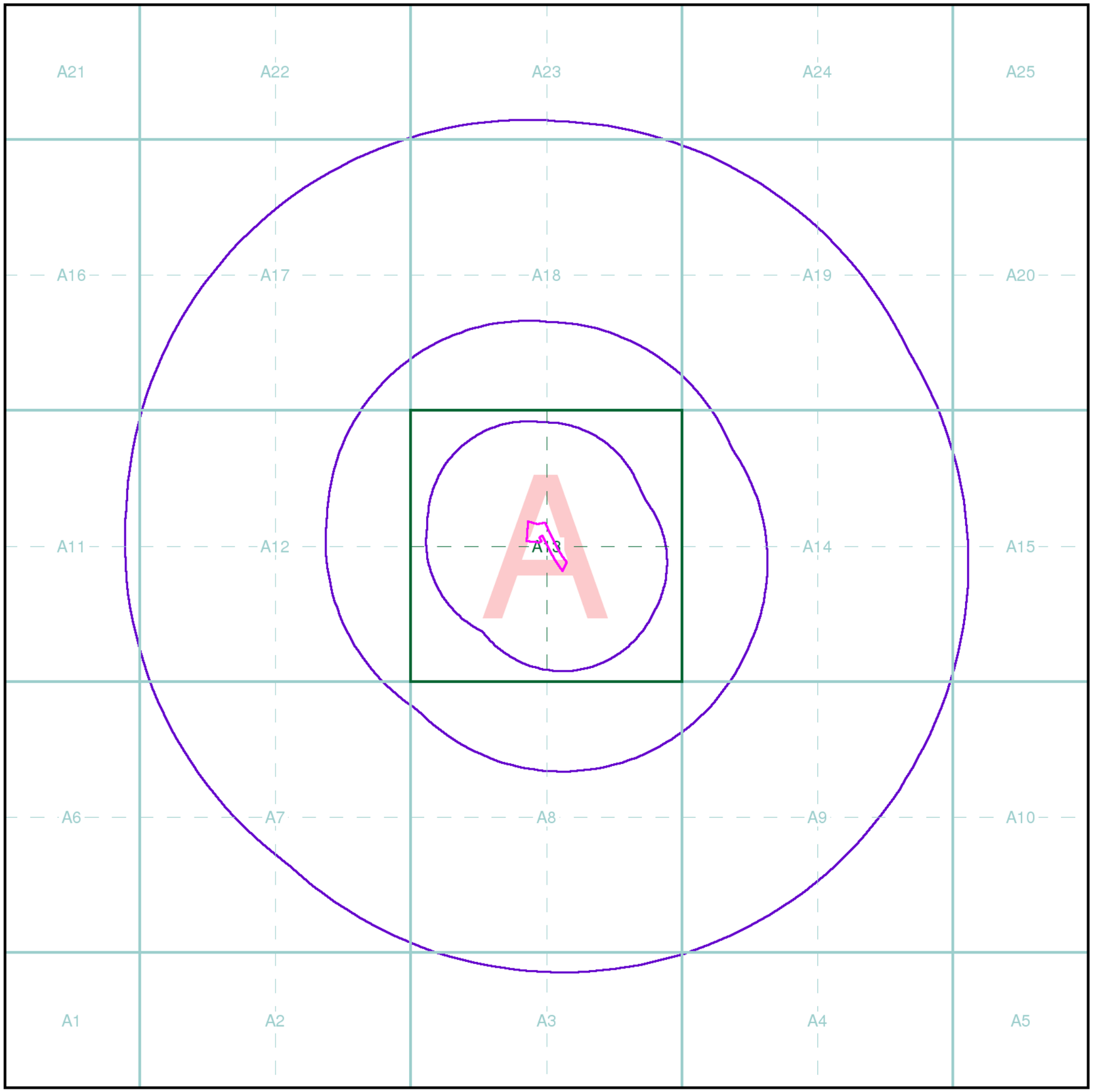


GeoSmart Information

Environmental Thinking

Index Map

For ease of identification, your site and buffer have been split into Slices, Segments and Quadrants. These are illustrated on the Index Map opposite and explained further below.

Slice
Each slice represents a 1:10,000 plot area (2.7km x 2.7km) for your site and buffer. A large site and buffer may be made up of several slices (represented by a red outline), that are referenced by letters of the alphabet, starting from the bottom left corner of the slice "grid". This grid does not relate to National Grid lines but is designed to give best fit over the site and buffer.

Segment
A segment represents a 1:2,500 plot area. Segments that have plot files associated with them are shown in dark green, others in light blue. These are numbered from the bottom left hand corner within each slice.

Quadrant
A quadrant is a quarter of a segment. These are labelled as NW, NE, SW, SE and are referenced in the datasheet to allow features to be quickly located on plots. Therefore a feature that has a quadrant reference of A7NW will be in Slice A, Segment 7 and the NW Quadrant.

A selection of organisations who provide data within this report:

Map data

British Geological Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

Environment Agency

NATURAL ENGLAND

Envirocheck reports are compiled from 136 different sources of data.

Client Details

Miss S Cogan, Geo Smart Information Limited, New Zealand House, 160 Abbey Foregate, Shrewsbury, Shropshire, SY2 6FD

Order Details

Order Number:	91973393_1_1
Customer Ref:	65199
National Grid Reference:	537360, 172980
Site Area (Ha):	0.4
Search Buffer (m):	1000

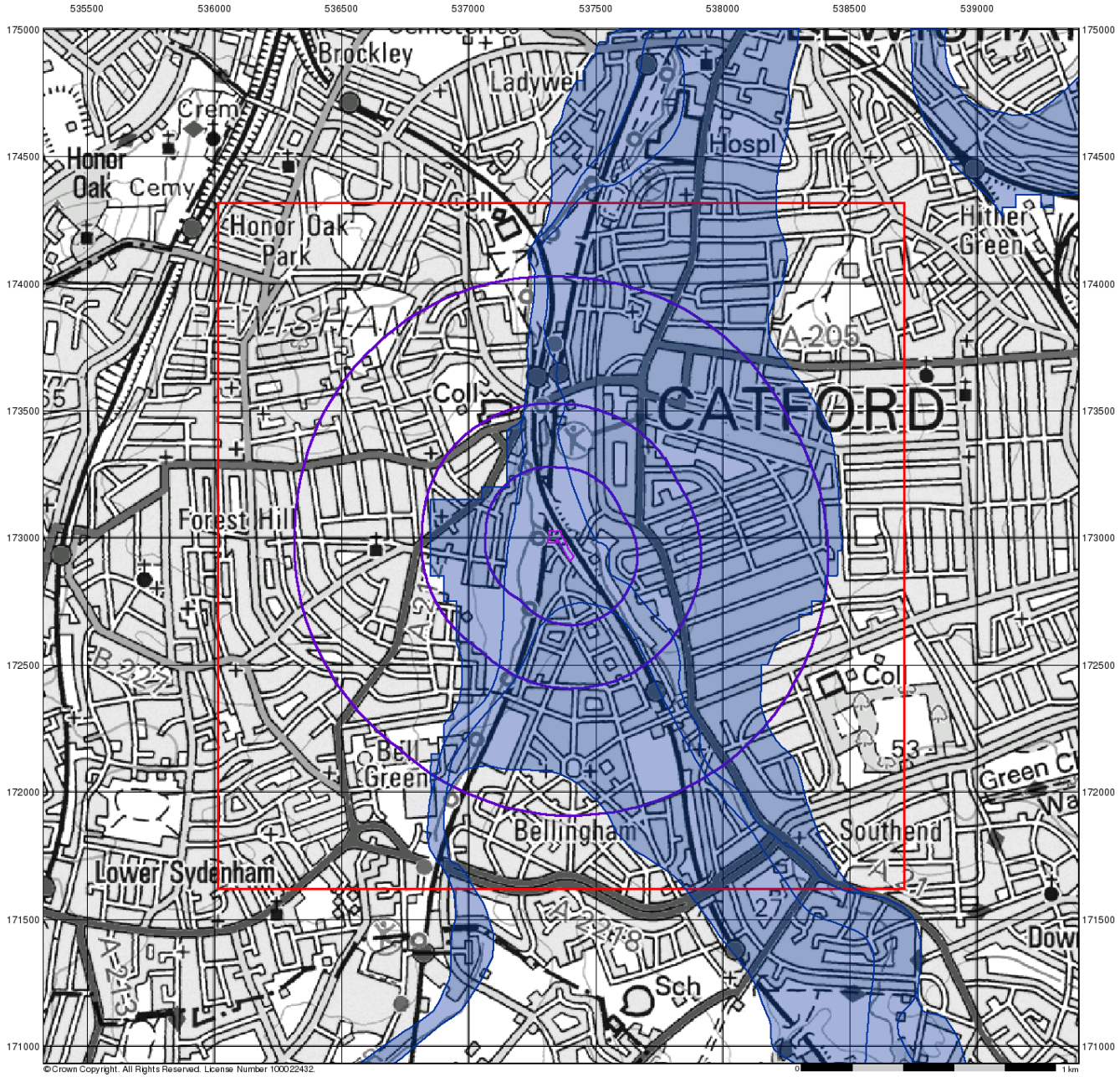
Site Details

Land by Pool Court, London, SE6 3JQ

Full Terms and Conditions can be found on the following link:
http://www.landmarkinfo.co.uk/Terms/Show/515

Landmark Information Group

Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



GeoSmart Information

Environmental Thinking

BGS Flood Data (1:50,000)

General

Specified Site | Specified Buffer(s) | Bearing Reference Point

Slice | Map ID

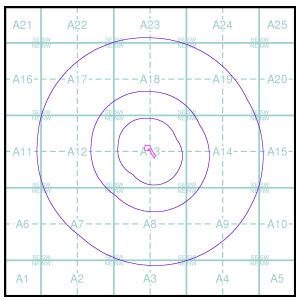
BGS Geological Indicators of Flooding

Coastal

Inland

Bodies of Water

BGS Flood Data Map - Slice A



Order Details

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Slice:	A
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Search Buffer (m):	1000

Site Details

Land by Pool Court, London, SE6 3JQ

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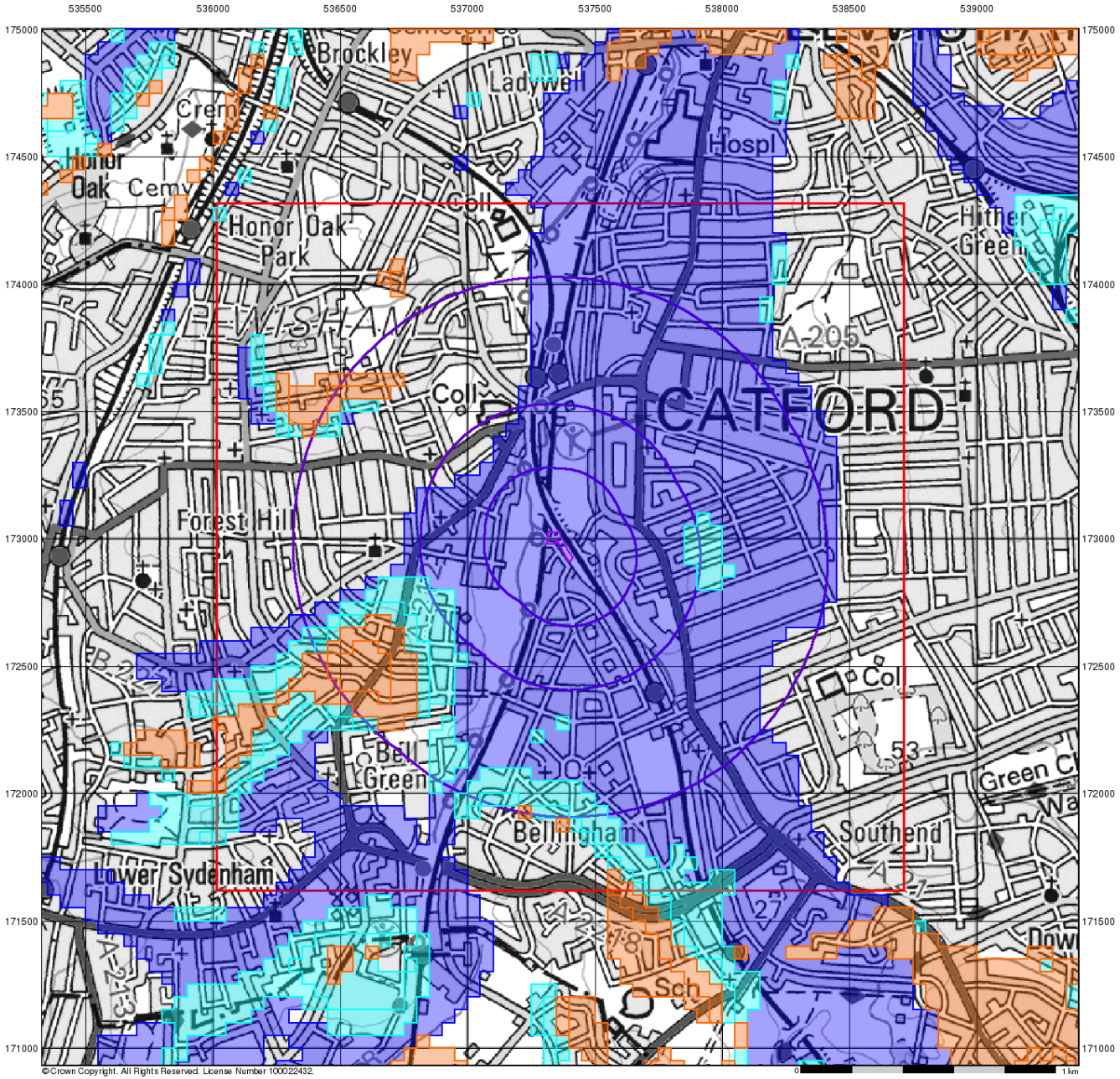


GeoSmart Information

Environmental Thinking

BGS Flood Data (1:50,000)

General

Specified Site | Specified Buffer(s) | Bearing Reference Point

Slice | Map ID

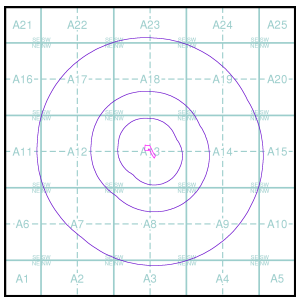
BGS Groundwater Flooding Susceptibility

Potential for Groundwater Flooding to Occur at Surface

Potential for Groundwater Flooding of Property Situated Below Ground Level

Limited Potential for Groundwater Flooding to Occur

BGS Flood Data Map - Slice A



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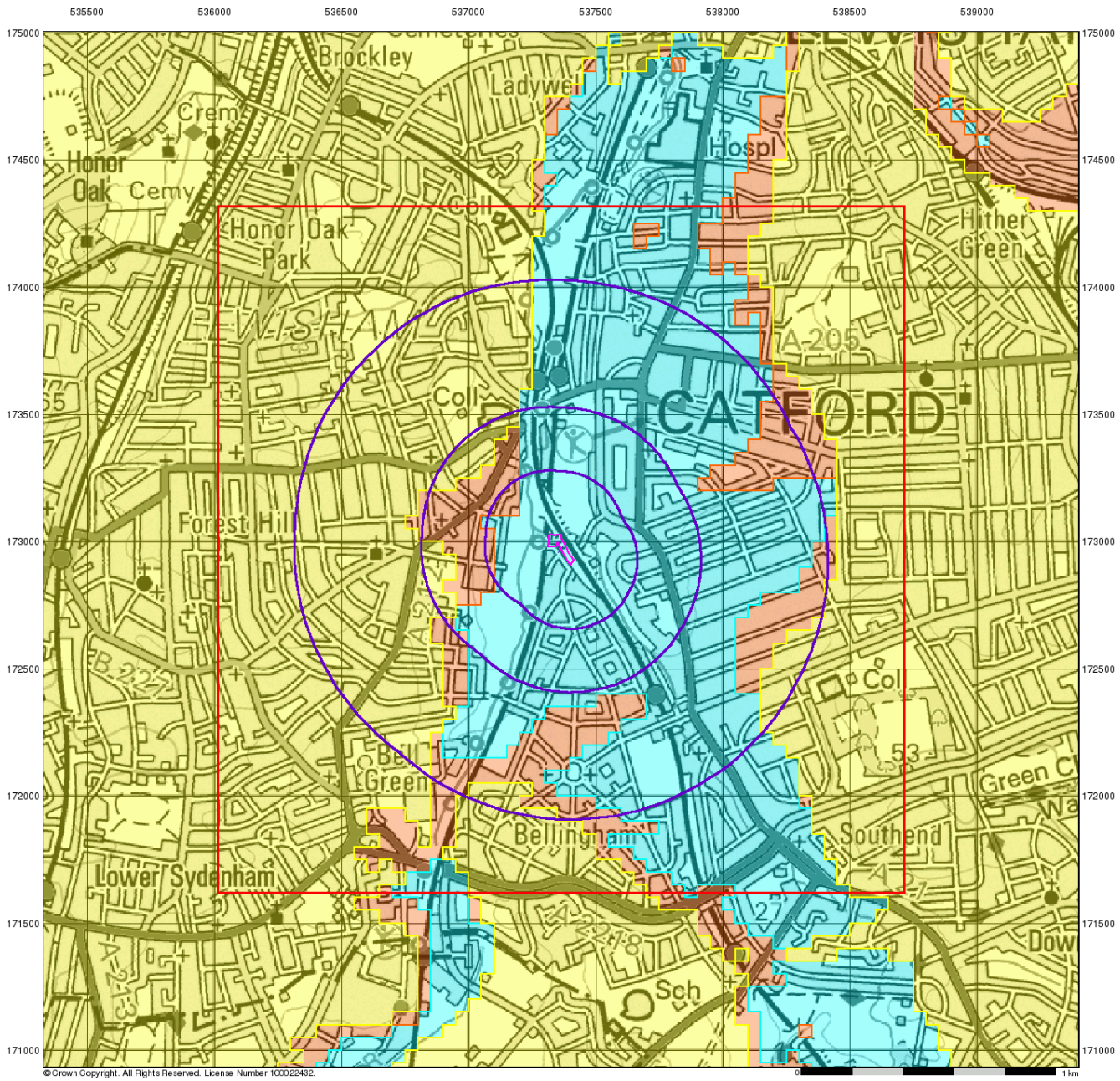


GeoSmart Information

Environmental Thinking

ESI Groundwater Flood Map (1:50,000)

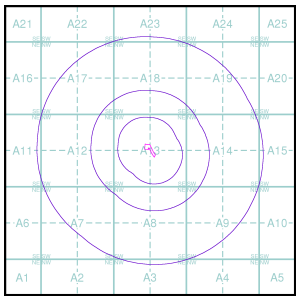
General

Specified Site | Specified Buffer(s) | Bearing Reference Point | Slice

ESI Groundwater Flooding Risk

- High Risk
- Moderate Risk
- Low Risk
- Negligible Risk

ESI Groundwater Flood Map - Slice A



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Order Number:	91973393_1_1
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National Grid Reference:	537360, 172970
Slice:	A
Site Area (Ha):	0.4
Search Buffer (m):	1000

Site Details

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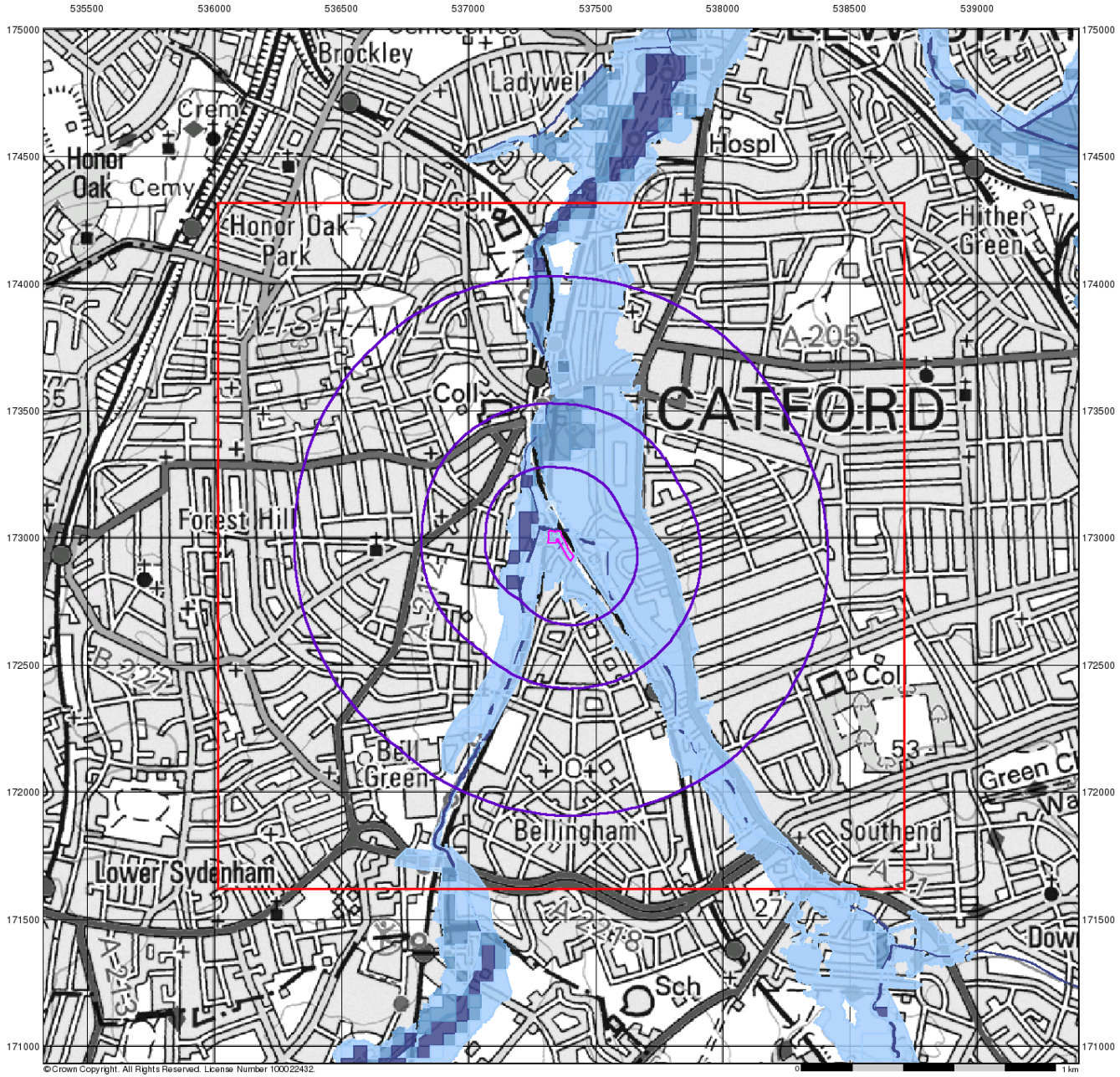


