



University of Birmingham
Edgbaston Central Campus Development
Flood Risk Assessment

University of Birmingham

Final Report
9X0386

**UNIVERSITY OF
BIRMINGHAM**



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1 INTRODUCTION

Royal Haskoning were commissioned by University of Birmingham (UoB) in November 2011 to carry out a Flood Risk Assessment (FRA) to support the Edgbaston Central Campus Development planning application.

This FRA satisfies the requirements of PPS25. It fulfils the requirements of a Level 2 Scoping Study in terms of the guidance given in PPS25 Practice Guidance (March 2010), providing details of:

- 1) An appraisal of the availability and adequacy of available information;
- 2) A qualitative appraisal of the flood risk posed to the site, and potential impact of the development on flood risk elsewhere; and
- 3) An appraisal of the scope of possible measures to reduce the flood risk to acceptable levels.

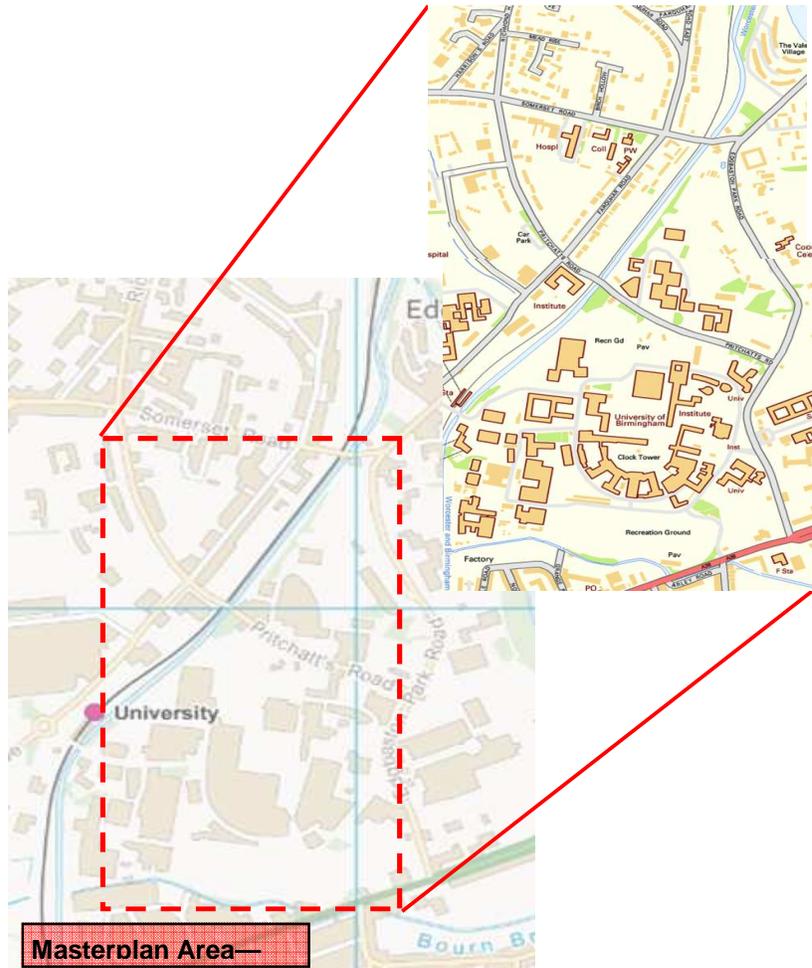
Appendix A includes the PPS25 Pro Forma for an FRA and refers to the relevant sections in this report, thus demonstrating the compliance.

2 DEVELOPMENT DESCRIPTION AND LOCATION

2.1 Nature of the Proposed Development

The UoB has recently announced a five year capital programme of new development on the Edgbaston campus. This comprises of 21 new projects including replacement of the Munrow Sports Centre and Existing Library, a new Student Services Hub, and creation of a 'Green Heart' open space in the centre of campus. The redevelopment will take place within the Edgbaston campus, as outlined in **Figure 2.1** below.

Figure 2.1 – Location of the Development Site



Mapping taken from OS Open Source

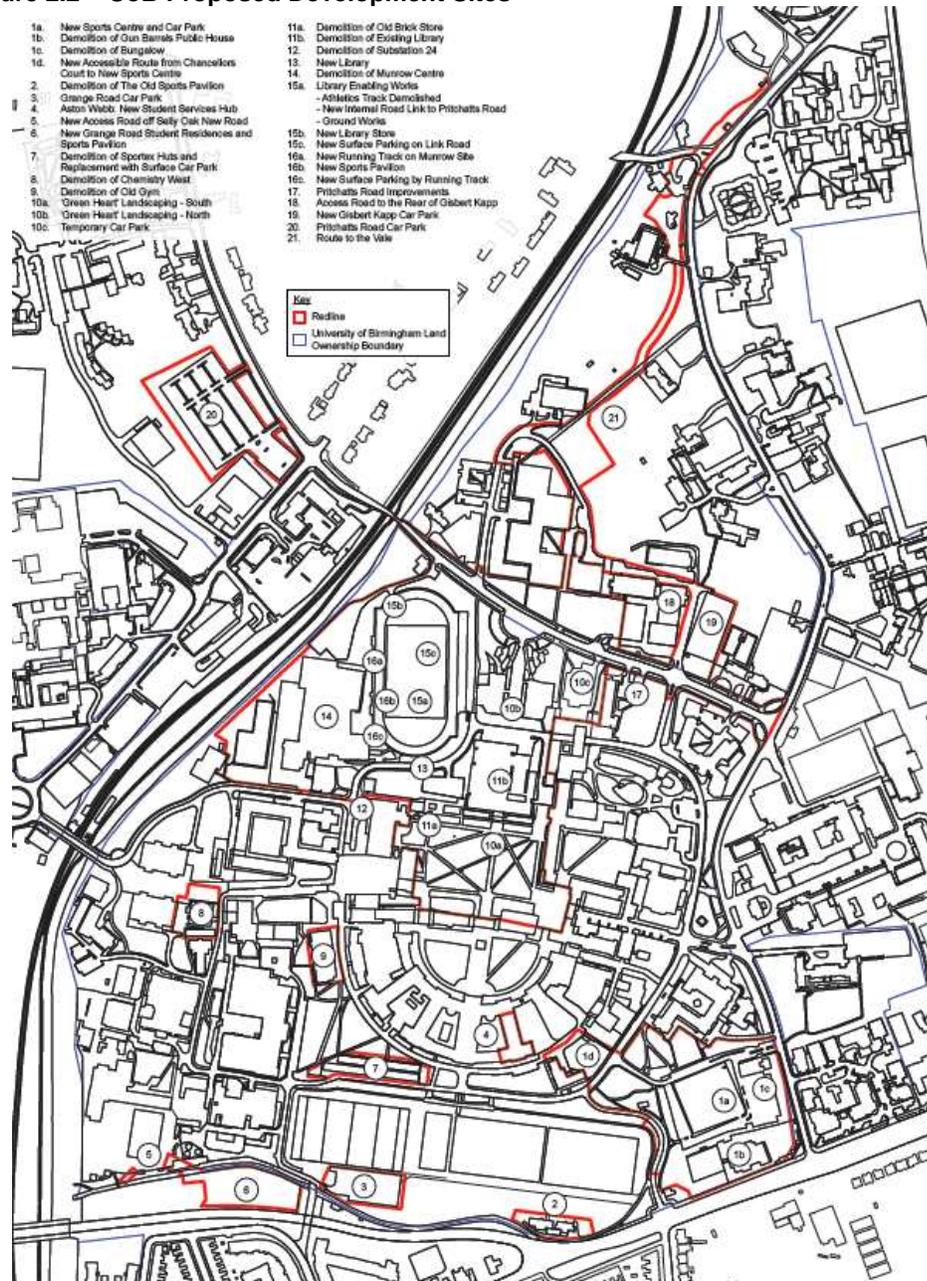
The proposed scheme is to consist of 21 projects, as illustrated in **Figure 2.2**. The nature of the individual developments are outlined in further detail within the Planning Application.



The redevelopment of the campus will encompass a 'Green Heart', which will comprise a large open space in the centre of the campus. At this stage in planning, the concept design for the 'Green Heart' landscaped space will reconfigure the existing car park and the former Library site. The approximate area of the 'Green Heart' is 5.7ha.

Details of the 21 projects are outlined in **Table 2.1** within **Appendix B**.

Figure 2.2 – UoB Proposed Development Sites



Source: MJP Architects

2.2 Topography

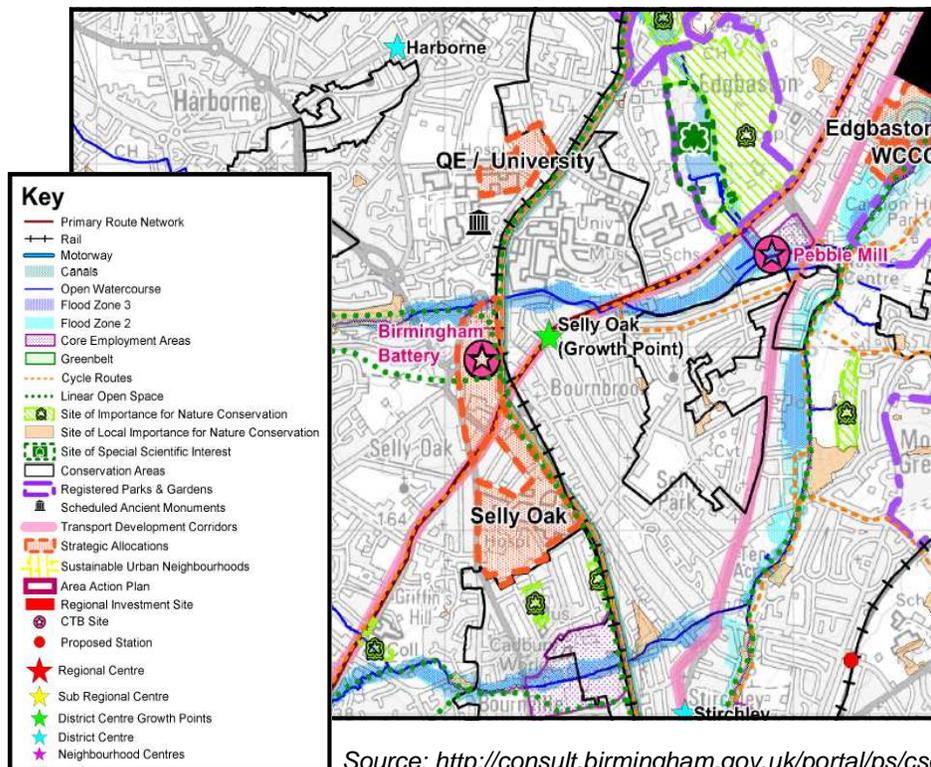
The site of the Edgbaston Central Campus Development is largely situated on high ground, with a small area parallel to the Bourn Brook forming a ledge of lower ground. Due to the natural topography of the campus, drainage from the campus is naturally discharged into the Bourn Brook. Ground levels vary significantly throughout the site from 145mAOD to 122mAOD, with the lowest point on the campus being to the south next to the Bourn Brook.

2.3 Local Development Plans

The development site does not have a particular designation in the adopted development plan for Birmingham (The Birmingham unitary development Plan 2005). The emerging Draft Core Strategy does however, include the following statement, all of which are relevant to this application and illustrated in **Figure 2.3**, which identifies Selly Oak as a District Centre Growth Point:

1. (Policy S5) The Selly Oak area will be promoted for major mixed use development. This will include the following:
 - *The University of Birmingham will remain a major centre of higher education, research and development, and supporting activities. **Proposals that maintain and enhance the University's facilities will be encouraged.***
2. (Supporting Evidence 9.44) **Investment in the University will be encouraged...**
3. (Supporting Evidence 9.51) The City Council **will work with the private sector including** key landowners such as the **UoB**.