GeoSmart Information

Environmental Thinking

EA/NRW RoFRS Data (1:50,000)

General

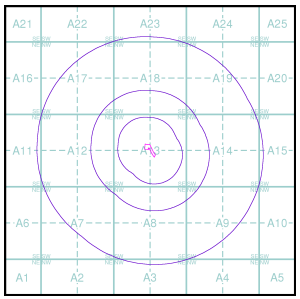
Specified Site | Specified Buffer(s) | Bearing Reference Point

Slice | Map ID

Risk of Flooding from Rivers and Sea (RoFRS)

- High Risk
- Medium Risk
- Low Risk
- Very Low Risk

EA/NRW RoFRS Data Map - Slice A

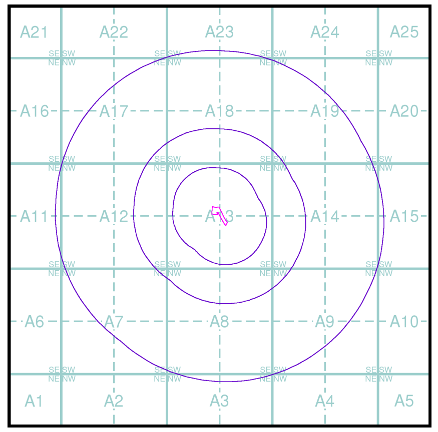


Order Details

Order Number:	91973393_1_1
Customer Ref:	65199
National Grid Reference:	537360, 172970
Slice:	A
Site Area (Ha):	0.4
Search Buffer (m):	1000

Site Details

Land by Pool Court, London, SE6 3JQ



GeoSmart Information

Environmental Thinking

EA/NRW Flood Data Map (1:10,000)

General

- Specified Site
- Specified Buffer(s)
- X Bearing Reference Point

Flood Data

- Extreme Flooding from Rivers or Sea without Defences (Zone 2)
- Flooding from Rivers or Sea without Defences (Zone 3)
- Area Benefiting from Flood Defence
- Flood Water Storage Areas
- Flood Defence

Contours (height in metres)

- Standard Contour
- Master Contour
- Spot Height
- Mean Low Water
- Mean High Water

EA/NRW Flood Data Map - Slice A

Order Details

Order Number:	91973393_1_1
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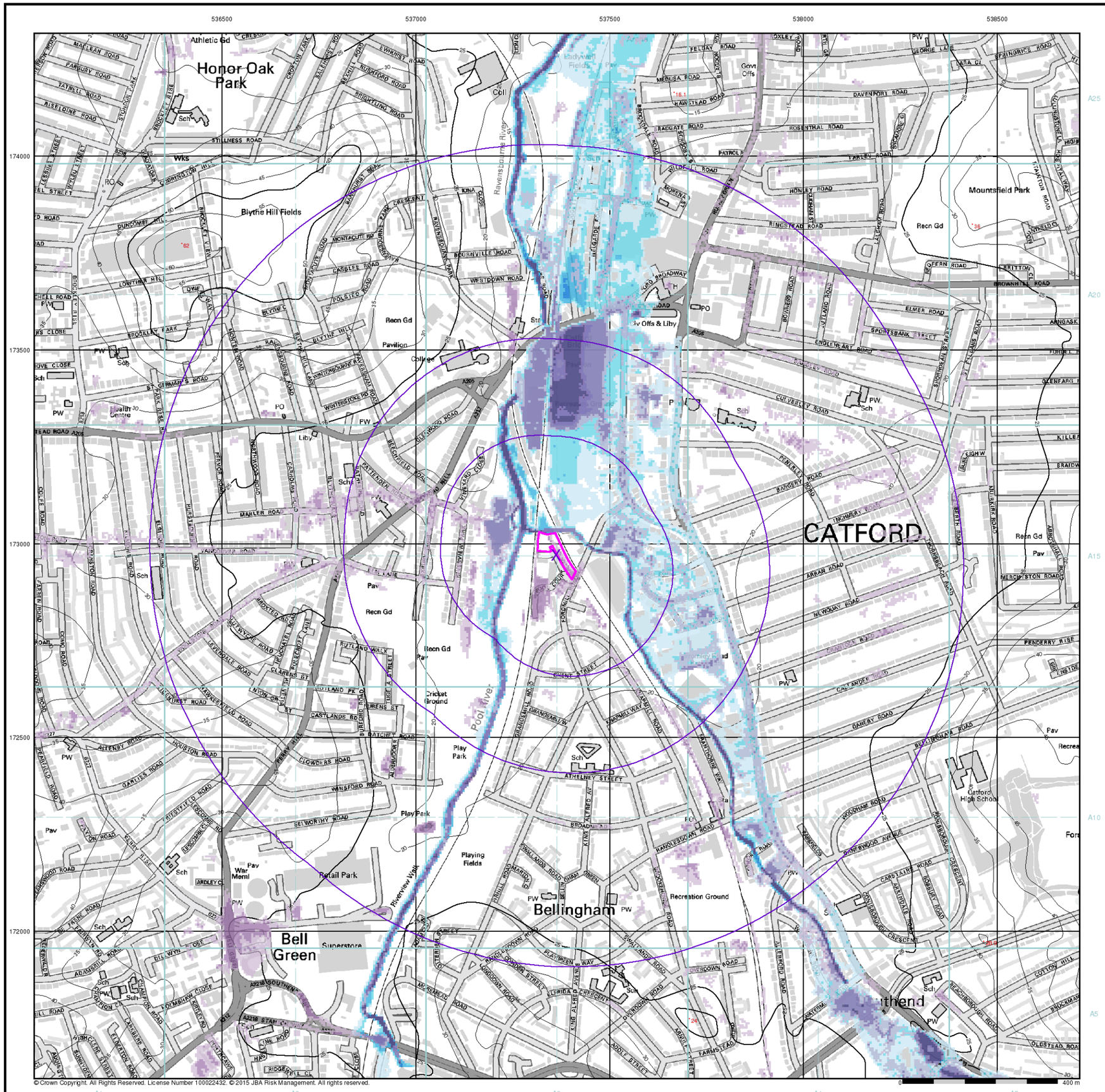


GeoSmart Information

Environmental Thinking

JBA 75 Year Return Flood Map (Undefended) (1:10,000)

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point

Modelled Flood Depth

Pluvial Depth	Fluvial Depth	Coastal Depth
< 1cm	0.5mm - 10cm	< 10cm
1cm - 10cm	10cm - 30cm	10cm - 30cm
10cm - 30cm	30cm - 1m	30cm - 1m
30cm - 1m	>1m	>1m
>1m		

Contours (height in metres)

Standard Contour 105 100 95

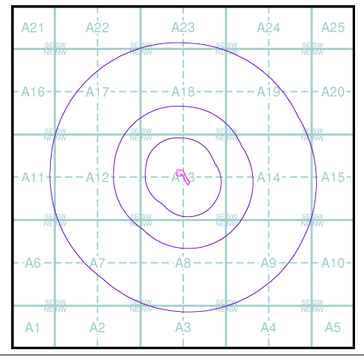
Master Contour

Spot Height 167.8

MLW Mean Low Water

MHW Mean High Water

JBA 75 Year Return Flood Map (Undefended) - Slice A



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Search Buffer (m):	1000

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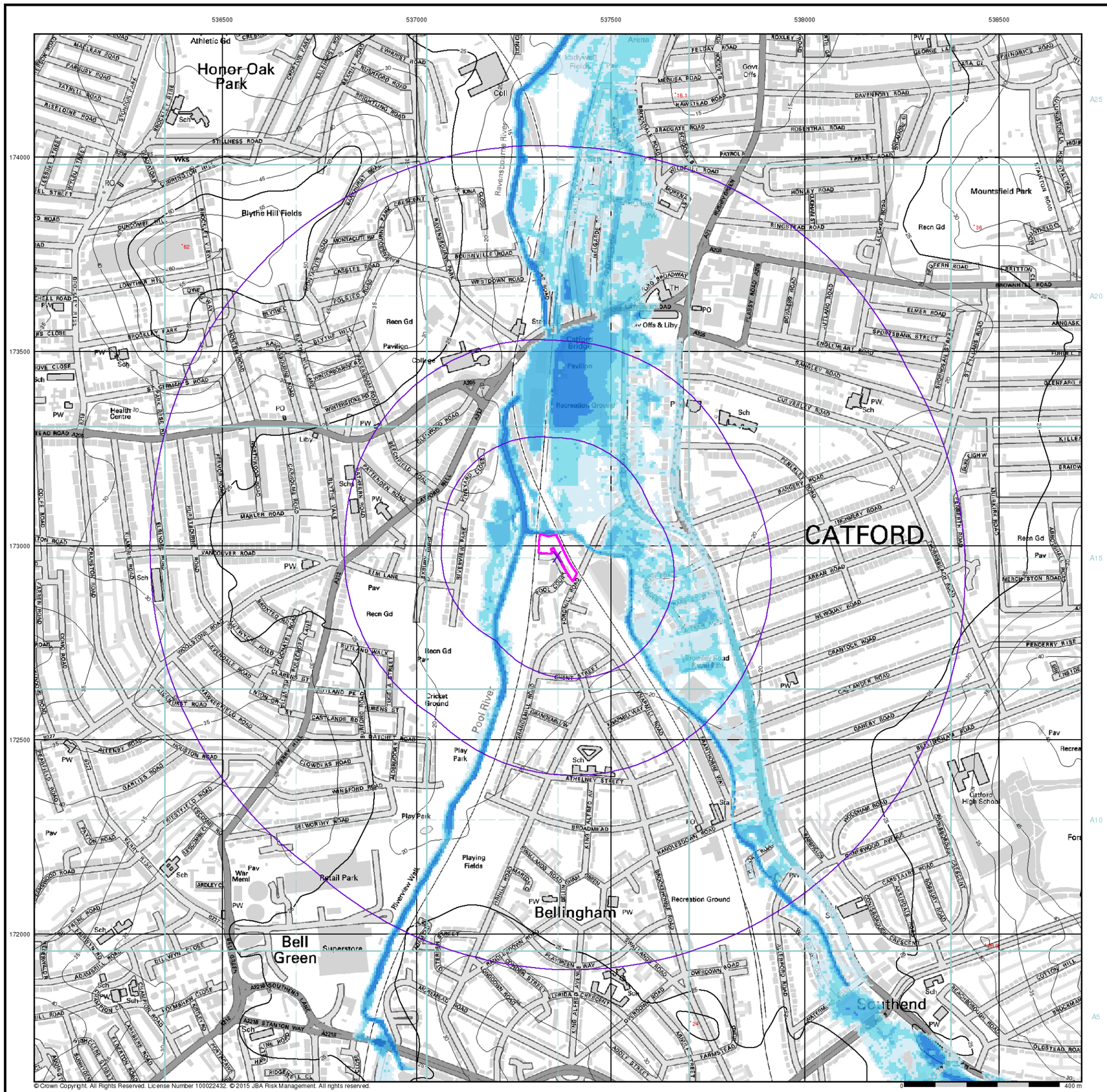


GeoSmart Information

Environmental Thinking

JBA 100 Year Return Flood Map (Undefended) (1:10,000)

General

- Specified Site
- Specified Buffer(s)
- X Bearing Reference Point

Modelled Flood Depth

Fluvial Depth	Coastal Depth
0.5mm - 10cm	< 10cm
10cm - 30cm	10cm - 30cm
30cm - 1m	30cm - 1m
>1m	>1m

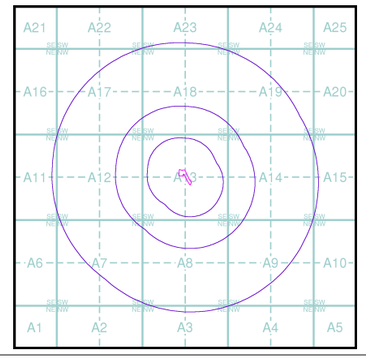
Contours (height in metres)

Standard Contour 105 100 95 — MLW Mean Low Water

Master Contour — MHW Mean High Water

Spot Height *167.6

JBA 100 Year Return Flood Map (Undefended) - Slice A



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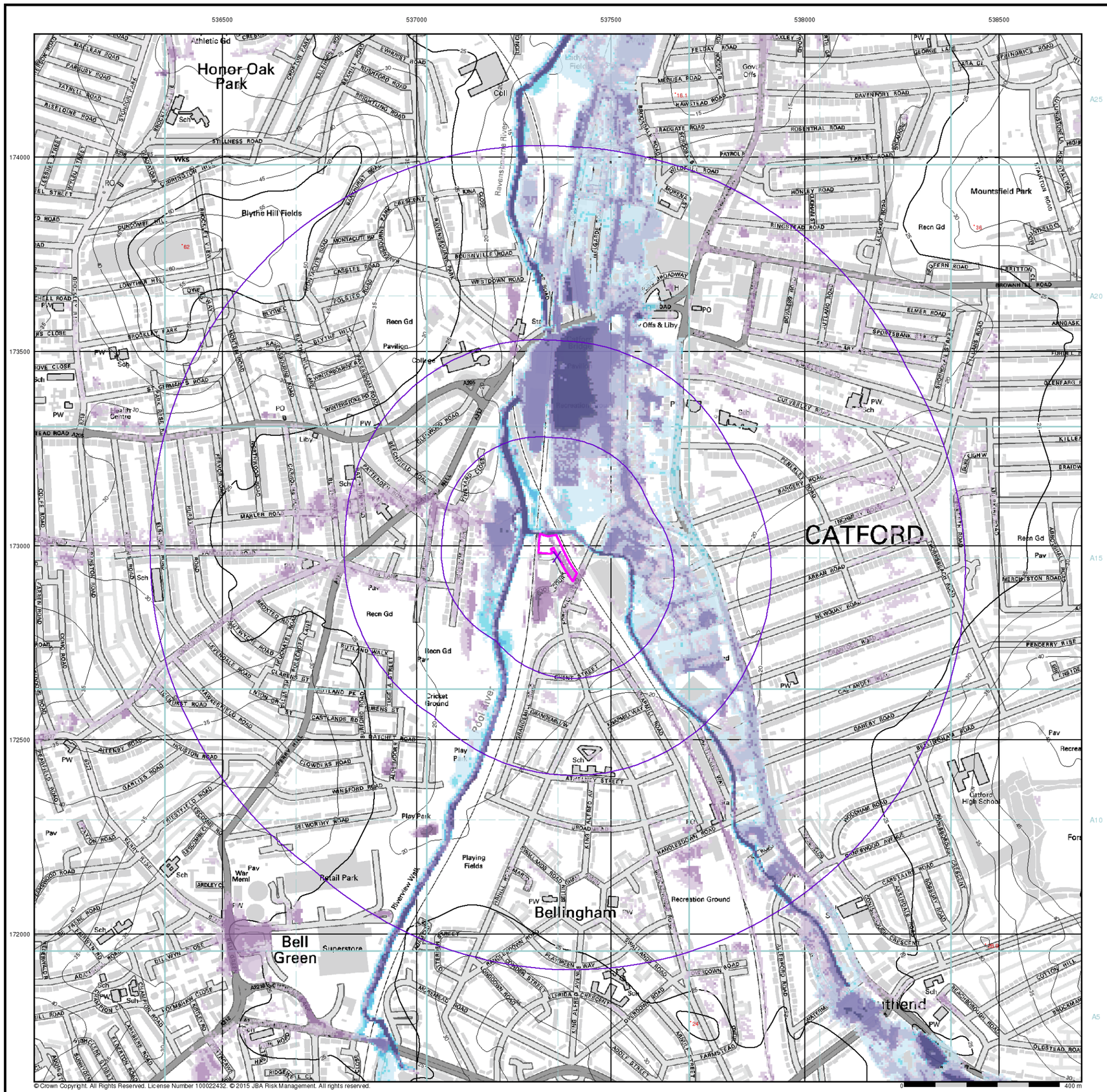


GeoSmart Information

Environmental Thinking

JBA 200 Year Return Flood Map (Undefended) (1:10,000)

General

- Specified Site
- Specified Buffer(s)
- X Bearing Reference Point

Modelled Flood Depth

Pluvial Depth	Fluvial Depth	Coastal Depth
< 1cm	0.5mm - 10cm	< 10cm
1cm - 10cm	10cm - 30cm	10cm - 30cm
10cm - 30cm	30cm - 1m	30cm - 1m
30cm - 1m	>1m	>1m
>1m		

Contours (height in metres)

Standard Contour 105 100 95

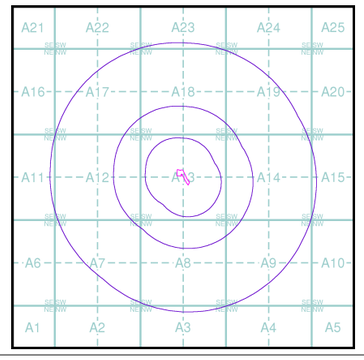
Master Contour

Spot Height *167.8

MLW Mean Low Water

MHW Mean High Water

JBA 200 Year Return Flood Map (Undefended) - Slice A



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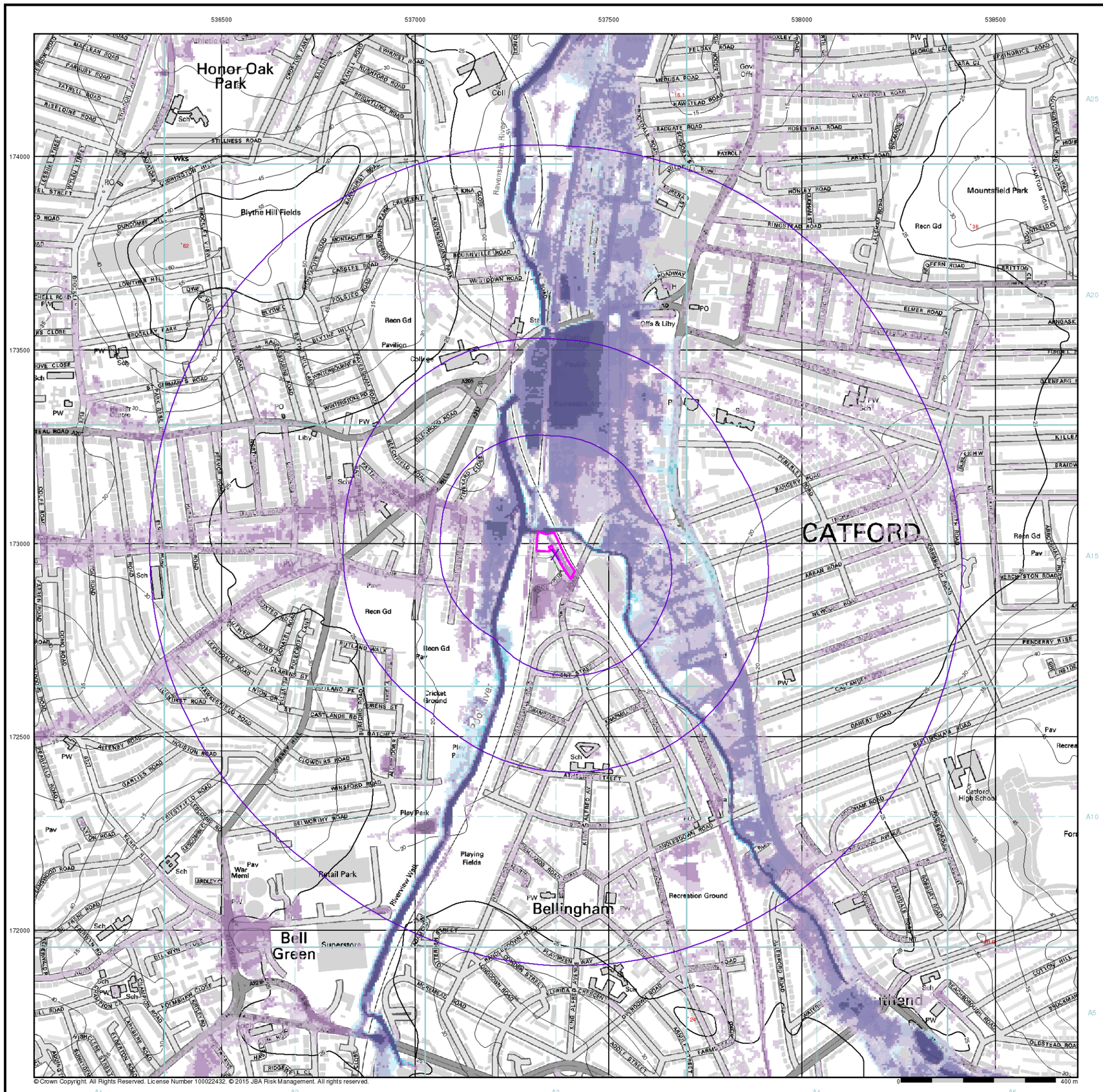


GeoSmart Information

Environmental Thinking

JBA 1000 Year Return Flood Map (Undefended) (1:10,000)

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point

Modelled Flood Depth

Pluvial Depth	Fluvial Depth	Coastal Depth
< 1cm	0.5mm - 10cm	< 10cm
1cm - 10cm	10cm - 30cm	10cm - 30cm
10cm - 30cm	30cm - 1m	30cm - 1m
30cm - 1m	>1m	>1m
>1m		

Contours (height in metres)