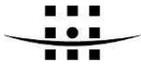
Figure 2.3 - Birmingham Draft Core Strategy 2026 – South Strategic Proposals Map





In addition, the following clauses from Birmingham City Council's Selly Oak Local Action Plan, 2001 are directly relevant to, and support, the Edgbaston Central Campus development:

1. Birmingham University is a major academic and research institution. Proposals to **expand its teaching and research facilities**, improve student accommodation and introduce 'lifelong learning' initiatives will increase its attractiveness nationally.
2. There is a need to continue to support the important role of Birmingham University as a major teaching and research institution and source of employment. The following will be encouraged:
 - New development for research and teaching facilities;
 - This should not detract from the high quality environment of the University campus, in particular the listed buildings;
 - New purpose built student accommodation;
 - High quality environmental improvements within the campus, including the landscaping of key spaces and the provision of public art features. These should enhance the setting of the University and listed buildings.



3 DEFINITION OF THE FLOOD HAZARD AND PROBABILITY

3.1 Potential Sources of Flooding

Fluvial

A small area to the South of the Edgbaston campus is liable to fluvial flooding as a result of its location next to the Bourn Brook. This area is identified within the Environment Agency's published Flood Zones and the Birmingham City Level 1 Strategic Flood Risk Assessment (SFRA)¹ as being within Flood Zones 2 and 3 (the 0.1% AEP and 1% AEP flood outlines, respectively), as seen in **Figure 3.0**.

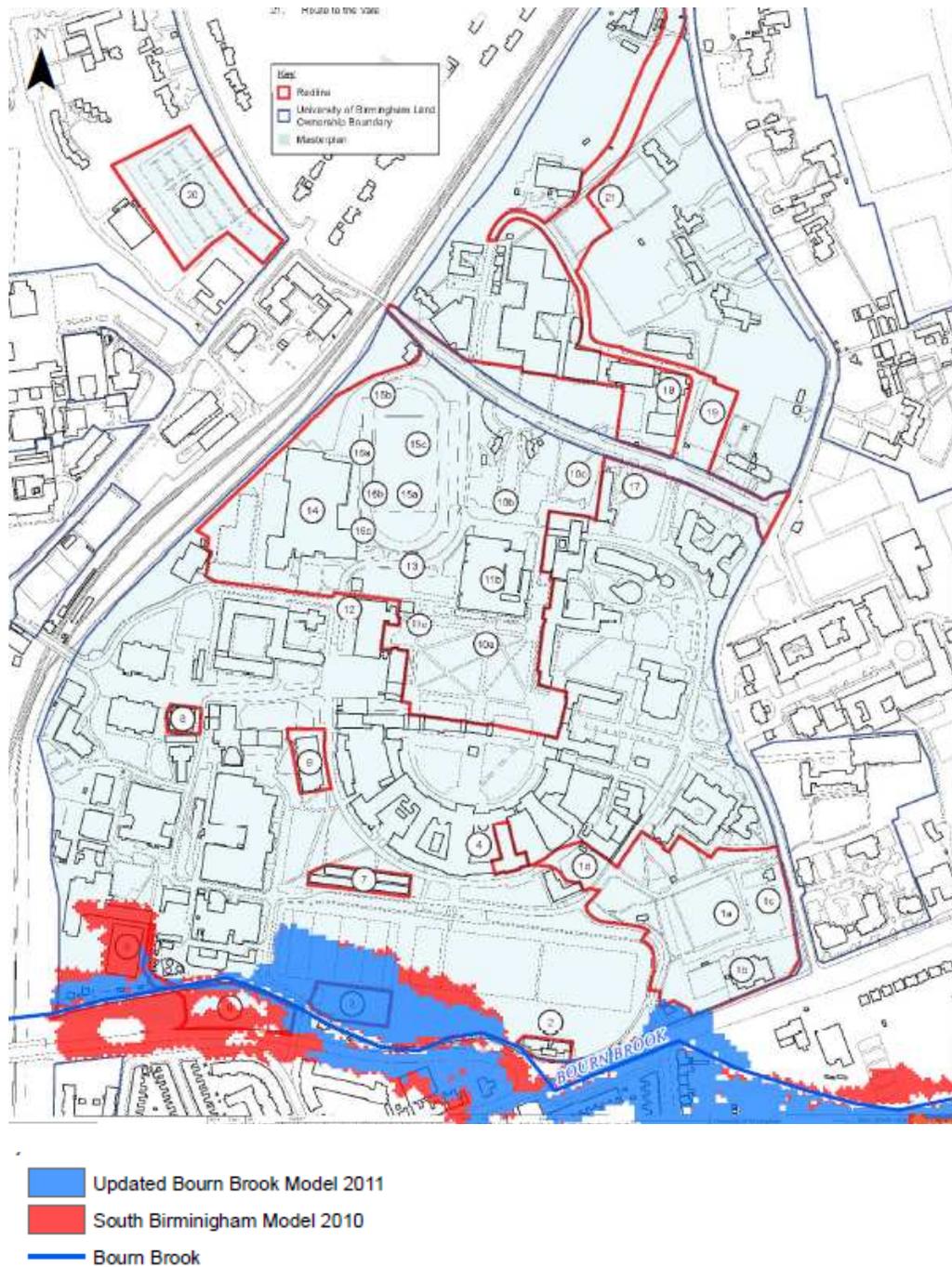
However, since the SFRA and latest Environment Agency flood maps were published in 2010, the Selly Oak bypass road has been constructed, resulting in a number of significant changes in close proximity to the UoB. These changes include re-profiling of the Bourn Brook channel sides and bed, widening of a culvert downstream to accommodate the bypass road crossing and construction of walls along the channel.

As a result of these modifications, the old Flood Maps are no longer considered valid and Royal Haskoning were commissioned by UoB and Victoria Hall Ltd (VHL) in September 2011 to assess any changes in flood risk by updating the existing ISIS-TUFLOW modelling along this section of the Bourn Brook². This was undertaken in consultation with the Environment Agency and using the bypass design drawings. The model was run for the 20%, 10%, 5%, 2%, 1.33%, 1% and 0.1% AEP flood events. The resulting flood outlines for the 1% AEP events are also shown in **Figure 3.0**.