Standard Contour 105 100 95

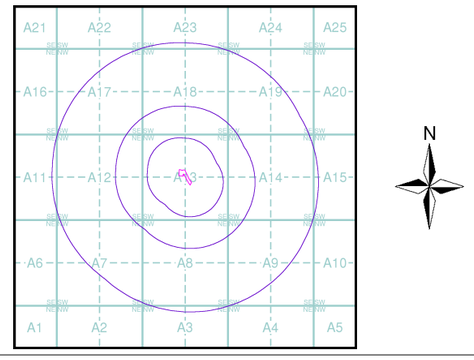
Master Contour

Spot Height *167.8

MLW Mean Low Water

MHW Mean High Water

JBA 1000 Year Return Flood Map (Undefended) - Slice A



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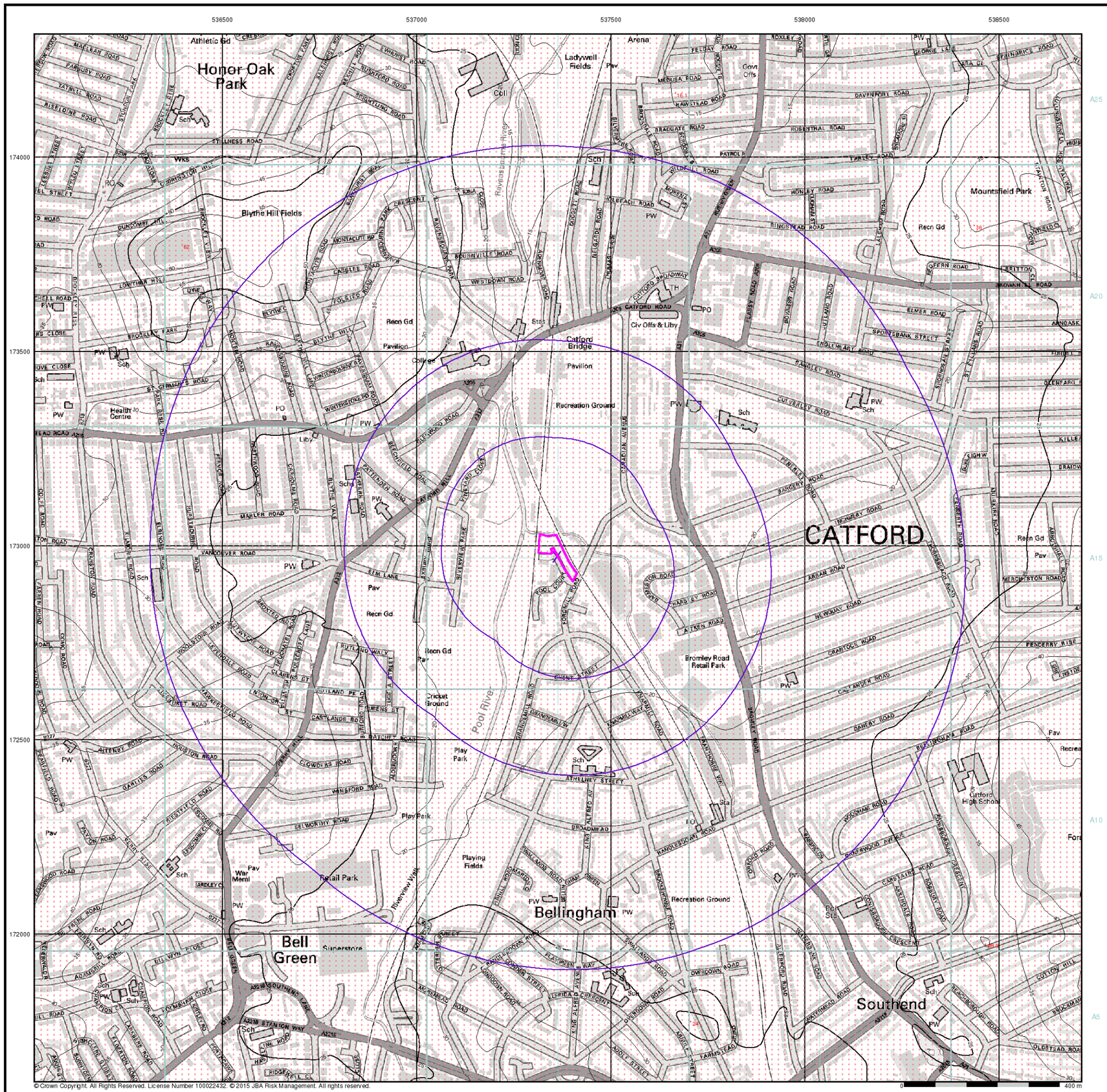


GeoSmart Information

Environmental Thinking

JBA Canal Failure Map (1:10,000)

General

- Specified Site
- Specified Buffer(s)
- X Bearing Reference Point

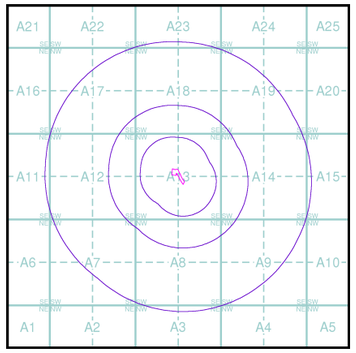
Flood Data

- Canal Failure
- Coverage

Contours (height in metres)

- Standard Contour
- Master Contour
- Spot Height *167.8
- MLW Mean Low Water
- MHW Mean High Water

JBA Canal Failure Flood Map - Slice A



Order Details

Order Number:	91973393_1_1
Customer Ref:	65199
National Grid Reference:	537360, 172970
Slice:	A
Site Area (Ha):	0.4
Search Buffer (m):	1000

Site Details

Land by Pool Court, London, SE6 3JQ

Landmark Information Group

Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk

GeoSmart Information
Environmental Thinking

EA/NRW Surface Water 30 Year Return Depth Map (1:10,000)

536500 537000 537500 538000 538500

174000 173500 173000 172500 172000

A25 A20 A15 A10 A5

A1 A2 A3 A4 A5

0 400 m

General

Specified Site
Specified Buffer(s)
X Bearing Reference Point

Surface Water Depth

0 - 0.15m
0.15 - 0.30m
0.30 - 0.60m
0.60 - 0.90m
0.90 - 1.20m
> 1.20m

Contours (height in metres)

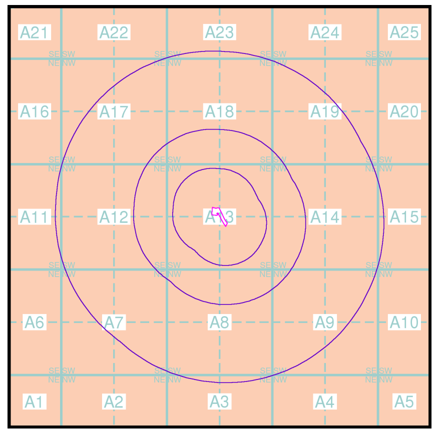
Standard Contour
Master Contour
Spot Height 167.8
MLW Mean Low Water
MHW Mean High Water

Suitability

See the suitability map below

National to county
County to town
Town to street
Street to parcels of land
Property

EA/NRW Suitability Map - Slice A



N

Order Details

Order Number: 91973393_1_1
Customer Ref: 65199
National Grid Reference: 537360, 172970
Slice: A
Site Area (Ha): 0.4
Search Buffer (m): 1000

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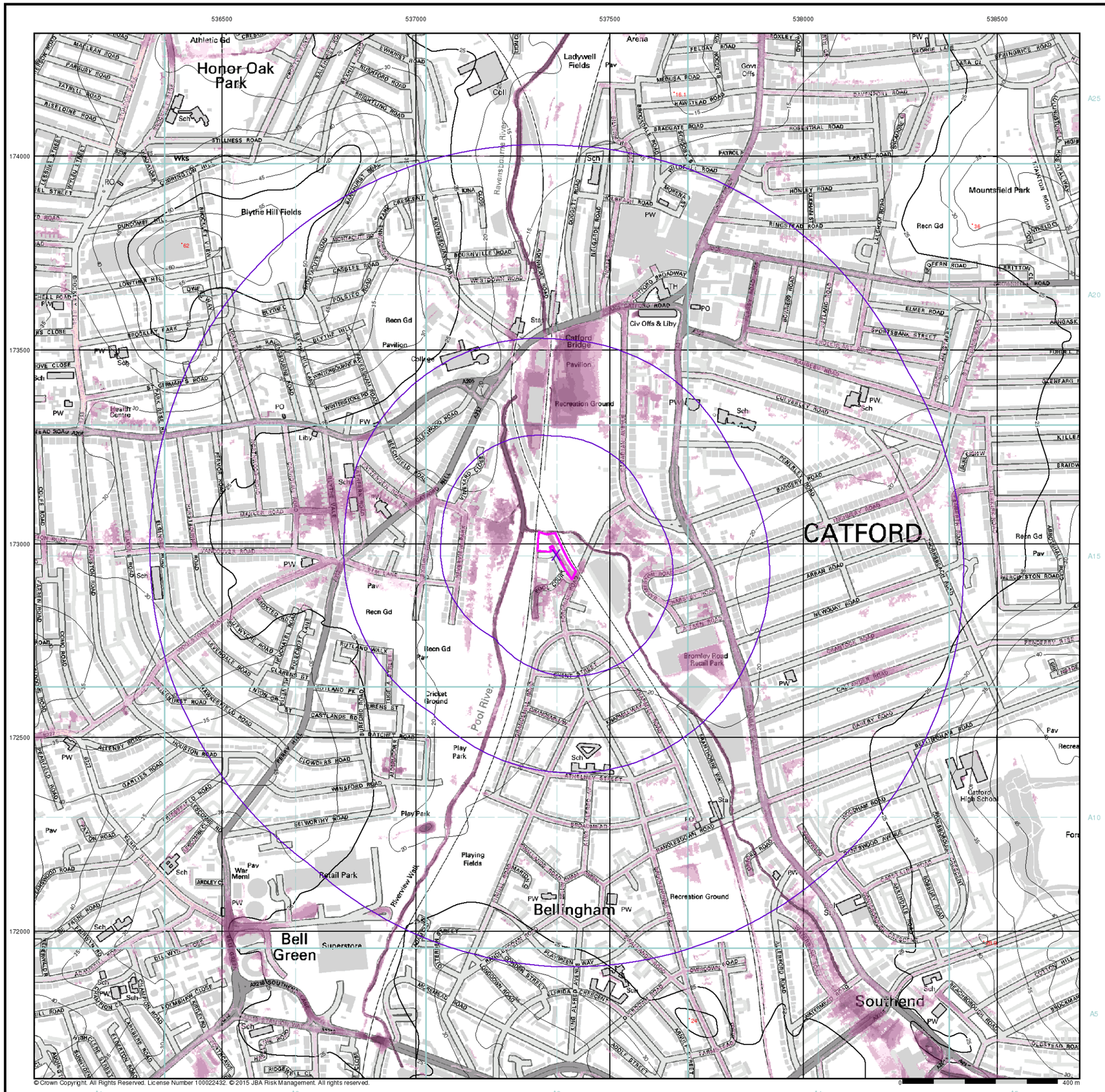

GeoSmart Information

Environmental Thinking

EA/NRW Surface Water 100 Year Return Depth Map

General

Specified Site | Specified Buffer(s) | X Bearing Reference Point

Surface Water Depth

- 0 - 0.15m
- 0.15 - 0.30m
- 0.30 - 0.60m
- 0.60 - 0.90m
- 0.90 - 1.20m
- > 1.20m

Contours (height in metres)

Standard Contour | Master Contour | Spot Height *167.8

MLW Mean Low Water

MHW Mean High Water

Suitability

See the suitability map below

- National to county
- County to town
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- Street to parcels of land
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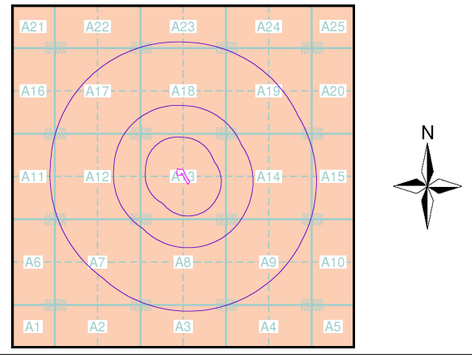
EA/NRW Suitability Map - Slice A



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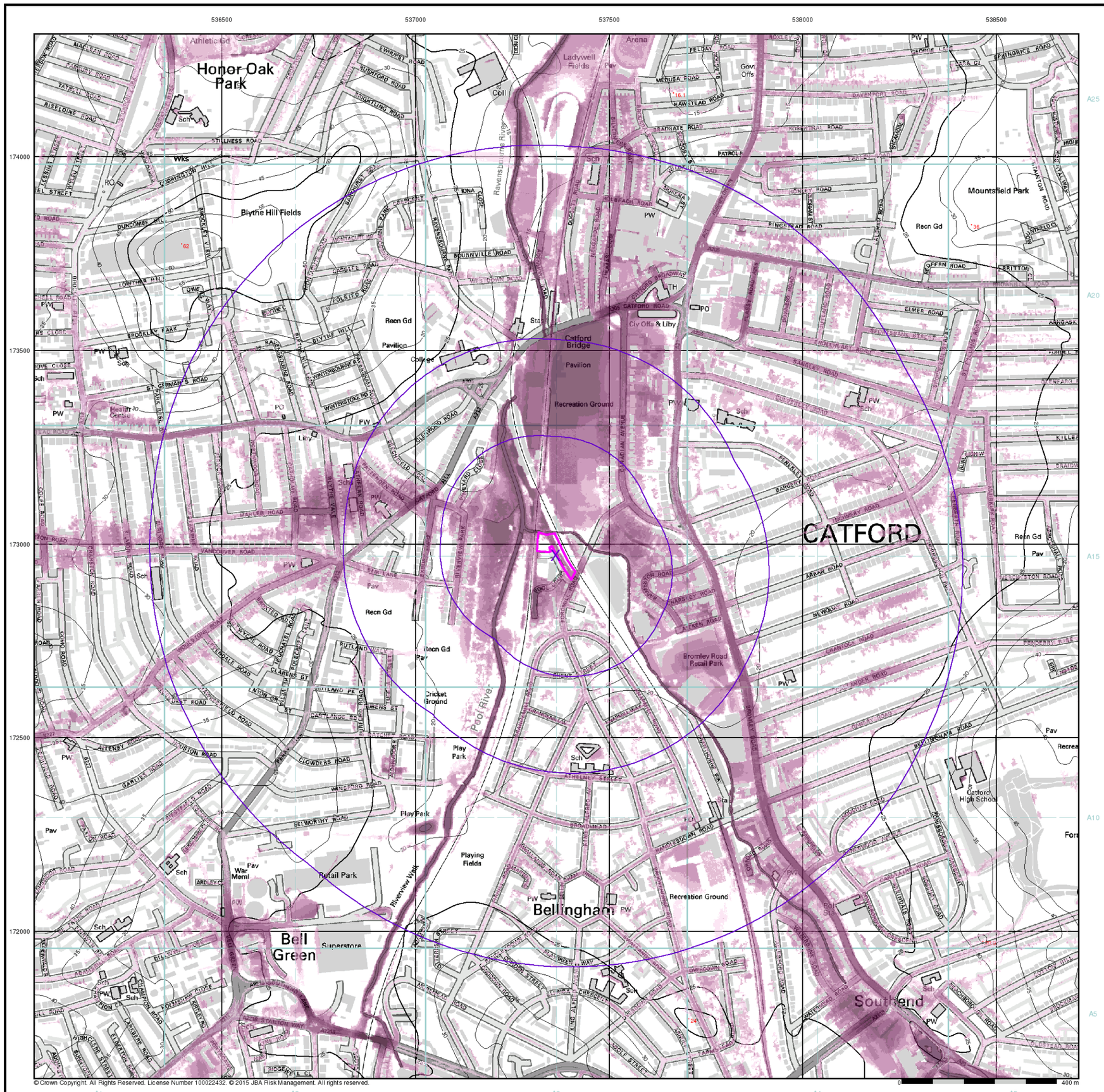

GeoSmart Information

Environmental Thinking

EA/NRW Surface Water 1000 Year Return Depth Map (1:10,000)

General

Specified Site | Specified Buffer(s) | X Bearing Reference Point

Surface Water Depth

- 0 - 0.15m
- 0.15 - 0.30m
- 0.30 - 0.60m
- 0.60 - 0.90m
- 0.90 - 1.20m
- > 1.20m

Contours (height in metres)

Standard Contour | Master Contour | Spot Height *167.8

MLW Mean Low Water

MHW Mean High Water

Suitability

See the suitability map below

- National to county
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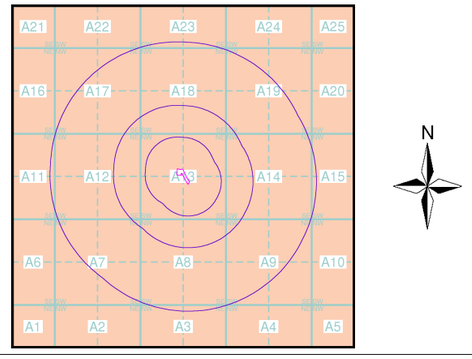
EA/NRW Suitability Map - Slice A



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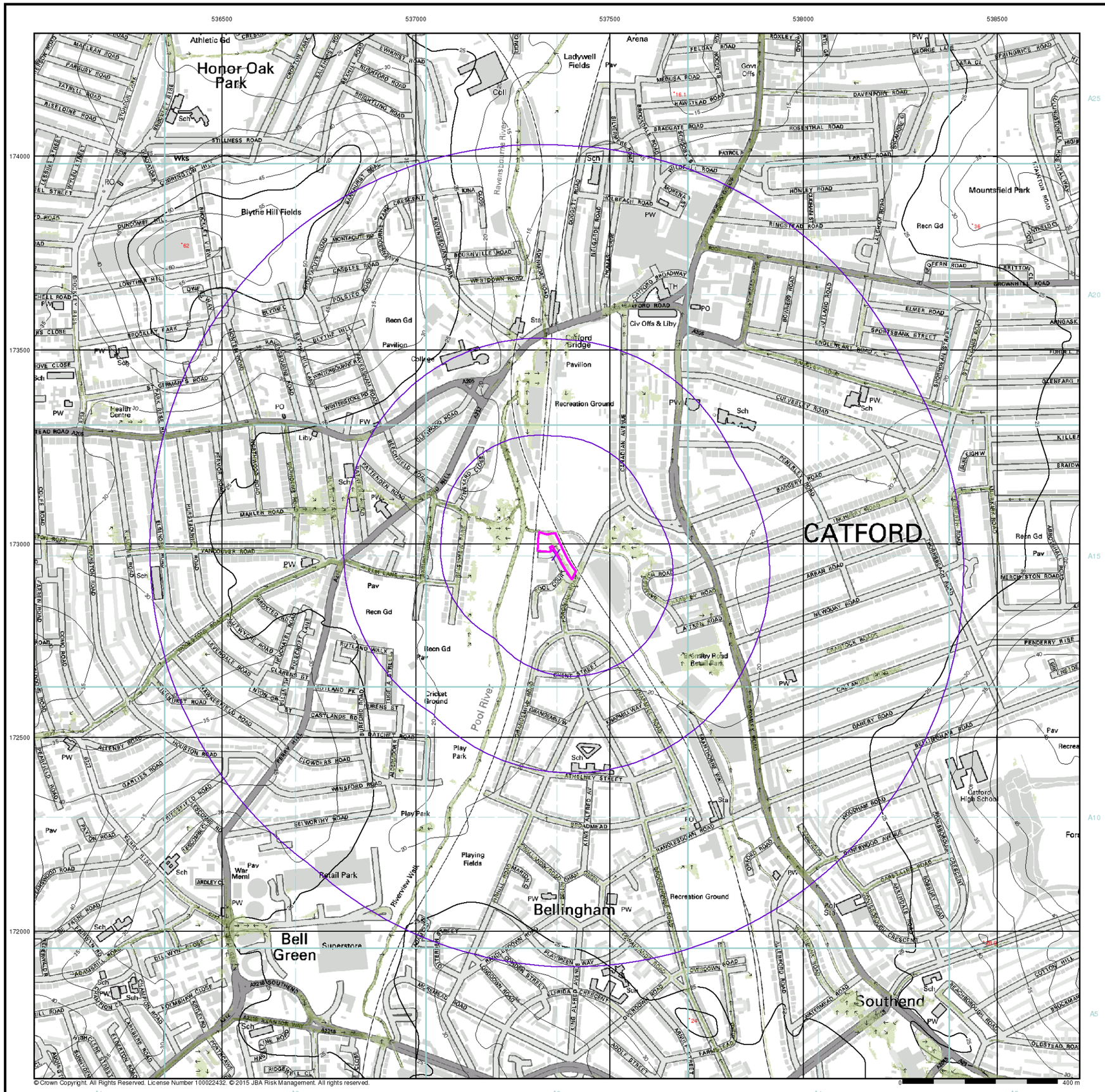


GeoSmart Information

Environmental Thinking

EA/NRW Surface Water 30 Year Return Velocity and Flow Direction Map (1:10,000)

General

Specified Site | Specified Buffer(s) | X Bearing Reference Point

Surface Water Velocity and Direction

- 0.00 - 0.25m/s
- 0.25 - 0.50m/s
- 0.50 - 1.00m/s
- 1.00 - 2.00m/s
- > 2.00m/s

Flow Direction at maximum velocity

Contours (height in metres)

Standard Contour 105 100 95

Master Contour

Spot Height *167.8

MLW Mean Low Water

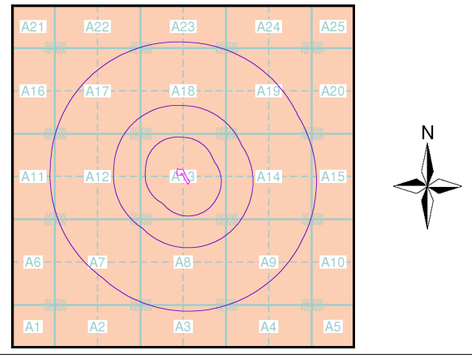
MHW Mean High Water

Suitability

See the suitability map below

- National to county
- County to town
- Town to street
- Street to parcels of land
- Property

EA/NRW Suitability Map - Slice A



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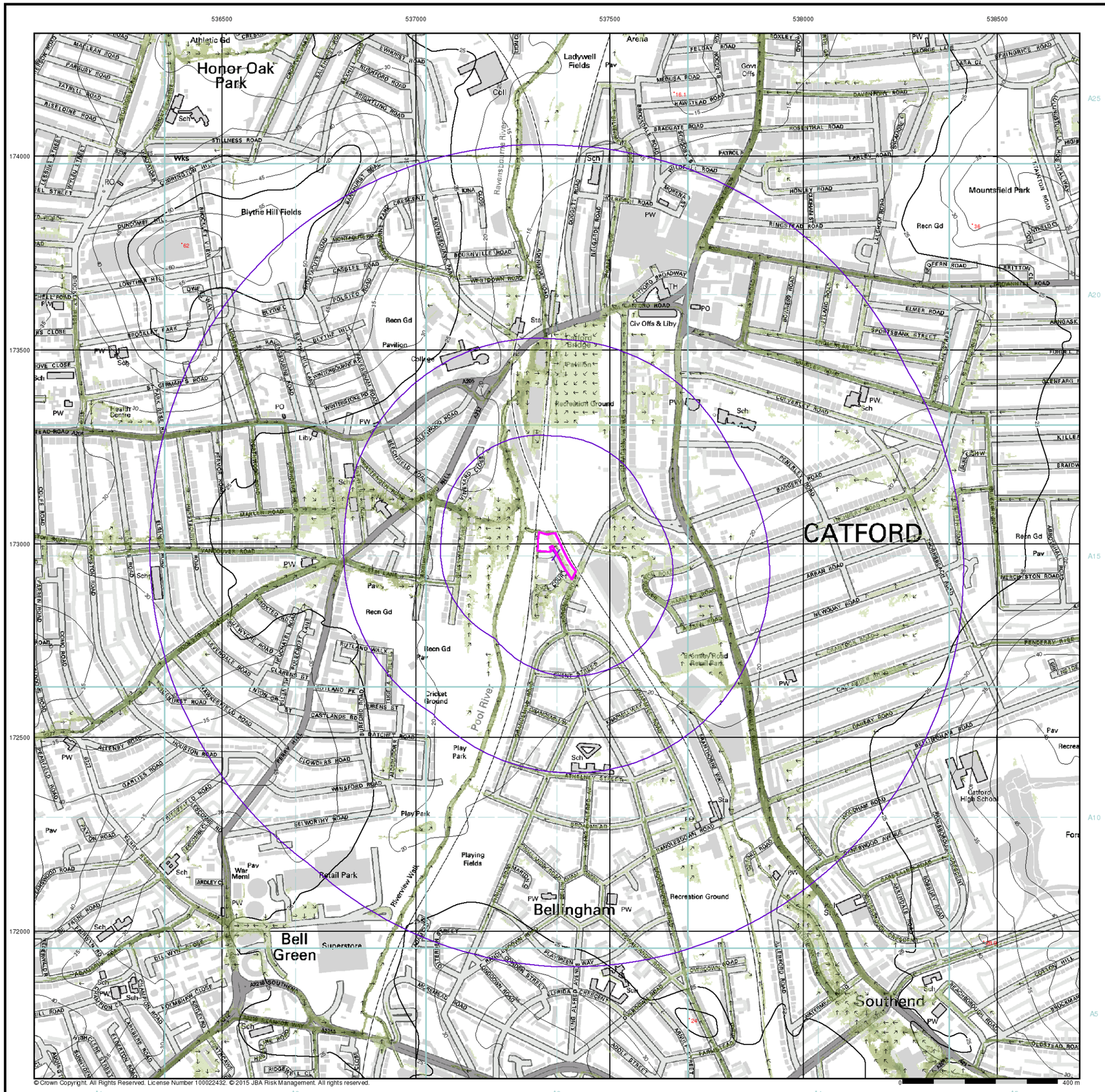

GeoSmart Information

Environmental Thinking

EA/NRW Surface Water 100 Year Return Velocity and Flow Direction Map (1:10,000)

General

Specified Site | Specified Buffer(s) | X Bearing Reference Point

Surface Water Velocity and Direction

- 0.00 - 0.25m/s
- 0.25 - 0.50m/s
- 0.50 - 1.00m/s
- 1.00 - 2.00m/s
- > 2.00m/s

Flow Direction at maximum velocity

Contours (height in metres)

Standard Contour 105 100 95

Master Contour

Spot Height *167.8

MLW Mean Low Water

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Suitability

See the suitability map below

- National to county
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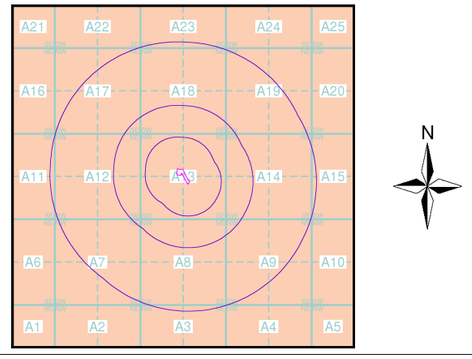
EA/NRW Suitability Map - Slice A



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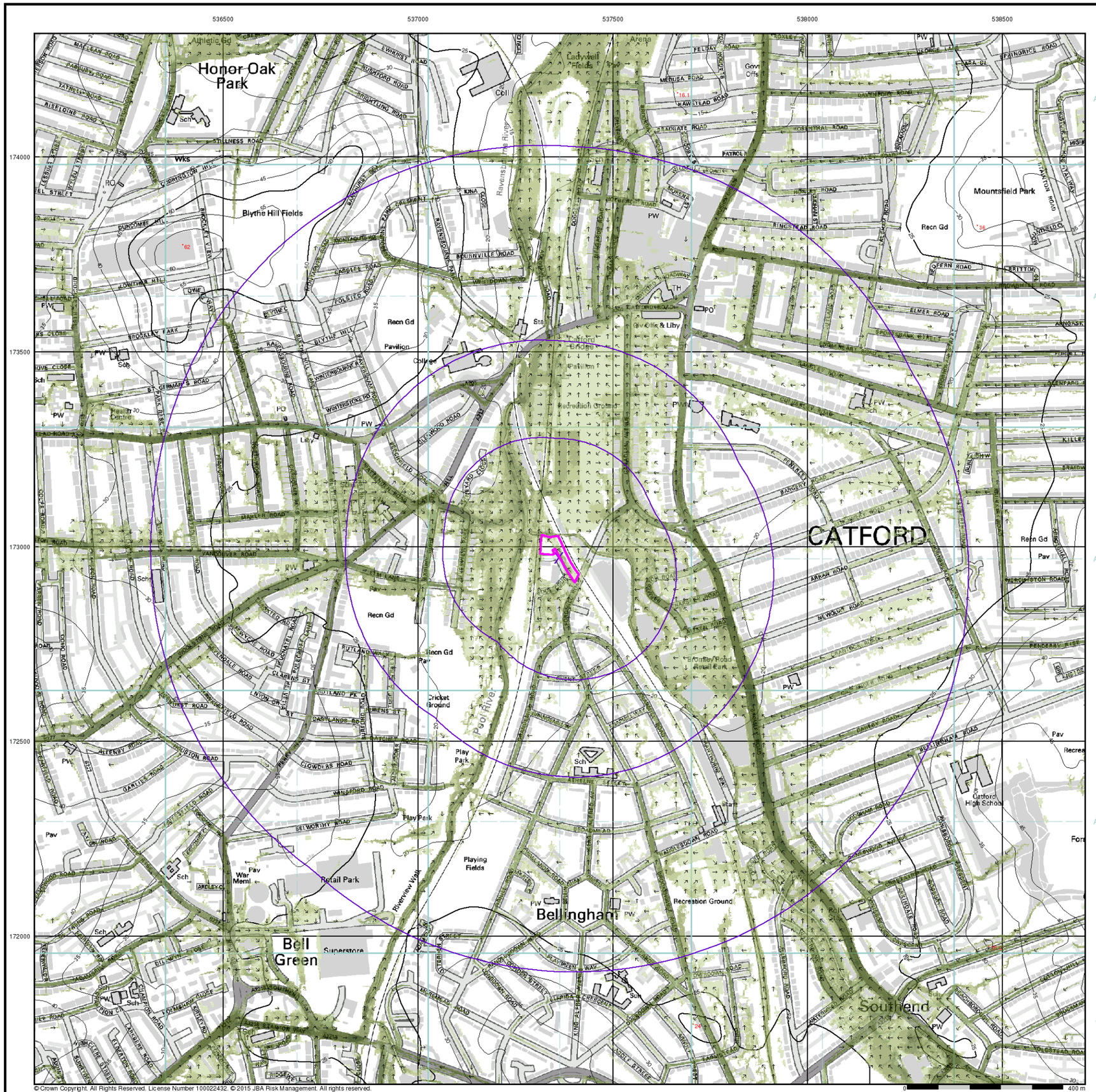

GeoSmart Information

Environmental Thinking

EA/NRW Surface Water 1000 Year Return Velocity and Flow Direction Map (1:10,000)

General

Specified Site | Specified Buffer(s) | X Bearing Reference Point

Surface Water Velocity and Direction

- 0.00 - 0.25m/s
- 0.25 - 0.50m/s
- 0.50 - 1.00m/s
- 1.00 - 2.00m/s
- > 2.00m/s

Flow Direction at maximum velocity

Contours (height in metres)

Standard Contour 105 100 95

Master Contour

Spot Height *167.8

MLW Mean Low Water

MHW Mean High Water

Suitability

See the suitability map below

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- Street to parcels of land
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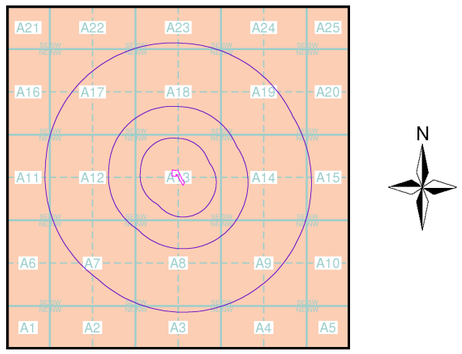
EA/NRW Suitability Map - Slice A



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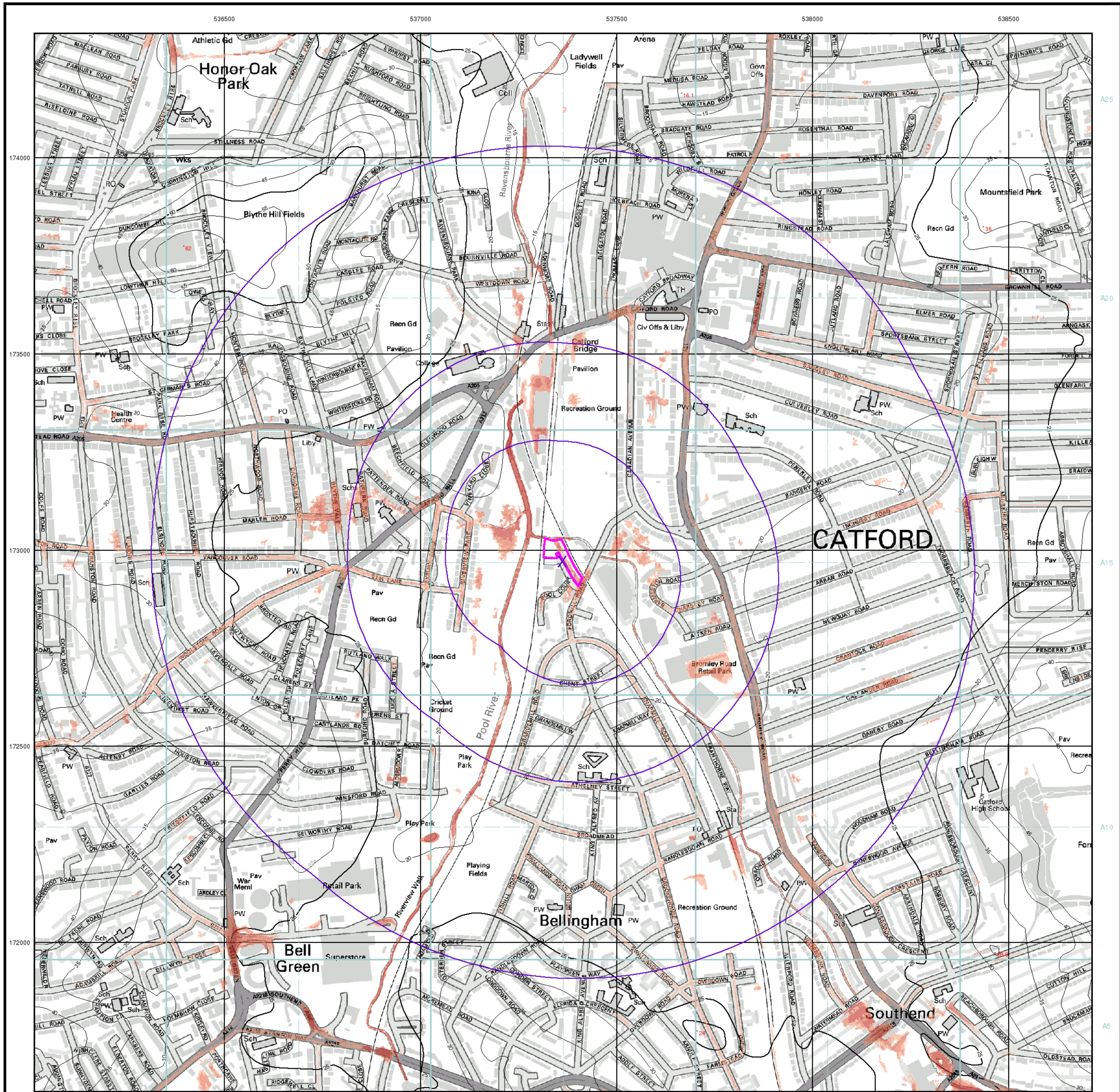


GeoSmart Information

Environmental Thinking

EA/NRW Surface Water 30 Year Return Hazard Rating Map (1:10,000)

General

Specified Site
Specified Buffer(s)
X Bearing Reference Point

Surface Water Hazard Rating

Low (0.5 – 0.75)
Moderate (0.75 – 1.25)
Significant (1.25 – 2.0)
Extreme (>2.0)

Contours (height in metres)

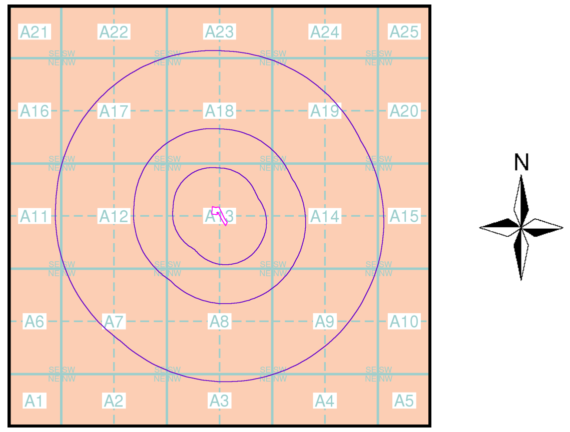
Standard Contour
Master Contour
Spot Height 167.8
MLW Mean Low Water
MHW Mean High Water

Suitability

See the suitability map below

National to county
County to town
Town to street
Street to parcels of land
Property

EA/NRW Suitability Map - Slice A



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Customer Ref: 65199
National Grid Reference: 537360, 172970
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Search Buffer (m): 1000

Site Details

Land by Pool Court, London, SE6 3JQ

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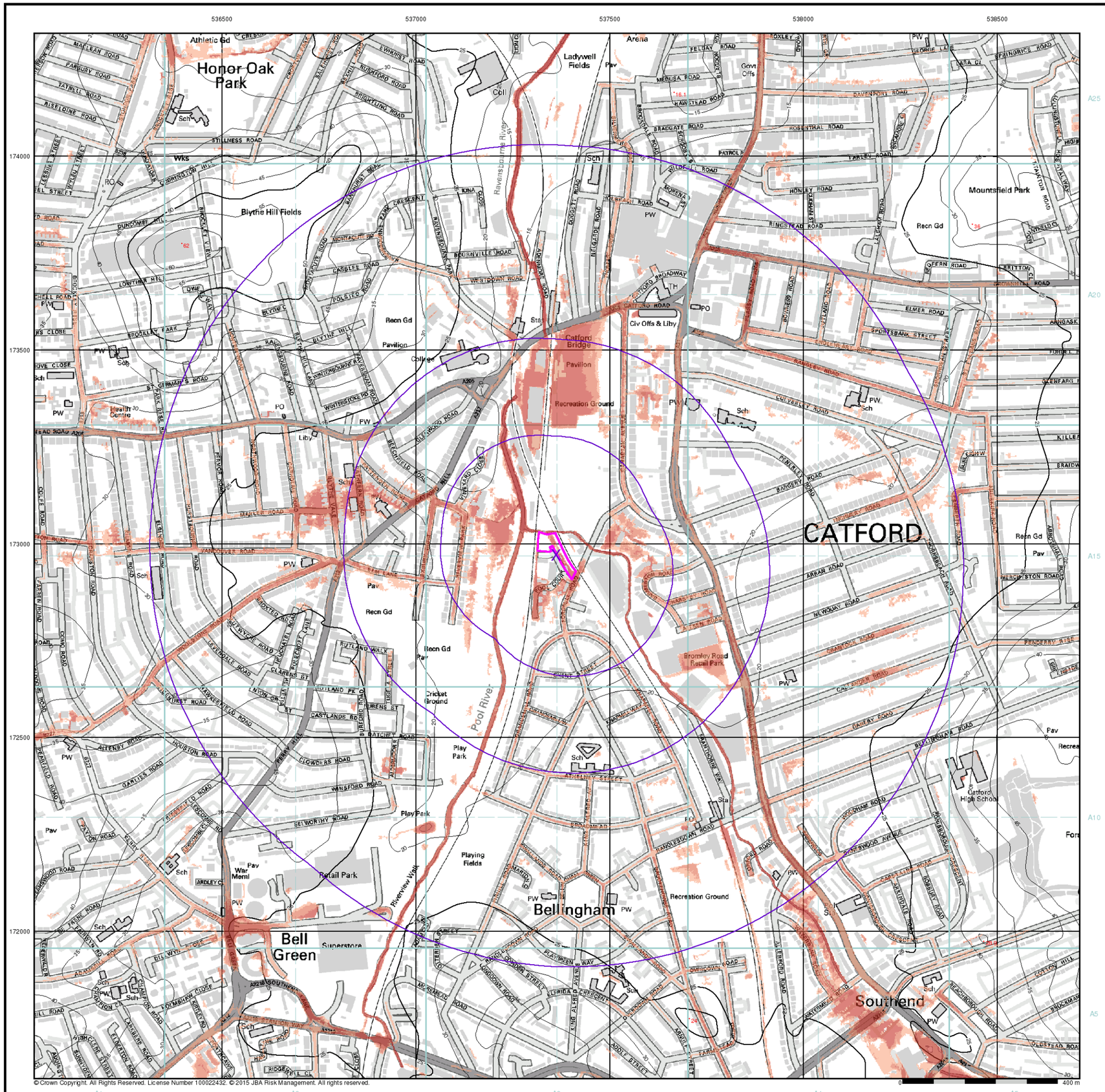


GeoSmart Information

Environmental Thinking

EA/NRW Surface Water 100 Year Return Hazard Rating Map (1:10,000)

General

Specified Site | Specified Buffer(s) | X Bearing Reference Point

Surface Water Hazard Rating

- Low (0.5 – 0.75)
- Moderate (0.75 – 1.25)
- Significant (1.25 – 2.0)
- Extreme (>2.0)

Contours (height in metres)

Standard Contour 105 | Master Contour 100 | 95 | Spot Height *167.8

MLW Mean Low Water

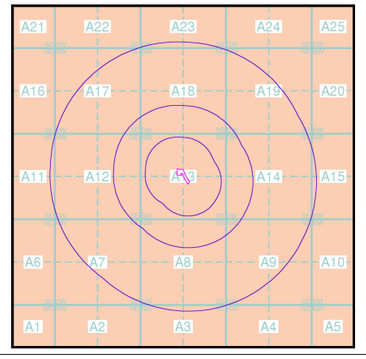
MHW Mean High Water

Suitability

See the suitability map below

- National to county
- County to town
- Town to street
- Street to parcels of land
- Property