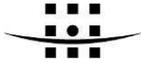
¹ Completed in September 2009

² Bourn Brook Modelling Report, Royal Haskoning, September 2011

Figure 3.0 – Fluvial Flood Zones, Bourn Brook



Source: MJP Architects



The results of this modelling have reduced the flood outline to the South of the Edgbaston Campus. The new assessment identifies there is no risk of fluvial flooding to specific areas of development within the Master Plan. Development plots 5 and 6 are situated on the border of the fluvial flood outline, however this development has been considered within a separate planning application and Flood Risk Assessment, and will therefore not be included within the assessment of this Master Plan FRA.

Development Site 1 and Demolition Site 2 are located upon the dry boundary of the updated Flood Zone 3. They will therefore not be affected by fluvial flooding. Development Site 3 remains within Flood Zone 3, however, the water level at this site will not be worsened by the development of the campus. The proposed land use of Development Site 3 will remain a car park, which will not be occupied full time. In the instance of a flood event, mitigation measures will be put in place to close the car park. This will prevent risk to human life. The remaining development plots are not affected by fluvial flooding. This scenario has been greatly improved since the construction of the Selly Oak bypass. This is due to a number of amendments made as part of the Selly Oak works. These include:

- Removal of an in channel weir
- Brick wall built on the right bank of the Bourn Brook;
- Raised levels in the location of the new road;
- Work carried out on the Bristol Toad culvert; and
- Re-configuration of the floodplain upstream of the railway embankment.

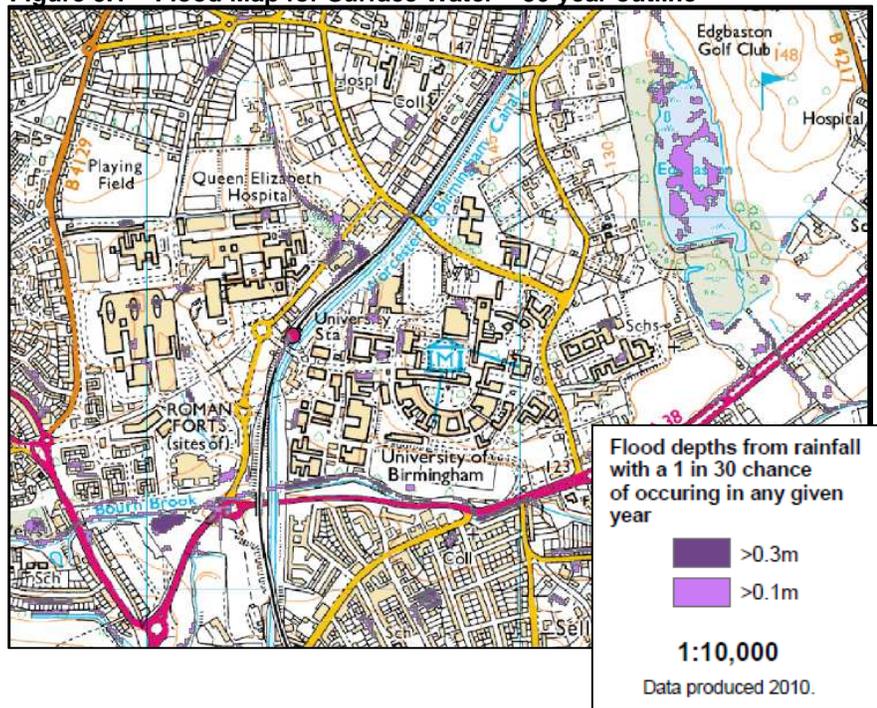
The Level 1 SFRA does not identify any records of historic fluvial flooding within the vicinity of the Edgbaston Central Campus Development site.

For the remainder of this FRA, we have assumed the outlines of the updated hydraulic model are relevant for the assessment of fluvial flood risk at the site. Therefore, the UoB hybrid application sites are outside the fluvial Flood Zones.

Surface Water

The Environment Agency has recently commissioned the production of a surface water 'flood map' of the UK. This map utilised a fairly crude modelling technique whereby a single rainfall event was run over the topography of the land to determine where surface water may collect and pool. However it does not include underground sewerage and drainage systems, small over ground drainage systems or buildings. The terrain data used for this assessment was 5m resolution, which is coarser than recommended for accurate surface water management analysis. This resolution for example, does not identify important surface water flow routes such as roads. It therefore indicates the susceptibility of an area to surface water flooding and does not prescribe exact locations. Figures 3.1 and 3.2 indicate the flood depths from rainfall for the 30 year and 200 year rainfall probability events respectively.

Figure 3.1 – Flood Map for Surface Water – 30 year outline

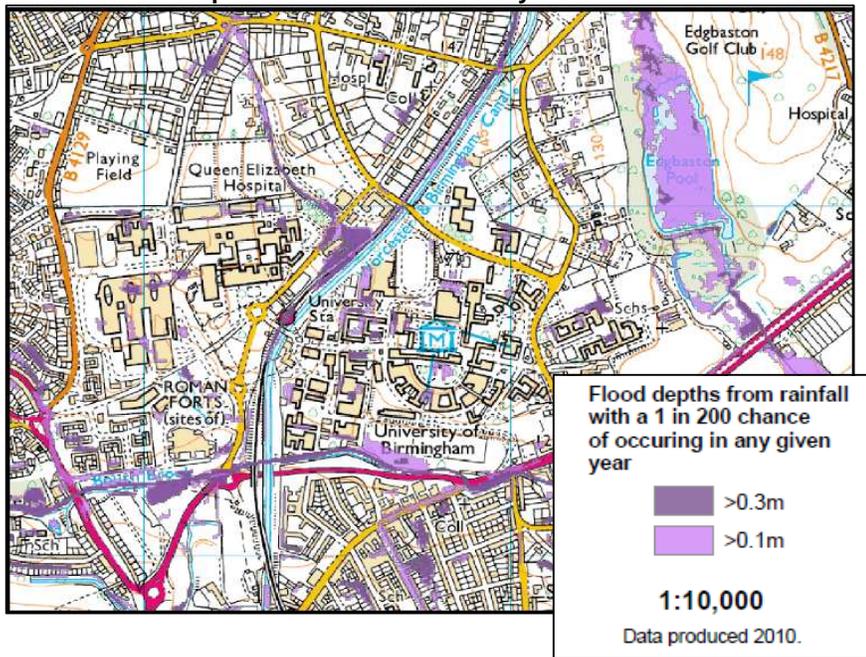


Source: Environment Agency

Figure 3.1 indicates that there is little chance of surface water flooding to depths of >0.1m in a 30 year rainfall event. The small area within this outline is located within the vicinity of the Existing Munrow Sports Centre.