EA/NRW Suitability Map - Slice A



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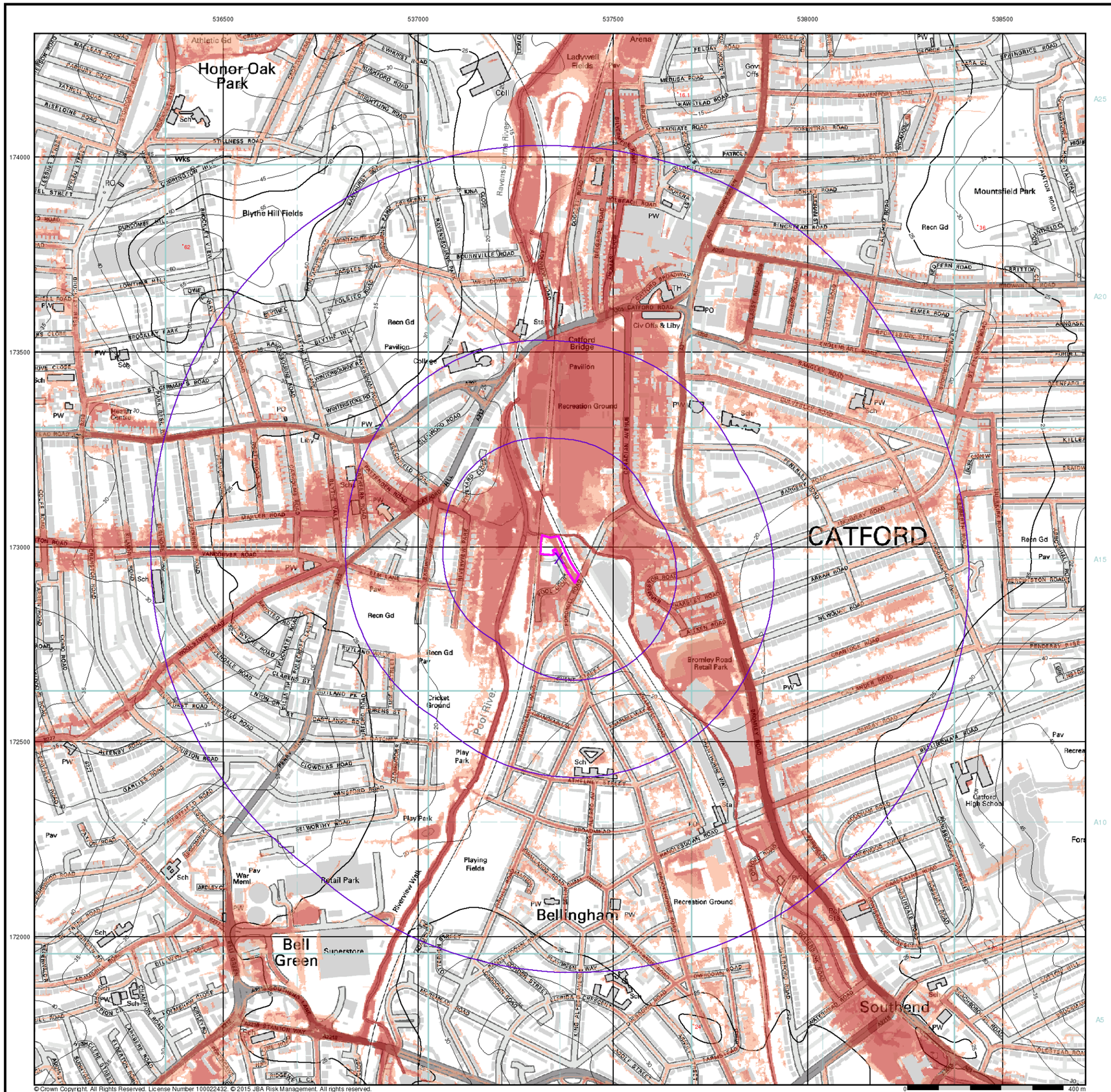

GeoSmart Information

Environmental Thinking

EA/NRW Surface Water 1000 Year Return Hazard Rating Map (1:10,000)

General

Specified Site | Specified Buffer(s) | X Bearing Reference Point

Surface Water Hazard Rating

- Low (0.5 – 0.75)
- Moderate (0.75 – 1.25)
- Significant (1.25 – 2.0)
- Extreme (>2.0)

Contours (height in metres)

Standard Contour 105

Master Contour 100 95

Spot Height *167.8

MLW Mean Low Water

MHW Mean High Water

Suitability

See the suitability map below

- National to county
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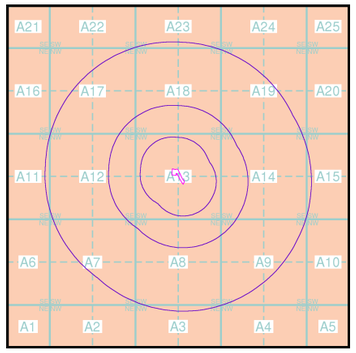
EA/NRW Suitability Map - Slice A



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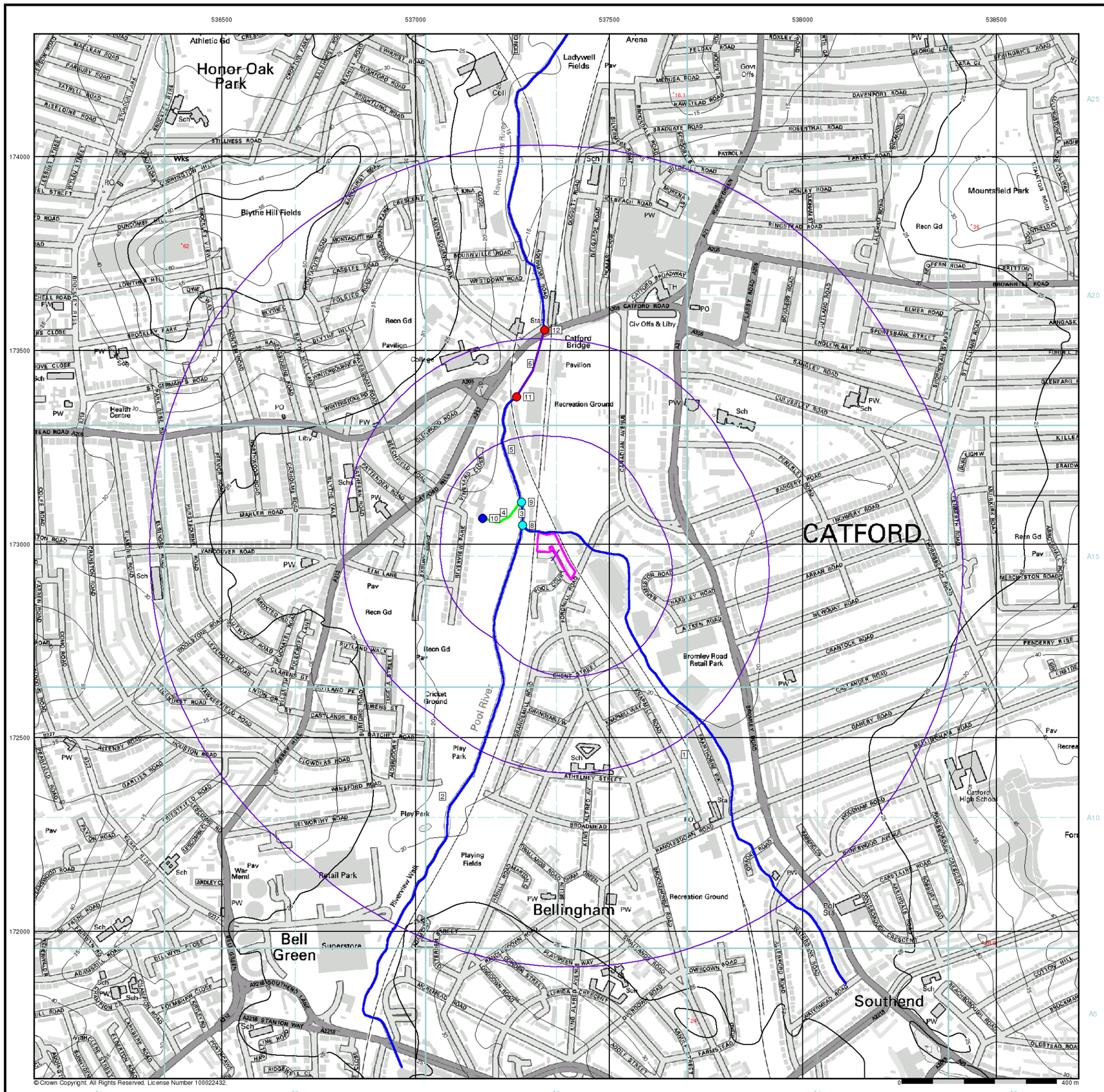


GeoSmart Information

Environmental Thinking

Detailed River Network Map (1:10,000)

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Map ID

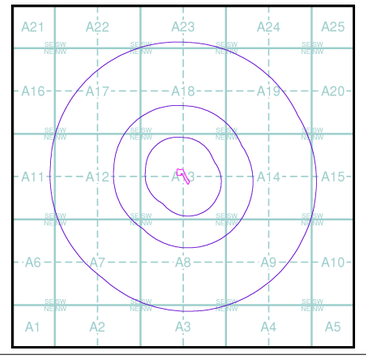
Detailed River Network Data

- Primary River
- Secondary River
- Tertiary River
- Canal
- Canal Tunnel
- Undefined River
- Lake/Reservoir
- Source
- Junction
- Sink
- Non-interactive Node
- Offline Drainage Feature
- Extended Culvert (greater than 50m)
- Underground River (inferred)
- Underground River (local knowledge)
- Downstream of High Water Mark
- Downstream of Seaward Extension
- Not assigned River feature
- Not assigned River feature
- Pseudo Node (general)
- Pseudo Node (High Water Mark)
- Pseudo Node (OS MasterMap polygon boundary)

Contours (height in metres)

- Standard Contour
- Master Contour
- Spot Height *167.3
- MLW Mean Low Water
- MHW Mean High Water

Detailed River Network Map - Slice A



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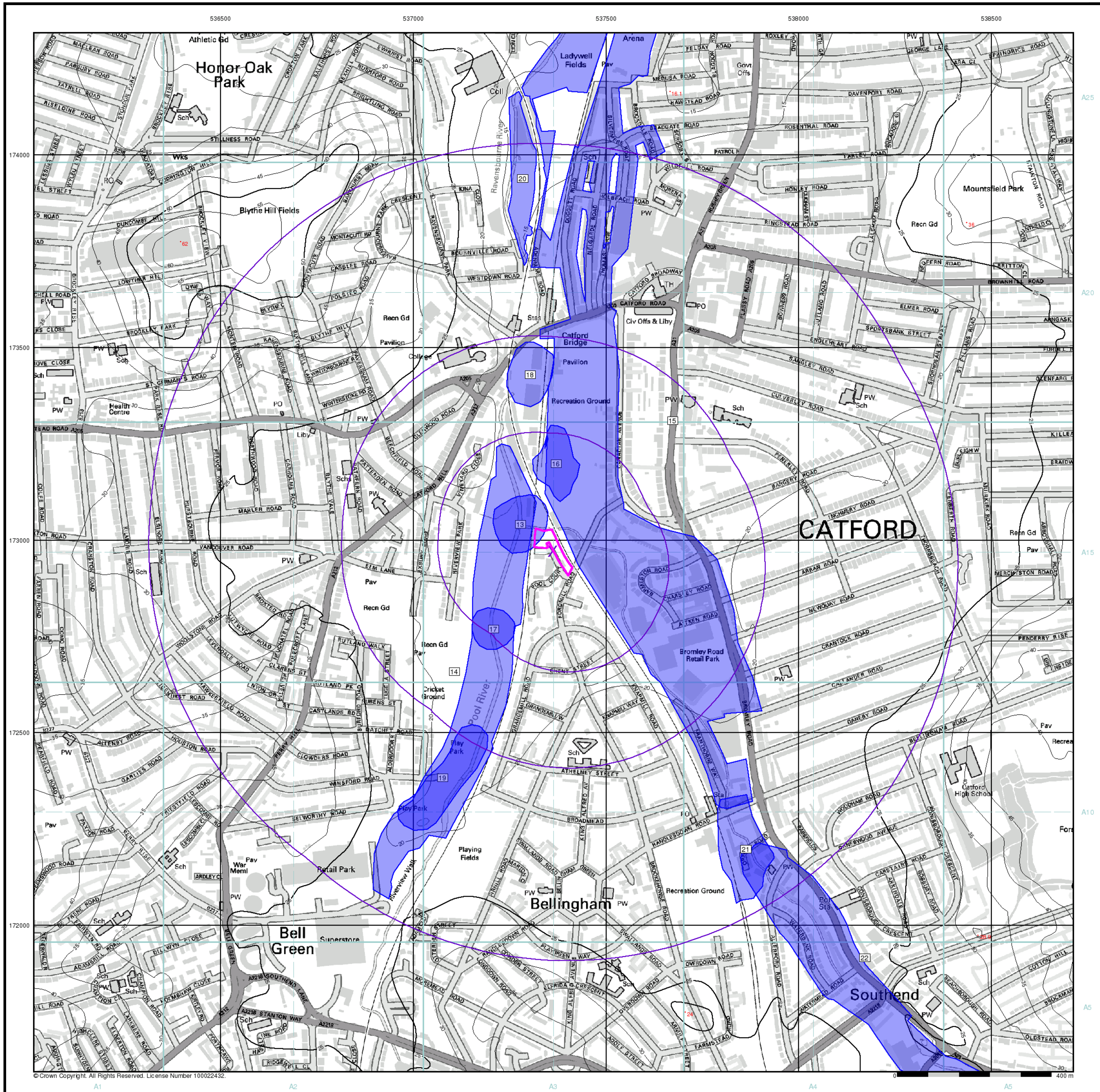


GeoSmart Information

Environmental Thinking

EA/NRW Historic Flood Map (1:10,000)

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Map ID

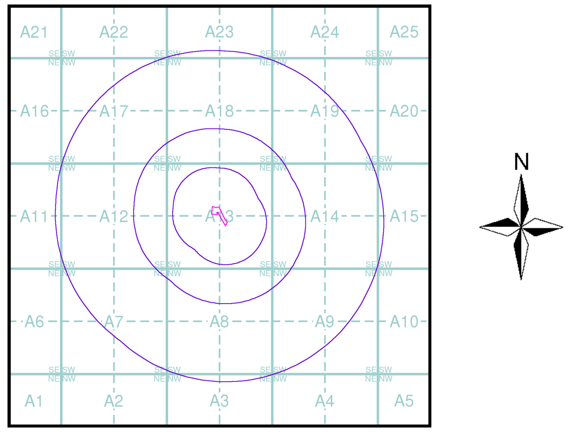
Historic Flood Events Data

- Channel Capacity Exceeded (no raised defences)
- Groundwater/High Water Table
- Local Drainage/Surface Water
- Mechanical Failure
- Obstruction/Blockage - Bridge
- Obstruction/Blockage - Channel
- Obstruction/Blockage - Culvert
- Obstruction/Blockage - Debris Screen
- Operational Failure/ Breach of Defence
- Other
- Overtopping of Defences
- Unknown
- Historical Flood Liabilities

Contours (height in metres)

- Standard Contour
- Master Contour
- Spot Height 167.8
- MLW Mean Low Water
- MHW Mean High Water

EA/NRW Historic Flood Map - Slice A



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Land by Pool Court, London, SE6 3JQ

Landmark Information Group

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Web: www.envirocheck.co.uk

Appendix D

Environment Agency data

t. +44(0)1743 276150 e. info@geosmartinfo.co.uk www.geosmartinfo.co.uk

Product 4 (Detailed Flood Risk) for: Pool Court, SE6 3JQ
Requested by: Claire Gray
Reference: KSL 20068 TT
Date: 16 August 2016

Contents

- Flood Risk Assessments: Climate Change Allowances
- Flood Map for Planning (Rivers & Sea) Confirmation
- Flood Map for Planning (Rivers & Sea) Extract
- Model Output Data
- Data Point Location Map
- Modelled Flood Outlines Map
- Defence Details
- Recorded Flood Events Data Map
- Additional Data
- Open Government Licence

The information provided is based on the best data available as of the date of this letter.

You may feel it is appropriate to contact our office at regular intervals, to check whether any amendments/ improvements have been made to the data for this location. Should you re-contact us after a period of time, please quote the above reference in order to help us deal with your query.

This information is provided subject to the enclosed notice which you should read.

Orchard House, Endeavour Park, London Road, Addington, West Malling, Kent, ME19 5SH.
Email: kslenquiries@environment-agency.gov.uk

Flood Risk Assessments: Climate Change Allowances

Updated climate change requirements for flood risk assessments

On 19/02/2016 the 'Flood risk assessments: climate change allowances' were published on gov.uk. You can view the new allowances at 'Flood risk assessments: climate change allowances'. This replaces the previous guidance Climate Change Allowances for Planners.

The data provided in this product does not include the new allowances. You will need to consider this data and factor in the new allowances to demonstrate the development will be safe from flooding.

The fluvial climate change factors are now more complex reflecting the fact that the latest information shows that a single uplift percentage across England cannot be justified.

The Environment Agency will also incorporate the new allowances into all future modelling studies.

It remains the applicant's responsibility to demonstrate through their proposals and flood risk assessments that a new development will be safe in flood risk terms for its lifetime.

Orchard House, Endeavour Park, London Road, Addington, West Malling, Kent, ME19 5SH.
Email: kslenquiries@environment-agency.gov.uk

Flood Map for Planning (Rivers & Sea) Confirmation

The Flood Map for Planning (Rivers & Sea)

Our Flood Map shows the natural floodplain for areas at risk from river and tidal flooding. The floodplain is specifically mapped ignoring the presence and effect of defences. Although flood defences reduce the risk of flooding they cannot completely remove that risk as they may be over topped or breached during a flood event.

The Flood Map indicates areas with a 1% (0.5% in tidal areas), Annual Exceedance Probability (AEP) - the probability of a flood of a particular magnitude, or greater, occurring in any given year, and a 0.1% AEP of flooding from rivers and/or the sea in any given year. The map also shows the location of some flood defences and the areas that benefit from them.

The Flood Map is intended to act as a guide to indicate the potential risk of flooding. When producing it we use the best data available to us at the time, taking into account historic flooding and local knowledge. The Flood Map is updated on a quarterly basis to account for any amendments required. These amendments are then displayed on the internet at

https://www.gov.uk/government/organisations/environment-agency.

At this Site:

The Flood Map shows that the north-west of this property lies within the outline of the 0.1% chance of flooding in any given year. The extreme perimeter of the north-west of the site lies within the outline of the 1% chance of flooding from rivers in any given year.

Enclosed is an extract of our Flood Map which shows this information for your area.

Method of production

The Flood Map at this location has been derived using detailed fluvial modelling of the Ravensbourne River completed in 2015 by CH2M Hill Ltd.

The outputs from this new study will be used to inform our Flood Map which is yet to be updated.

Orchard House, Endeavour Park, London Road, Addington, West Malling, Kent, ME19 5SH.
Email: kslenquiries@environment-agency.gov.uk

Model Output Data

You have requested flood levels for various return periods at this location.

The modelled flood levels for the closest most appropriate model grid cells, any additional information you may need to know about the modelling from which they are derived and/or any specific use or health warning for their use are set out below.

Using a 2D TuFLOW model the floodplain has been represented as a grid. The flood water levels have been calculated for each grid cell.

A map showing the location of the points from which the data is taken is enclosed. Please note you should read the notice enclosed for your specific use rights.

Table 1 : Modelled **defended** levels in metres above Ordnance Datum Newlyn (m AODN), for various Annual Exceedance Probabilities (AEP).

Node	Easting	Northing	20% AEP	10% AEP	5% AEP	3.3% AEP	2% AEP	1.3% AEP	1% AEP	1% AEP + CC	0.1% AEP
1	537291	173031	Nil Return	Nil Return	Nil Return	Nil Return	17.11	17.15	17.19	17.26	17.24
2	537316	173032	Nil Return	Nil Return	Nil Return	Nil Return	Nil Return	17.54	17.61	17.77	17.76
3	537314	172990	Nil Return	Nil Return	Nil Return	Nil Return	Nil Return	Nil Return	17.25	17.71	17.70
4	537318	173014	Nil Return	Nil Return	Nil Return	Nil Return	Nil Return	Nil Return	17.36	17.71	17.70
5	537314	172982	Nil Return	Nil Return	Nil Return	Nil Return	Nil Return	Nil Return	Nil Return	17.70	17.70
6	537321	173008	Nil Return	Nil Return	Nil Return	Nil Return	Nil Return	Nil Return	Nil Return	17.71	17.70
7	537345	173007	Nil Return	Nil Return	Nil Return	Nil Return	Nil Return	Nil Return	Nil Return	Nil Return	Nil Return
8	537373	172981	Nil Return	Nil Return	Nil Return	Nil Return	Nil Return	Nil Return	Nil Return	Nil Return	Nil Return
9	537393	172943	Nil Return	Nil Return	Nil Return	Nil Return	Nil Return	Nil Return	Nil Return	Nil Return	Nil Return

No raised defences were identified within the Ravensbourne model for this site, therefore only defended model outputs are relevant.

Data taken from Ravensbourne Mapping Study, completed by Halcrow Group Ltd., in date 2015

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Email: kslenquiries@environment-agency.gov.uk

Defence Details

Type and location – Fluvial concrete lined channel at the Ravensbourne Confluence with Pool to Randelsdown Road Catford SE6

Build date – 1960s

Standard of protection – 1 in 70

Owner – Not recorded

Plans for improvement / future schemes - Lewisham and Catford Flood Alleviation Scheme

- Works are due to commence in 2017 and are expected to last for two years.
- Incorporating floodwater storage at Beckenham Place Park, works on the Honor Oak Stream in Ladywell, as well as some works to river walls through Lewisham. Benefits will be felt in the urban centres of Lewisham and Catford.

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Email: kslenquiries@environment-agency.gov.uk

Recorded Flood Events Data

We hold records of historic flood events from rivers and the sea. Information on the floods that may have affected the area local to your site are provided below and in the enclosed map (if relevant).

Flood Event Data

Dates of historic flood events in this area – November 1965

Please note that our records are not comprehensive. We would therefore advise that you make further enquiries locally with specific reference to flooding at this location. You should consider contacting the relevant Local Planning Authority and/or water/sewerage undertaker for the area.

We map flooding to land, not individual properties. Our historic flood event record outlines are an indication of the geographical extent of an observed flood event. Our historic flood event outlines do not give any indication of flood levels for individual properties. They also do not imply that any property within the outline has flooded internally.

Please be aware that flooding can come from different sources. Examples of these are:

- from rivers or the sea;
- surface water (i.e. rainwater flowing over or accumulating on the ground before it is able to enter rivers or the drainage system);
- overflowing or backing up of sewer or drainage systems which have been overwhelmed,
- groundwater rising up from underground aquifers

Currently the Environment Agency can only supply flood risk data relating to the chance of flooding from rivers or the sea. However you should be aware that in recent years, there has been an increase in flood damage caused by surface water flooding or drainage systems that have been overwhelmed.

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Email: kslenquiries@environment-agency.gov.uk

Additional Information

Use of Environment Agency Information for Flood Risk / Flood Consequence Assessments

Important If you have requested this information to help inform a development proposal, then we recommend that you undertake a formal pre-application enquiry using the form available from our website:-

http://www.environment-agency.gov.uk/research/planning/33580

Depending on the enquiry, we may also provide advice on other issues related to our responsibilities including flooding, waste, land contamination, water quality, biodiversity, navigation, pollution, water resources, foul drainage or Environmental Impact Assessment.

In **England**, you should refer to the Environment Agency's Flood Risk Standing Advice, the technical guidance to the National Planning Policy Framework and the existing PPS25 Practice Guide for information about what flood risk assessment is needed for new development in the different Flood Zones. These documents can be accessed via:

http://www.environment-agency.gov.uk/research/planning/82587

http://www.communities.gov.uk/publications/planningandbuilding/nppftechnicalguidance

http://www.communities.gov.uk/publications/planningandbuilding/pps25guideupdate

You should also consult the Strategic Flood Risk Assessment produced by your local planning authority.

You should note that:

1. Information supplied by the Environment Agency may be used to assist in producing a Flood Risk / Consequence Assessment (FRA / FCA) where one is required, but does not constitute such an assessment on its own.
2. This information covers flood risk from main rivers and the sea, and you will need to consider other potential sources of flooding, such as groundwater or overland runoff. The information produced by the local planning authority referred to above may assist here.
3. Where a planning application requires a FRA / FCA and this is not submitted or deficient, the Environment Agency may well raise an objection.
4. For more significant proposals in higher flood risk areas, we would be pleased to discuss details with you ahead of making any planning application, and you should also discuss the matter with your local planning authority.

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Email: kslenquiries@environment-agency.gov.uk

Surface Water

We have provided two national Surface Water maps, under our Strategic Overview for flooding, to your Lead Local Flood Authority – London Borough of Lewisham, who are responsible for local flood risk (i.e. surface runoff, ground water and ordinary watercourse), which alongside their existing local information will help them in determining what best represents surface water flood risk in your area.

London Borough of Lewisham have reviewed these and determined what it believes best represents surface water flood risk. You can access the most up to date surface water maps via the Environment Agency web page here: http://watermaps.environment-agency.gov.uk/wiyby/wiyby.aspx?topic=ufmfsw#x=357683&y=355134&scale=2

You may also wish to consider contacting the appropriate relevant Local Planning Authority and/or water/sewerage undertaker for the area. They may be able to provide some knowledge on the risk of flooding from other sources. We are working with these organisations to improve knowledge and understanding of surface water flooding.

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Email: kslenquiries@environment-agency.gov.uk

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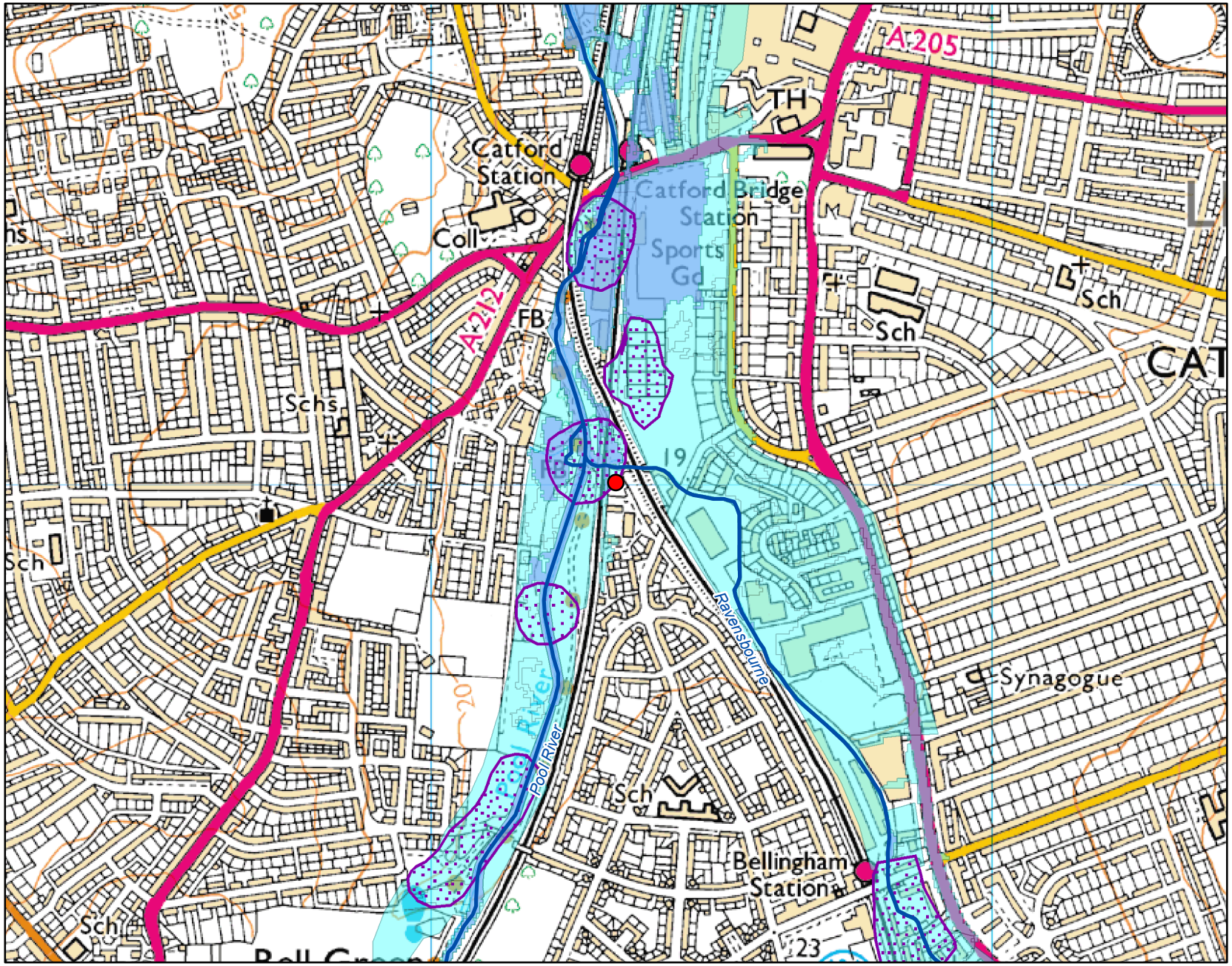
Detailed FRA/FCA Map centred on SE6 3JQ created 16 August 2016 [Ref: KSL 20068 TT]



Environment Agency

Scale 1: 10,000

Legend

- Site Location
- Flood Map - Defences
- Main Rivers
- Flood Map - Flood Storage Areas
- Areas Benefiting from Flood Defences
- Flood Map - Flood Zone 3
- Flood Map - Flood Zone 2
- Nov 1965 Flood Outline

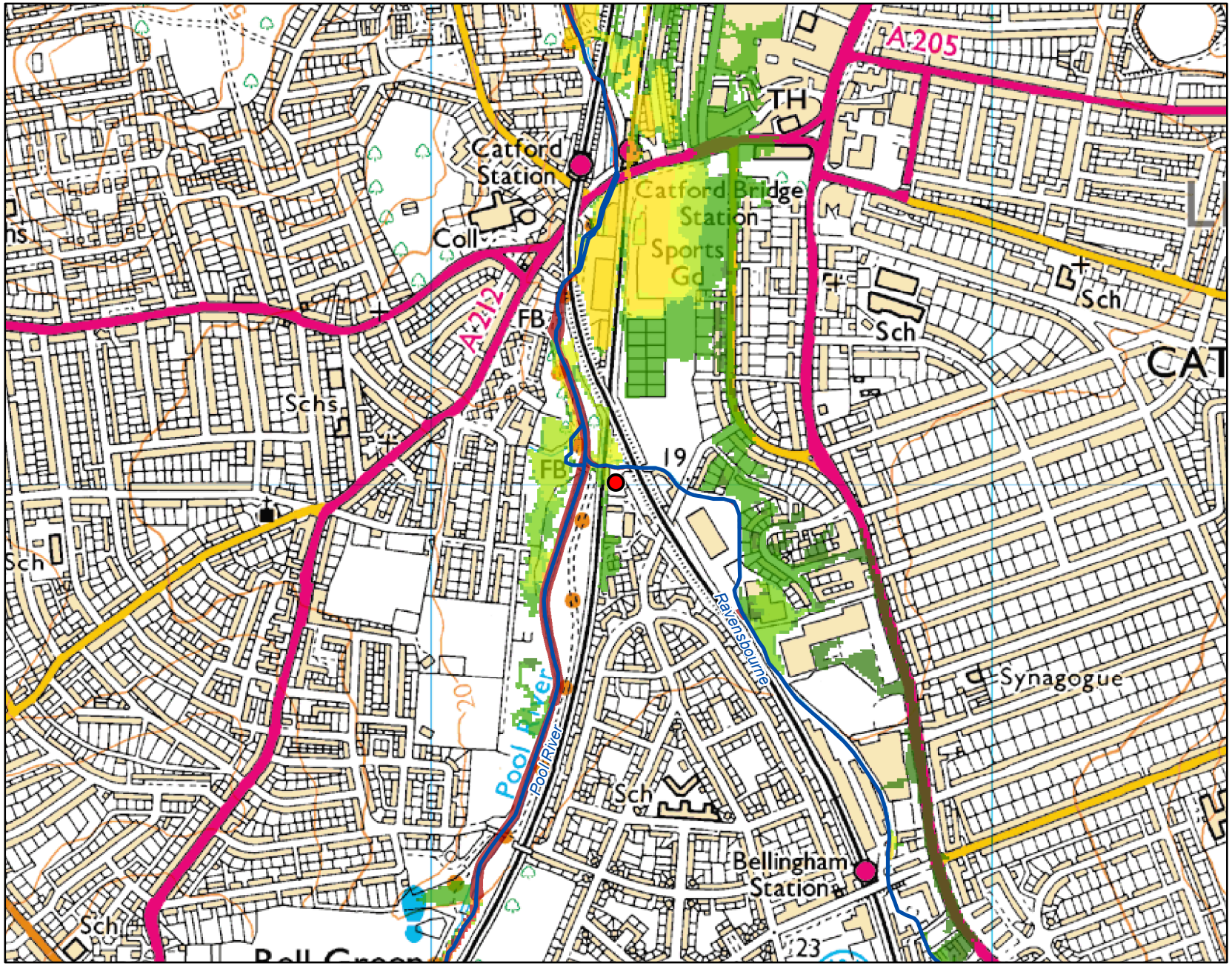
Flood Map for Planning (assuming no defences)

Flood Zone 3 shows the area that could be affected by flooding:
- from the sea with a 0.5% or greater chance of occurring each year
- or from a river with a 1% or greater chance of occurring each year.

Flood Zone 2 shows the extent of an extreme flood from rivers or the sea with up to a 0.1% chance of occurring each year.

Contact Us: National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel: 03708 506 506 (Mon-Fri 8-6). Email: enquiries@environment-agency.gov.uk

Modelled Defended Extents centred on SE6 3JQ created 16 August 2016 [Ref: KSL 20068 TT]



Environment Agency

Scale 1: 10,000

Legend

- Site Location
- Main Rivers

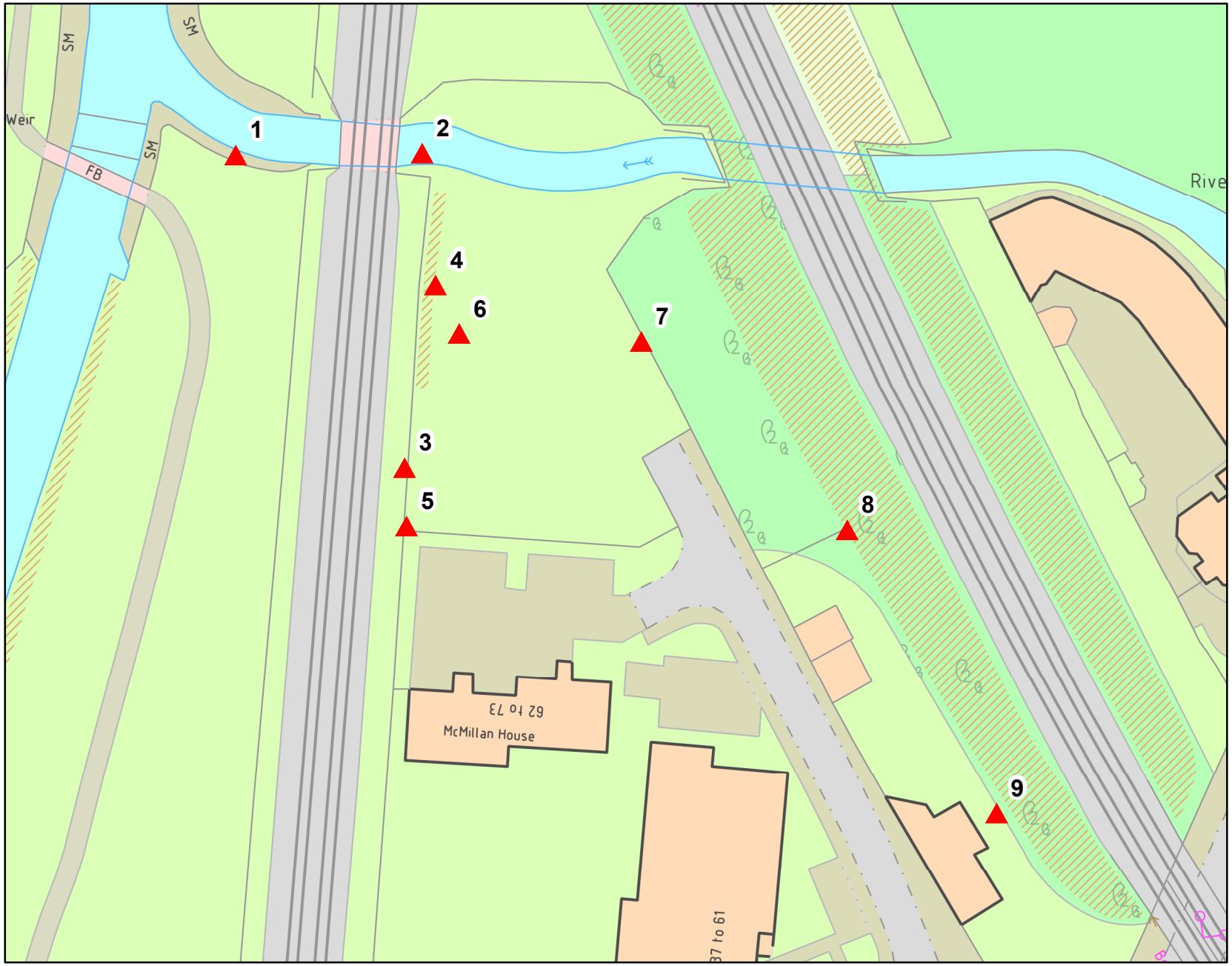
AEP (%)

- 20% AEP Extent
- 10% AEP Extent
- 5% AEP Extent
- 3.3% AEP Extent
- 2% AEP Extent
- 1.3% AEP Extent
- 1% AEP Extent
- 0.5% AEP Extent
- 1% AEP Extent + CC
- 0.1% AEP Extent

AEP = Annual Exceedance Probability
The probability of a flood of a particular magnitude, or greater, occuring in any given year.

Contact Us: National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel: 03708 506 506 (Mon-Fri 8-6). Email: enquiries@environment-agency.gov.uk

Node Location Map centred on SE6 3JQ created 16 August 2016 [Ref: KSL 20068 TT]



Environment Agency

Scale 1: 750

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S

Legend

Node Locations

Contact Us: National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel: 03708 506 506 (Mon-Fri 8-6). Email: enquiries@environment-agency.gov.uk

Product 4 (Detailed Flood Risk) for: New Cross Social Club, SE15 1HB
Requested by: Claire Gray, London Borough of Lewisham
Reference: KSL 20068 TT
Date: 16 August 2016

Contents

- Flood Map for Planning (Rivers and Sea)
- Flood Map Extract
- Thames Estuary 2100 (TE2100)
- Thames Tidal Breach Modelling
- Thames Tidal Breach Modelling Map
- Thames Tidal Upstream Inundation Modelling
- Thames Tidal Upstream Inundation Modelling Map
- Site Node Locations Map
- Defence Details
- Recorded Flood Events Data
- Recorded Flood Events Outlines Map
- Additional Information
- Open Government Licence

The information provided is based on the best data available as of the date of this letter.

You may feel it is appropriate to contact our office at regular intervals, to check whether any amendments/ improvements to the data for this location have been made. Should you re-contact us after a period of time, please quote the above reference in order to help us deal with your query.

This information is provided subject to the enclosed notice which you should read.

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Website: https://www.gov.uk/government/organisations/environment-agency

Flood Map for Planning (Rivers and Sea)

The Flood Map:

Our Flood Map shows the natural floodplain for areas at risk from river and tidal flooding. The floodplain is specifically mapped ignoring the presence and effect of defences. Although flood defences reduce the risk of flooding they cannot completely remove that risk as they may be over topped or breached during a flood event.

The Flood Map indicates areas with a 1% (0.5% in tidal areas), Annual Exceedance Probability (AEP) - the probability of a flood of a particular magnitude, or greater, occurring in any given year, and a 0.1% AEP of flooding from rivers and/or the sea in any given year. In addition, the map also shows the location of some flood defences and the areas that benefit from them.

The Flood Map is intended to act as a guide to indicate the potential risk of flooding. When producing it we use the best data available to us at the time and also take into account historic flooding and local knowledge. The Flood Map is updated on a quarterly basis to account for any amendments required. These amendments are then displayed on the internet at

https://www.gov.uk/government/organisations/environment-agency.

At this Site:

The Flood Map shows that this site lies within the outline of Flood Zone 3. This zone comprises land assessed as having a 0.5% (1 in 200) or greater annual probability of tidal flooding.

Enclosed is an extract of our Flood Map which shows this information for your area.

Method of production

The Flood Map at this location has been derived using detailed modelling of the Thames Tidal Defences Study completed in 2006 by Halcrow Ltd.

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Thames Estuary 2100 (TE2100)

You have requested in-channel flood levels for the tidal river Thames. These have been taken from the Thames Estuary 2100 study completed by HR Wallingford in 2008. The modelled node closest to your site is **2.41**; the locations of nearby nodes are also shown on the enclosed map.

Details about the TE2100 plan

The TE2100 plan is now live and within it are a set of levels on which the flood risk management strategy is based. The plan is the overarching flood management strategy for the Thames Estuary and therefore any development planning should be based on the same underlying data.

Details about the TE2100 in-channel levels

The TE2100 in-channel levels take into account operation of the Thames Barrier when considering future levels. The Thames Barrier requires regular maintenance and with additional closures the opportunity for maintenance will be reduced. When this happens, river levels – for which the Barrier would normally shut for the 2008 epoch – will have to be allowed through to ensure that the barrier is not shut too often. For this reason, levels upriver of the barrier will increase and the tidal walls will need to be heightened to match.

Why is there no return period for levels upriver of the barrier?

The levels upriver of the barrier are the highest levels permitted by the operation of the Thames Barrier. If levels and flows are forecast to be any higher, the Thames Barrier would shut, ensuring that the tide is blocked and the river maintained to a low level. For this reason the probability of any given water level upriver of the Barrier is controlled and therefore any associated return period becomes irrelevant. The Thames Barrier and associated defence system has a 1 in 1000 year standard which means it ensures that flood risk is managed up to an event that has a 0.1% annual probability. The probability of water levels upriver is ultimately controlled by the staff at the Thames Barrier.

For further information about the Thames Barrier please visit our website at:

https://www.gov.uk/the-thames-barrier

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TE2100 2008 levels:

Levels downriver of the Thames Barrier are 0.1% AEP (1 in 1000) and levels upriver are the highest levels permitted by the Thames Barrier, described as the Maximum Likely Water Levels (MLWLs). The defence levels (left defence, right defence) are the minimum levels to which the defences should be built.

Location	Node	Easting	Northing	Extreme water level (m)	Left defence (m)	Right defence (m)	Allow for future defence raising to a level of...	
							Left Bank (m)	Right Bank (m)
Tower	2.38	535264	180141	4.76	5.28	5.28	6.35	6.35
				4.75	5.28	5.28	6.35	6.35
				4.75	5.23	5.23	6.20	6.20
	2.39	536040	180673	4.74	5.23	5.23	6.20	6.20
	2.41	536870	179152	4.72	5.23	5.23	6.20	6.20
	2.42	537709	178083	4.71	5.23	5.23	6.20	6.20
Greenwich	2.43	538582	178205	4.70	5.23	5.23	6.20	6.20

TE2100 climate change levels:

				2065 to 2100		**2100**	
Location	Node	Easting	Northing	Design water level	Defence level (both banks)	Design water level	Defence level (both banks)
Tower	2.38	535264	180141	5.27	5.85	5.75	6.35
				5.26	5.85	5.74	6.35
				5.26	5.70	5.74	6.20
	2.39	536040	180673	5.25	5.70	5.74	6.20
	2.41	536870	179152	5.23	5.70	5.72	6.20
	2.42	537709	178083	5.21	5.70	5.70	6.20
Greenwich	2.43	538582	178205	5.19	5.70	5.68	6.20

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Thames Tidal Breach Modelling

We have undertaken breach modelling through the Thames Tidal Breach Modelling Study 2015 completed by CH2M HILL in March 2015. However this site is not located within the outlines of the models due to the considerable distance of the site from the Thames. Therefore no data from the breach models is available for this site. We recommend using Upstream Inundation Model levels instead.

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Customer services line: 01732 223 202
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Thames Tidal Upstream Inundation Modelling

The enclosed map shows results for the Thames Tidal Upstream Inundation Modelling Study 2015 completed by CH2M HILL in March 2015.

Upriver of the Thames Barrier, there is no return period for modelled levels as the levels are controlled by barrier closures. Therefore 2014, 2065 and 2100 epochs were modelled on that basis.

Using the domains updated as part of the Thames Tidal Breach Modelling Study 2015 completed by CH2M HILL in March 2015, the project generated outputs for water depths, velocity, levels and hazard. However the scenario modelled is that the Thames Barrier is operational but all linear defences have been removed. It uses the TE2100 in-channel levels calculated in 2008 and only provides data for embayments upriver of the Thames Barrier.