Figure 3.2 shows an increase in flood depths with a 1 in 200 year rainfall event. The increased outline is noted on the banks of the Bourn Brook where the existing sports pitches are located. The mapped surface water in this location will reach depths of >0.1m. The previously mentioned surface water flooding at the existing Munrow Sports Centre is slightly worsened in the 200 year rainfall event, as expected.

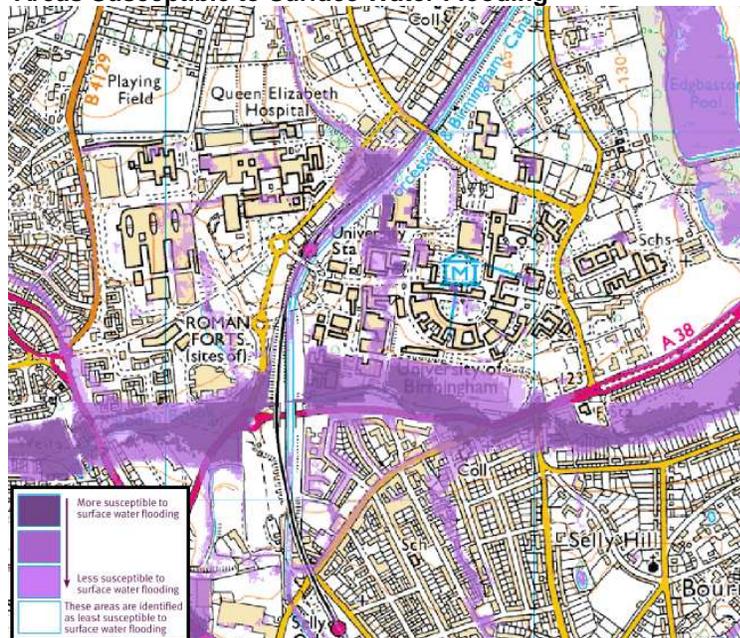
Figure 3.2 – Flood Map for Surface Water – 200 year outline



Source: Environment Agency

The Level 1 SFRA identifies the extent of the Environment Agency's first edition surface water Flood Zones (Areas Susceptible to Surface Water Flooding, AStSWF). Figure 3.3 illustrates the outputs of this map for the Edgbaston Central Campus Development. This represents the future risk of surface water flooding.

Figure 3.3 – Areas Susceptible to Surface Water Flooding



Source: Environment Agency



Figure 3.3 indicates that the site is largely located in a zone that is 'Least Susceptible to Surface Water Flooding'. An area covering the existing sports pitches has been identified as less susceptible to surface water flooding while a small corridor around the Bourn Brook has been identified as 'More Susceptible to Surface Water Flooding'. There is also an area within the UoB campus that has been identified as less susceptible to surface water. This area corresponds to Demolition sites 7, 8 and 9.

The 'Green Heart'; to be located in the centre of the campus will consist of 5.7ha of landscaped green space. The nature of the development will significantly reduce the surface water runoff, ultimately reducing the risk of surface water flooding elsewhere on the campus. Detailed design of this area will provide the opportunity for improving flow routes and surface water storage on the campus. This will reduce the surface water discharge into the Bourn Brook. The 'Green Heart' will replace an existing concrete car park and footpaths resulting in an increase the infiltration of rainwater.

It must be noted that this surface water flood outline does not account for buildings or the capacity of the underground drainage network and the SFRA does not identify any historic records of surface water or sewer flooding in the vicinity of the development site. The information within the surface water maps is not suitable for assessing individual properties due to the method that was used to derive it.

It is recommended that in order to assess the drainage and surface water at a property scale, a drainage strategy is carried out. This study would inform the design of sustainable drainage systems throughout the new development.

Reservoirs

The Bartley reservoir is approximately 3 miles upstream of the University of Birmingham development site. Due to the proximity of the reservoir to the site, the University of Birmingham is located within an area at risk of flooding from reservoirs. However, as stated on the Environment Agency's website, reservoirs in the UK have a very good safety record, with no record of incidents resulting in the loss of life since 1925. The present day maintenance regime of such structures is very strict and, as a result, reservoir flooding is very unlikely to happen. This risk is therefore not quantitatively considered within this FRA.

Canal Flooding

The hybrid application site is located to the east of the Worcester and Birmingham canal. The flood risk associated with the canal was assessed as part of the Level 2 SFRA. Canals in general are sensitive to rainfall where the runoff from urban areas can lead to elevated water levels. British Waterways maintains the canal levels using reservoirs, feeders and boreholes and manages the water by transferring it within the canal system.

Water in a canal is maintained at predetermined levels by control weirs to ensure minimum navigable depth at all times. When rainfall or other water enters the canal, the water level rises and flows out over the weir. If the level continues raising it will reach the levels of the storm weirs, typically set around 50 mm above the control weir.



The control weirs and flood weirs are normally designed to take the water that legally enters the canal under normal conditions. However, it is possible for unexpected water, i.e. a burst water main, to enter the canal or for the weirs to become obstructed (i.e. vandalism). In this case the water continues to rise until it finds a way to escape. Initially this will be by increased flows over the weirs, and later mitigated by British Waterways opening emergency sluices, however, most of the sluice gates around Birmingham are operated automatically and are monitored by telemetry.