	National Grid Reference		Modelled levels in mAODN		
Point	**Easting**	**Northing**	**2014**	**2065**	**2100**
1	535306	177515	nil return	3.20	3.75
2	535338	177541	nil return	3.20	3.75
3	535424	177596	nil return	3.20	3.77
4	535371	177586	nil return	3.20	3.76
5	535309	177575	nil return	3.20	3.74
6	535303	177542	nil return	3.20	3.75

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Email: kslenquiries@environment-agency.gov.uk
Website: https://www.gov.uk/government/organisations/environment-agency

Defence Details

The design standard of protection of the flood defences in this area of the Thames is 0.1% AEP; they are designed to defend London up to a 1 in 1000 year **tidal** flood event. The defences are all raised, man-made and privately owned. It is the riparian owners' responsibility to ensure that they are maintained to a crest level of 5.23 m AODN (the Statutory Flood Defence Level in this reach of the Thames). We inspect them twice a year to ensure that they remain fit for purpose. The current condition grade for defences in the area is 2 (good), on a scale of 1 (very good) to 5 (very poor). For more information on your rights and responsibilities as a riparian owner, please see our document 'Living on the edge' found on our website at:

https://www.gov.uk/government/publications/riverside-ownership-rights-and-responsibilities

There are no planned improvements in this area. Please see the 'Thames Estuary 2100' document on our website for the short, medium and long term Flood Risk Management strategy for London:

https://www.gov.uk/government/publications/flooding-thames-estuary-2100-te2100-plan

Areas Benefiting from Flood Defences

This site is within an area benefiting from flood defences, as shown on the enclosed extract of our Flood Map. Areas benefiting from flood defences are defined as those areas which benefit from formal flood defences specifically in the event of flooding from rivers with a 1% (1 in 100) chance in any given year, or flooding from the sea with a 0.5% (1 in 200) chance in any given year.

If the defences were not there, these areas would be flooded. An area of land may benefit from the presence of a flood defence even if the defence has overtopped, if the presence of the defence means that the flood water does not extend as far as it would if the defence were not there.

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Website: https://www.gov.uk/government/organisations/environment-agency

Recorded Flood Events Data

We hold records of historic flood events from rivers and the sea. Information on the floods that may have affected the area local to your site is provided below and in the enclosed map (if relevant).

Flood Event Data

We do not hold records of historic flood events from rivers and/or the sea affecting the area local to this site. However, please be aware that this does not necessarily mean that flooding has not occurred here in the past, as our records are not comprehensive.

Due to the fact that our records are not comprehensive, we would advise that you make further enquiries locally with specific reference to flooding at this location. You should consider contacting the relevant Local Planning Authority and/or water/sewerage undertaker for the area.

We map flooding to land, not individual properties. Our historic flood event record outlines are an indication of the geographical extent of an observed flood event. Our historic flood event outlines do not give any indication of flood levels for individual properties. They also do not imply that any property within the outline has flooded internally.

Please be aware that flooding can come from different sources. Examples of these are:

- from rivers or the sea;
- surface water (i.e. rainwater flowing over or accumulating on the ground before it is able to enter rivers or the drainage system);
- overflowing or backing up of sewer or drainage systems which have been overwhelmed,
- groundwater rising up from underground aquifers

Currently the Environment Agency can only supply flood risk data relating to the chance of flooding from rivers or the sea. However you should be aware that in recent years, there has been an increase in flood damage caused by surface water flooding and drainage systems that have been overwhelmed.

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Additional Information

Use of Environment Agency Information for Flood Risk / Flood Consequence Assessments

Important

If you have requested this information to help inform a development proposal, then we recommend that you undertake a formal pre-application enquiry using the form available from our website:-

https://www.gov.uk/government/publications/pre-planning-application-enquiry-form-preliminary-opinion

Depending on the enquiry, we may also provide advice on other issues related to our responsibilities including flooding, waste, land contamination, water quality, biodiversity, navigation, pollution, water resources, foul drainage or Environmental Impact Assessment.

In **England**, you should refer to the Environment Agency's Flood Risk Standing Advice, the technical guidance to the National Planning Policy Framework and the existing PPS25 Practice Guide for information about what flood risk assessment is needed for new development in the different Flood Zones. These documents can be accessed via:

https://www.gov.uk/flood-risk-standing-advice-frsa-for-local-planning-authorities

https://www.gov.uk/government/publications/national-planning-policy-framework-technical-guidance

https://www.gov.uk/government/publications/development-and-flood-risk-practice-guide-planning-policy-statement-25

You should also consult the Strategic Flood Risk Assessment produced by your local planning authority.

You should note that:

1. Information supplied by the Environment Agency may be used to assist in producing a Flood Risk / Consequence Assessment (FRA / FCA) where one is required, but does not constitute such an assessment on its own.
2. This information covers flood risk from main rivers and the sea, and you will need to consider other potential sources of flooding, such as groundwater or overland runoff. The information produced by the local planning authority referred to above may assist here.
3. Where a planning application requires a FRA / FCA and this is not submitted or deficient, the Environment Agency may well raise an objection.
4. For more significant proposals in higher flood risk areas, we would be pleased to discuss details with you ahead of making any planning application, and you should also discuss the matter with your local planning authority.

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Surface Water

We have provided two national Surface Water maps, under our Strategic Overview for flooding, to your Lead Local Flood Authority – Lewisham Council – who are responsible for local flood risk (i.e. surface runoff, ground water and ordinary watercourse), which alongside their existing local information will help them in determining what best represents surface water flood risk in your area.

Lewisham Council have reviewed these and determined what it believes best represents surface water flood risk. You should therefore contact this authority so they can provide you with the most up to date information about surface water flood risk in your area.

You may also wish to consider contacting the appropriate relevant Local Planning Authority and/or water/sewerage undertaker for the area. They may be able to provide some knowledge on the risk of flooding from other sources. We are working with these organisations to improve knowledge and understanding of surface water flooding.

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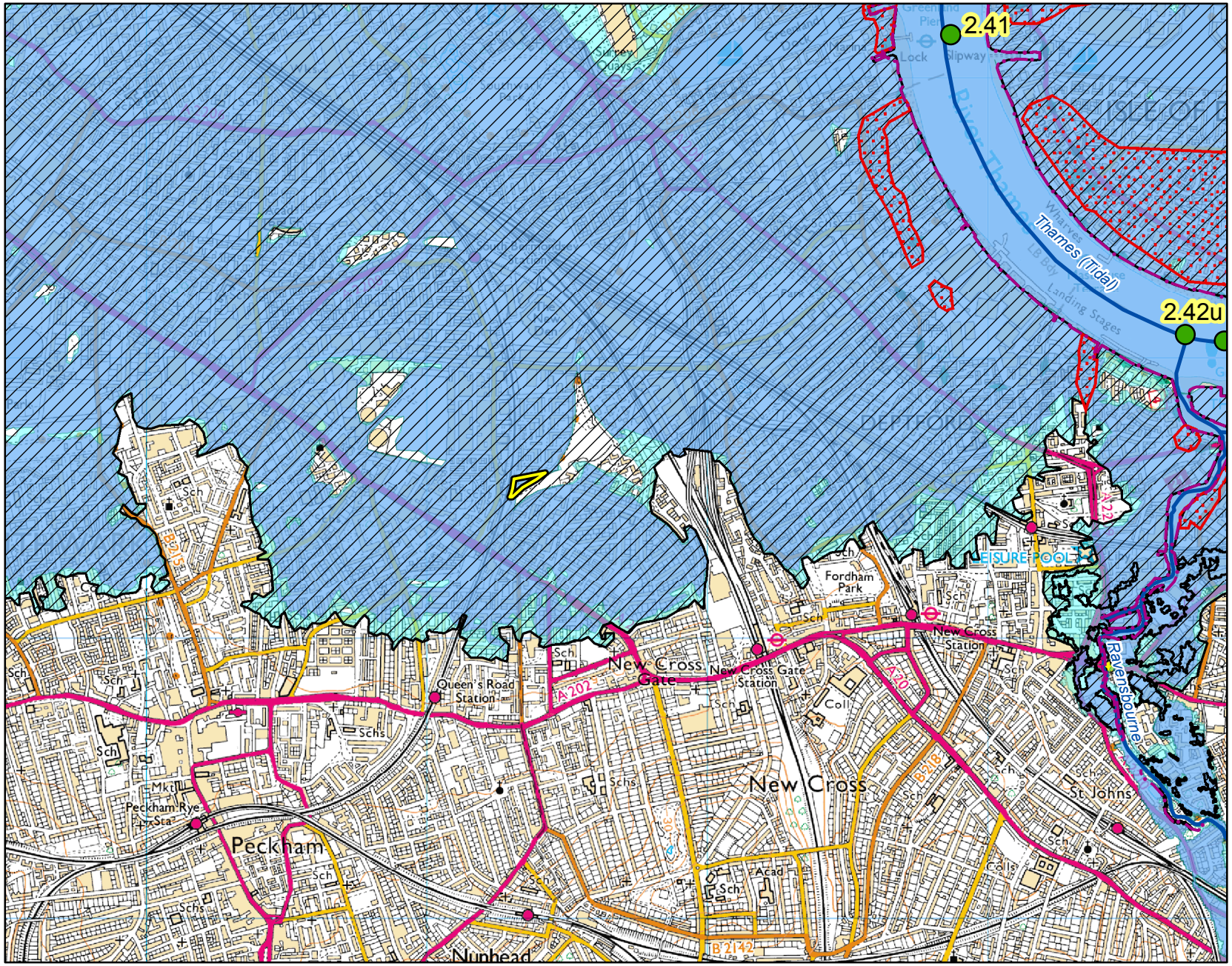
Detailed FRA/FCA Map centred on SE15 1HB created 16 August 2016 [Ref: KSL 20068 TT]



Environment Agency

Scale 1: 20,000

Legend

- Site Location
- TE2100 Model Nodes
- Flood Map - Defences
- Main Rivers
- Flood Map - Flood Storage Areas
- Areas Benefiting from Flood Defences
- Flood Map - Flood Zone 3
- Flood Map - Flood Zone 2
- Jan 1928 Flood Outline

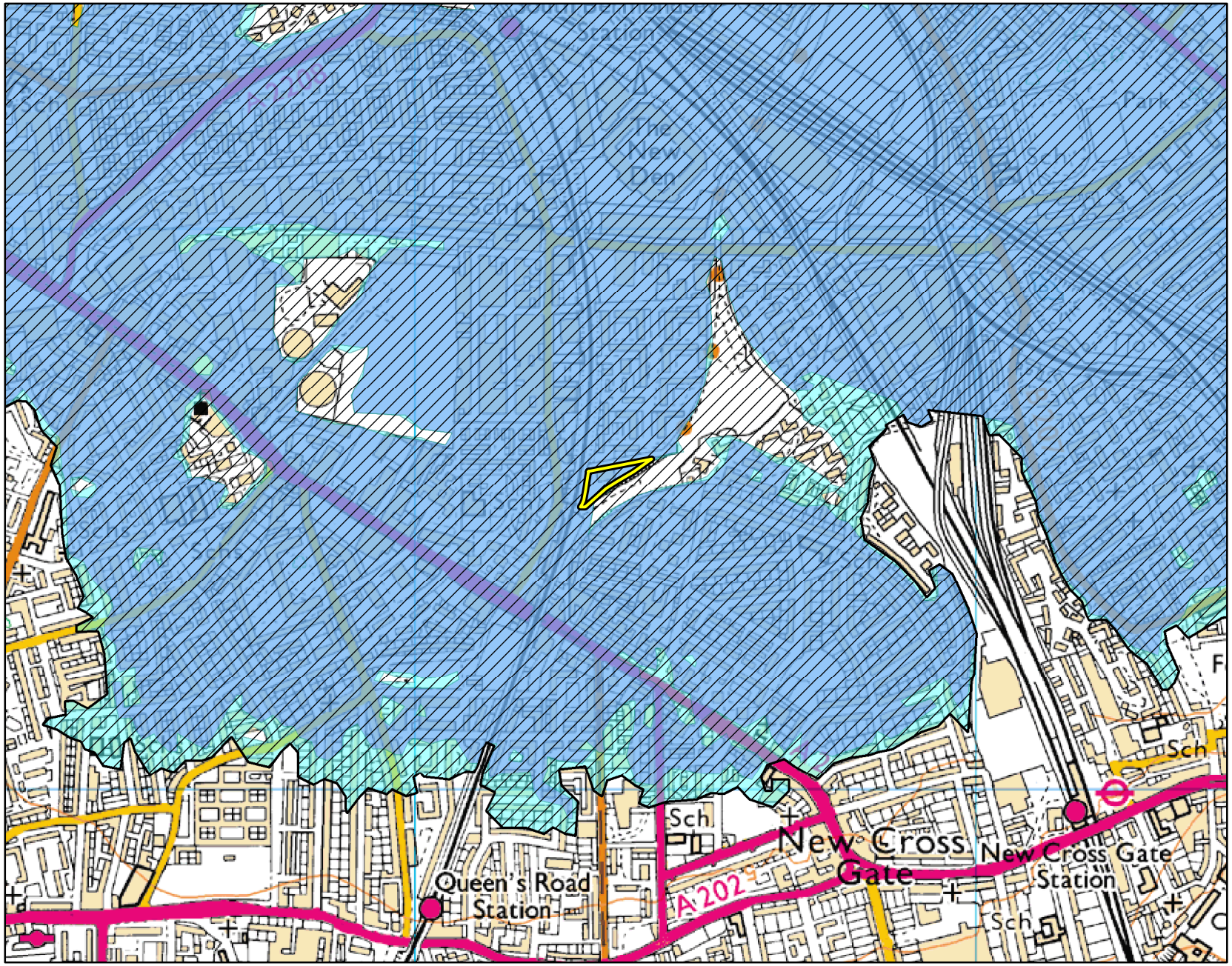
Flood Map for Planning (assuming no defences)

Flood Zone 3 shows the area that could be affected by flooding:
- from the sea with a 0.5% or greater chance of occurring each year
- or from a river with a 1% or greater chance of occurring each year.

Flood Zone 2 shows the extent of an extreme flood from rivers or the sea with up to a 0.1% chance of occurring each year.

Contact Us: National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel: 03708 506 506 (Mon-Fri 8-6). Email: enquiries@environment-agency.gov.uk

Detailed FRA/FCA Map centred on SE15 1HB created 16 August 2016 [Ref: KSL 20068 TT]



Environment Agency

Scale 1: 10,000

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Legend

- Site Location
- TE2100 Model Nodes
- Flood Map - Defences
- Main Rivers
- Flood Map - Flood Storage Areas
- Areas Benefiting from Flood Defences
- Flood Map - Flood Zone 3
- Flood Map - Flood Zone 2
- Jan 1928 Flood Outline

Flood Map for Planning (assuming no defences)

Flood Zone 3 shows the area that could be affected by flooding:
– from the sea with a 0.5% or greater chance of occurring each year
– or from a river with a 1% or greater chance of occurring each year.

Flood Zone 2 shows the extent of an extreme flood from rivers or the sea with up to a 0.1% chance of occurring each year.

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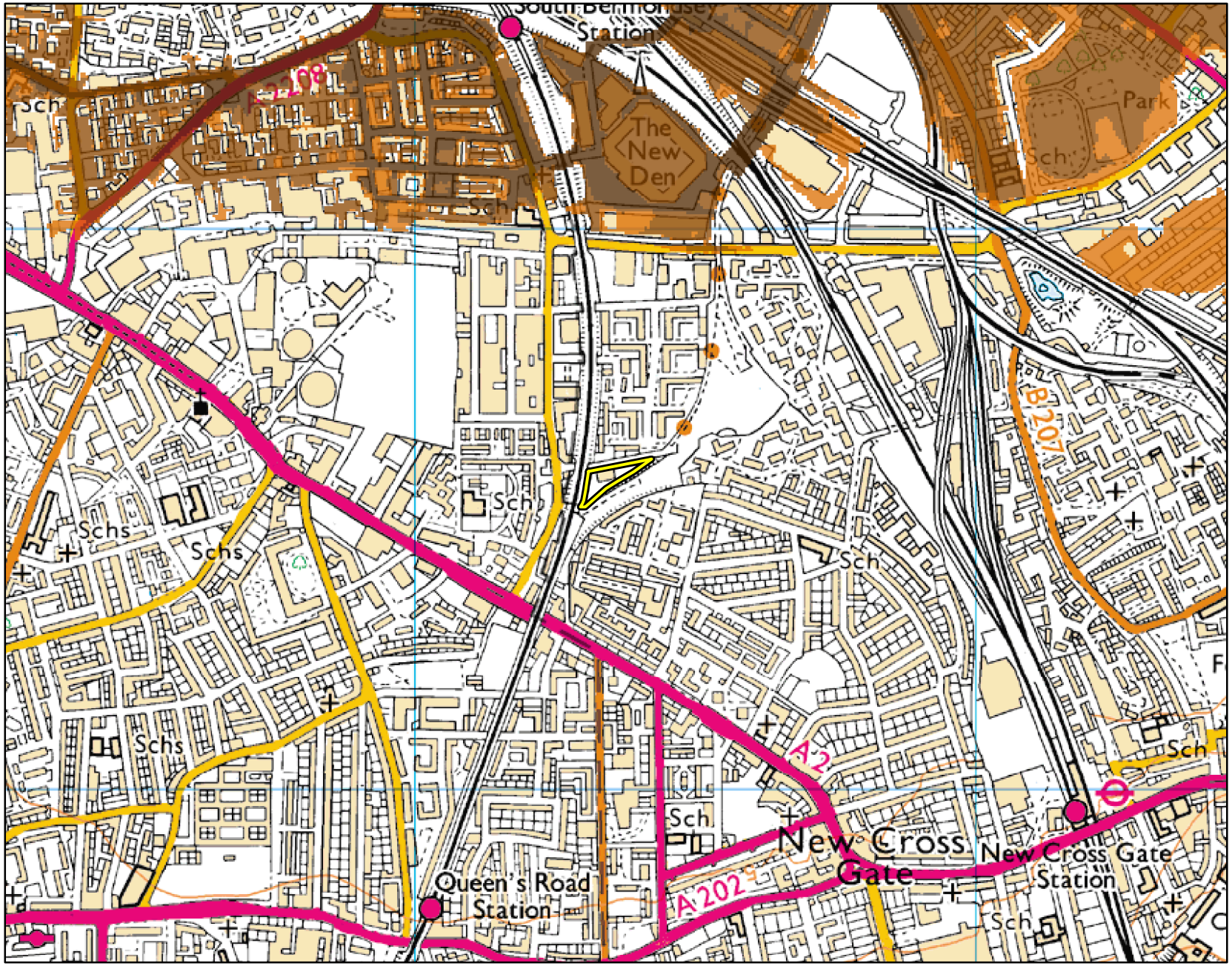
Breach Modelling Map centred on SE15 1HB created 16 August 2016 [Ref: KSL 20068 TT]



Environment Agency

Scale 1: 10,000

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Legend

- Site Location
- TE2100 Model Nodes
- Main Rivers
- Breach Locations
- Flood Map - Defences

Upriver MLWL Outlines

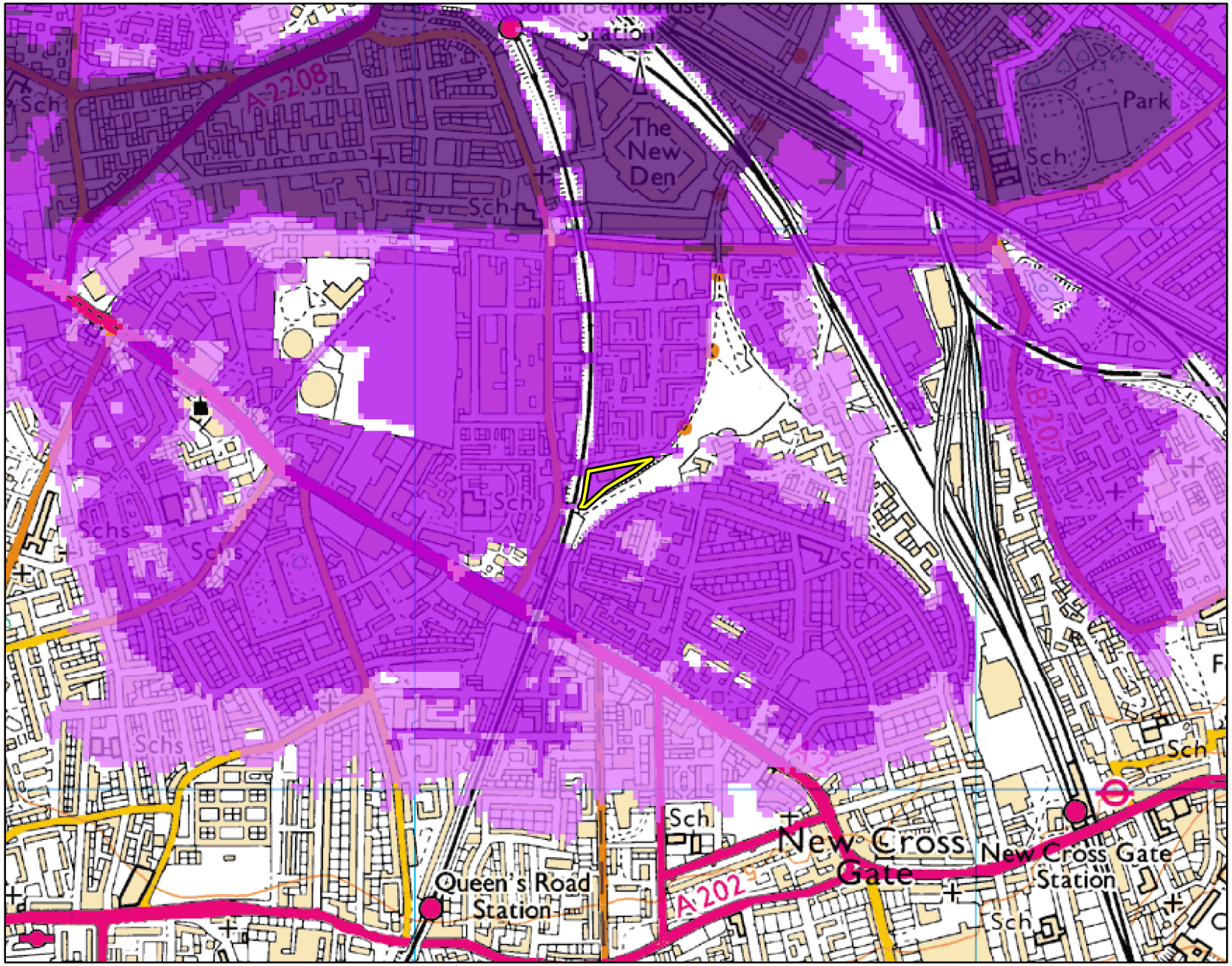
- 2014
- 2065
- 2100

Thames Tidal Breach Modelling 2015

A modelled representation of tidal breaches along the Thames from Teddington to the Mar Dyke and River Darent, based on low floodplain topography. For hard and composite defences breaches are set at 20 m wide; for soft defences, breaches are 50 m wide. In both cases, the defence breach scour distance was assumed to extend into the floodplain by the same distance as the breach width.
The modelling is based on the 2008 TE2100 in-channel levels, with an allowance for climate change for epochs 2065 and 2100.

Contact Us: National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel: 03708 506 506 (Mon-Fri 8-6). Email: enquiries@environment-agency.gov.uk

Upstream Inundation Modelling Map centred on SE15 1HB created 16 August 2016 [Ref: KSL 20068 TT]



Environment Agency

Scale 1: 10,000

Legend

- Site Location
- TE2100 Model Nodes
- Main Rivers
- Flood Map - Defences

Upriver MLWL Outlines

- 2014
- 2065
- 2100

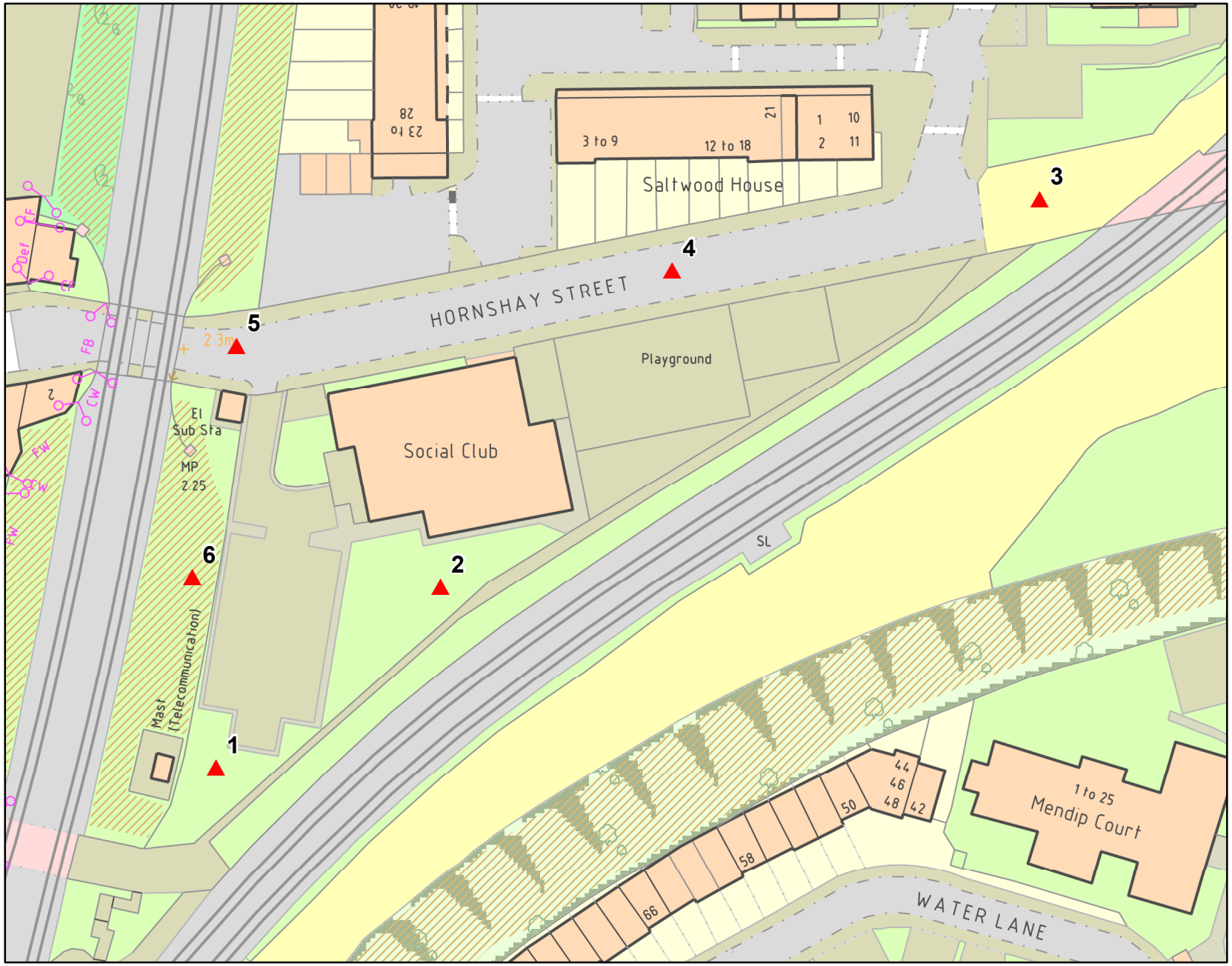
Upstream Inundation Modelling 2015

The modelled scenario is that the Thames Barrier is operational but all linear defences have been removed. The modelling is based on the 2008 TE2100 in-channel levels including an allowance for climate change.

Upstream of the Thames Barrier, there is no return period for modelled levels as the levels are controlled by barrier closures. Therefore 2014, 2065 and 2100 epochs were modelled using Maximum Likely Water Levels (MLWLs).

Contact Us: National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel: 03708 506 506 (Mon-Fri 8-6). Email: enquiries@environment-agency.gov.uk

Node Location Map centred on SE15 1HB created 16 August 2016 [Ref: KSL 20068 TT]



Environment Agency

Scale 1: 800

N
W
E
S

Legend

▲ Node Point Locations

Contact Us: National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel: 03708 506 506 (Mon-Fri 8-6). Email: enquiries@environment-agency.gov.uk

Appendix E

Thames sewer flooding report

Sewer Flooding
History Enquiry

Envirep Ltd

Search address supplied

Land at Pool Court
Pool Court
London
SE6 3JQ

Your reference 65199 PO: 1294

Our reference SFH/SFH Standard/2016_3382206

Received date **29 July 2016**

Search date **29 July 2016**

Thames Water Utilities Ltd

Property Searches
PO Box 3189
Slough SL1 4WW

DX 151280 Slough 13

T 0118 925 1504
E searches@thameswater.co.uk
I www.thameswater-propertysearches.co.uk

Registered in England and Wales
No. 2366661, Registered office
Clearwater Court, Vastern Road
Reading RG1 8DB

Sewer Flooding

History Enquiry

Search address supplied: Land at Pool Court,Pool Court,London,SE6 3JQ

This search is recommended to check for any sewer flooding in a specific address or area

TWUL, trading as Property Searches, are responsible in respect of the following:-

(i) any negligent or incorrect entry in the records searched;

(ii) any negligent or incorrect interpretation of the records searched;

(iii) and any negligent or incorrect recording of that interpretation in the search report

(iv) compensation payments

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I www.thameswater-propertysearches.co.uk

Registered in England and Wales
No. 2366661, Registered office
Clearwater Court, Vastern Road
Reading RG1 8DB

Sewer Flooding

History Enquiry

History of Sewer Flooding

Is the requested address or area at risk of flooding due to overloaded public sewers?

The flooding records held by Thames Water indicate that there have been no incidents of flooding in the requested area as a result of surcharging public sewers.

For your guidance:

- A sewer is “overloaded” when the flow from a storm is unable to pass through it due to a permanent problem (e.g. flat gradient, small diameter). Flooding as a result of temporary problems such as blockages, siltation, collapses and equipment or operational failures are excluded.
- “Internal flooding” from public sewers is defined as flooding, which enters a building or passes below a suspended floor. For reporting purposes, buildings are restricted to those normally occupied and used for residential, public, commercial, business or industrial purposes.
- “At Risk” properties are those that the water company is required to include in the Regulatory Register that is presented annually to the Director General of Water Services. These are defined as properties that have suffered, or are likely to suffer, internal flooding from public foul, combined or surface water sewers due to overloading of the sewerage system more frequently than the relevant reference period (either once or twice in ten years) as determined by the Company’s reporting procedure.
- Flooding as a result of storm events proven to be exceptional and beyond the reference period of one in ten years are not included on the At Risk Register.
- Properties may be at risk of flooding but not included on the Register where flooding incidents have not been reported to the Company.
- Public Sewers are defined as those for which the Company holds statutory responsibility under the Water Industry Act 1991.
- It should be noted that flooding can occur from private sewers and drains which are not the responsibility of the Company. This report excludes flooding from private sewers and drains and the Company makes no comment upon this matter.
- For further information please contact Thames Water on Tel: 0800 316 9800 or website www.thameswater.co.uk

Thames Water Utilities Ltd

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Slough SL1 4WW

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

Sewer Flooding
History Enquiry

Envirep Ltd

Search address supplied New Cross Social Club & Adjoining Land
Hornshay Street
London
SE15 1HB

Your reference 65199 PO: 1292

Our reference SFH/SFH Standard/2016_3382200

Received date **29 July 2016**

Search date **29 July 2016**

Thames Water Utilities Ltd

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Clearwater Court, Vastern Road
Reading RG1 8DB

Sewer Flooding

History Enquiry

Search address supplied: New Cross Social Club & Adjoining Land,Hornshay Street,London,SE15 1HB

This search is recommended to check for any sewer flooding in a specific address or area

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(ii) any negligent or incorrect interpretation of the records searched;

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Sewer Flooding

History Enquiry

History of Sewer Flooding

Is the requested address or area at risk of flooding due to overloaded public sewers?

The flooding records held by Thames Water indicate that there have been no incidents of flooding in the requested area as a result of surcharging public sewers.

For your guidance:

- A sewer is “overloaded” when the flow from a storm is unable to pass through it due to a permanent problem (e.g. flat gradient, small diameter). Flooding as a result of temporary problems such as blockages, siltation, collapses and equipment or operational failures are excluded.
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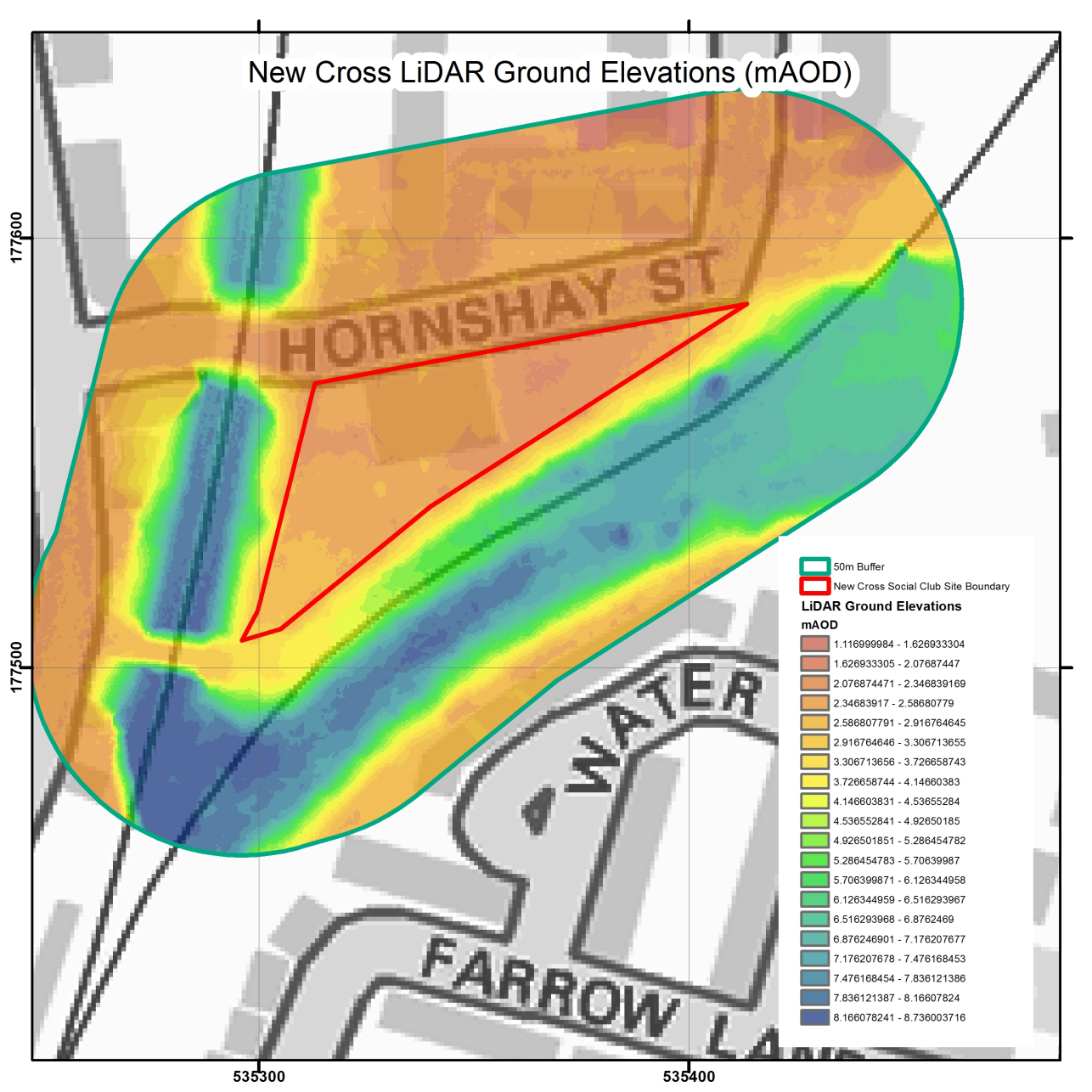
Appendix F

EA Elevation Data


New Cross LiDAR Ground Elevations (mAOD)
HORNSHAY ST
WATER
FARROW
177600
177500
535300
535400
50m Buffer
New Cross Social Club Site Boundary
LiDAR Ground Elevations
mAOD
1.116999984 - 1.626933304
1.626933305 - 2.07687447
2.076874471 - 2.346839169
2.34683917 - 2.58680779
2.586807791 - 2.916764645
2.916764646 - 3.306713655
3.306713656 - 3.726658743
3.726658744 - 4.14660383
4.146603831 - 4.53655284
4.536552841 - 4.92650185
4.926501851 - 5.286454782
5.286454783 - 5.70639987
5.706399871 - 6.126344958
6.126344959 - 6.516293967
6.516293968 - 6.8762469
6.876246901 - 7.176207677
7.176207678 - 7.476168453
7.476168454 - 7.836121386
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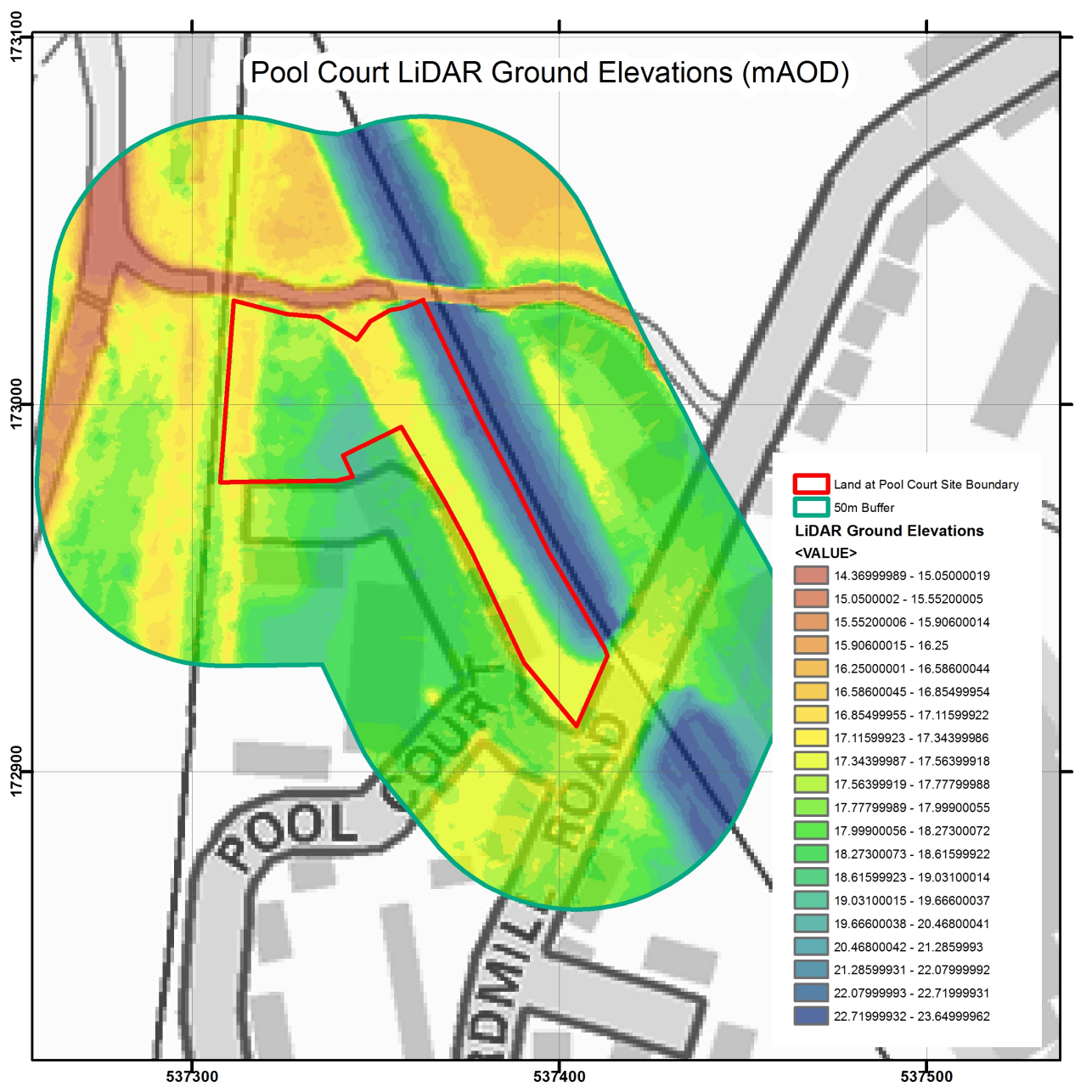
8.166078241 - 8.736003716


Pool Court LiDAR Ground Elevations (mAOD)
173100
173000
172900
537300
537400
537500
POOL COURT ROAD
Land at Pool Court Site Boundary
50m Buffer
LiDAR Ground Elevations
<VALUE>
14.36999989 - 15.05000019
15.0500002 - 15.55200005
15.55200006 - 15.90600014
15.90600015 - 16.25
16.25000001 - 16.58600044
16.58600045 - 16.85499954
16.85499955 - 17.11599922
17.11599923 - 17.34399986
17.34399987 - 17.56399918
17.56399919 - 17.77799988
17.77799989 - 17.99900055
17.99900056 - 18.27300072
18.27300073 - 18.61599922
18.61599923 - 19.03100014
19.03100015 - 19.66600037
19.66600038 - 20.46800041
20.46800042 - 21.2859993
21.28599931 - 22.07999992
22.07999993 - 22.71999931
22.71999932 - 23.64999962

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Tel: 01743 276 150

Email: info@geosmartinfo.couk

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- sets out minimum standards which firms compiling and selling search reports have to meet
- promotes the best practice and quality standards within the industry for the benefit of consumers and property professionals
- enables consumers and property professionals to have confidence in firms which subscribe to the code, their products and services.
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- conduct business in an honest, fair and professional manner
- handle complaints speedily and fairly
- ensure that products and services comply with industry registration rules and standards and relevant laws
- monitor their compliance with the Code

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If you have a query or complaint about your search, you should raise it directly with the search firm, and if appropriate ask for any complaint to be considered under their formal internal complaints procedure. If you remain dissatisfied with the firm's final response, after your complaint has been formally considered, or if the firm has exceeded the response timescales, you may refer your complaint for consideration under The Property Ombudsman scheme (TPOs). The Ombudsman can award compensation of up to £5,000 to you if he finds that you have suffered actual loss as a result of your search provider failing to keep to the Code.

Please note that all queries or complaints regarding your search should be directed to your search provider in the first instance, not to TPOs or to the PCCB.

TPOs contact details:

The Property Ombudsman scheme
Milford House
43-55 Milford Street
Salisbury
Wiltshire SP1 2BP
Tel: 01722 333306
Fax: 01722 332296
Email: admin@tpos.co.uk

You can get more information about the PCCB from www.propertycodes.org.uk.

Please ask your search provider if you would like a copy of the search code

Complaints procedure

GeoSmart Information Limited is registered with the Property Codes Compliance Board as a subscriber to the Search Code. A key commitment under the Code is that firms will handle any complaints both speedily and fairly.

If you want to make a complaint, we will:

- Acknowledge it within 5 working days of receipt.
- Normally deal with it fully and provide a final response, in writing, within 20 working days of receipt.
- Keep you informed by letter, telephone or e-mail, as you prefer, if we need more time.
- Provide a final response, in writing, at the latest within 40 working days of receipt.
- Liaise, at your request, with anyone acting formally on your behalf.

If you are not satisfied with our final response, or if we exceed the response timescales, you may refer the complaint to The Property Ombudsman scheme (TPOs): Tel: 01722 333306, E-mail: admin@tpos.co.uk.

We will co-operate fully with the Ombudsman during an investigation and comply with his final decision.

Complaints should be sent to:

Lisa Davies
Operations Manager

GeoSmart Information Limited
New Zealand House
160 Abbey Foregate
Shrewsbury
SY2 6FD

Tel: 01743 276150
lisadavies@geosmartinfo.co.uk