Selly Oak has experienced 2 cases of canal breach in the past. However, as summarised within the Level 1 SFRA, the residual risk associated with the canal is 'Low'.

Groundwater

Risk of groundwater flooding for the Master Plan has been assessed within the SFRA using the British Geological Society's Groundwater Flood Susceptibility dataset. The majority of the development site is located within an area classified as having 'Very Low' susceptibility to groundwater flooding. The site is, however, located above a Major Aquifer. There are no records of historic groundwater flooding in the vicinity of the development site identified within the SFRA.

3.2 Existing Flood Defences and Management Structures

As part of development plots 5 and 6, an 850mm flood wall will be constructed to protect the site from flows up to the 100+cc return period with an allowance for freeboard. The proposals have been accepted by the Environment Agency, so it is acceptable to assume the land on the right bank of the Bourn Brook will be protected from flooding.

There are no other known flood defences and management structures in the vicinity of the University of Birmingham.

3.3 Extent of Known Flood Information

There are no records of historical flood events impacting the site within the Level 1 SFRA and no known occurrences of flooding to the site following completion of the Level 1 SFRA in September 2009.

3.4 Flooding Mechanisms

3.4.1 Overtopping of the Bourn Brook

As stated within Section 3.1 of this report, the results of the Bourn Brook Modelling Study have identified the application site as being outside the modelled flood extents.

3.4.2 Other Flood Mechanisms

As discussed in Section 3.1 above, the only other sources of flood risk to which this site is susceptible are reservoir inundation and surface water flooding. The risk of reservoir inundation is considered extremely low and therefore does not require consideration within this FRA. Due to the limitations of the AStSWF mapping and lack of historic records, the risk of surface water flooding is considered 'Low'. As noted, the proposed development will reduce the risk of surface water flooding in the future.



3.5 Climate Change Impacts

Given the potential sources of flooding outlined previously, the only aspect of climate change likely to impact the site is an increase in the duration and intensity of rainfall events.

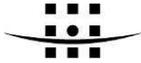
The risk of flooding from all potential sources outlined in Section 3.1 will be amplified as a result of the predicted increase in rainfall.

Annex B of PPS25 (Table B.2) recommends the following increases upon rainfall intensity and peak river flow to allow for climate change:

Table 1 - Recommended national precautionary sensitivity ranges

Parameter	1990 to 2025	2025 to 2055	2055 to 2085	2085 to 2115
Peak rainfall intensity	+5%	+10%	+20%	+30%
Peak river flow	+10%	+20%		

The present day 0.1% AEP flood event does not flood the UoB Edgbaston Central Campus Development site; therefore the 1% AEP flood event even with the effects of climate change will not. Therefore, consideration of this event on the proposed development is not discussed further within this report.



4 DEVELOPMENT PROPOSALS

4.1 Classification of the Development Under PPS25

As outlined in Section 2.1, the aim of the proposed development is to redevelop part of the UoB Edgbaston campus. Road access to the site will remain as existing with the addition of a service bridge over the Bourn Brook as part of development 6. Foot access will remain as existing.

In terms of flood risk and vulnerability, it has been identified that the development site is outside of the fluvial flood zones. Therefore, the development is not required to be classified as per Table D.2 of PPS25.



5 IMPACT ON LOCAL FLOOD REGIME

5.1 Floodplain Volume

As the site is outside the Flood Zones, the development proposal is not considered to have an effect upon floodplain volume.

5.2 Floodplain Flow

As the site is outside the Flood Zones, and there are no records of historical flooding on the site, the development proposal is not considered to have an impact on floodplain flow in the area.

5.3 Surface Water Runoff

There is currently limited surface water drainage provision from the site, with surface water currently draining off the site as rainfall runoff directly into the Bourn Brook. As the Environment Agency require the proposed development to reduce the runoff from the previous industrial buildings by 20%, less surface water will be entering the watercourse following development than at the present time. As such there will be a positive impact on the local surface water flooding regime in relation to fluvial flows. In addition, as the site will not be discharging surface water into the underground network, there will be no negative impact on the risk of surface water sewer flooding to neighbouring properties.

5.4 Fluvial Morphology

Due to the highly modified and urban nature of the Bourn Brook, no negative impact is expected on the fluvial morphology.

5.5 Impact on Neighbouring Properties

The site is out of the Flood Zones. As such there is no direct flood risk consequence for surrounding areas from the proposed development.



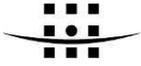
6 CONCLUSIONS

This FRA has considered the hybrid application proposals for the Edgbaston Central Campus Development.

The FRA concludes that since the updated hydraulic model to include the Selly Oak Bypass and associated floodplain alterations, all development sites apart from Site 3 are no longer within the EA Flood Zone 3.

The final conclusion is that the development as proposed in this planning application should be permitted, but with inclusion of the recommended measures outlined in this report.

A sustainable surface water drainage design should be developed for the site as part of the 'Green Heart', whereby surface water runoff is reduced by 20% from the previous rate and consideration is given to the use of SUDs.



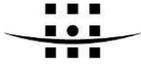
Appendix A PPS25 Practice Guide Pro-Forma



PLANNING POLICY STATEMENT 25 REQUIREMENTS (March 2010)	FRA REPORT COMPLIANT SECTION
1 Development description and location	
1a. What type of development is proposed and where will it be located? Include whether it is new development, an extension to existing development or change of use etc.	2.1
1b. What is its vulnerability classification?	4.1
1c. Is the proposed development consistent with the Local Development Documents?	2.3
1d. Please provide evidence that the Sequential Test and, where necessary, the Exception Test has been applied in the selection of this site for this development type?	N/A
1e. Will the proposal increase overall the number of occupants and/or users of the building/land; or the nature or times of occupation or use, such that it may affect the degree of flood risk to these people?	2.1
2. Definition of the flood hazard	
2a. What sources of flooding could affect the site? (see Annex C PPS25).	3.1
2b. For each identified source, describe how flooding would occur, with reference to any historic records wherever these are available.	3
2c. What are the existing surface water drainage arrangements for the Site?	5.3
3. Probability	
3a Which Flood Zone is the site within?	3.1
3b If there is a Strategic Flood Risk Assessment covering this site, what does it show?	3
3c What is the probability of the site flooding taking account of the contents of the SFRA and of any further site-specific assessment?	3
3d What are the existing rates and volumes of run-off generated by the site?	5.3
4. Climate change	
4a How is flood risk at the site likely to be affected by climate change?	3.5
5. Detailed development proposals	
5 Where appropriate, are you able to demonstrate how land uses most	N/A



sensitive to flood damage have been placed in areas within the site that are at least risk of flooding, including providing details of the development layout?	
6. Flood risk management measures	
6. How will the site be protected from flooding, including the potential impacts of climate change, over the development's lifetime?	3.2
7. Off site impacts	
7a How will you ensure that your proposed development and the measures to protect your site from flooding will not increase flood risk elsewhere?	5.5
7b How will you prevent run-off from the completed development causing an impact elsewhere?	5.3
8. Residual risks	
8a What flood-related risks will remain after you have implemented the measures to protect the site from flooding?	N/A
8b How, and by whom, will these risks be managed over the lifetime of the development?	N/A

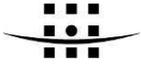


Appendix B Summary of Hybrid Application Projects

Project	Description	Application type	Site number	ref.
New Sports Centre and route from Bristol Road to Chancellors Court	Demolition of ex Gun Barrels PH (1b) and bungalow adj South Car Park (1c) and construction of new sports centre (1a) with 50m pool, and 270-290 parking spaces (providing community access). Improvement of existing pedestrian route (1d) between new Sports Centre and Student Services Hub including minor landscaping works	Full	1a, 1b, 1c, 1d	
Demolition of Sports Pavilion	Demolition of an ex sports pavilion on playing fields upon occupation of new Sports Pavilion and landscaping of site.	Full	2	
Grange Road Car Park	New permanent surface car park	Outline with all matters reserved except access	3	
Student Services Hub	Insertion of rooflights and erection of plant compound ¹	Full	4	
Grange Road bridge crossing	Bridge crossing of Bourn Brook into campus to provide access for service vehicles into campus and new ramp down to the Brook.	Outline with all matters reserved	5	
Grange Road student residences and sports pavilion	New 6,750 m ² student residences, bar/cafe and sports pavilion	Outline with landscaping appearance and layout reserved	6	
Demolition of Sportex Huts	Demolition and replacement with at grade parking (70 spaces)	Full	7	
Demolition of Chemistry West and research unit	Demolition of obsolete buildings and interim landscaping, pending longer term redevelopment	Full	8	
Demolition of Old Gym	Demolition of obsolete buildings and interim landscaping, pending longer term redevelopment	Full	9	
'Green Heart' landscaping	Design guidelines for 'green heart' landscaped open space including potential location for pavilion-style buildings to replace existing car park and former Library site (area approx 5.7ha). Phase one (10a) and phase two (10b) . Temporary car parking to the north of Muirhead Tower (10c) .	Outline with all matters reserved	10	
Project	Description	Application Type	Site ref. number	
Demolition of existing library	Demolition of existing Library building (11b) on occupation of new Library pending new landscaping as part of 'Green Heart'. Demolition of old brick store to south of new library site (11a) . Loss of car parking.	Full	11a and 11b	
Demolition of sub station 24	Demolition of substation	Full	12	
New main campus library	Construction of the new Main Campus Library on a site created by enabling works	Outline with all matters reserved	13	
Demolition of Munrow Sports Centre	Demolition of existing sports centre, loss of surface car park and tennis courts	Full	14	
Library enabling works	A new vehicular route linking the university ring road with Pritchatts Road to create the new Library site, requiring removal of the ex running	Outline with all matters reserved	15a, 15b and 15c	

¹ Further works to this building are proposed in a separate application for Listed Building Consent submitted by Associated Architects

	track and groundworks (15a) . New library store (15b) . Surface car park removed. New surface car park provided (15c) .		
Development of site of Munrow Sports Centre	Creation of new running track (16a) and erection of new sports pavilion (16b) and new surface car parking (16c) .	Outline with all matters reserved	16
Pritchatts road improvements	Changes to highway to improve pedestrian safety and environment, including traffic management/ public realm improvements	Outline with all matters reserved	17
Access road to rear of Gisbert Kapp	Extend the existing access road into the Met & Met building off Pritchatts Road to create a loop road relieving traffic for Project 17	Outline with all matters reserved except layout	18
Gisbert Kapp Car Park	Erection of new multi-storey car park	Outline with all matters reserved except layout	19
Pritchatts Road Car Park	Extension to surface car park	Full	20
Pedestrian and cycle route to The Vale	Construction of new pedestrian and cycle route from the rear of Met & Mat avoiding Edgbaston Park Road to the Vale Student Village. New crossings on Edgbaston Park Road and Somerset Roads	Full plus conservation area consent	21



Appendix C Glossary of Terms

Terms to be Used	Description
Edgbaston Central Campus Development	Generic name for the proposals the subject of the hybrid planning application.
Hybrid planning application	The single planning application containing the Edgbaston Central Campus Development proposals. It is a 'hybrid' in the sense that it contains both detailed proposals submitted in "full" and others submitted in "outline" with some or all matters reserved for later approval (these being layout, scale, appearance, access and landscaping).
University Strategic Vision	The University's overall strategic vision within which the Estates Strategy is set.
Estates Strategy	The overarching strategy for the University estate (University document).
Estate Development Framework	The framework for the development of the University estate and an outworking of the Estates Strategy and which is translated for the purposes of the hybrid application into the Campus Masterplan (authored by MJP).
Campus Masterplan	The document to be submitted with the application and the Design & Access Statement which sets out graphically the Edgbaston Central Campus Development Proposals in the context of wider strategies for the campus (authored by MJP).
Design & Access Statement	The statutory requirement for a D&A Statement to be submitted with the application should be read with the masterplan described above and contains design statements on the specific building projects (authored by MJP with contributions from AA, Stubbs Rich and LDS). This will include landscaping guidelines for the development of the Green Heart through subsequent appointment of a landscape architect.
Planning Statement	The overall planning statement setting out the strategic justification for the development, addressing planning policy and summarising the technical aspects of the application proposals (authored by Turley Associates).
Strategic Heritage Assessment	An overarching document produced by Alan Baxter & Associates considering the significance of heritage assets on campus, including Scheduled Monuments, Listed Buildings, the Conservation Area and Registered Parks & Gardens. This will also contain impact assessments for each of the application proposals with the exception of the Aston Webb C Block works which are also the subject of a separate Listed Building Consent application and a PPS5 Assessment prepared by Associated Architects).
Ecology Assessment	A supporting document prepared by RPS addressing the baseline ecological conditions across campus (Phase 1 Habitat Survey), assessing the effects of the application proposals and recommending mitigation measures including a Campus Wide Ecology Strategy. This will include Protected Species Surveys where necessary.
Transport Assessment	A supporting document prepared by Arup (incorporating contribution from WSP in respect of the New Indoor Sports Facility) addressing the transport effects of the application proposals. This will incorporate a Campus Wide Parking Strategy including proposals for phasing of temporary parking and a Travel Plan (updating the existing University Travel Plan).
Flood Risk Assessment	A supporting document prepared by Royal Haskoning, providing a Level 1 Flood Risk Assessment of the application proposals across campus: a detailed FRA of the Grange Road Student Residences and New Indoor Sports Facility proposals which adjoin the Bournbrook, and a campus-wide drainage strategy.
Archaeological Technical Appraisal	A supporting document prepared by Arup providing a desk-based assessment on likely archaeological issues and recommendations on any intrusive investigations required prior to commencement of development.
Ground Conditions Report	A campus-wide report on ground conditions.
New Indoor Sports Facility	The New Indoor Sports Facility to be developed on the former South Car Park and Gun Barrels PH site.

New Indoor Sports Facility Car Park	The car park to be provided within the New Indoor Sports Facility development.
Former South Car Park	The existing South Car Park off Edgbaston Park Road which will be lost for the development of the New Indoor Sports Facility.
Munrow Sports Centre	The existing sports centre in the NW of campus to be demolished after the opening of the New Indoor Sports Facility.
New Athletics Track and Sports Pavilion	The development of a new athletics track and sports pavilion on the site of the Munrow Sports Centre following its demolition.
Edgbaston Park Road Bungalow	The bungalow accessed from Edgbaston Park Road which is to be demolished as part of the New Indoor Sports Facility development.
Library Enabling Works	The physical groundworks to prepare the site for the new Library, including removal of the existing athletics track, earth-moving and creation of new access road from the University Ring Road to Pritchatts Road. Also a new car park and New Library Store.
New Library	The new library to be developed on the new site to the west of the existing library.
Existing Library	The current Library building on University Square which is to be demolished on completion of the New Library.
The 'Green Heart'	The creation of a new landscape space between the Aston Webb building and Metallurgy & Materials, following demolition of the Existing Library and removal of the North Car Park off Pritchatts Road.
Pritchatts Road Improvements	Traffic calming and reconfiguration of the carriageway on Pritchatts Road to contribute towards the creation of the Green Heart.
New Student Services Hub	The refurbishment of the Aston Webb C Block between the Great Hall and new Bramall Music Building to create a hub for student services.
Route from Chancellors Court to New Indoor Sports Facility	The creation of a new pedestrian route between the Student Services Hub/Bramall Music Building and the New Indoor Sports Facility crossing the University Ring Road.
Route to the Vale	The creation of an improved pedestrian/cycle route from Metallurgy & Materials to the Vale, across the Grounds Maintenance Nursery, the Elms Day Nursery and through the grounds of Park Grange to Mason Hall.
New Gisbert Kapp Car Park	A new multi-storey car park on the former tennis courts to the right of 52 Pritchatts Road/Gisbert Kapp building to be accessed off Pritchatts Road.
Pritchatts Road Car Park	The existing surface car park off Pritchatts Road, accessed from Vincent Drive, which is to be extended (note the previous proposal for a multi-storey car park on this site has been dropped).
Access Road to the rear of Gisbert Kapp	The extension of the existing access road off Pritchatts Road around the rear of Met & Mat to link through to the service access to Gisbert Kapp.
New Library Store	The construction of a new Library Store on a site created by the Library Enabling Works to the south of Pritchatts Road.
New Grange Road Student Residences and Sports Pavilion	The development of new student residences on a site at the Grange Road Entrance, including the creation of a new sports pavilion and bar. This adjoins the site of the new Victoria Halls student residences scheme which has been submitted for planning. The extension of Jarratt Hall opposite is a separate scheme.
Grange Road Car Park	The creation of a permanent car park on the site of an existing temporary car park adjoining the rugby pitches off Grange Road.
Chemistry West	The existing Chemistry West building near Westgate which is to be demolished together with the adjacent Research Unit once Haworth is refurbished, with an interim landscaping scheme pending longer term redevelopment.
The Old Gym	The original gymnasium building between Haworth Building and Aston Webb which is to be demolished, with an interim landscaping scheme pending longer term redevelopment.
The Old Sports Pavilion	The existing sports pavilion on the playing fields in front of Aston Webb which is to be demolished once the new sports pavilion within the Grange Road student residences is completed.

Terrace Huts	The existing Terrace Huts which are to be demolished, making way for a new car parking area as part of the Campus Wide Parking Strategy.
Additional New Car Parking	2 separate areas of new car parking adjoining the new access road off Pritchatts Road created as part of the Library Enabling Works and New Athletics Track development.
Small Brick Store	The small brick store to the south of the proposed library to be demolished.
Elms Day Nursery	Grade II listed Elms Day Nursery at 33 Edgbaston Park Road.
Elms Plant Nurseries	Grade II listed Elms Nurseries Cottage at 37 Edgbaston Park Road.